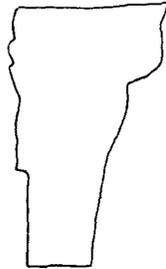


THE GREEN MOUNTAIN GEOLOGIST



QUARTERLY NEWSLETTER OF THE VERMONT GEOLOGICAL SOCIETY

SPRING 1976

Volume 3 Number 1

IMPORTANT NOTICE

The Spring meeting of the Vermont Geological Society will be incorporating an important afternoon session on the Vermont Geological Survey which will follow the scheduled student papers.

Any members who want to give their input on the future of the State Survey should try to attend this meeting. We shall be asking for members who will be willing to work on two Ad Hoc Committees. We shall organize a search committee for a new state geologist and a program committee for the Geological Survey.

In keeping with the recently passed legislation concerning the State Geologist, the Vermont Geological Society has been asked to recommend between three and five candidates to the Secretary of the Agency of Environmental Conservation for a new State Geologist. This information is needed by July of this year. Hence it is imperative that the search committee be established to determine the academic and experience criteria for the new State Geologist and then obtain several qualified candidates.

Besides this legislative mandate, the Society has been asked to formulate a Survey program that can be presented to the Legislature which will show the value of geological investigation to the people of Vermont. The Program Committee can strongly influence the future budget of the Survey if they can present a strong case for the geological needs of the people.

Our young society has been given a major responsibility. Let's work together to fulfill it.

John A. Malter President

SPRING MEETING IN BURLINGTON ON MAY 1... SEE ANNOUNCEMENT ON PAGE 3 →

Microseism Monitoring in Vermont

Dr. David P. Bucke
University of Vermont

The University of Vermont in cooperation with (and supported largely by) Lamont-Doherty Geological Observatory is in the process of establishing a small network of seismometers in north-western Vermont. These detectors are tuned to be particularly sensitive to small earthquakes of "local" origin which emit high-frequency vibrations. Of course, large, distant quakes are also detected, as are man-made disturbances such as quarry blasts.

Very little information about microseisms is available for the northeast in general, and Vermont in particular. These small quakes ideally allow determination of seismic risk potential by pinpointing areas of "subtle" activity. They also help detinate the recent orogenic history and perhaps allow some prediction into the future.

During the fall of 1975 and spring of 1976, Barry Doolan and Dave Bucke of UVM have been busy with a sensitive protable seismometer locating sites for "permanant" installations. Present plans call for three new sites; one in the Burlington area, another near St. Albans, and the third near Barre-Montpelier. These remote sites will continually radio signals into UVM via Mt. Mansfield. The signals from these three stations as well as ones from Middlebury, Hanover, N.H., and Plattsburg, N.Y., will go via special telephone line to Lamont-Doherty for interpretation. The UVM Geology Department will continually monitor the Burlington seismic station and others if finances become available.

P R O G R A M

VERMONT GEOLOGICAL SOCIETY
 SPRING MEETING
 UNIVERSITY OF VERMONT

PERKINS HALL

MAY 1, 1976

<u>STUDENT PAPERS</u> - Rolfe Stanley and Brewster Baldwin presiding	
Coffee and doughnuts	0830-0900
1. K. Cashman: Structure of the Wimpy Ridge Harzburgite	0900
2. M. A. Mihalik: Origin of the Plymouth Granite	0920
3. A. S. Cohen: Conodont Biostratigraphy of the Middle Ordovician in the Champlain Valley	0940
4. D. N. Reusch: Environments of Deposition of Lower Ordovician Strata, Shoreham, Vermont	1000
5. J. Rogers: The Environment of Deposition of the Monkton Quartzite	1020
6. G. Jacobs: Geology of Some Metagabbroic Dikes and Sills in Lowell	1040
Coffee Break	1100
7. R. L. Badger: The Umbrella Hill Conglomerate: Subaqueous Grain-Flow	1115
8. M. Black: The St. George Fault, Monkton Ridge, Vermont	1135
9. G. Monrad: Cross Fault Geology and Fault Block Rotation in the Monkton Ridge, Vermont	1155
10. P. F. Straley: Structure of West-Central Vermont	1215
11. M. Higgins: Origin of the Terrace at Bristol, Vermont . . .	1235
Lunch: Brown Bag or eat out	
<u>SPECIAL MEETING OF THE SOCIETY</u> on the Vermont Geological Survey	1400
(See letter by John Malter on page 1)	

A B S T R A C T S

THE UMBRELLA HILL CONGLOMERATE: SUBAQUEOUS GRAIN-FLOW
 Badger, Robert L., University of Vermont

The Umbrella Hill member of the Missisquoi Formation in north-central Vermont is a conglomeritic unit of quartz pebbles and phyllite fragments within a phyllitic matrix. Previously interpreted as a basal conglomerate of the Missisquoi Formation, it is recognized on the basis of detailed mapping as a series of subaqueous grain-flows of Early to Middle Ordovician age. Grain-flow is defined by Stauffer (1967) as a flow of granular material, of any size, in a dispersion maintained by grain-to-grain collisions. Phyllite fragments within the Umbrella Hill are from the upper part of the Stowe Formation and from distinct phyllitic beds within the Umbrella Hill. Contact with the Stowe Formation is commonly abrupt except in a few places where it is gradational over distances up to five meters. Contact with the Moretown Formation is gradational by interlayering over an interval up to 20 meters. A few graded beds within the upper part of the Umbrella Hill indicate the Moretown stratigraphically overlies the Umbrella Hill. Mode of transport is considered to be by laminar flow which incorporated fragments of underlying semiconsolidated sediments and preserved them for distances of several kilometers. Sharp and Nobles (1953) have documented the transport and preservation of semiconsolidated fragments by laminar grain-flow in a subaerial environment for distances of approx-

imately 25 kilometers at Wrightwood, California. Tectonic implications suggest an unstable, moderate energy shoreline disturbed by vertical motion, leading to localized grain-flows that were deposited into an adjacent graben-like structure.

THE ST. GEORGE FAULT, MONKTON RIDGE, VERMONT Black, Martin, University of Vermont

The north-trending St. George normal fault has been traced through the town of Monkton, Vermont to an area just northwest of Bristol, Vermont. A part of the fault zone has been discovered just east of the kaolin pits in East Monkton, with a slip surface striking just west of north and dipping steeply to the west. This fault was found to be offset by several east-west striking faults, which have been mapped by Welby (1964) in further to the west along the trace of the Champlain thrust. These faults cut through an area of tightly folded anticlines and synclines that plunge to the north, and are found in the Cheshire Quartzite and Dunham Dolomite.

Fracture fabric analyses at stations in the area are similar to those obtained from other quadrangles in Vermont. One of these locations was affected by the former Monkton thrust which has since been mapped as a normal fault, and another has been affected by one of the east-west faults.

Local deposits of kaolin and low-grade iron ore are localized in the St. George fault. The kaolin deposits appear to be controlled by the intersection of the cross faults and the larger, St. George fault.

STRUCTURE OF THE VIMY RIDGE HARZBURGITE Cashman, Katharine, Middlebury College

The mafic and ultramafic assemblage of Thetford Mines, Quebec, represents a complete ophiolite sequence of Early or early Middle Ordovician age, and lies within a chain of ultramafic bodies that stretches the length of the Appalachian Mountain system. The tectonized harzburgite of the Vimy Ridge area lies at the basal edge of the sequence and is separated from the overlying cumulates by a shear zone. The harzburgite has a well developed and pervasive foliation, with orthopyroxenes, olivines, and chromite stringers flattened in the plane of the foliation. Thin layers of orthopyroxenite have been isoclinally folded, often with the axial plane of the folds parallel to the foliation. Variations in the attitude of both the layering and the foliation suggest the presence of one or more small shear zones and possible folding related to emplacement.

Microscopic evidence of the great strain involved in the creation of the isoclinal folding lies in the large angles of external rotation in the kink bands of olivine and pyroxene, and in the mylonitization and recrystallization of olivine around orthopyroxene porphyroblasts. A plastic-flow deformation in a high temperature and pressure regime is postulated, with the tectonite fabric of the harzburgite presumably resulting from

horizontal shear stress in the mantle occurring during movement away from the ridge crest.

Electron microprobe and X-ray diffraction show that the olivine is forsteritic (FO_{90.9-92}) and very rich in nickel (.52-.68% NiO while the enstatite has a range of En_{99.5-91.5} and contains low amounts of calcium (.32-.48% CaO), probably due to the abundant exsolution lamellae of clinopyroxene diopside which were not accounted for in the microprobe determinations. Chromian spinels show the greatest range in composition, ranging from pleonaste (ferroan chromian spinel) to true chromites. The serpentine is primarily lizardite, with minor clinochrysotile.

CONODONT BIOSTRATIGRAPHY OF THE MIDDLE ORDOVICIAN IN THE CHAMPLAIN VALLEY

Cohen, Andrew S., Middlebury College

Seventy-two samples of Middle Ordovician limestones and dolomites were analyzed to determine the succession of conodont faunas within the Central Champlain Valley. Samples ranged from the middle of the Crown Point Limestone (Chazy) through the Valcour and Orwell Limestones, into the lower part of the Glens Falls Limestone (Early Trenton).

The four field areas extend 35 km. northeast from Crown Point, New York, through Panton and Buck Mountain to North Ferrisburg, Vermont, in a line oblique to the depositional strike of the Middle Ordovician platform sediments.

Over 500 elements of both the North Atlantic and North American midcontinent conodont provinces were studied to determine the correlation of the North American Middle Ordovician type locality (the Champlainian Sequence) with the Middle Ordovician Standard of the Southern Appalachians.

Based upon the conodont faunas recovered, the lengthy hiatus between the Chazy and Black River age rocks within the Champlain Valley, as postulated by Cooper, does not exist. Upper Chazyan rocks are representative of the entire Ashby Stage and most of the Porterfield Stage. The widespread unconformity between the Valcour Limestone (Upper Chazy) and Orwell Limestone (Black River) is to be expected in near-shore facies like the Valcour, and need not be interpreted as a major gap in the lithologic record of the Champlain Valley.

ORIGIN OF THE TERRACE AT BRISTOL, VERMONT

Higgins, Matthew, Middlebury College

The terrace at Bristol, in Addison County, stands at an elevation of 180 m (580 feet), more than 50 m above the land to the west, and it projects 2 km west-northwest from the mountain front, in line with the canyon of New Haven River. It has been interpreted either as a delta built into Lake Vermont or as a kame terrace. Study of the terrace evolution has identified four types of sediments.

Within 0.9 km of the mountains, the sediments north and south of the terrace are moderately to poorly sorted, irregularly bedded, and medium to coarse grained; there are some clay-rich layers. Within the terrace, bedding and sorting are apparently absent and sediments are much coarser. From 0.9 to 1.8 km to the west-northwest, the sediments include boulders up to 2 m;

in outer exposures, bedding is distinct and dips westward about 20 degrees, with local dips of more than 30 degrees. No slump features or channels were seen in these two sets of sediments.

The terrace is mantled by gravels and sands that dip outward at angles of 15 to 5 degrees. These sediments grade into the upper 2 or 3 m of laminated silts and silty clays that include rolled silt-clay clasts (to 1 m) within a sandflow channel.

At 2.7 km from the mountain front, and in line with the terrace axis, northwestward dipping silts and clays meet southeastward dipping sands. Thinly alternating beds of clay and cross-laminated and graded silts lie at least 3.6 km from the mountain front.

High-energy meltwater floods from mountain ice deposited an unstructured and poorly sorted kame terrace. After ice recession, continued high-energy floods built an elongate delta beyond the kame terrace. Density underflow carried fine sand and silts onto the lake floor. Meltwater from northern ice, above lake level, deposited sands and silts to the north and west of the delta limits. Consequent to lake level decline, the New Haven River cut its present gorge through the south side of the terrace, and wave action and stream erosion redistributed sediments.

GEOLOGY OF SOME METAGABBROIC DIKES AND SILLS IN LOWELL, VERMONT

Jacobs, Gary, University of Vermont

Cady, Albee and Chidester (1963) have noted at least seventeen occurrences of metagabbroic dikes and sills intruding Cambrian and Ordovician metasedimentary rocks in northeastern Vermont. This study investigates the chemistry and origin of well exposed metagabbros on Leland Hill, Lowell, Vermont.

Steeply inclined dikes ranging from 3m to 40m in thickness, and trending N25E, intrude the Stowe Formation just north and south of the two summits of Leland Hill. Across the top, a pinched sill of metagabbro approximately 1000m in length is discontinuously exposed.

As evidenced by an older schistosity in the Stowe which is transected by the dikes and parallel to the boundaries of the sill, one deformation preceded the emplacement of the metagabbros. A possible "original" foliation within the sill has been deformed, giving evidence along with the map pattern that the areas was folded during a younger deformation into a gently southwest plunging synform with its axial plan dipping east. Minor folds and their associated axial surface schistosity are parallel to the major synform. Thus the Stowe which occurs north of the sill is structurally "lower" on the section than the metagabbro. The "upper" Stowe is exposed to the south of the sill. This also requires that the dikes intruded south of the sill were emplaced higher in the section than the sill itself. The dikes to the north may be either feeders for the sill and/or later dikes which intruded through the sill into the "upper"

Stowe. Several dikes to the south appear to originate from the sill-like body. The presence of sharp contacts between coarse and fine grained varieties of meta-gabbro within the sill, lends support to the possibility of multiple intrusions.

Nine-element, whole rock analyses of fifty meta-gabbros and associated country rocks were completed following the methods of Shapiro (1967) and Shapiro and Brannock (1962). The chemistry of the meta-gabbros ranged as follows: SiO_2 : 38.75-51.88; Al_2O_3 : 11.51-18.03; TiO_2 : 0.92-1.64; Fe_2O_3 (total): 8.32-16.60; MnO : 0.12-0.49; MgO : 4.76-8.64; CaO : 7.40-12.24; total alkalis: 1.57-3.56. Only three meta-gabbros had $\text{K}_2\text{O} > 0.4\%$. These values indicate that the meta-gabbros are slightly more basic than oceanic tholeiites. It is suggested that these meta-gabbros, along with other occurrences in northeastern Vermont, are possible feeders to the Coburn Hill volcanics (pillow basalts), which are found north and east of Leland Hill (Fairbairn, 1933).

ORIGIN OF THE PLYMOUTH GRANITE

Mihalik, Mary Ann, Middlebury College

The Plymouth trondhjemite is a small laccolith (600 feet long and 250 feet wide) located northeast of Plymouth, Vermont. Several sills extend beyond the body and multiple tension-fracture dikes project up-section into the surrounding Cambrian Pinney Hollow schist. The body was emplaced after the schist was metamorphosed and is conformable with the schistosity.

Crystallization occurred in two phases. The primary phase produced well-formed oligoclase crystals and subsequently formed quartz, high iron-magnesium muscovite, and small amounts of microcline. Metasomatic processes produced epidote, clinozoisite, chlorite, and calcite; and sericite in the oligoclase crystals. The presence of two feldspars indicates that crystallization occurred at water pressures of at least 5000 bars.

Major element compositions of the rocks indicate that the laccolith and sills were emplaced first, followed by the dikes. Minor fractionation occurred as evidenced by increased SiO_2 , Na_2O , and decreased CaO in the dikes. The porphyritic textures of the dikes support the secondary emplacement.

Assimilation of CaO , FeO , MgO , and TiO_2 from the schist into the sill magma is illustrated by the higher content of these oxides in the sills. The sills and dikes exhibit lower K_2O values which suggest that potassium was mobile and moved into the surrounding schist.

Chemical variation diagrams show that the Plymouth trondhjemite has high SiO_2 , Al_2O_3 , and Na_2O and low K_2O , CaO , FeO , MgO , and TiO_2 when compared to the Sierra Nevada and Southern California batholiths. The trondhjemite is a product of continental crustal melting (anatexis) rather than mantle melting.

The Plymouth trondhjemite is similar to and probably coeval with the Barre granite, which has been dated as 330 ± 25 my bp., and other Vermont granites. They can be correlated with the New Hampshire plutonic series. The granitic bodies may have been the result of melting of down-folded sediments during the Acadian orogeny, which presumably represents the collision of North America with Europe and Africa.

CROSS FAULT GEOLOGY AND FAULT BLOCK ROTATION IN THE MONKTON
RIDGE, VERMONT REGION
Monrad, Glenn, University of Vermont

Detailed mapping in the Monkton Ridge area of western Vermont has delineated a north-trending horst bound to the west by the Monkton fault (Monkton thrust of Cady, 1945) and bound to the east by the St. George fault which has been traced southward from Milton, Vermont. Displacement on the Monkton fault is approximately 80m dip slip. North of Monkton Ridge, displacement on the St. George fault is approximately 690m.

In the Monkton Ridge area, the traces of these planar faults are cut across by at least two northwest-trending normal faults, one of which has approximately 60m dip slip, and two northeast-trending normal faults. The more southerly northwest-trending fault offsets a major anticline of Dunham Dolomite and appears to connect with cross faults which displace the Champlain thrust south of Mt. Philo. Both northeast-trending faults are traced eastward into the Hogback Mountain anticline cored by the Cheshire Quartzite, where breccia zones approximately 50m wide are found. The cross faults have effectively locked motion on the Monkton and St. George faults by offsetting them a maximum of 600m.

Structural analysis using bedding, cleavage, and minor fold information shows that the blocks of Cheshire Quartzite within the horst and separated by the cross faults have been rotated by motion on the cross faults relative to the adjacent and surrounding Monkton Quartzite.

ENVIRONMENTS OF DEPOSITION OF LOWER ORDOVICIAN STRATA, SHOREHAM,
VERMONT

Reusch, Douglas N., Middlebury College

A section across the west limb of the Shoreham anticline, including the Shelburne Marble (105 m), Cutting Dolomite (100 m), and Bascom Formation (75 m), was measured and described. Primary features in many beds are obscured by dolomitization, which clearly cuts across layering in some limestones and which, in thin section, shows as dolomite rhombs replacing clastic grains. Probably, the extensive gray massive dolomites in the Shelburne and Cutting are secondary, whereas dolomite that replaces primary features is evidently penecontemporaneous.

Five common lithofacies have been recognized for which environments of deposition are tentatively assigned:

- 1) chained limestone: pelmicrite with irregular dolomite laminae (algal mat) and occasional carbonate clasts (up to 5 cm) that were probably deposited by storms; chaining due to network of minute dolomite veins (supratidal).
- 2) limestone with wavy algal laminae: intrapelmicrite, poorly sorted, poorly bedded; gradational with lithofacies 1 (low supratidal or high intertidal).
- 3) gray laminated dolomitic quartzite: very fine well sorted sandstone, current laminated (1 to 2 mm); *Scolithus* burrows, cross-bedding, and breccia in some beds (intertidal).
- 4) laminated limestone: carbonate equivalent of lithofacies 3; channels (intertidal).

5) limestone with dolomitic ribs: micrite and some biointra-pelmicrite (fossil hash) and intramicrite; parallel and cross-cutting ribs of silty dolomite; Glossyfungites burrows (intertidal).

The influx of terrigenous material that marks the base of the Cutting does not coincide with a significant change in water depth; lithofacies 3 (intertidal) rests on lithofacies 2 (high intertidal).

THE ENVIRONMENT OF DEPOSITION OF THE MONKTON QUARTZITE Rogers, Janeann, Middlebury College

The Monkton Quartzite is a Middle or Upper Cambrian sequence of quartzite and dolomite, and it forms a system of north-trending ridges in the Champlain Valley of Vermont. On the north part of Snake Mountain, the Monkton is more than 700 feet thick. The red ("Upper") Monkton is underlain and overlain by the gray ("Lower") quartzite. Eastward, the Monkton thins, is all gray, and pinches out between the Dunham and Winooski dolomites. The Monkton is a terrigenous sheet in the carbonate platform sequence of west-central Vermont.

On Snake Mountain, three distinct lithofacies are represented: red, medium bedded sandstones with minor interbedded red mudstone; drab quartzite, some of which is massive and some of which is thinly bedded or current bedded; and tan-weathering dolomite, often with quartz silt laminae. The interbedding of carbonates with mudcracked terrigenous sediments indicates a shore zone environment of deposition.

The color of the red beds is due to hematite staining the clay matrix and rimming of detrital grains. Primary sedimentary features of the red beds indicate a subaerial origin; the laminated dolomite probably formed on a tidal flat. The drab quartzite is evidently a shallow marine deposit.

STRUCTURE OF WEST-CENTRAL VERMONT Straley, Peter F., Middlebury College

Previous workers have suggested that the structural features of west-central Vermont have resulted from both the Taconian and Acadian orogenies. There is, however, little agreement concerning which features were formed during which orogeny. Crosby (1963) in a detailed regional study of the Middlebury Synclinorium found two deformations at each of 40 localities. He concluded that the gross map pattern of the synclinorium and adjacent anticlinorium was formed during the second deformation, which he attributed to the Acadian orogeny. In many of the 20 localities within the synclinorium and adjacent anticlinorium examined during this study, evidence for two deformations was not found. Near Forestdale, on the Green Mountain Front, the Pinnacle Formation, a graywacke, exhibits two deformations, but the adjacent Cheshire Formation, a quartzite, displays only one. The deformational features in both lithologies trend north and dip steeply to the east. Continuous exposure permits the correlation of the single deformation in the Cheshire with the early deformation in the Pinnacle. In the Cheshire, movement during the second deformation may have taken place along the

surface of anisotropy developed during the early deformation. The results of this study are in agreement with Williams (1970), who studied continuous exposures of rocks subjected to two deformations and concluded that overprinting of one deformation on another is the only reliable criteria for concluding that one is early and the other late.

In areas where only one deformation is expressed, it cannot, in general, be termed either early or late and it is suggested that the one surface evident in the outcrop is the expression of both periods of deformation. Many of the differences in styles and orientations of deformational features observed are probably due to differences in lithology. Evidence from this study does not lead to an unambiguous structural history of the Middlebury Synclinorium. Examination of the regional tectonics of New England may be necessary to define deformational events in west-central Vermont.

THE GREEN MOUNTAIN GEOLOGIST



QUARTERLY NEWSLETTER OF THE VERMONT GEOLOGICAL SOCIETY

SUMMER 1976

Volume 3 Number 2

SUMMER MEETING, SATURDAY, AUGUST 21, 1976

The Summer Meeting and Picnic will be held after the field trip and starting about 2:00 p.m. at the D.A.R. State Park. Admission to the park is 75¢ per adult, free to anyone under 14. The Society will assess a \$1.00 per person charge to cover the cost of beer and soda. PLEASE bring your own franks and hamburgers, charcoal, and one covered dish to share with others. The Society has rented the picnic shelter so there shouldn't be any problems with weather conditions.

FIELD TRIP INFORMATION

DR. DOLL RETIRES

Dr. Charles G. Doll, Vermont State Geologist emeritus retired on June 30, 1976. The entire Vermont Geologic Community wishes him well in all his future endeavors. Dr. Charles Ratte of Windham College has been selected as the new State Geologist. We will have more on this appointment in the next issue.

JUST RELEASED:

The Vermont Geological Survey has recently published an excellent reference work called: A History of the Vermont Geological Surveys and State Geologists by T. D. Seymour Bassett. Copies of this publication are available from the Vermont Department of Libraries Attn: Diana Henderson, Montpelier, Vt. 05602 at a cost of \$3.00.

ANNUAL MEETING, SATURDAY, OCTOBER 16, 1976

Dr. Charles Ratte will be leading a field trip entitled the Mechanics of Emplacement of the Multiple Intrusions at Ascutney Mountain Windsor, Vt. The field trip will be followed by our annual meeting and banquet. More information will be forwarded in the next issue of The Green Mountain Geologist.

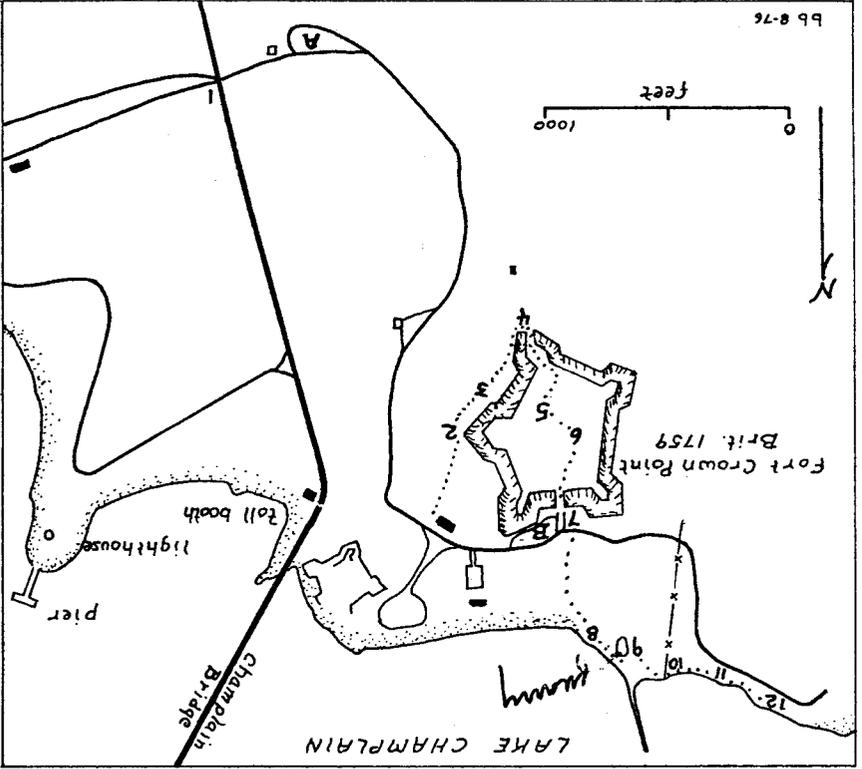
THE CROWN POINT SECTION, N.Y.

Brewster Baldwin

Several hundred feet of mid-Ordovician carbonate rocks are exposed in the vicinity of the old English fort at Crown Point, N.Y. The strata dip gently to the west-northwest. Environments of deposition can be inferred from the abundant fossils and from primary structures and textures. The Crown Point Limestone (locality 1 on map) and Valcour Formation (localities 2 to 6) are of Chazy age and are predominantly shore zone dolomites and limestones. The Orwell Limestone (localities 7 to 10) and Glens Falls Limestone (localities 10 to 12), of Black River and Trenton age, are lagoonal to open marine sediments.

Tectonically, the Crown Point section records the end of a stable continental platform and the beginning of the collapse of the crust that elsewhere was accompanied by emplacement of the Taconic klippe and the Thetford Mines ophiolite. The Chazy sediments were built up to sea level, reflecting slow crustal subsidence; the reefs on Isle La Motte are one evidence of this. Starting in Black River time, subsidence here at Crown Point was more rapid than sedimentation, and the water deepened; by Glens Falls time the water had become deep enough for open marine conditions and argillaceous material was beginning to spread westward in the transgressing sea.

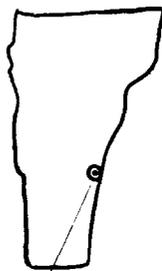
The field trip assembles at 10 a.m. at parking area A (see map), a third of a mile south of the toll booth. We will be across the highway at locality 1 until about 10:45; we will then drive to parking area B north of the fort and start the walking tour. The route enters the "moat" on the east point of the fort and goes along strike to the south entrance to the fort; through the fort to the north entrance to a small outcrop; then skirting the sumac and poison ivy to the glaciated bedrock on the shore, and into the north end of the quarry. From there the route goes



Please observe three cautions. The area west of locality 12 is private property; stay off the rocky beach that fronts it. Leave hammers in the car; no sampling or collecting is allowed by any of the several agencies and organizations that control the area of our route. Poison ivy is luxuriant.

north to a small sandy beach by the former loading promontory, under the fence and west along the rocky beach to the edge of privately owned land. This ends the tour, about 1 p.m.; return to car.

THE GREEN MOUNTAIN GEOLOGIST



THE QUARTERLY NEWSLETTER OF THE VERMONT GEOLOGICAL SOCIETY

FALL 1976

Volume 3 Number 3

THIRD ANNUAL MEETING TO BE HELD IN WINDSOR ON OCTOBER 16th

The third annual meeting of the Vermont Geological Society will be held at the 1775 Restaurant in Windsor, Vermont. Dr. Charles A. Ratte will be leading a field trip during the day on the Mechanics of Emplacement of the Multiple Intrusions at Ascutney Mountain and Little Ascutney Mountain, Windsor. More information on this trip is found inside this issue. A banquet and meeting will follow after the field trip and Rolf Stanley will be our guest speaker at the banquet. Dr. Stanley will be speaking on High Angle Folding in Western Vermont and Its Relationship to Earthquake Hazards, Mineral Resources, and Groundwater Supply.

NEWS FROM THE NEW STATE GEOLOGIST

Dr. Charles Ratte has accepted the position of Vermont State Geologist on a temporary ten-month status. The temporary status was necessitated as a result of conflicting statements in the 1975 legislation. The new State Geologist's position is under the Planning Division of the Agency of Environmental Conservation. The office of the State Geologist will be in Montpelier, and the equipment and materials of the Vermont Geological Survey are now in the process of being moved to this new location. Because of a very limited budget for the fiscal year 1976-77, most of the programs of a Geological Survey nature will be in a state of limbo. Dr. Ratte's goals for the coming year will include the following:

- 1) Clarify and expand present legislation concerning the status of the Vermont Geological Survey and the State Geologist.
- 2) Have an on-going personal program of familiarization with Vermont geology and geologic problems.
- 3) Set up a schedule of meetings and personal appearances throughout the state.
- 4) Become involved in the on-going programs of the Agency of Environmental Conservation and, at the same time, develop a short and long-term program that will identify and broaden those geologic parameters that can facilitate the Agency's efforts and be of service to the people of the state. Such programs will include the continuation of geological Survey programs and, in

particular, will employ the information already made available by previous surveys.

5) Develop a projected five-year budget.

6) Maintain an open line of communications with the geologic community of the state and elsewhere to seek out ways in which the State Geologist and the Vermont Geological Survey can most effectively serve the present needs of the people of Vermont, and anticipate future needs in which geology can play an important role.

7) Set up an advisory staff that can be called upon for problem solving, etc. in various professional and areal expertise.

The office of the State Geologist is on the fourth floor at 5 Court Street, Montpelier, and you are all welcome at any time.

GEOPHYSICAL TECHNIQUES SEMINAR TO BE HELD

The Vermont Geological Society will be co-sponsoring a seminar on seismic and resistivity geophysical techniques that will be presented by Bison Instruments, Inc. of Minneapolis, Minnesota. This two-day session will be held in Montpelier in late October. Bison Instruments will be sending an invitation to attend this seminar along with exact information on its time and place to each member of the Society.

VERMONT GEOLOGICAL SOCIETY ANNUAL MEETING AND FIELD TRIP.

Saturday, October 16, 1976

Field Trip: See map.

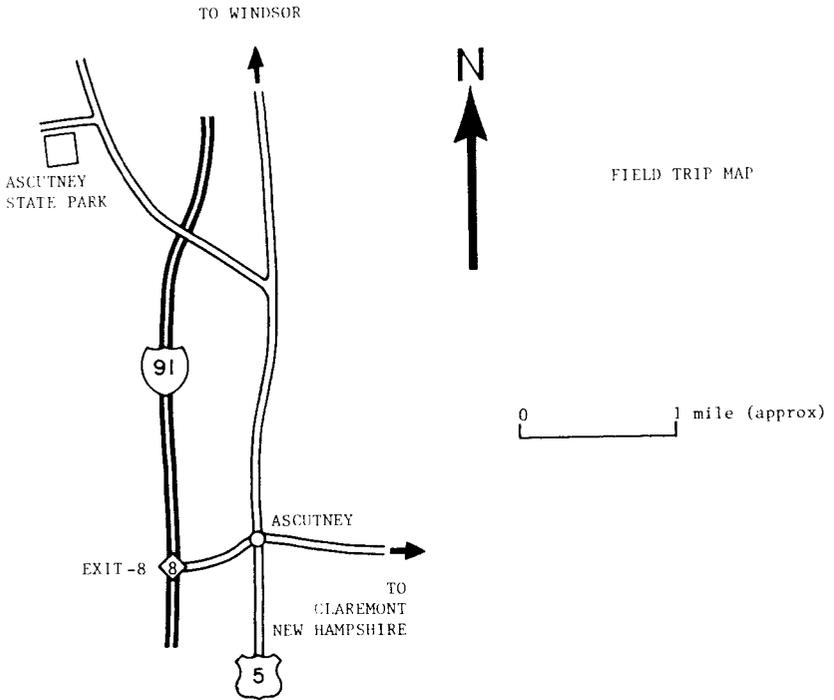
Assemble at Ascutney State Park entrance at 10:30 a.m. 75c park fee. Field Trip departs at 11:00 a.m. We will car pool at this time--bring a lunch as there will be a break at about 1:30 p.m. where drinks can be purchased. The field trip will be completed and return to the park entrance no later than 4:00 p.m. NOTE: Field Trip cancelled in the event of MUCH rain. Banquet and meeting will still be held.

Field Trip: Mechanics of Emplacement of the Multiple Intrusions at Ascutney Mountain and Little Ascutney Mountain, Windsor, Vermont. Charles Ratte--trip leader.

This trip is intended to be a field discussion of evidence used to determine a mechanism of emplacement of adjacent stock-like plutons. The field stops and discussions will include the various metamorphic and igneous lithologies, structures in the country rock and in the plutons, and a correlation with regional magmas. Bring your hammers, hand lenses and Bruntons. If it is a clear day, the scenery from the top of Ascutney Mountain is magnificent, bring a camera.

References:

- Chapman and Chapman, 1940 Cauldron Subsidence at Ascutney Mountain, Vermont Bulletin G.S.A. Vol. 51, P. 191-212.
Daly, R. A. 1903. Geology of Ascutney Mountain, Vermont. U.S.G.S. Bulletin 209, P. 1-122.

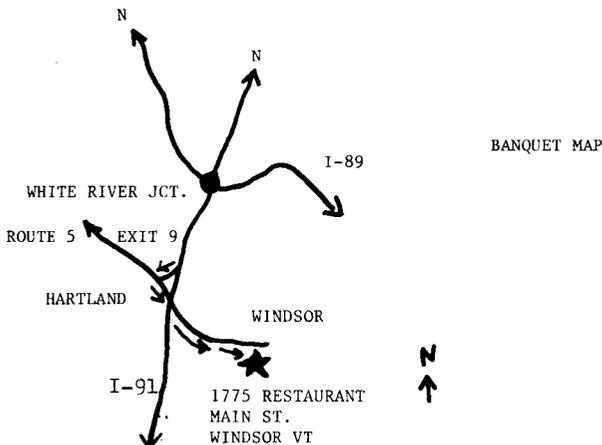


REGISTRATION FOR BANQUET

In order to assure that adequate arrangements can be made for the banquet, an early registration by mail, accompanied by a check for \$7.95 per person to cover the dinner is required if you'll be attending the Saturday evening festivities. The registration form indicating your choice of meal is found on the last inside page of the newsletter and should be mailed to Carolyn Merry, 190 Hanover St., Lebanon, New Hampshire 03766, no later than October 8th.

The banquet will be held on Saturday evening, October 16th, at the 1775 Restaurant, Main St., Windsor, Vermont. (See sketch map). The \$7.95 price includes appetizer, salad, vegetable, potato, main course, dessert, coffee, gratuity and tax. The choice of meal will be prime rib or stuffed shrimp.

Cash Bar Cocktail Hour	6:00 p.m. -- 7:00 p.m.
Banquet	7:00 p.m. -- 8:00 p.m.
Annual Meeting	8:00 p.m.



MINUTES OF EXECUTIVE COMMITTEE, April 14, 1976

Present: Baldwin, Butterfield, Fox, Malter, Merry, Ratte, Rhodes, Ashley, Bucke, Wagner, Donald Webster (Protection Division of Agency of Environmental Conservation.)

President Malter called the meeting to order at 7:45 p.m. at his home in Montpelier.

The Secretary read the minutes of the January 7 meeting; the minutes were approved as read.

Treasurer's Report: The Treasurer reported that 51 members are paid to the Fall of 1976 (45 full members, 4 associate members, 2 student members.) There is \$163.07 in the checking account and \$303.71 in the savings-account. The report was approved.

Office of State Geologist: Wagner summarized work of the Ad Hoc Committee. A position paper was distributed by G.M.G. (Spec. issue, March, 1976) and sent to all 180 legislators. He and Baldwin attended the Senate Appropriations Committee hearing on March 3. The legislature passed a bill to put the office of the State Geologist in the Planning Division, to serve directly under the Secretary of the Agency of Environmental Conservation (AEC) and to be appointed at the level of Director (the highest continuum position). The legislature appropriated \$15,000 for fiscal 1977 (\$3,200--personal services; \$6,800--expenses; \$5,000--grants).

J.R.S. 48 is a resolution congratulating Dr. Doll on his dedicated service as State Geologist, and conferring the title Vermont State Geologist Emeritus upon his retirement. The Committee briefly discussed a retirement party.

Webster attended the Committee meeting as a spokesman for Dr. Martin Johnson, Secretary of AEC. Regarding the office of State Geologist, the Society is asked to:

- 1) recommend a level of funding and support the Agency's proposed budget before the legislature. Recommend a geologic program and priorities for each biennium.
- 2) recommend personnel for the interim period (FY 1977) and for a semi-permanent appointment thereafter.

For the interim period, the limited funding will allow only pulling together loose ends of Dr. Doll's administration, and developing a proposal for a program. It will involve inventorying Vermont's needs and ordering the priorities. For the long run, the office of State Geologist should stress:

- 1) participation in the Agency's environmental review team in planning
- 2) identifying and obtaining the kinds of geologic information pertinent to planning and development; this is a variety of economic geology oriented around surficial geology
- 3) getting the geologic information out to those in other parts of state government, those in local government, and the public.

Webster predicted that from now on human services will demand a great part of the State's resources, so that funds for geology can only be justified by activities that meet concrete and changing needs. He has volunteered to serve on a legislative subcommittee to work with the Society.

Webster reported that three senators spoke on the floor in favor of funding a realistic geologic program that looks to environmental needs of the state; this program would supplant Dr. Doll's program that has provided background information for long-term understanding of Vermont geology.

Meetings: the Spring Meeting will be at the University of Vermont. The morning is for student papers; Ashley will get the abstracts printed in G.M.G. The afternoon is for a meeting on Society business: whether the Society will approve using the savings account for printing Baldwin's guidebook for the Thetford Mines area in Quebec; appointment of committees (search, program) regarding the State Geologist.

The Summer Meeting is proposed for a field trip on the Crown Point Reservation and a base at the D.A.R. State Park on August 21.

The Annual Meeting is proposed for a field trip on Mt. Ascutney and banquet at Hanover, New Hampshire.

Other Business: Bucke will prepare a summary of the seismic network in Vermont for G.M.G.

Merry announced publication of a report on surficial geology of northern Maine.

The meeting adjourned at 10:00 p.m.

MINUTES OF SPRING MEETING, May 1, 1976

The meeting was called to order at 2:08 p.m. by President Malter, with 13 members present. The meeting was held at the University of Vermont Geology Department, following the morning session of student papers. Malter announced that the \$25.00 prize was divided between R. Badger and G. Monrad.

The Secretary read minutes of the Winter Meeting (January 22, 1976) and Executive Committee (April 14, 1976).

Vermont State Geologist: President Malter reviewed work of the Ad Hoc Committee (Wagner, Stanley, Malter, Baldwin). Stanley initiated a long discussion on guidelines for the work of a committee to search for an interim State Geologist and a permanent State Geologist. Ratte moved (Stanley seconded) that the committee include at least one person from academia, one from the Agency of Environmental Conservation, and one other; this was approved unanimously. The committee is to develop a job description for the interim person, to review at least three names, and to recommend its choice to Dr. Johnson; it

is to work with the new interim appointee. Charles Ratte, David Tarbox, and James Ashley stated they would be interested in the interim position. The members unanimously elected Wagner, Baldwin, Siok, and Merry to the committee. It was agreed that the committee could act for the Society and would elect its own chairman (it elected Siok unanimously).

Summer Meeting: Baldwin will lead a mid-day field trip through the Crown Point (New York) section on Saturday, August 21; after this, the members will meet at the D.A.R. State Park.

Thetford Mines Guidebook: Ashley gave costs of publishing the guidebook Baldwin has prepared. Stanley initiated discussion whether the Society should publish a guidebook for any area outside the state. Ratte moved (Stanley seconded) that the Publications Committee should prepare guidelines for field guides, for membership approval. This was approved unanimously. Baldwin said his guidebook material probably could be published through Universite Laval.

Charles G. Doll: Dr. Doll, who has served as Vermont State Geologist since 1947, is retiring on June 30. Malter moved (Siok seconded) that the Society establish a fund in his name, with details to be worked out by the Executive Committee; this was approved unanimously. Malter moved (Stanley seconded) that Dr. Doll be made an honorary member of the Society; this was approved unanimously.

Annual Meeting: the annual meeting will be held in Hanover, New Hampshire; preceded by a field trip at Mt. Ascutney under the direction of Chuck Ratte.

Treasurer's Report: the Treasurer reported that the checking account has \$80.56, and that the saving account has \$300.00 plus interest. The report was approved unanimously.

The meeting adjourned at 3:56 p.m.

MINUTES OF EXECUTIVE COMMITTEE, August 21, 1976

Present: Malter, Merry, Fox, Baldwin; Terry Thompson, Roger Thompson, Willey, Fischer, Tarbox, Manning.

President Malter called the Summer Meeting to order at 2:25 p.m. at the D.A.R. shelter in Addison. With only nine members present, there was no quorum for a meeting of the Society. A quorum was present for a meeting of the Executive Committee, which then met. For purposes of accepting nominations from the floor, this also served as a Special Meeting of the Society.

The Secretary distributed copies of the minutes of the Spring Meeting, May 1, 1976.

Treasurer's Report: There is a balance of \$43.95 in the checking account and \$307.52 in the savings account. Half the expenses are for outings and the other half for publishing the Green Mountain Geologist. It was agreed that the Society should purchase a coffee pot. The report was approved.

Vermont State Geologist: Malter announced that Dr. Charles A. Ratte is serving as interim State Geologist. Malter suggested that the Dr. Doll Fund be used at first to provide awards for student papers, but that the Fund should be built up to provide for a scholarship in Dr. Doll's name.

Summer Field Trip: Baldwin arrived 1½ hours late to lead the trip through the Crown Point section. About fifteen persons attended. The trip ended on schedule, at 1:00 p.m. For the Society, Malter gave a card of congratulations for the Baldwin's 30th wedding anniversary.

Annual Meeting: to be at the 1775 Restaurant in Windsor, Vermont, following the Mt. Ascutney field trip.

Nominating Committee Report: one nomination (*) was from the floor.

President: David Tarbox	Committee Chairpersons:
Brewster Baldwin	Communications: James Ashley
Vice-Pres: William Siok	Membership: Roger Thompson
Secretary: Terry Thompson	Meetings: Richard Willey
Treasurer: Charles Fox	Professionalism: Bill Siok*
Director: Carolyn Merry (2-year)	Frank Lanza*

By-Laws: because of lack of quorum today, it is proposed that the first sentence of Art. X, Sec. C be changed:

- (from) "Twenty-five percent (25%) of the membership shall constitute a quorum."
(to) "Quorum is to equal the number that is twenty-five percent (25%) of members residing in Vermont."

Seminar: Malter announced a fall seminar on geologic investigation involving geophysical instrumentation. Baldwin moved (Fox seconded) that the Society be one of the sponsors. This passed.

The meeting adjourned at about 3:30 p.m.

N.E.I.G.C.--OCTOBER 8-10 AT BOSTON UNIVERSITY

NEWS OF WHAT'S GOING ON IN AND AROUND VERMONT

If you have an article for publication or some other information that you would like to share with us in the Green Mountain Geologist, please send it along to V.G.S., P.O. Box 304, Montpelier VT 05602.

CONGRATULATIONS!!!!

Congratulations to VGS members Roger and Terry Thompson on their summer wedding. They are now living at the Cole Farm in West Bridgewater, Vermont.

Congratulations also go to Richard April. He has been appointed to the faculty at Colgate University and will be teaching mineralogy and geochemistry there this Fall.

FROM MIDDLEBURY COLLEGE: the following item was submitted by Middlebury College.

The geology faculty has completed its transition with the appointment of William E. Glassley, from the University of Washington. Bill is a structural geologist and metamorphic petrologist with experience in the geology of subduction zone terranes. He replaces Peter Coney, who went to the University of Arizona at the end of 1975.

In the fall of 1975, Thomas A Davies and David A. Clague arrived, replacing Dave Folger, who has gone to the U.S.G.S. at Woods Hole, and John Creasy, who went to Bates College. Tom has been active as scientist and administrator in the Deep Sea Drilling Project since the program began in 1968. He completed his formal education at Cambridge University before going to Scripps; he serves as Department Chairman. Dave is a petrologist with graduate work at the University of California, San Diego, and a year post-doctorate position with the U.S.G.S. before coming here. He studies oceanic igneous rocks, particularly basalts and dredged samples from the Hawaiian-Emporer seamount chain; he will be on leave for the Fall of 1976 in order to participate in a North Pacific Cruise. Brew Baldwin continues work on the sedimentary rocks around Middlebury.

LAKE CHAMPLAIN REPORT RELEASED

Monty Fischer reports that a major new report on Lake Champlain will be released in September. Monty has spent the last two years researching and co-authoring a lengthy and detailed investigation concerning the natural resources of Lake Champlain and its tributaries. This report was prepared at the request of the states of New York and Vermont, and the New England River Basins Commission (NERBC).

It is designed to be a guide to water and related land research, planning, and management activities on-going or envisioned to be needed in the future. The report, Lake Champlain Planning Guide, describes the Lake and its environs, and management issues and programs according to the following subjects: fluctuating lake level; water quality; land; wetlands and fish and wildlife; outdoor recreation; power; transportation; and water supply. It is loaded with maps, charts, graphs, and tables.

Based on the findings of this report, a two-year effort to develop strategies for addressing some of the most important issues, including restoration of the Lake's water quality, will be started in October, 1976. Known as a "Level B Study," this effort will be supported by the states and the NERBC, and will probably have a staff located in offices in Burlington.

Copies of the guide will be available from Monty or from the Agency of Environmental Conservation in Montpelier. We hope that all interested in or concerned with Lake Champlain will find this a useful guide to its use and protection.

GROUNDWATER REPORTS RELEASED

Arthur Hodges, former President of the Society; David Butterfield, and James Ashley, have authored two detailed area assessments of groundwater resources. These reports were prepared as part of the cooperative groundwater program between the U.S.G.S. and the State of Vermont. The first report covers the Barre-Montpelier area, while the second covers the White River Junction area. Both reports have just been released by the Department of Water Resources.

Both reports assess the water availability from both bedrock formations and unconsolidated deposits. Water quality of surface water and of groundwater is examined. Maps in each report show the thickness of surficial materials, and the availability of water. A bedrock geology map also shows lineaments, linear surficial features, visible on aerial photographs which represent structural zones where higher well yields are frequently found.

A section of each report also lists the extensive well records and boring logs upon which each report was developed. Copies of the report may be obtained from Dave Butterfield, Jim Ashley, or by writing or calling the Vermont Department of Water Resources. (See map)

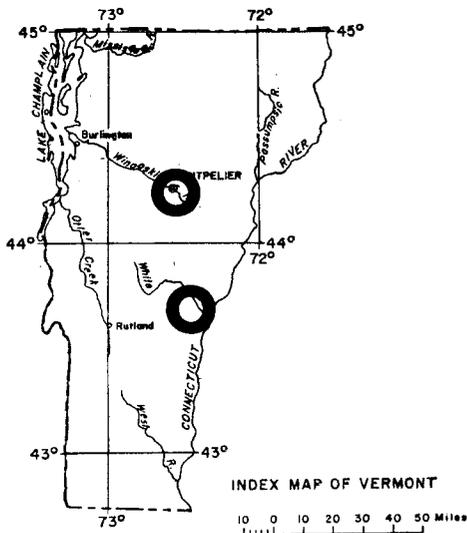


FIGURE I
LOCATION MAP

TWO AMENDMENTS TO OUR BYLAWS PROPOSED

The following two amendments have been proposed for action by the membership at our annual meeting:

Article VI: Election of Officers and Directors:

(Existing) A) Method of election

- 1) Officers and Directors shall be elected at the annual meeting.
- 2) Voting shall be by ballot
- 3) Officers and Directors shall assume their duties at the close of the meeting at which they were elected.

(Proposed) A) (stay the same)

- 1) (stay the same)
- 2) Voting shall be by ballot at the annual meeting.
- 3) Those persons who will not be able to attend the annual meeting may request an absentee ballot from the Secretary and shall return this ballot in the envelope provided so as to be received prior to the annual meeting.
- 4) Same as existing Number 3.

Article X: Voting Body

(Existing) A) The voting body of the meetings shall consist of the members of the Society.

B) Each member shall have but one vote.

C) Twenty-five percent (25%) of the membership shall constitute a quorum. Two (2) of these members shall be members of the Executive Committee.

(Proposed) A) (stay the same)

B) (stay the same)

C) The number of members needed to constitute a quorum shall be twenty-five percent (25%) of the current paid membership living in Vermont. All members present shall be counted to satisfy the quorum number. Two (2) of these members shall be members of the Executive Committee.

ABSENTEE BALLOT

If you cannot attend the Annual Meeting, but would like to vote on new officers, please mail this ballot to V.G.S., P.O. Box 304, Montpelier VT 05602; no later than Tuesday, October 12, 1976.

Nominations: President: _____	Dave Tarbox	Committee Chairpersons:	
	_____ Brewster Baldwin	Communications _____	Jim Ashley
Vice-Pres: _____	William Siok	Membership _____	Roger Thompson
Secretary: _____	Terry Thompson	Meetings _____	Richard Willey
Treasurer: _____	Charles Fox	Professionalism _____	Bill Siok
Director : _____	Carolyn Merry _____ (2-year)		_____ Frank Lanza

Your Name: _____

Green Mountain Geologist
Vermont Geological Society
Box 304
Montpelier VT 05602

The Green Mountain Geologist is published
Quarterly for the members of the Vermont
Geological Society, a non-profit corporation
registered in the State of Vermont.

President	John Malter
Vice-President	Brewster Baldwin
Secretary	Carolyn Merry
Treasurer	Charles Fox
Directors	Dallas Rhodes
	Charles Ratte
	David Butterfield

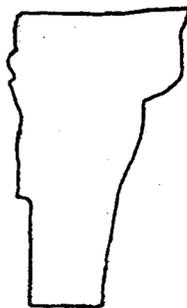
Committee Chairmen:

Communications	James Ashley
Professionalism	Bill Siok
Membership	John Drake
Meetings	David Bucke

The official mailing address for the
Vermont Geological Society is:

Box 304
Montpelier VT 05602

THE GREEN MOUNTAIN GEOLOGIST



QUARTERLY NEWSLETTER OF THE VERMONT GEOLOGICAL SOCIETY

WINTER 1976

Volume 2 Number 4

SEMINAR ON WATER QUALITY ON JANUARY 22nd

The Vermont Geological Society is sponsoring an all day seminar on water quality on January 22nd from 9 am to 4:15 pm at the Tavern Motor Inn in Montpelier. William Silvey of the Water Resources Division of the United States Geological Survey office in Boston will lead the seminar. A basic review of the chemistry and biology of water will occupy most of the seminar. From 3 to 4:15 attention will be **focused** on two specific problems: the effect of salt and its secondary ramifications; and the iron and manganese problem.

All Society members and anyone else interested in a better basic understanding of water quality are urged to attend this professional seminar. For any specific questions about the program call Jim Ashley, 828-2393 days, or 684-3491 evenings.

WINTER MEETING SET FOR JANUARY 22nd

The winter meeting of the Society will be held on Thursday, January 22nd at 7:00 P.M. at the Tavern Motor Inn in Montpelier. This is a very important meeting and every member's input is strongly requested.

The business meeting will be held from 7:00 to 7:30 P.M. From 7:30 to 9:30 P.M. a discussion of Geology in Vermont will be held. Please see the outline prepared by Brewster Baldwin on the next page. It is hoped to tape record this meeting. Future actions to be taken by the Society will also be discussed.

Any person wishing to have dinner before the meeting should let John Malter know. We plan to have a special table for the Society. Dinner will be at 6:00 P.M.

SEE RESULTS OF MEETING WITH DR. JOHNSON ON PAGE 3. —————>

VERMONT GEOLOGICAL SOCIETY

Program For Winter Meeting
22 January 1976
Montpelier

GEOLOGY IN VERMONT

Background report: Summary of Executive Committee activities since the annual meeting in October, 1975:

- 11 November 1975 - Prepared Society Position Paper on the Vermont Geological Survey in an attempt to insure continued existence of the Survey in the face of threatened elimination. The paper has been submitted to numerous legislators.
- 2 December 1975 - J. Malter, Pres. and B. Baldwin, Chairman of the Ad Hoc Committee on the Vt. Geological Survey, met with Martin Johnson, Secretary of the A.E.C. to discuss Survey.
- 7 January 1976 - Met to plan winter meeting and future activity to further the status of the geologic profession in Vermont.

Open discussion: During the January 7, Executive Committee meeting, the following outline for a proposed "white paper", to be distributed in February to legislators and the public, was prepared. Comment on modification and/or support of this outline is solicited.

1. The first priority is to heighten the public's awareness that geologists are professionals with formal training and that planning and development must begin with geology. Topics for discussion:
 - a) Recent news items on reported mineral resources in Vermont. (i.e. Plainfield Coal)
 - b) "horror stories"
 - c) Present extent of geologic input to planning and development and existing legislation.
 - d) Public relations.
2. The second priority is the identification of geologic (including hydrogeologic) needs of the public. Topics for discussion:
 - a) Water quality and waste disposal.
 - b) Availability of surface water and groundwater.
 - c) Exploration for mineral resources.
 - d) Rockfalls and landslides.
 - e) Site evaluation and the role of applied and basic research.
 - f) Publications.
 - g) Education - reports and field guides for schools, other public groups.

3. Priority three - identification of the role of the Vermont Geological Survey in meeting the needs of the state. Topics for discussion:
 - a) Relation of the State Geologist to other government geologists.
 - b) Administrative and geographic home of the Survey.
 - c) Program

RESULTS OF DISCUSSION WITH MARTIN JOHNSON
CONCERNING
THE VERMONT GEOLOGICAL SOCIETY POSITION PAPER

On December 2, 1975, Brewster Baldwin and John Malter met with Martin Johnson, Secretary of the Vermont Agency of Environmental Conservation to discuss the Vermont Geological Society Position Paper on the Vermont Geological Survey. The Secretary was receptive to the Society's input concerning the future of the Survey in Vermont, but because of the financial crunch, he could not recommend any working budget for the Survey during the remainder of this biennium. Prior to our meeting, the Salmon administration had proposed the total elimination of the State Survey.

The Society was successful in keeping the Survey "on the books" and we have been asked to assist the administration in revising some of the current State Geologist legislation in order to clear up such subjects as program responsibility, fiscal accountability, and administrative organization. An appropriation of \$1.00 has been left in the Survey's budget, and though this is nothing more than a token, at least there is still a Survey. The Society shall endeavor to educate the legislature about the importance of geology to the state and the benefits that can be derived from a Geological Survey.

The groundwork for this legislation will be developed at our January 22, 1976 meeting. MAKE EVERY EFFORT TO ATTEND. YOUR PARTICIPATION IS ENCOURAGED.

LETTER FROM A MEMBER 

The following letter from Dr. W. Philip Wagner was submitted in response to the last Green Mountain Geologist, and outlines a difference approach to the role of the geologist and of geology in Vermont.

Comments and letters from other members are welcome.

The University of Vermont

ENVIRONMENTAL PROGRAM
THE BITTERSWEET
153 SOUTH PROSPECT STREET
BURLINGTON, VERMONT 05401
(802) 656-4055

December 8, 1975

Dear Colleagues:

This is an open letter to geologists in Vermont about matters concerning all of us. On December 4, 1975, David Tarbox and I met with Martin Johnson, Secretary of the Agency of Environmental Conservation. We were there to share our views about the role of geology in public service, the present state of the non-academic side of geological affairs in Vermont, and the future of geology in government in the state. Although each of these items is multi-faceted and complex, I think it would be helpful to summarize and share with you the essence of our views.

Role of Geology in Public Service in Vermont

From the point of view of application of geology to Vermont's social needs and problems, five categories can be delineated as follows:

Resources: the location and evaluation of mineral, energy, sand and gravel, water, and other resources of a geological nature

Waste Disposal: the location and feasibility analysis of solid and liquid waste disposal systems, especially sanitary landfills and land-based liquid waste facilities

Health: safe location and protection of water supplies; proper location of waste disposal facilities; identification and tracing of contaminants in the environment

Hazards: faulting and nuclear reactors; earthquakes; landslides; river and shoreline erosion

Environmental Impact: determination of the effects of existing or proposed developments (highways, vacation homes, landfills, etc.) on the environment from the geologic perspective

These areas of geological contribution have become highly specialized and sophisticated, going far beyond the general and qualitative levels typical of the past. The public as well as officials in Vermont have an old-fashioned (and I might add low) image of geology. Indeed, our present image is one we have fashioned. Although we could examine each of these in detail, suffice it to say that all are of vital public interest and none are being adequately dealt with. In general, we need to make it clear that the geological perspective is unique and that our familiarity with earth materials and the natural system of the earth is worthwhile in modern, practical terms.

An Equal Opportunity Employer

Present State of Geological Service in Vermont

While it is true that all geologists in Vermont, whether in government, private enterprise, or education can contribute to the overall public welfare and betterment, our comments are here directed toward the present nature of geology within state government. At present there are about ten geologists in state government. With one exception, however, these individuals serve without geological title. This is symptomatic of the second-class status of geologists in state government. The general unrecognized value of geology in government is reflected in different ways: limited professional advancement opportunities; lack of administrative voice at higher levels; minimal opportunities for mid-career education; lack of regulatory authority (despite the regulatory mission). In other words, the bulk of geologists in state government are not given administrative, legal, or professional recognition and support. As a consequence, there is no institutional mechanism for incorporating geology into day-to-day affairs. Moreover, geologists are notably absent at higher levels of state government where decision and policy-making in such areas as planning (land use, transportation, energy, etc.), public education, taxes, and so on take place.

Future Role of Geology in Public Service in Vermont

There is an urgent need for improvement in the role of geology in our state government. We feel very strongly that the public pays a high price, measured not only in dollars but also in health, safety, and general welfare for not having effective geological input. Numerous examples can be cited where the absence of geology has led directly to the detriment of the public. It is unfortunately true that for the most part these cases go unnoticed due to the lack of awareness and appreciation of the role of geology shared by the public, higher administrative authorities in state government, and the legislature. Given what we see as a condition stemming largely from ignorance (for which responsibility should be accepted by us geologists), we propose that all geologists in the state embark on an education campaign. Why not call our friends and neighbors, our representatives, the Governor's "Hot Line"? Letters should be sent to Secretary Johnson (who, in the main, is sympathetic with our situation). As the Governor and legislature soon will be making decisions concerning the Geological Survey, the urgency of the matter is stressed. Whatever the differences in our viewpoints may be, we should be adamant together about the price the public will inevitably bear through a continuation of the status quo.

Beyond an effort to change our image (or to create one), we specifically propose that state government undergo a minor reorganization to bring about improved geological input. First, geologists must be designated explicitly in their position appointment and title. In order that geologists are involved in the day-to-day affairs of state government, it is essential that they maintain existing responsibilities and affiliations (rather than being isolated in a separate administrative unit). In addition, a hierarchical structure of geologists within state government should be established to provide for advancement, delegation of responsibilities, and overall coordination of geological affairs. We emphasize that such changes can be accommodated within the present budgetary framework of state government. No or minimal additional expenditures of funds are required.

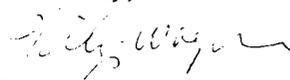
It is proposed that the reorganization of geologists be housed under a modified form of the Vermont Geological Survey. Although the title of the administrative structure called for above is perhaps of lesser consequence than reorganization itself, considering the lack of visibility of geology in state government, it is appropriate that the Survey be the organization.

It is proposed that responsibility for the operation of the reorganized form be vested in the position of the State Geologist. The State Geologist should occupy a full-time position based in Montpelier. The position must be given appropriate administrative authority and support. In considering the diverse role of geology in state government, authority must extend beyond the level of a department. The duties of the organization, as previously noted, must principally be to participate in the daily business of the state. To this end, and to insure that geology is incorporated in the decision-making process at high levels, it is absolutely essential that the organization have a higher voice.

It is proposed that the Geological Survey actively work toward the following: full and meaningful involvement of geology in Vermont's public affairs; explicit and official inclusion of appropriate geological statutes and regulations in diverse areas of state government; a suitable registration system for regulation of private practice in the state; greater coordination between state government, the University of Vermont and other institutions of higher education, and the federal government; stimulating and guiding basic research by University or other geologists; conducting mission-oriented research and education that can be directly related to the objectives and needs of the state.

In summation, it appears to us that there is a clear and present need for a change in the geological affairs of the state. To repeat, this need is most urgent in the public sector - this is our greatest strength in calling for preservation and enhancement of our profession in state government. We are calling for a modest reorganization of state government at the minimum. This does not necessarily require the continuation of the State Geological Survey, but we feel this is the best of several alternatives. Likewise, the involvement of the State Geologist is not required but makes sense. The issues of geology in state government, versus the Geological Survey, versus the State Geologist are interrelated but not inseparable. They should not be called for together on an all or nothing basis. If compromises are to be made, the first and most pressing need is for reorganization. The best argument for maintaining the position of the State Geologist ultimately can come from a vital and appreciated body of geologists in state government. It is not reasonable in light of the prevailing atmosphere to expect the same results by reversing the process; i.e., by calling for a Survey or State Geologist before or without reorganization. This, we believe, must lead to the ultimate complete demise of the Survey. Finally, it is very clear to us that we as geologists in the state must present a united front. Anything less than this is not likely to win the support of Secretary Johnson, the Governor, or the legislature. Time is not on our side.

Yours truly,


Philip Wagner

FATHER JAMES SKEHAN ELECTED TO GSA POST

Fr. James W. Skehan, S. J., Director of Boston College's Weston Observatory, has been elected Chairman of the Engineering Geology Division of the Geological Society of America.

Fr. Skehan was elected to the position at the Annual Meeting of the Society in Salt Lake City in late October and succeeds Professor Paul L. Hilpman of the University of Missouri at Kansas City.

Other elected officers of the Division are Dr. David J. Varnes, Engineering Geology Branch, U. S. G. S., Denver, Vice-Chairman; Dr. Richard W. Galster, U. S. Corps of Engineers, Seattle, Secretary-Treasurer; and Dr. Frank W. Wilson, Kansas Geological Survey, Lawrence, Liason Officer.