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This is a reminder to collectors that landowner permission is required if you are collecting on private property, including old mine sites.

*Compliments of
Vermont Geological Survey
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ROCKHOUNDING IN VERMONT

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VERMONT OPPORTUNITIES FOR THE ROCKHOUND AND FOSSIL COLLECTOR

Vermont presents an interesting challenge to amateur rock and fossil collectors. While most people — even Vermonters — don't consider Vermont **THE** place to go to collect mineral specimens or fossils, there is a challenging wealth of material to be found in this small state. Certainly many of us have heard of Barre granite, Danby marble (of which the Jefferson Memorial in Washington DC was constructed), and the Fair Haven and Poultney area slates. Talc and asbestos were mined until recently, and until 1958, copper was being mined commercially at the Elizabeth Mine in South Strafford.

You're probably familiar with the famous California Gold Rush, but how many know that one occurred in Vermont? Plymouth (VT) farmers discovered placer gold in Broad Brook and for a time gave up their farming to pan for gold. Canny Yankees that they were, they soon calculated that they weren't really earning more money than they had from farming, and the Vermont Gold Rush was over. Gold can still be panned from Broad Brook today. In fact, many other Vermont streams offer the energetic collector a chance to find some placer gold as a return for a hard day's work. The locations include: Rock River in Newfane and Dover; Williams River in Ludlow; Ottauquechee River in Bridgewater; White River in Stockbridge and Rochester; Third Branch of the White River in Braintree; Mad River in Warren, Waitsfield and Moretown; Shady Rill Brook in Wrightsville; Minister Brook in Worcester; Little River in Stowe and Waterbury; Gold Brook in Stowe; Lamoille River in Johnson; Gihon River in Eden; and the Missisquoi River in Lowell and Troy.

The geological history of the state has been so varied that it is possible to find undistorted Ordovician Era fossils in sedimentary limestones and shales, metamorphic minerals such as garnet, serpentine, actinolite, chrysolite asbestos, kyanite and sillimanite, and igneous rocks and minerals such as granite (including "prune" granite), bornite, beryl, hematite, chalcopyrite, native gold and pyrrhotite. While no spectacular pegmatites, such as occur in the White Mountains, have been found in Vermont, an impressive array of minerals and good cutting material to interest the lapidary certainly are available.

We hope this pamphlet makes it easier for the typical amateur rockhound vacationing in Vermont, or the young collector interested in acquiring a representative collection of the minerals of their state to have the pleasure of collecting their own specimens. There are more

potential sites than are listed in this pamphlet. The appended bibliography lists a few other publications that will have additional sites and general geological information. The sites listed here have been chosen for ease of access. The hardier collector should have no problem finding additional sites.

It is appropriate here to voice several strong cautions about the importance of every collector being a responsible citizen. Please be a conservationist as well as a collector. Take only what you need to supply a good example of the mineral or rock formation for your collection. Leave some for the next collector. Don't damage private property or mine and quarry equipment. Please ask permission to collect at a mine or on private property. You will usually get this permission, provided the last collector there didn't wear out his welcome. Please don't leave trash behind, and remember to observe all safety rules. In short, be a responsible collector and help make it possible for others to share the same privileges you have enjoyed.

There is no better way to start out rock collecting in a new area than to visit local museums or mineral exhibits which offer some displays and background materials on the geological history, minerals and fossils of the area. In Vermont, you will do well to visit some of the following:

-  University of Vermont Geology Museum, Perkins Hall, Burlington, VT ; (802) 656-8694; general collection, special exhibits of Vermont fossils, minerals and rocks.
-  Fairbanks Museum, St. Johnsbury , VT; (802) 748-2372; natural history museum that has collections of minerals and fossils found in Vermont.
-  Vermont Marble Company Exhibit, Proctor, VT; (802) 459-3311; displays of the many uses of marble, examples of marbles from many countries, exhibit of the origins and types of Vermont marbles; free samples usually available; Vermont mineral sets available.
-  Rock of Ages Visitor Center, Barre, VT; (802) 476-3115; quarry tours, craftsman's center; free samples of granite usually available; Vermont mineral sets available.
-  Annual Rock Swap and Mineral Show; sponsored by the Burlington Gem and Mineral Club, PO Box 1712, Burlington, VT 05402-1712 .

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MINERAL LOCATIONS

(listed alphabetically by county)

ADDISON COUNTY

Kaolinite — Vermont Kaolin Corporation Quarry. Go from Bristol or Hinesburg to East Monkton. Turn west for 3/4 miles, then south for 1¼ mile to the Kaolin pits next to the road.

Pebbles (quartz, jasper, basalt, olivine) — In the Bristol area are extensive deposits of gravel,

sand, cobbles and silt. Since the glaciers carried much of this material from quite a distance north, an inter-esting assortment of exotic rock types can be found. Good tumbling material.

Fossils (Ordovician trilobites, brachiopods, bryozoans, crinoids) — Take Route 125 west from Route 7 near Bridport towards Chimney Point Bridge to New York. Park near bridge and look in rocks on the Vermont side along the lake. Fossils are fairly abundant here and elsewhere along the lakeshore.

Calcite crystals, tremolite (mountain leather) — Huntley Quarry, Leicester Junction. Turn west from Route 7 at Leicester, continue to Leicester Junction. Cross Otter Creek and railroad tracks. Quarry and old lime kilns are visible south of the road. Best examples of hydrothermally deposited calcite crystals are found at the north end of the quarry. The marble in the quarry is pink, gray and white. Some make attractively banded cutting material.

BENNINGTON COUNTY

Blue quartz — In road-cut north side of Route 9, six miles east of Bennington. The blue quartz is cabochon material. Other minerals found here are garnet, orthoclase and plagioclase feldspar, biotite and hornblende.

CHITTENDEN COUNTY

Dunham dolomite — Quarry to the east of sharp curve on Route 2 between Chimney Corner and Sand Bar Bridge. Pull off road near quarry, park and walk in. Dolomite is banded red, white, gray, orange, fine-grained. Interesting cutting material.

Chalcopyrite — In the road-cut leading to the bridge across the Lamoille River. In dolomite rock on the left side as you go north on Route 2 (towards the islands) are dolomite crystals and chalcopyrite specimens. There is also some interesting rose-colored dolomite with white orbicules of dolomite making interesting patterns for cutting.

ESSEX COUNTY

Andalusite — Road-cut on Route 102, 0.6 miles south of Bloomfield opposite a small cemetery. In a dark to light gray phyllite schist, pink andalusite crystals or darker crystals with oriented inclusions that resemble a cross or flower (*var. chiastolite*). Some are white partially altered to muscovite. Small garnet crystals are also visible in some specimens.

FRANKLIN COUNTY

Actinolite, talc, fuchsite — Follow Route 105 east of Richford to the Route 105A junction. Continue on 105 for 2.7 miles. Park where powerline crosses road. Walk down dirt road 0.3 miles to Lucas Brook. Follow brook downstream about 0.2 miles. Boulders in stream bed along sides are actinolite with talc, fuchsite and magnetite.

Pyrite — Occurs in outcrops along Route 108 for several miles between East Fletcher and

Bakersfield. Best locality is north of town line between Fletcher and Bakersfield. Large outcrops are 0.2 miles north of town line just east of the road where a small stream crosses.

Specular hematite, rhodonite, pyrolusite — A small manganese prospect between Richford and Berk-shire. From intersection 2½ miles west of Richford, follow gravel road north for 1 mile. Just to the east of the road is a small pit and a dump that has been filled with tree stumps. Calcite is also found here.

Swanton “red marble” (dolomite) — Off Route 7 about 0.7 miles south of Missisquoi River Bridge. Turn east on narrow road passing under interstate, go 0.3 miles to small quarry and Vermont Marble Company dump. This is another occurrence of the Dunham Dolomite formation. Good cutting material.

GRAND ISLE COUNTY

Quartz crystals, calcite crystals, pyrite “suns” — Found in the rock used as road fill where Route 2 crosses from Grand Isle to North Hero. Good sized quartz and calcite crystals in veins in calcareous black shale. Pyrite concretions (*suns*) are also found in this black shale. An alternate site is in the quarry on the south side of Route 2, just off the west end of Sand Bar Bridge. Contains similar material.

“Zebra marble” — Stoney Point formation, fine-grained calcareous black shale with white calcite veins. Cutting material can find “pictures.” This outcrops in several locations along the lake. For this location, take road south towards southernmost point of South Hero off Route 2. Park and walk along old railroad right-of-way towards shore. Formation is also visible at Shelburne Point.

Marcasite, maclurites magnus (fossil gastropod) — Take Route 129 from Route 2 at South Alburg about two miles. Just before the road turns to cross bridge to Isle La Motte, a quarry can be seen to the right of the road. This is the Crown Point limestone. Nautiloids have also been found in rocks from this formation.

Trilobites, lingula (inarticulate brachiopod) — Take road to Grand Isle ferry. Don't turn off on ferry road, go straight to next road. Turn right. The black carbon imprints of these chitinous shells are found in rocks exposed on both sides of road-cut.

Bryozoans, brachiopods, trilobites, dolomite — Take Route 2 west through South Hero. After the road turns right past the post office, turn left onto Sunset View Road. Quarry is on left as you go towards the lake. Ask permission to collect at last farm on the left.

Other fossil locations — Park at the fishing access at South Alburg off Route 2, walk along shore north of the access. Many fossils (trilobites and brachiopods) are evident.

The limestones and shales along Lake Champlain offer many fossil finds. Not much alteration of these rocks has taken place. Also, the Champlain Overthrust has placed the older fossil-bearing rocks above the newer ones, making them easily accessible.

LAMOILLE COUNTY

Garnet, serpentine, asbestos, epidote, diopside, calcite — Former GAF-owned asbestos mine closed in 1993. Take Route 100 to Eden Mills. At intersection, take a half-left turn and follow to mine. Collectors may call 802-635-2508 for permission to collect. Over 30 different minerals have been reported from this location.

Placer gold — As mentioned in the introduction, many streams in Vermont will yield some gold when the heavy sediment at the bottom is panned. In Lamoille County, try Little River and Gold Brook in Stowe, Lamoille River in Johnson, and Gihon River in Eden.

ORANGE COUNTY

Arsenopyrite, pyrite, quartz — From East Braintree, follow Route 12 south ½ mile to bridge. At south end of bridge, turn east onto gravel road. Continue 0.3 mile to fork, stay right. Park past fork to left of road. Walk to small stream (intermittent in summer). Past stream on right is a trail. Follow for ¼ mile. Continue past a sharp left turn to old chimney, pits and dump. Good arsenopyrite crystals have been found here.

Pyrrhotite, pyrite, sphalerite, tourmaline — Ely mine, between West Fairlee and South Vershire. Take Route 113A to West Fairlee, go west 1½ miles towards South Vershire. Old smelter and ruins of former village of Copperfield can be seen on both sides of the road. Park and follow dirt road 0.75 mile to mine dumps. Actinolite, calcite, garnet, hornblende and malachite have also been found here.

Placer gold — Placer gold has been reported from the Third Branch of the White River near Braintree. Braintree Center is six miles north of Randolph on Route 12A.

ORLEANS COUNTY

Granite pegmatites, “plumose” muscovite, beryl, garnet, idocrase crystals — Found in outcrops in the road-cuts along Route 5A east side of Lake Willoughby. Park at turn-off where pipe brings spring water down from side of cliff to road. Best outcrops are north of here along 5A. Watch out for fast traffic and falling rocks from steep road-cut.

“Prune” or “bulls eye” granite — A granodiorite with biotite orbicules. Best location is at northwest edge of Craftsbury Village. Outcrop extends 0.75 mile and is ¼ mile wide.

Placer gold — Gold has been panned from the Missisquoi River in both Lowell and Troy.

Copper minerals, chlorite, feldspars — Hike up Long Trail to near summit of Jay Peak. Malachite, chlorite and feldspars can be found in the rubble from ski lift construction.

RUTLAND COUNTY

Kaolinite, lignite, fossil plant fragments — Brandon Kaolinite. From Route 7 in Brandon, go 1½ miles west on Route 73 to fork in road. Take right fork. Go ½ mile to end of road at intersection. Park and cross road. Kaolinite can be found in the woods north and south of intersection. Northeast of inter-section is a depression in which lignite, fossil nuts and other plant remains have been found. A study of these has shown that, 20-30 million years ago, Vermont had a climate similar to that of the present southeast US.

Slate, pyrite, bornite, chalcopyrite, quartz, calcite — Many quarries are south of Fair Haven along the west side of the Delaware and Hudson Railroad right-of-way, both north and south of Lewis Brook. They are located in the green and purple Cambrian Metawee Slate.

Tabular calcite crystals, pastel patterned limestone — Danby lime quarry. Slabs of limestone with the tabular calcite crystals are found in the quarry on the west side of Route 7, 11.6 miles north of Manchester. Also found is a pastel colored, attractively patterned limestone that makes good cutting material.

Tourmaline, albite, actinolite, calcite, epidote, phlogopite, pyrite, sphene, diopside — Outcrops along Route 155 road-cut about 6-8 miles south of East Wallingford contain these minerals. Many are in large crystals, or large crystal aggregates.

Smokey quartz crystals, clear quartz crystals, pyrite, ilmenite — Take Mt. Tabor Road from Danby, park at Devil's Den picnic area, walk north along road to outcrops on east side of road. Excellent smoky quartz and other minerals are found in pockets in the local schist.

WASHINGTON COUNTY

Serpentine, talc, tremolite, actinolite — Duxbury serpentine quarry. From Waterbury, go south on Route 100 for 8 miles to Harwood Union High School. 0.3 past school cross a small bridge, turn right onto uphill dirt road. Continue 0.3 miles, pass auto graveyard on right to a trail heading left, and park. Walk up trail past a tailings pile and turn right where path meets another trail that leads to the quarry. "Verde Antique" was quarried here. Magnetite octahedra (up to ½" in diameter in chlorite schist), well-formed dolomite crystals, and calcite that fluoresces pink have been found here.

Clay concretions — Barre, in a clay bank 1,000 feet north of where Route 302 crosses Stevens Brook; East Montpelier, on Route 2 along the Winooski River across from a well company. Both are found in conjunction with clay beds dating back 10,000-12,000 years to the recession of the last ice sheet.

Placer gold — Gold has been recovered from the Mad River in Warren, Waitsfield and Moretown, as well as other previously mentioned locations.

WINDHAM COUNTY

Serpentine (varicolored), quartz, agate, garnierite, placer gold, garnets — Take Route 30 past Newfane, turn right just before West Dummerston onto the road to South Newfane. About 8 miles from Route 30, the road crosses Adam's Brook. Collect in the outcrops north of the road-cut and north along Adam's Brook. Serpentine boulders are in the stream, as are boulders with green, yellow, red and orange agate and quartz crystals. Some green surface coatings that may be garnierite have been reported. Placer gold and garnets have been recovered in the brook, and also in the Rock River between Newfane and Dover.

Phlogopite, diopside, calcite, graphite, hematite — Park at the New England Power Plant in Readsboro. Walk south about a mile along the railroad tracks to an old lime quarry. The large dump of rock from the water tunnel east of the plant has pyrite and garnet specimens.

WINDSOR COUNTY

Pyrite, pyrrhotite, chlorite, ilmenite, smoky quartz — Pine Hill quarry. From Route 106 in Perkinsville, take road to Springfield Dam recreation area. Collect in the quarry just east of the dam. Calcite, actinolite and biotite are also found.

Garnet, staurolite, kyanite, diopside — Several interesting outcrops in the Gassetts road-cut where Route 103 crosses the Williams River. South of the river, a muscovite schist contains quartz, garnet, tourmaline, staurolite and kyanite crystals. This was once mined for the garnet. A smaller outcrop northwest of the bridge across the river contains actinolite, diopside, calcite, sphene and pyrite.

Chloritoid, garnet, magnetite — Near Kingdom Brook. Take Route 100 to Tyson, continue east one mile on road towards South Reading. Mineral collecting area is along both sides of the road. Unusually large chloritoid crystals make this quartz-muscovite-biotite-chlorite schist atypical, because this mineral normally occurs in microscopic size.

Tourmaline (black), pyrite, talc, calcite, diopside — On Route 103 one mile east of junction of Routes 103 and 100 north of Ludlow, outcrops in the long road-cut contain a number of different rock types. Good specimens of marbles, pegmatites, mica-schists, quartzites, calc-silicates and several gneisses can be found here.

Placer gold — From Route 100A, 1.4 miles south of intersection with Route 100, take dirt road along Hale Hollow to the remains of the former village of Plymouth Five Corners. Any location along Broad Brook should yield some gold. Also magnetite and garnet can be recovered from the heavy sediments of the stream. Other sites include the Ottauquechee River in Bridgewater, and White River between Stockbridge and Rochester.

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For further information and free publications, the **publications list of the Vermont Geological Survey (VGS)** may be obtained through:

Vermont Geological Survey
103 South Main St., Logue Cottage
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tel. (802) 241-3608
e-mail marjorie.gale@state.vt.us
<http://www.anr.state.vt.us/dec/geo/vgs.htm>

GENERAL GEOLOGY AND VERMONT GEOLOGY REFERENCES

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