



Chapter 8 Study of Lime Kilns

Study Methodology

The study of lime kiln ruins and sites in Vermont started with the inspection of a ruin in Leicester Junction in 1984, where attention was directed by a friend who claimed that large blast furnace ruins were to be seen. Inspection confirmed suspicions that the ruin was that of a lime kiln, not a blast furnace. But the physical similarities between blast furnaces and some early commercial lime kilns encouraged further archival research and field inspection of the latter.

Information regarding location of lime kiln ruins and remains came from maps, archival references, and informants. A few kiln ruins were found by chance. Maps include the 1854–1859 series county wall maps, which indicate lime kilns presumed active or recently active at time of publication. Likewise, some 1869–1878 Beers maps also indicate lime kilns. The Doll geology map shows various limestone outcrops, which indicate areas of probability for finding limestone quarries, but was not detailed enough to provide specific surface information for finding lime kiln ruins.

The Vermont lime business has received minimal recognition in many local histories written in the 19th century. Incredibly little beyond a few words has been written about availability of limestone in the state. At best, a few histories make a statement or two alluding to lime burning at some obscure time in the past. It was not until the merits of using lime as an agricultural additive were recognized that lime burning in Vermont took on an “industrial” stance and histories written in the late 19th century reflected this. State geology reports during and after that period also included much information on the economics of the lime industry. They reported on locations of quality limestone, annual production capacities of lime works, and regional and national trends of the industry.

Archival material included state, town, and county histories and business journals. Of special help were the 1861 *Report on the Geology of Vermont* by Hitchcock et al., the 1899 through 1934 biennial reports of the State Geologist by George H. Perkins, and the 1915 U.S. Geological Survey Bulletin on the geology of Vermont dolomite and marble by T. Nelson Dale. The latter included small detailed maps of quarries discussed in the text, which greatly facilitated the search for lime kiln sites.

While using the Dale material to find the kiln ruins in the field, it was noticed that some of the descriptions referred specifically to a lime kiln in the vicinity of a quarry, but other references were merely to lime having been burned in the vicinity at one time. Field work resulted in finding ruins at 13 of 14 sites (93 percent) at which lime kilns had been specifically referenced, but at only 4 of 7 sites (57 percent) at which only vague references were made of lime burning. It is not known whether Dale could not find some of the kilns or perhaps did not intend to accurately reference kiln ruins; the reports were mainly about the geology of the state’s marble industry and not about the manufacture of lime. This could mean that lime kilns might have also operated at some of the many marble

quarries he discussed (and maybe at some quarries he did not discuss) but at which no mention of lime burning or lime kilns was made. Information from Dale got us into the vicinity of a kiln but it usually took local inquiry and hours of bushwhacking to get us exactly to the kiln ruin.

Informants included friends, property owners, and those who gave directions or shared thoughts on the subject along the way. Some knew only where a suspicious pile of stones was to be found; others knew a lime kiln ruin when they saw one and were specific with directions and descriptions. Most property owners and local residents were very generous with their time and knowledge of where things were and what they knew of them. Many were surprised that anyone was interested at all in “that old pile of stones.”

Chance finds were also made, such as discovering Lime Kiln Road in Charlotte while driving up Route 7 one Sunday afternoon, or Arnold Kingsley’s directions to a lime kiln in his Whitingham pasture instead of the one being sought farther down the road. Although not a common occurrence, a few kiln ruins were discovered while driving by or just by having glanced in that direction at the right moment. There was also much useless stopping and hiking into pastures and fields to check out suspicious-looking mounds of stones or clumps of white birch. Many ruins still lie out there along sides of roads and trails, however, waiting to be discovered and interpreted.

Finding a kiln ruin in the field, even with good archival reference to its existence and indication on a 19th-century map, was not easy. The best time of year for field work was, of course, before or after foliage season. Each was not without its hazards, however. In mid-spring there was still cold surface water and mud to be dealt with; snow and ice at higher elevations. In the post-foliage season shot and arrows were flying about, and some of the smaller ruins and features were obscured by fallen leaves.

Farm-type kilns were usually found at the base of a hill, sometimes just below a limestone outcrop. Attention was paid to ledges in suspected areas and also for indications of former roadbeds that preceded present roads, alongside which the lime kilns would have been operating.

The dividing line used in differentiating between early and later commercial ruins was the use of firebrick. Large kiln ruins near extensive quarries were obviously not farm kilns but more of a commercial operation, and these ruins, in which internal lining is made of stone, are in the early commercial (1850s–1900s) category. Those in which firebricks were found are in the later commercial (1870s–1920s) category. The presence of firebrick is taken to indicate a definite technological step forward.

Their markings indicated that most firebricks probably came from Troy, New York. A common firebrick mark was McL&H CO TROY NY, which was McLeod & Henry Company, manufacturer of stove linings and firebrick. The company was founded by Jacob Henry in 1871; Bacon & Henry succeeded him, and in turn were succeeded by Harvey S. McLeod in

1882. McLeod & Henry Company was founded February 1, 1887. Bussey & McLeod also cast stoves in that same period (Anderson 1897:313). Correlating firebrick markings with firebrick manufacturers can provide valuable kiln operating dates. Other firebrick marks found associated with ca.-1880s to -1920s lime kiln ruins were: H. W. SPEC; BOSTON [FIRE?] BLOCK CO; U.S.A.; and BRANDON VT. Among the tons of firebricks lying around the razed lime works at Winooski Park are firebricks marked LEHIGH, BESSEMER, POWER, TYRONS, D-TYRONS, and ALUSITE 81. Some of these firebricks are quite large, on the order of a cubic foot. Some red bricks found at many sites were identified DRURY (of Essex Junction); many, however, contained no markings at all.

Another indication of technological progress at kiln sites was the use of binders to stabilize the stack and keep the stonework together. Most common bindings were one-inch-diameter iron rods, threaded at ends that protruded out the walls. The rod ends had large nuts screwed on with washers that snugged the assembly against the kiln walls. At some collapsed ruins, the internal lateral crisscross pattern of these binders was revealed once the tangle of bent and intertwined hardware was figured out. At the Lyman-Martell ruin in New Haven (AD-494), a double set of bindings across the outside wall of the kiln was reinforced by a flat iron plate bolted to the rods. Nowhere did the strength of the lime kiln binding approach that of binding used at blast furnaces, however, which were much more massive in size.

Kiln ruins were anything from a 20-foot-square stone base with 25-foot-high iron shells (AD-355) to a barely distinguishable grass-covered stone mound in a pasture (WN-124). Depending on which direction a ruin was approached, it could appear to be no more than a hole in the ground from the uphill side, or an entrance to a crypt or stone chamber from the downhill or front side. One stone feature initially taken for a lime kiln ruin turned out to be an abandoned stone-lined cistern (BE-LK07).

The general configuration and character of the ruin differentiated it from, for example, a charcoal kiln or blast furnace, as did the presence of burnt lime in the form of a gray-white grainy powder or small, cracked, white stones in the direct vicinity of the kiln ruin. Because the bottom opening in the front wall of the kiln created a built-in weakness, the front walls of many early ruins were found collapsed and their stonework slumped outward to the ground, hiding any burnt lime in this area and giving the ruin a random stone mound appearance. At Scotch Hill (RU-98), moving a few stones from a collapsed front wall during a reinspection of this previously unidentified ruin exposed a hidden archway, confirming its past use as a lime kiln.

While studying lime kiln ruins, finding limestone and marble quarries was inevitable. Quarries that provided stone for the earlier lime kilns were small, appearing in many cases no more than natural outcrops. They were sometimes overgrown in summer and required some effort to find. A few were reputed by owners or local residents to be infested with rattlesnakes.

Quarries that provided stone for lime kilns (and marble) operating after the mid-19th century have left significant scars on the landscape. In most cases, the remains of ironworks and charcoal kilns left little physical disturbance to the landscape.

Soil erosion and vegetation quickly re-covered ground lost to furnace mounds, ore pits, and kiln remains. Forests cut for cordwood consumed in charcoal and lime kilns renewed themselves in a few dozen years. But quarry operations, whether slate, granite, or marble, by their nature have left gaping holes in the ground. Like railroad cuts still visible along long since abandoned rights-of-way, quarries will remain forever to remind the explorer what the 19th and 20th century did to the landscape.

Results of the Lime Kiln Study

Seventy-one kiln sites were reported to the State Archeologist during the 1984–1992 period of the overall statewide IA study of lime kilns and are now part of the State Archeological Inventory. These sites contained 93 fully or partially standing ruins or mounds (something visible on the surface). Twenty-nine sites were found within the new proclamation boundaries of the Green Mountain National Forest. Visible ruins include 71 made of stone, 13 of a combination stone and concrete, and 9 made of concrete. Thirteen stone and/or concrete types displayed remains of their tall iron shells in various stages of deterioration. Forty-three kilns probably operated at one time with iron shells.

An additional 14 sites at which inconclusive or no positive surface evidence was found but subsurface material might exist were also reported in the Field Site (FS) category. Archival and field work continues at 33 more sites in the work-in-progress (LK) category. The total number of lime kiln sites studied is 118 at this writing; 160 lime kilns are estimated through archival work to have operated in the state.

Lime kiln ruins were generally found associated with limestone outcrops or quarries. Although the earlier primitive farm-type lime kilns were usually found well away from the nearest farmhouse, almost all later commercial-type lime kiln ruins were found near roads, highways, and railroads. Farm-type ruins were the smallest type found; commercial-type ranged from much larger round shapes to imposing square structures, some with their rusting iron stacks wholly or in part above stone and/or concrete bases. One lime kiln site was found associated with an early-20th-century calcium carbide plant.

Many lime kilns were built of stone from the same quarry where they obtained stone to burn. Although appearing to be a peculiar practice, the insides of these kilns soon glazed over from the heat of burning, which protected the walls from further heat effects. The glaze also sealed the kiln from outside drafts, keeping the heat inside and reducing fuel consumption. At some ruins, the glaze was observed as being all that remained to hold small sections of inside walls intact, long after major sections of the outside walls had collapsed. Concrete kilns and combination stone-and-concrete kilns were those usually found associated with firebrick, although two stone-built kiln ruins were also found with firebrick. All combination stone-and-concrete kilns were the base for iron shells.

Lime kiln ruins were generally round or square. Some kiln ruins were built into a hillside or slight rise and their front side (that is, the opening side) was faced with a stone wall. This wall was as high as the kiln and extended up to 20 feet on either side to act as a retaining wall to support the work area

Table 8-1. Lime Kiln Sites

| Site No. | Principal Name | Kilns per Site | Type | Green Mountain National Forest |
|--------------------------|------------------------------------|----------------|------------------|--------------------------------|
| <u>Addison County</u> | | | | |
| AD-318 | Huntley | 2 | Stone/Concrete* | No |
| AD-355 | Green Mountain Lime Company | 5 | Stone/Concrete* | No |
| AD-409 | Bristol | 1 | Stone | No |
| AD-494 | Lyman-Martell | 2 | Stone | No |
| AD-FS95 | Powers Lime Works | 1 | Stone? | No |
| AD-FS96 | Swinington | 3 | Stone/Concrete*? | No |
| AD-FS97 | Plank Road | 1? | Stone? | No |
| AD-LK01 | Quarry Road | 1 | Stone? | No |
| AD-LK02 | Marsh | 1? | Stone? | Yes |
| AD-LK03 | Chaffee | 1? | Stone? | Yes |
| AD-LK04 | Peake | 1? | Stone? | No |
| AD-LK05 | Gibbs | 1? | Stone? | No |
| <u>Bennington County</u> | | | | |
| BE-109 | Barnumville | 1 | Stone | Yes |
| BE-117 | Manchester Depot | 1? | Stone? | Yes |
| BE-118 | Pownal Lime Company | 1? | Stone/Concrete*? | Yes |
| BE-141 | North Dorset | 1 | Stone | Yes |
| BE-144 | Judson-Howell | 1 | Stone | Yes |
| BE-192 | Martin | 1 | Stone | Yes |
| BE-FS7 | Amaden & Son | 1? | Stone? | Yes |
| BE-LK01 | North Pownal | 1? | Stone? | Yes |
| BE-LK02 | Dorset Mountain Road | 1? | Stone? | Yes |
| BE-LK03 | Purdy Hill | 1? | Stone? | Yes |
| BE-LK04 | Hopper Brook | 1? | Stone? | Yes |
| BE-LK05 | Equinox Mountain | 1? | Stone? | Yes |
| BE-LK06 | Readsboro | 1? | Stone? | Yes |
| BE-LK07 | Red Mountain | 1? | Stone? | Yes |
| BE-LK08 | Lawrence | 1? | Stone? | Yes |
| <u>Caledonia County</u> | | | | |
| CA-LK01 | Marl Pond | 1? | Stone? | No |
| <u>Chittenden County</u> | | | | |
| CH-282 | Weston Lime Works | 2? | Concrete? | No |
| CH-284 | Champlain Valley Lime Company | 4 | Concrete* | No |
| CH-365 | Laberge | 1 | Stone | No |
| CH-FS118 | Bates | 1? | Stone? | No |
| CH-LK01 | Stave Point | 1? | Stone? | No |
| <u>Franklin County</u> | | | | |
| FR-178 | Fonda Junction | 6 | Stone/Concrete* | No |
| FR-179 | Joyal | 1 | Stone | No |
| FR-224 | Missisquoi Lime Company | 1 | Stone | No |
| FR-225 | Missisquoi Lime Works Incorporated | 5 | Stone(*?) | No |
| | | 2 | Concrete(*?) | No |
| FR-226 | Bancroft | 1 | Stone? | No |
| FR-227 | Richford | 1 | Stone | No |

Table 8-1. Lime Kiln Sites (Cont.)

| Site No. | Principal Name | Kilns per Site | Type | Green Mountain National Forest |
|--------------------------------|-----------------------------------|----------------|-----------|--------------------------------|
| <u>Franklin County (Cont.)</u> | | | | |
| FR-228 | Swanton Lime Works | 6 | Stone(*?) | No |
| | | 5 | Concrete* | No |
| FR-FS24 | Rich Lime Works | 2? | Stone? | No |
| FR-LK01 | Ferris | 1 | Stone? | No |
| <u>Grand Isle County</u> | | | | |
| GI-27 | Fort Sainte-Anne/Fisk Point | 1? | Stone? | No |
| <u>Lamoille County</u> | | | | |
| LA-LK01 | Benjamin Thomas | 1? | Stone? | No |
| LA-LK02 | Tillotson | 1 | Stone? | No |
| LA-LK03 | Shattuck Mountain | 1? | Stone? | No |
| LA-LK04 | Bradford | 1? | Stone? | No |
| LA-LK05 | Butler | 1? | Stone? | No |
| <u>Orange County</u> | | | | |
| OR-FS12 | Limehurst Lake | 1? | Stone? | No |
| <u>Rutland County</u> | | | | |
| RU-98 | Scotch Hill | 1 | Stone | No |
| RU-154 | Maplebrook Farm | 1 | Stone | No |
| RU-157 | Vermont Lime Products Corporation | 3 | Concrete* | No |
| RU-161 | Crow Hill Farm | 2 | Stone | No |
| RU-165 | Bromley Farm | 1 | Stone | No |
| RU-166 | "The Cobble" | 2 | Stone | No |
| RU-179 | Mendon | 1 | Stone | Yes |
| RU-180 | River Road | 1 | Stone | Yes |
| RU-194 | Seager Hill | 1 | Stone | No |
| RU-196 | Briggs | 2 | Stone | No |
| RU-197 | Devils Den | 1 | Stone | Yes |
| RU-198 | Howard Hill | 1 | Stone | No |
| RU-260 | Bomoseen | 1 | Stone | No |
| RU-261 | Chippenhook | 1 | Stone | No |
| RU-FS48 | Village Lime Kiln | 1 | Stone? | No |
| RU-FS49 | Kelley and Wellman | 1 | Stone? | No |
| RU-FS50 | Doran | 1? | Stone? | No |
| RU-LK01 | Vermont Marble Company | 1 | Rotary | No |
| RU-LK02 | Fuller | 1? | Stone? | ? |
| <u>Windham County</u> | | | | |
| WD-67 | Greene Farm | 1 | Stone | Yes |
| WD-68 | Thayer | 1 | Stone | No |
| WD-69 | Haven | 1 | Stone | No |
| WD-70 | Twitchell-Howard | 1 | Stone | No |
| WD-87 | Bemis | 1 | Stone | No |
| WD-88 | Pike-Bills | 1 | Stone | Yes |

Table 8-1. Lime Kiln Sites (Cont.)

| Site No. | Principal Name | Kilns per Site | Type | Green Mountain National Forest |
|-------------------------------|-----------------------------|----------------|-----------|--------------------------------|
| <u>Windham County (Cont.)</u> | | | | |
| WD-89 | Grimes-Fitzgerald | 1 | Stone | Yes |
| WD-90 | Kenfield-Kaufmann | 1 | Stone | Yes |
| WD-91 | No. 9 Brook | 1 | Stone | No |
| WD-92 | Gray-Holt | 1 | Stone | No |
| WD-126 | Vermont Lime Company | 1 | Stone | No |
| WD-127 | Kingsley | 1 | Stone | Yes |
| WD-FS13 | West Wardsboro | 1? | Stone? | Yes |
| WD-FS14 | Lime Hollow | 1? | Stone? | Yes |
| WD-LK01 | Merrifield Road | 1? | Stone? | Yes |
| WD-LK02 | Windmill Mountain | 1? | Stone? | No |
| <u>Windsor County</u> | | | | |
| WN-58 | Upper Falls | 2 | Stone | No |
| WN-104 | Amsden | 2 | Stone | No |
| | | 1 | Concrete* | No |
| WN-108 | Burnt Mountain | 1 | Stone | No |
| WN-109 | Campground | 1 | Stone | No |
| WN-110 | Rice | 1 | Stone | No |
| WN-111 | Grace's | 1 | Stone | No |
| WN-112 | Knapp | 1 | Stone | No |
| WN-113 | Brookwood | 1 | Stone | No |
| WN-114 | Money Brook | 1 | Stone | No |
| WN-118 | Felchville | 1 | Stone | No |
| WN-119 | Grass Pond | 1 | Stone | No |
| WN-120 | Frog City | 1? | Stone? | No |
| WN-121 | Ward Lime Works | 2 | Stone | No |
| WN-123 | Lower Branch Brook | 1 | Stone | No |
| WN-124 | Liberty Hill | 1 | Stone | Yes |
| WN-128 | Messer Hill Road | 1 | Stone | No |
| WN-133 | Lower Grand View Lodge Road | 1 | Stone | No |
| WN-134 | Upper Grand View Lodge Road | 2 | Stone | No |
| WN-135 | Upper Branch Brook | 1 | Stone | No |
| WN-136 | Cavendish Station | 1 | Stone | No |
| WN-137 | Stearns | 1 | Stone | No |
| WN-138 | Moore-Calkins | 1 | Stone | No |
| WN-139 | Plymouth Notch | 1 | Stone | No |
| WN-185 | Reservoir Brook | 1 | Stone | No |
| WN-FS18 | Hall's | 1 | Stone? | No |
| WN-FS19 | Jewell Brook | 1? | Stone? | No |
| WN-LK01 | Black Pond | 1? | Stone? | No |
| WN-LK02 | East Bethel | 1? | Stone? | No |
| WN-LK03 | South Woodstock | 1? | Stone? | No |
| WN-LK04 | Shattuck Farm | 1? | Stone? | No? |
| WN-LK05 | Hutchins | 1? | Stone? | No |
| WN-LK06 | North Andover | 1? | Stone? | No |
| WN-LK07 | Adams | 1? | Stone? | No |

Table 8-1. Lime Kiln Sites (Cont.)

| Site No. | Principal Name | Kilns per Site | Type | Green Mountain National Forest |
|-------------------------------|-----------------|----------------|--------|--------------------------------|
| <u>Windsor County (Cont.)</u> | | | | |
| WN-LK08 | Knapp Pond Road | 1? | Stone? | No |

* Commercial-type lime kiln with high, round iron shells

above and around the top of the kiln. A majority of the lime kiln sites found ranged up to seven ruins per site. Fifty of the sites (70 percent) contained one ruin. All were made of stone and were mostly of the early-19th-century "pot kiln" variety.

Table 8-1 lists all kiln sites that have been researched by county, and numerically within county by site identification number. The table also lists the site's given name, number of kilns per site, the construction type, and if in the Green Mountain National Forest. Three sections following divide the state into the northern, central, and southern districts, as described in the Introduction of this book (see "Presentation of the Study"). In these sections, the history of the lime-burning site and descriptions of whatever physical remains exist are presented. Table 8-2 at the end of the chapter summarizes the results of the lime kiln study.

Presentation of sites within each section is by county, and within each county, sites are presented either in site number sequence or grouped to reflect a geographic proximity. Grouping does not reflect any commonality that might have existed when the kilns were in operation, but aids in describing them. Accompanying maps provide a geographic sense of the physical disposition of the sites and ruins, without compromising the exact location of the site.

For the purpose of this study, remains and ruins are used to differentiate between nonstructural and structural surface evidence. Remains include kiln mounds that have no structural elements and are relatively caved in, yet are otherwise identifiable as a lime kiln. Ruins include individual kilns that are standing or partially standing structures, and might also include visible sections of brick and/or stone walls. A lime-burning area, whether containing ruins, remains, or no visible surface features or evidence, is referred to as a site.

WARNING to Hikers and Explorers: Although appearing sturdy, all kiln ruins are in fact very fragile. Climbing about them loosens stones, weakens walls, and contributes to their progressive deterioration. Collapse of larger ruins can cause personal injury.

The Northern District

The only counties in the northern district where lime kiln ruins have thus far been found are Franklin and Chittenden counties. Ruins might also exist in Grand Isle, Lamoille, and Caledonia counties per archival sources. Lime was burned at Isle La Motte in 1666. Lime kiln remains in Franklin County center in the

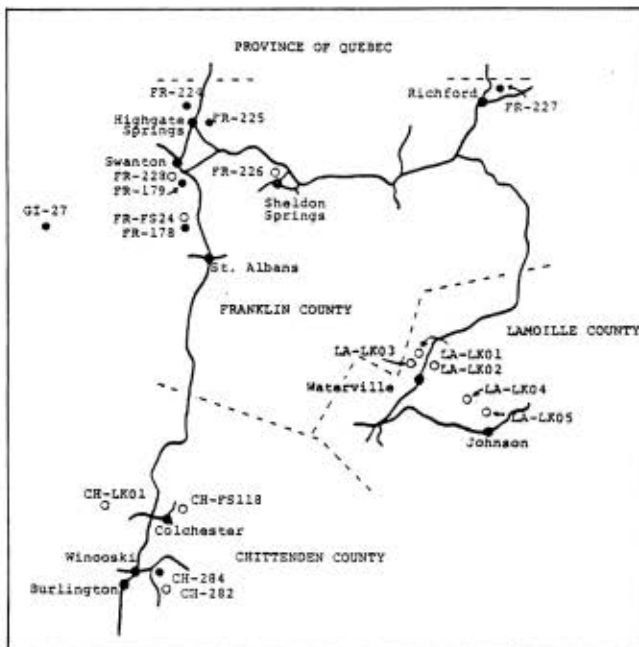
Swanton-Highgate area, following an almost straight north-south limestone ledge. Major kiln remains in Chittenden County center on both sides of the Lime Kiln Road bridge over the Winooski River between Colchester and South Burlington, where limestone burning and processing was carried on commercially for about 150 years. Farther south in Charlotte, a moderate-size lime kiln probably operated until nearly the 20th century.

CALEDONIA COUNTY

CA-LK01 Marl Pond Lime Kiln (Sutton): In the northwest corner of Sutton near Lime Pond (known as Marl Pond in the mid-1800s), shell marl was dug and burned at an early time for use as fertilizer. It proved to be a valuable business for many years (Swift 1977:149). No attempt has been made to inspect the site.

GRAND ISLE COUNTY

GI-27 Fort Sainte-Anne/Fisk Point Lime Kilns (Isle La Motte): The earliest known date for burning lime in what is today Vermont is 1666, when a lime kiln was built by the French to make mortar that was used by Captain De La Motte in the construction of Fort Sainte-Anne. Archival references vary as to the construction date of the fort. A plaque at the north end of the island claims the fort was built in 1665 and dedicated in 1666. The initial French settlement probably dates to 1664 and the construction of the fort to protect the settlement in 1666. The settlement and fort were abandoned four years later. The kiln was also operated by the British and, eventually, by Vermonters as late as 1796 (Child *Grand Isle* 1883:18; Perkins 1933:145; Stratton 1984:118). In 1779–1780, Captain William Chambers of the British Navy made soundings off the shores of Lake Champlain to afford safe anchorage points should hostilities demand renewal of naval warfare on the lake. The maps of these soundings were recently published, and one of the charts identifies "Lime Kilns" at what is today Fisk Point. The bay immediately south of the point is named Lime Kiln Bay (Chambers 1984:8). The lime kilns were an obvious landmark in 1779 if they appeared on the map. Another map, drawn from a 1786 survey by John Clark, clearly identifies "Lime Kilns" at today's Fisk Point (Stratton 1984:14-15). It is improbable, however, that the same lime kiln that burned lime in the mid-17th century was one of those still operating in the 1780s–1790s. It is also unknown whether the original Fort Sainte-Anne lime kiln operated at Fisk Point or somewhere farther north, nearer



8-1. Grand Isle, Franklin, Lamoille, and Chittenden counties lime kiln sites.

to the fort.

Fort Sainte-Anne was at Sandy Point, near the northwest corner of the island, where today's Saint Anne's Shrine is a popular religious, picnicking, swimming, and tourist attraction. The fort faced north and west at a point where guns of "good calibre" could command passage on the lake (Child *Grand Isle* 1883:227). A priest queried at the shrine had no knowledge of exactly where the fort stood and knew of no archeological work done to accurately locate it. (Another fort was built in 1812 about 1½ miles south.)

Limestone burned for mortar (and possibly the stone for the fort itself) might have come from the vicinity of the Fisk quarry, about 4 miles south of the shrine, as indicated on the Chambers map. "The quarry is not deep, tracks for a small railroad running from the back wall of the quarry directly to the dock on the shore of the lake" (Perkins 1933:145). "The stone from this quarry known as Chazy Limestone, has been quarried continuously for over a hundred years. An immense quantity of stone has been removed. The quarry walls are over 2000 feet long and 30 feet high. The piers and abutments of the Victoria Bridge across the St. Lawrence River at Montreal were built of this stone" (Stratton 1984:118).

Three generations of the Fisk family worked the quarry, starting ca. 1802 and ending soon after 1905. The old gray-stone Fisk house is a few hundred yards north of the quarry, today owned by the Fitch family. The quarry is owned by the Vermont Marble Company.

The Fisk Point area was inspected in 1991 and about a dozen summer cabins and mobile homes were found occupying the space between the island's west shore road and the point. Two roads into the area as well as most of the cabins are on fill,

two to three feet above the local ground level. The ground between the shoreline and the road is quite low, and one vacationing resident said that in spring it is not uncommon for the lake to flood to the edge of their road (about 100 feet from the lake shore). Another resident showed where two very old barns burned to the ground two years before, and where the stone foundation remains were scattered by bulldozer. He said that 26 loads of fill were used for landscaping the yard following the fire. No one remembered seeing anything resembling a lime kiln or burned limestone. The ground rises slightly at the shore where ledge rock outcrops. Lime kilns would either have been built at these outcrops or well back of the point on higher ground to escape annual flooding, unless the lake ran lower 200 to 300 years ago. The low areas are wet and are probably the sole survivors from that time, before the point was developed. Limestone outcrops were found in the fields immediately east of the road, opposite the point, but no indications of quarrying were seen.

At the dock area, immediately south of Fisk Point, bits of burned lime were found eroding out of a 10-foot-high embankment on the east side of the road and about 25 feet south of the road to the Fisk quarry. The possible kiln site here is a mound or low rise of broken stone, some of which might have been part of the lime kiln. No burned, glazed stonework was found although some flat pieces of red-stained stone were found, appearing to have been burned. This low embankment is the only rise in the immediate area and might have been significantly disturbed by improvements to the road, which curves gently to the southeast around the rise. Directly behind (east) through a heavy tangle of trees is a small, early quarry. The main Fisk quarry is about 100 feet northeast, now flooded to approximately lake level. It was the oldest continuously operated quarry in Vermont (see chapter 7, "Vermont Lime Kilns").

The dock is a small point of land extending into the lake south of Fisk Point and was probably built during the mid-19th century from quarry tailings. At the shore of the dock are huge reinforced concrete blocks imbedded with heavy-gauge steel rods. Jammed under the blocks are sections of severely rusted and corroded narrow-gauge railroad track (smaller than 30-pound track), all that remains of the quarry railroad. At the edge of the dock are partially submerged log foundations that supported a large crane. Lake steamers docked here up to the early 20th century (see photo in Perkins 1898:41).

FRANKLIN COUNTY

FR-224 Missisquoi Lime Company (Highgate): The 1871 Beers map of Highgate shows buildings of the Missisquoi Lime Company on a small point on Lake Champlain, about a half-mile north of Highgate Springs. The lime kiln was in operation at least 10 years earlier, making an excellent quicklime, "large quantities of which are annually manufactured and sent to market" (Hitchcock et al. 1861:285). The company was incorporated in 1862 by Harvey Phelps, A. H. Barrows, Dana R. Bailey, Andrew A. Mason, D. A. Bartlett, William Fiske, and David Cross, for quarrying, mining, and working iron, copper, and other minerals, and manufacturing lime and cement (*Acts and Resolves* 1862:93). The kiln, owned by Boston interests, operated until 1888, at which time it was abandoned in favor of a newer site (FR-225) a mile south (Jacobs 1918:161).



8-2. Inside one of seven lime kiln ruins of the Missisquoi Lime Works at Highgate, showing firebrick lining and multiple arches for draft.



8-3. The opposite side of the wall shown in figure 8-2, showing the brick arch, through which draft was drawn into the kiln.



8-4. Workers gather around the lime kiln for the photographer in this ca.-1900 photo. Note the railroad cars under scaffolding at left, possibly indicating this kiln is either at Fonda or beside the spur track at Highgate Springs. The wheelbarrow was used for carrying the burned lime from the kilns to the barrels (courtesy Bob Douglas).



8-5. Another early view of lime kilns in Swanton or Highgate, showing horse and wagon atop wood scaffolding between two kilns at left, small door and iron binding around kiln at right, and young boys standing beside the stack. The wagon carried off the burned lime in barrels.

The lime kiln ruin was found in 1990 on the northeast end of the point, about a quarter-mile west from Route 7. The ruin is about 25 feet from the shore of Lake Champlain on what the USGS topographical map identifies as Limekiln Point. The kiln was probably built near the shore to be serviced by lake commerce. The dirt road leads to the point, which is owned by Barbara Updike (per Harold D. Campbell IV of Highgate Springs). The kiln ruin was found at the north edge of a quarry, associated with a manmade ramp of talus that would have allowed a bridge to service the top of the kiln.

The ruin is a brick- and stone-strewn mound, about 12 to 15 feet high. It is about 20 to 25 feet in diameter at ground level, 5 to 6 feet in diameter at the top, and well hidden from lake view by evergreen trees. At the top of the ruin are the three-sided rectangular remains of the inside lining, measuring 64 inches by over 15 inches (the fourth side does not stick out and no attempt was made to uncover it). This lining is made of firebrick, laid end- and crosswise. A glassy coating on the lining varies from ½ to 1 inch thick. Firebricks marked BRANDON VT measured 8½ by 4¼ by 2½ inches. A broken firebrick was marked BOS[TON?]. Unmarked red brick measured 7¾ by 3¼ by 2 inches. To the southwest of the ruin is the limestone quarry and between the quarry and the lake (to the west) are the possible remains of an earlier lime kiln.

FR-225 Missisquoi Lime Works, Inc. (Highgate): When the operations closed at Limekiln Point in 1888 (FR-224), the Missisquoi Lime Company built five kilns about a mile east of Highgate Springs. The move was probably made to be nearer to both a new quarry and the railroad, and to have more land to allow construction of the five kilns. A horse railroad carried the rock from the quarry to the kilns, about 1,200 feet west of the quarry. L. H. Fenton operated the company until his death in 1914.

The company was reorganized in 1916 as the Missisquoi Lime Works by F. B. Wright, President; C. H. Schoff, Vice-President; E. Deschenes, Treasurer; and O. H. Parker, Superintendent, with company offices at St. Albans. The Works' five wood-burning kilns produced about 45 tons of lime per day. They produced over 100,000 barrels (9,000 tons) of lime in 1917. Production in 1918, with a new, modern plant expected to be in operation, was expected to exceed 130,000 barrels. Prices varied from \$6.00 to \$11.00 per ton in bulk and from \$1.10 to \$1.60 per barrel. The lime, which ran from 95 to 99 percent calcium dioxide, was held in high reputation in the lime industry (Jacobs 1918:159). The company was described as still operating in 1937 (*Vermont* 1937:276).

Remains of the Missisquoi Lime Works were inspected in 1990 after finding and inspecting the lime kiln ruin at Limekiln Point (FR-224) earlier in the day. The site is identified by "Ruins" on the USGS topographical map although this spot is somewhat south of where Jacobs described the site as being. Specific guidance to the ruins was provided by young Harold D. Campbell IV, who was riding a trail bike in the vicinity.

Mound remains of five stone-built kilns were found in a generally east-west row with each ruin about 25 to 30 feet apart. At the east end of the row is a dirt mound that appears to have been a ramp from which tracks were built over the tops of the kilns so a small rail car could deposit quarry stone directly into them. The condition of the ruins improves from east to

west, with the western ruin having enough wall section standing (about 8 feet high) to indicate that the outside walls of these kilns were round. Firebrick was scattered about the ruins. One firebrick measured 9 by 4½ by 2½ inches and is marked H. W. SPEC. A broken firebrick marked BOSTON [FIRE?] BLOCK CO measured 4½ inches wide by 2½ inches thick. A wedge-shaped firebrick was marked U.S.A.

The surprise of the day was finding two more kiln ruins, not exactly in line with the five stone ruins, but in a line and offset slightly to the southwest. These kilns were made of concrete, cast solid in approximately 10-foot-high vertical half-sections. The inside diameters of the concrete ruins were estimated to have been 8 feet when both sections were standing and intact. The sections had been banded together around the middle, probably with a heavy-duty iron ring, similar to that used on brick-type charcoal kilns. One ruin had only a single section standing; the other half-section had toppled and broken. Both concrete halves of another ruin, about 40 feet away, were lying on their backs. These two kilns, which were attempts to improve the design of the five stone-built kilns, are probably the remains of Jacobs' referenced modern plant constructed in 1918. Hardware and trash were found associated with these two concrete kiln ruins, which sit in a slight depression, and within a few feet of a large concrete foundation that appears to have been the storage building and railroad loading platform.

Bordering on the south sides of the five stone-type ruins are square concrete pedestals, about 1½ feet square, 1½ to 2 feet high, and in a row about 6 feet apart. Since they are about midway between, and line up with, both the ramp and the concrete kiln ruins, it is guessed that these pedestals supported tracks that switched from the main quarry track at the ramp and allowed quarry cars to supply stone to the concrete-section kilns.

A spur track connected the plant to the Central Vermont Railroad (on what is today the dirt road into the site). The railroad no longer runs north of Swanton. Interstate 89 now generally covers the old railroad bed and a section of old Route 7 at Highgate Springs.

FR-227 Richford Lime Kiln (Richford): Limestone was quarried and burned before 1861 about two miles east-northeast of Richford, between the old road to East Richford on the north side of the Missisquoi River and the upper, parallel road (Golf Course Road). The property was identified as that of O. W. Corliss. A tunnel was also begun near the quarry before 1861 with the intention of mining copper that was in association with the limestone (Dale 1915:10).

The kiln ruin was found on the second try in 1990, about a mile south of the Canadian border alongside a rustic north-south road. Leon Carr, who was haying in the vicinity, gave directions to the ruin. The ruin is an approximately 15-foot-high mound of collapsed stone with about a third of a circular section of its inside lining sticking above the mound, enough to see that there was a light, reddish glaze on the lining. The glaze is probably all that is holding this section of wall together. No firebrick was found associated with the ruin, but five yellow birch grow atop the mound. The site is in the wooded hollow beyond the open pastures between Golf Course Road and the lower east-west road.

FR-226 Bancroft Lime Kiln (Sheldon): Among his other in-

dustrial pursuits at Sheldon Springs (known earlier as Olmstead Falls), George Bancroft operated a lime kiln. The 1871 Beers map of Sheldon shows the lime kiln and quarry on the sharp inside bend of the Missisquoi River, identified "Missisquoi Falls."

The site of this lime kiln was identified in 1990. The inside curve of the Missisquoi River at Sheldon Springs is occupied by the many buildings of the Specialty Paperboard Company, whose permission was obtained to search for the lime kiln remains. The limestone outcrop shown in the Beers map was found about 50 feet due west from the plant office. At the base of this cliff are pieces of lime powder, tightly compacted into a hard crusty composition. One could easily imagine a lime kiln having operated here. Adjacent to the kiln site is a path and the stone-wall foundation building that was one of the original buildings of the pulp company, built about 1900 (per a land surveyor who happened to drive into the area.) Although no positive surface remains exist, archeological remains of the kiln might be hidden under the path. The Beers map shows a gristmill and sawmill along the river at this point. The whole landscape of this side of the "point" has changed with the construction of the pulp mill. There are no references to this lime kiln in either the 1861 geology report of Vermont or in any of the State Geologists' reports of the early 1900s.

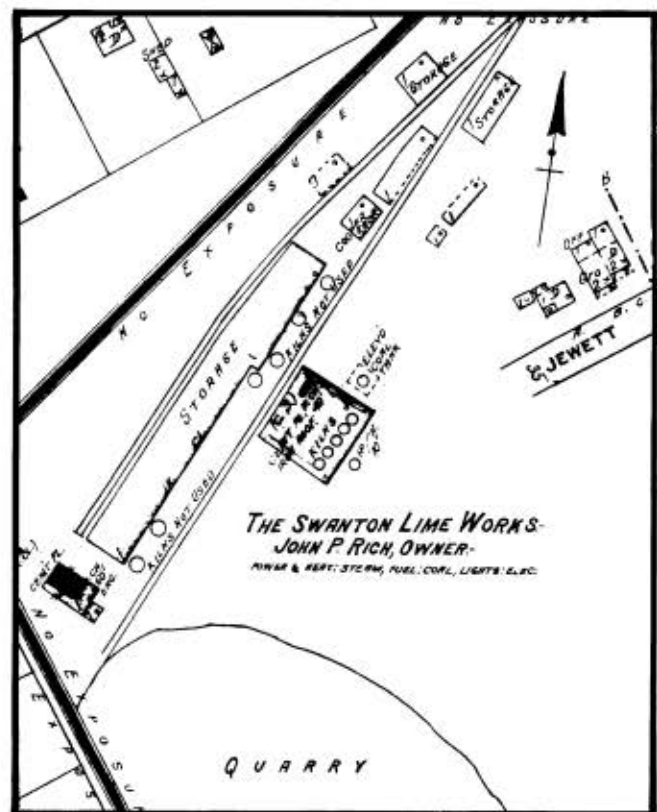
FR-179 Joyal Lime Kiln (Swanton): Remains of a lime kiln were found near the old John's Bridge crossing in 1987. The site is about 200 feet west of Route 7, and is 500 feet northwest of the Missisquoi River. It was found from information provided by the following historical account: "Lime was manufactured to a considerable extent before 1800. The first limekiln it is believed was built at the lime rock ledge near John's Bridge" (Aldrich 1891:406). "The writer can well remember over 60 years ago there was a lime kiln at the edge near the entrance to the old covered 'John's Bridge'; Benj. Joyal carried it on for years" (Hemenway vol. 4 1882:1024). Hemenway's 60 years before 1882 dovetails well within the period of the Ferris lime kiln (FR-LK01, following), which was erected contemporaneously with Joyal's; both appear to have been operating in the 1820s and possibly earlier.

The kiln remains were found along the lime rock ledge southwest of the bridge on the village side of the river, and consisted of a low, circular feature, about a foot high by 12 feet in diameter. The back (east) side is the natural ledge wall. Bits of burned lime and white stone made up part of the circular feature.

FR-LK01 Ferris Lime Kiln (Swanton): Another lime kiln operated near John's Bridge contemporaneously with Benjamin Joyal's, built by Jonathan Ferris (1765–1829) north of the bridge. It was described as being large and "near the one run by Benjamin Joyal" (Ledoux 1988:26-27). The possibility exists that the lime kiln remains found near John's Bridge in 1987 (FR-179) could be that built by Jonathan Ferris.

FR-228 Swanton Lime Works (Swanton): Today it is known as the Jewett Street Plant of the Shelburne Limestone Corp., but in its lime-burning days, it was the Swanton Lime Works. The company started in 1847 near Fonda (Swanton Junction; see FR-178), and in the village in 1877 by A. B. and E. W. Jewett and C. W. Rich (see also chapter 4, AD-404). The latter coincided with the completion of the Portland and Ogdensburg

Railroad. In 1888, ownership passed from C. W. Rich to his son, John P. Rich. Limestone came from quarries just south of the plant and also from Fonda. Blasted rock was carried from the local quarry to the kilns by an aerial tramway. The plant had five gas-burning and nine wood-burning kilns, but the diminishing supply of wood forced use of gas-burning kilns only by 1918. The gas was converted from soft coal to gas by a Bradley Gas Producer. The plant was considered one of the most modern and best equipped in the state. Daily production of the gas kilns was 10 tons each; yearly capacity was 15,000 tons. Average price per ton in 1916 was \$5.00; in 1917 \$8.00; and in 1918 \$11.00 (Jacobs 1918:161). The lime was bought for the manufacture of paper, leather, and mortar, and for agriculture (Jacobs 1937:20).



8-6. The 1920 Sanborn map of Swanton Lime Works showing the six "kilns not used" next to the storage shed, the five new kilns on the opposite side of the tracks, and the limestone quarry just south of the kilns.

The five gas-burning kilns were still in operation in 1932 (Perkins 1933:149). A few years later, John P. Rich passed ownership of the plant to his sons Davis, Charles, and John. With the advent of the USDA Agricultural Stabilization Program in 1937, a modern plant was built with machinery to grind the limestone (Douglas 1988:60-61).

The 1920 Sanborn map shows five kilns in a building just at the end of Jewett Street. Six more kilns are shown across



8-7. The Swanton Lime Works lime kiln shed at left housed five kilns, as seen by their tops visible through the roof. These kilns operated from the early 1900s to about the 1970s (courtesy Bob Douglas).



8-8. Quarry workers at Swanton Lime Works in pre-mechanization days (courtesy Bob Douglas).

the railroad tracks adjacent to a storage building, with the notation "kilns not used." The 1930 Sanborn map still shows the five kilns but not the six unused kilns. The storage building is gone in the 1953 map. In a 1987 visit, only a modern lime-processing operation was seen; no lime kilns. But inspection of the ground in the vicinity of the former gas-burning kilns showed large circles, hinting at the exact location and diameters of the units. This also matched their proximity to the railroad tracks as shown in the Sanborn maps.

It is unknown for sure exactly where the original nine wood-burning kilns were located; these nine plus the five gas-burning kilns total 14 kilns. Since later accounts mention only 11 kilns, which can be confirmed on-site by the Sanborn maps, the nine wood-burning kilns might have been located elsewhere. They could have been earlier kilns that operated at Fonda Junction (FR-178), or those lime kilns owned by C. W. Rich (per Beers) at another site about a half-mile farther south, whose remains have not been found (FR-FS24).

FR-178 Fonda Junction Lime Kilns (Swanton): Partially standing/collapsed mound ruins/remains of six lime kilns were found in 1986, about a quarter-mile west of Route 7 at the west end of Lime Kiln Road in the south part of Swanton. The 1871 Beers map of Swanton shows the St. Albans Lime Works on a railroad siding at Swanton Junction near a "lime stone quarry."



8-9. Lime operations at Fonda (Swanton Junction) in 1871, showing (north to south) the "St. Albans Lime Works," the "C. W. Rich Lime Works," and "Lime Kilns" west of the railroad tracks and surrounding the limestone quarry (Beers Franklin 1871:14).

In 1850, C. W. Rich, esq., erected some kilns of an improved kind, from which great quantities [of lime] have been made and shipped to market and are still in successful operation, being run by John P. Rich, son of C. W. Rich. W. Beecher Fonda has carried on an extensive lime business on what is called the Gadcomb farm for 20 years past (Alldrich 1891:406-407).

The quarry has been worked about ten years, the product of lime averaging about 15,000 barrels annually. At the time of our visit (1858) the kilns were producing lime at a rate of 25,000 barrels per annum. About twenty hands were employed, exclusive of coopers (Hitchcock et al. 1861:750).

Swanton Junction had a post office from 1867 to 1909. The hamlet was sometimes called Fonda Junction and now is generally known as just Fonda. The name came from the lime-burning kilns of W. Beecher Fonda, which once employed over 30 men and manufactured 60,000 or 70,000 barrels a year of what was known as St. Albans Lime for bleaching (Swift 1977:255).

The works are located just west of Fonda Junction. Lime

26 ADVERTISEMENT.

The St. Albans Lime.

MANUFACTURED BY

C. H. FONDA, St. Albans, Vt.

IS ABSOLUTELY

THE PUREST LIME IN THE UNITED STATES.

It has been analyzed by Prof. A. D. Hager of New York, who pronounces it

99½ per cent. Pure Lime.

It is particularly adapted to Paper Makers' and Bleachers' use, as it is unequalled in pureness, whiteness, and strength. Parties who have used it for these purposes will use no other. For Masons' use it is best and cheapest, as it takes more sand than other lime, and makes

A STRONG, WHITE PLASTER.

Put up in 200 lb. and 300 lb. Barrels, (net weight,) and warranted full weights. The barrels are well coopered and nailed—are made of spruce and will not fall to pieces by handling.

Address

C. H. FONDA, St. Albans, Vt.

We have used this Lime for the last three years, and find it far superior in strength and purity to any we have tried.

Dec. 1874. CLAREMONT MANUF'G CO.

8-10. An advertisement (and endorsement) for St. Albans Lime, made at Fonda (Walton's 1876:26).



8-11. A ca-1915 view of railroad cars lined up on a spur track of the Central Vermont Railroad at Fonda taking on lime. Name on left car reads "National Dispatch—Lime" (courtesy James A. Murphy).



8-12. A 1986 view of kiln ruins at Fonda, showing disposition of their crumbling stone bases and rusted iron shells.

burning was begun in 1846 by Chas. W. Rich, following the building of the Vermont Central Railway. . . . It was continued in 1850 by Lawrence Brainerd and Edward A. Smith. The works were acquired in 1872 by W. B. Fonda. The present management (Leo F. Willson, Manager; offices at St. Albans) took control in 1917. . . . The quarried rock is hoisted up an inclined railroad and trammed to the works, where it is burned in five vertical kilns fired by soft coal (Jacobs 1918:160).

Remains in 1986 consisted of three standing ruins with their tall, round (and rusting), firebrick-lined iron stacks in varying degrees of decay; one collapsed ruin at the southern end without any iron stack and two completely collapsed remains at the northern end (six total, versus five reported by Jacobs in 1918). The most northerly remain has the least surface evidence. Indi-

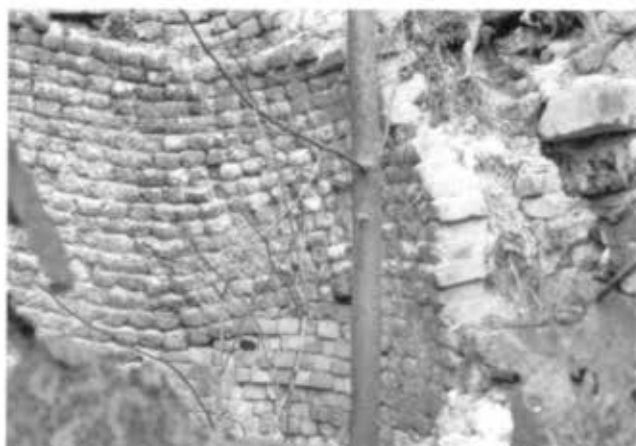
cations can be seen of a railroad bed running north, possibly to another quarry.

FR-FS24 Rich Lime Works (Swanton): There were more lime kilns about a half-mile south of the Fonda lime kilns, per "C. W. Rich Lime Works" and "Lime Kilns" indicated on the 1871 Beers map of Swanton.

Inspection of this area in 1987, about a half-mile west of Route 7, resulted in finding an abandoned quarry but no kiln remains. The property owner knew of no lime kiln or ruin in the vicinity. Operations here might have been connected with those at Fonda Junction.

LAMOILLE COUNTY

LA-LK01 Benjamin Thomas Lime Kiln (Waterville): This kiln is indicated in the 1878 Beers map of Waterville, about a



8-13. Firebrick lining inside one of the kiln ruins at Fonda.

half-mile west of today's Route 109 between Coddington Hollow Road and Belvidere Junction. This might also be at the quarry referenced by Dale as being "4,000 feet west of the Waterville-Belvidere road, on the second farm south of Wescott's" (Dale 1915:12). Many hours driving up and down roads and querying residents in the vicinity in 1990 failed to accurately locate the site, let alone find a ruin, due to the age of the USGS 15-minute topographical map used. New roads and homes in the area make it difficult to relate features in the Beers map with today's physical lay of the land.

LA-LK02 Tillotson Lime Kiln (Waterville): There was a marble quarry about two miles north of the village on the road to Belvidere, 500 feet to the east on a brook flowing southward in the hollow and separated from the road by a small schist ridge. Lime was burned here about 1865 (Dale 1915:11). The USGS topographical map shows a quarry symbol on the east side of Route 109 at this point, between the road and the brook (North Branch), but this is a gravel pit. The quarry was known as the Tillotson prospect. A brief search of the area in 1990 failed to reveal any evidence of a lime kiln. As far as is known, no limestone quarried in Waterville was used for marble (Perkins 1933:236).

LA-LK03 Shattuck Mountain Lime Kiln (Waterville): While querying local residents about the whereabouts of the Benjamin Thomas kiln (LA-K01), Mr. Maxfield of Maxfield Road said that there is a lime kiln ruin "over the other side of the mountain," while pointing to the west at the southern nose of Shattuck Mountain. The peak of this mountain is about a mile north and is a point on the boundary between Franklin and Lamoille counties. No attempt has been made to inspect this site.

LA-LK04 Bradford Lime Kiln (Johnson): Marble was burned for lime many years before the turn of the century four miles north-northwest of the village. The locality was a quarter-mile northwest of the Bradford house, with the lime kiln described as being near the south end of the quarry (Dale 1915:12-13). This appears to be somewhere near the upper reaches of Foot Brook at about the 1,300-foot elevation and near the trail to Waterville via Coddington Brook. No limestone in Johnson was quarried for marble as far as is known (Perkins 1933:227). No attempt has been made to inspect the site.

LA-LK05 Butler Lime Kiln (Johnson): Another lime kiln in Johnson operated in the 1860s about two or three miles north of the village near a 100-foot-long cave (Hitchcock at al. 1861:558). The quarry was described as being 15 feet wide and about 35 feet long; the limestone was white with varieties of blue, pink, and light brown. The kiln was described as being downhill from a quarry near a brook flowing south-southeastward (Dale 1915:13). The quarry was on the George Butler farm, adjoining and northeast of the Bradford property (LA-LK04). No attempt has been made to inspect the site.

CHITTENDEN COUNTY

CH-FS118 Bates Lime Kiln (Colchester): A perpetual lime kiln operated near the quarry of Alphonse Bates in the 1850–1860s, not far from the railroad in the village. Bates' kiln made about 150 bushels of lime per day (Hitchcock at al. 1861:750).

The 1857 map of Chittenden County shows a lime kiln a few hundred feet northeast of the Bates house, near the corner of Depot Road and East Road. A two-hour search in a low, rocky, forested rise behind houses at the intersection resulted in finding some deep quarries but no evidence of the lime kiln. From the position of the kiln in the 1857 map, the ruin might have been destroyed with the construction of the barn/carriage house behind one of the houses along East Road. The structure is well back of the house at the edge of the woods and within a few dozen feet of the rock outcrops behind it. Another possible kiln site is the vicinity of some burnt lime, found on the north side of Depot Road, just inside the woods beside an unpaved side road (a remnant of the old Depot Road before it was straightened). Although this is not exactly where the kiln is indicated on the map, there is no other logical answer for burnt lime being here.

A small brook, today called Cold Brook, flows northwesterly between Route 2A and Depot Road; it is identified as Lime Kiln Brook on the 1857 map.

CH-LK01 Stave Point Lime Kiln (Colchester): Marble quarries opened on both sides of the Malletts Bay outlet in the 1850s, most actively on the southern side at Malletts Head (also known as Marble Head). On the north side of the outlet at Stave Point a lime kiln burned some of the marble for making quicklime (Hitchcock et al. 1861:318; Perkins 1933:155).

Location of Stave Point is unknown at this writing. Maps, histories, lake charts, and personal queries have not uncovered Stave Point. Why the State Geologist used such an uncommon name for this piece of geography in 1861 is puzzling. Inspections of various places along the north shore of Malletts Bay in 1991 showed many marble/limestone ledges but no sign of lime burning.

CH-365 Laberge Lime Kiln (Charlotte): The ruin of a mid-19th-century lime kiln was found in Charlotte along Lime Kiln Road in 1988. The kiln ruin is in a cow pasture on the south side of the road, about a mile east of Route 7. From the road it appears no more than a 20-foot-diameter mound of stones. But closer inspection in 1991 revealed the four marble corners of an 18-foot-square base protruding out through the approximately 5-foot-high mound of collapsed rubble. At top-center is a slight depression. Firebricks associated with the ruin are marked McL&H CO TROY NY, which dates the kiln to the 1880s. These firebricks were both rectangular (9½ by 4½ by

200 Years of Soot and Sweat

2¾ inches) and wedge-shaped (9 by 2¾ by 4½ inches at the wide end and 3¾ inches at the narrow end; and 9½ by 2¾ by 4¾ inches at the wide end by 2¾ inches at the narrow end). Some red bricks were also found (7½ by 1¾ by 3¾ inches). About 50 feet uphill of the ruin is a small limestone outcrop, which provided stone that was burned in the kiln. Some crushed stone was seen near the foot of the quarry.

Property owner Mr. Laberge (86 years old in 1991) said that he thought the kiln operated to the 1920s because he remembers a neighbor who sold wood that was used to fuel the kiln. He said that the kiln closed because the burned lime contained too much slate. Margaret MacDonough, who lives across the road from the Laberge farm, remembered climbing to the top of the 6-foot-high ruin about 70 years ago and peering down into its round “mysterious” interior. It was her recollection that the kiln had been out of operation long before that. She also remembered a stone crusher in operation at a more recent time, which explains the crushed stone at the quarry.

Winooski Park and South Burlington Lime Kiln Sites: At the end of the War of 1812, lime extracting commenced on the Colchester side at today’s Winooski Park by Sidney Weston. A few years later, Jabez Penniman, husband of Ira Allen’s widow, commenced lime-burning operations on the Burlington side of the Winooski River. It was all known as The Lime Company and it covered about 22 acres of land on each side of the river. In 1858, Penniman and Noyes were operating the Winooski Limekiln Company, the first inference that kilns were by then in operation on the Colchester side (Carlisle 1975:10). Four perpetual kilns of the current design were then in operation; limestone was conveyed on tramways to the tops of the kilns. From 25 to 30 hands were employed at the works where 4,000 cords of wood were annually consumed for fuel. Production was 700 bushels of lime per day, or about 250,000 bushels (10,000 tons) of lime per year (Hitchcock et al. 1861:750).

The 1869 Beers maps of Colchester and Burlington show S. H. Weston associated with lime works on the Colchester side and “E. W.” (E. Weston?) associated with a lime kiln on the South Burlington side. The 1857 map of Chittenden County also shows the lime kiln here. It is indicated just southeast of the juncture of the road and the river. At that time (1869), operations on both sides were probably owned by Sidney H. Weston, who purchased the kilns from Robert Jackson and Alexander McGregor (Carlisle 1975:11). Weston also owned businesses in Burlington and in Wilmington, New York, and eventually became the president of the Winooski Savings Bank (Child 1882:302). Operations on both sides of the river were probably collectively known as the Weston Lime Works. Business was run at the kilns by George Catlin, son-in-law to Sidney H. Weston (Carlisle 1975:13). Harvey S. Weston, who owned a 1,000-acre dairy and sheep farm, later managed the kilns on the Burlington side (Child 1882:390).

In 1907 the operations on the Colchester side were known as the Champlain Valley Lime Company, and in 1920 they were sold to a Massachusetts-based firm (Carlisle 1975:13). The works then consisted of three wood-burning kilns with an annual capacity of 3,000 tons; a considerable amount of crushed limestone was also produced for the agricultural market (Meeks 1986:148). Sanborn fire insurance maps first show these operations in the January 1926 issue, on the Colchester side only,



8-14. Lime kilns at Winooski Park just before the site was razed in 1990 for scrap metal. Limestone was raised from the quarry, at left, to the top of the kilns via a skip car.



8-15. From the kilns shown in figure 8-14, lime was crushed and ground into a fine powder by machinery in this building, located just south of the kiln building (background). Only the foundation remains of this structure today.

possibly indicating that the kilns in South Burlington had shut down by that time (about 1907 when the company name changed?). The map shows the four-kiln building with its steel conveyer to the nearby quarry, a railroad siding trestle for supply of coal to fire the kilns, and another structure directly east, which on the 1942 Sanborn map is indicated for "Lime Ore Grinding & Bagging."

In 1948 the works were sold to the Vermont Associated Lime Industries, in 1960 to Merritt L. Hulett of Granville, New York, and in 1970 to William W. Magnus. The works closed in December 1971 with the loss of a U.S. government contract for supplying lime for agricultural purposes. At the time, the plant's 20 employees produced 20,000 tons of lime per year. In 1975, the property was owned by Richard Villeneuve of Greenmont Lumber Company, Underhill. In 1975 the South Burlington property was owned by Raymond R. Unsworth of South Burlington. At the time of his purchase, Unsworth planned to develop the property into a residential area. The South Burlington Zoning Commission, however, has since zoned the property "airport-industrial" (Carlisle 1975:13). The S. H. Weston & Company papers are at the UVM Special Collections Library, donated by Miss Ruth Boardman Catlin, descendent of S. H. Weston.

Following is a description of these two lime works sites; the Colchester side (CH-284) and the South Burlington (CH-282) side.

CH-284 Champlain Valley Lime Company (Colchester): Standing and other surface remains of lime kiln operations at Winooski Park were first inspected in 1978 and again many times later, noting each time the increased amount of vandalism and destruction of the structures and grounds. The standing ruins appeared about the same in 1989 as in the 1942 Sanborn map. Since abandonment in late 1971, the structures fell into such disrepair and desolation that resurrection of any operations

would have required complete rebuilding. But in 1990, while the site was in the process of being nominated to the National Register of Historic Places for the significant quality of the ruins, the kilns and structures were completely destroyed for scrap. The buildings contained many pieces of machinery, gearing, heavy steel shafting, and possibly a rotary kiln. In another building were rolling and grinding machines. Some of the tons of firebrick that had fallen to the floor beneath the kilns were identified LEHIGH, BESSEMER, POWER, D-TYRONS, TYRONS, and ALUSITE 81 96. Many red DRURY bricks were also found among the debris.

Lime Kiln Road, which intersects Route 15 at St. Michael's College, leads southward toward the site. About 800 feet south of Route 15, the road is straddled by the two large, deep quarries. The quarry to the west is not as visible from the road. The bottoms of both quarries contain water, hiding the quarry floors from view. The white quarry walls rise horizontally from the dark water. At the eastern quarry, nearest the kilns, the water edge can be reached with little difficulty nearly beneath remains of the steel conveyer. An approximately 100-foot-long, 50-foot-wide tunnel was dug beneath Lime Kiln Road at one time to connect the two quarries (Carlisle 1975:13). The tunnel was not visible the day of inspection, however, due to the height of the water in the quarries. No fences guard the quarries; it is a dangerous place to wander about.

At the west end of the main kiln furnace building, where the steel conveyer reached the tops of the four kilns, was a five-story spiraling, rusted, steel stairway that groaned and swayed in the breeze. (In 1978, Chester Liebs climbed to the top; I climbed halfway. In 1986 I was not even tempted.) A number of poured concrete foundation holes were partially hidden in high grass and brush in the immediate surrounding area. Huge, rusty pieces of steel machinery (containing many beehives) of undetermined use and a smaller kind of firebrick-lined furnace also stood in the surrounding area; log and stone abutments hinted of possible loading platforms.

No surface evidence of the 19th-century lime kiln, which operated previous to the present structures, was found. The construction (and destruction) of the present structures, the exploitation and enlargement of the nearest quarry, and the original laying and periodic improvements of the nearby railroad, which passes between the kiln and quarry sites and the Winooski River, all combined to destroy any surface features of the former operations. The 1869 Beers map of Winooski Park shows the "S. H. Weston Lime Works" exactly on the spot of today's cavernous easternmost quarry. Archeological remains of any former operations, therefore, might not exist.

CH-282 Weston Lime Works (South Burlington): Surface remains of lime kiln operations at the north end of Airport Road near the Winooski River were also inspected in 1986. The area immediately east of Airport Road (it becomes Lime Kiln Road on the north side of the bridge) revealed many surface features relating to the lime kiln and quarry operations that existed there. This area is adjacent to the roadside pull-off area, along the border of which much domestic trash has been dumped. Just inside the trees from the parking area are the remains of an approximately 500-foot-long by 4- to 5-foot-high earthen tramway, running generally north-south and somewhat parallel to Airport Road.



8-16. Remains of the lime kiln building at Winooski Park after the site was stripped for scrap iron.

At the south end of the tramway is the quarry, where the tramway gently slopes downward to ground level and the remains of a road continues the gentle downward slope into the quarry. The road proceeds into the quarry through a cut in the bedrock, then curves westerly and downward at a gentle slope to the floor of the quarry. The many small trees growing on the floor of the quarry indicate the number of years since abandonment; the quarry is not as wide or deep as those on the Colchester side of the river.

The top of the tramway is wide enough for carts to have been horse-drawn from the quarry to the lime kiln indicated by the Beers map as near its northern end. No surface remains of the lime kiln could be found at the north end of the tramway. A few dozen feet east, however, there is a wide, deep depression near the bottom of which are pieces of concrete abutments, recent trash, and some burned lime. A dozen feet southeast of the depression is a concrete foundation of undetermined use. The wide, north end of the depression drops off to the Winooski River; directly across the river are visible the remains of the

lime kilns that operated on that side. Considering the location of this depression nearly adjacent to where the lime kiln stood at the northern end of the tramway, could burned lime have been carted from the bottom of the kiln to a structure that stood in this depression, and then transported across the river by cable and cart arrangement to the railroad on the other side?

Southwest of the southern end of the tramway are some large stones that at first inspection appear to be foundation walls. But any pattern to the stones' placement seems to have been caused by their having been pushed or bulldozed. Truckloads of trash and earth have also been dumped in the proximity so that the stones may have been dumped here from someplace else and have no connection with the kiln operations. Just north of the stones and between them and the roadside parking area is a 35-foot-diameter concentration of white birch, but surface inspection and shallow testing failed to reveal any charcoal deposits.

Southeast of the tramway are pieces of glazed stone and red brick that appear similar to lime kiln lining material seen at other lime kilns in Vermont. The material is in about 6-foot-diameter surface concentrations, lying here and there in this area. No kiln foundations were found in the area of these finds; no surface features or depressions appeared to indicate a lime kiln existed here. From inspection of the area immediately adjacent and over the edge of the steep, 40-foot-high embankment it appeared that debris in this area had at one time been plowed over the edge, as if the whole area had been surface cleared except for the raised tramway. The kiln lining debris found here might have been dumped here after razing the kiln stack at the north end of the tramway.

The Central District

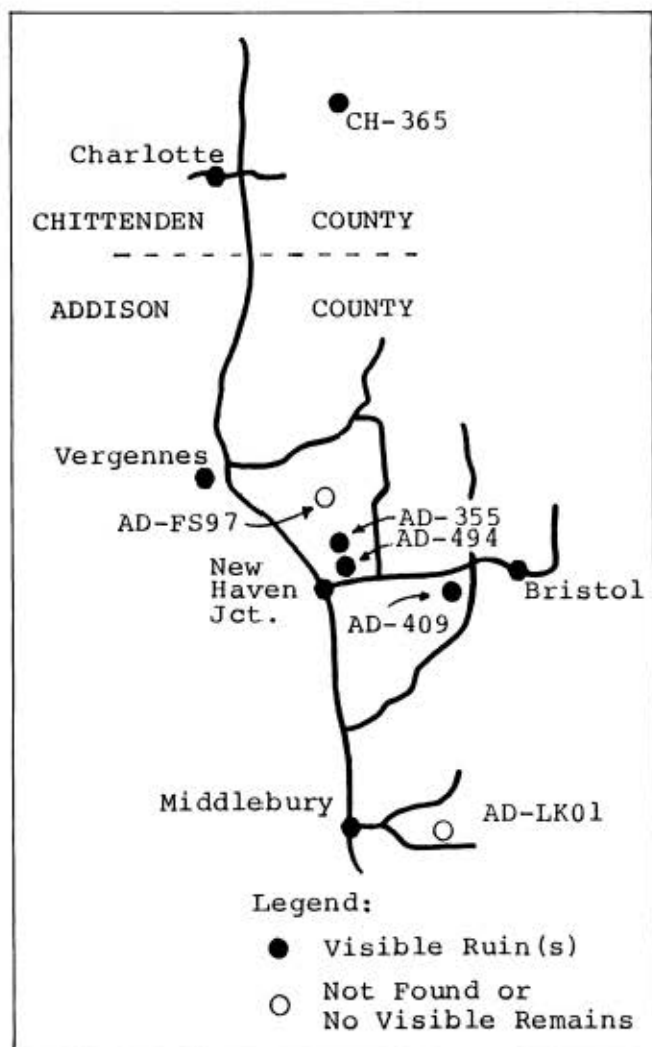
The central district, which consists of Addison, Orange, Rutland, and Windsor counties, contains 66 lime kiln sites, over half of all the known kiln sites in the state. Windsor County contains 34 sites, with 18 sites in the town of Plymouth alone.

ADDISON COUNTY

AD-409 Bristol Lime Kiln (Bristol): A standing lime kiln ruin was found a mile west of Bristol village in 1986. Information leading to the kiln was provided by Bob Carpenter of Bristol.

The Lime Stone is found in many different parts of Bristol on the west side of the mountain and especially along near the West line of the town is to be found a broken disconnected range of ledges of an inferior quality of Lime, where Lime Kiln[s] have been built and lime burned, which was a substitute for a better article in an early day. But the best quality of lime is now to be had from Middlebury and New Haven, two adjoining towns, and of a quality so far superior to ours in Bristol that no kilns have for many years been burned. The time may come when these Lime Ledges may be considered valuable to be burned for agricultural purposes. There has no good marble as yet been discovered in Bristol (Munsill 1979:10).

The stack is an early commercial type measuring 20 by 20 feet square at its base and 20 feet high. Flat iron rods slotted near their ends are laid in the stonework at corners. There are



8-17. Southern Chittenden and northern Addison counties lime kiln sites.



8-18. A magnificent lime kiln ruin at the end of a private driveway just west of Bristol village.

face plates snug to the stone walls with beveled iron pins inserted into the slots, keeping the face plates, and thus the stone walls, from shifting outward. This type of iron binding, face plate, and beveled pin is similar to that found on blast furnaces at Troy, Pittsford, and Forest Dale.

Wood beams support the roof of the west archway, possibly the work arch, if the amount of burnt lime, stone lining, and brick found outside this arch for a number of feet is an indicator. The beams extend the width of the kiln and lie horizontally side by side, measuring about 10 by 12 inches thick.

Included in the breakdown of the stack were some firebrick and some red brick. On the face of the firebrick is marked *McL&H CO TROY NY*, indicating that the kiln operated into the 1880–1890 period.

AD-494 Lyman-Martell Lime Kilns (New Haven): Ruins of two lime kilns were initially visited on the property of Alson Martell on Quarry Road in the northwest part of New Haven in early 1990 in company with Mr. Martell, Bob West, and John Peters. John knew of the kilns and led us to Mr. Martell's house. The ruins were reinspected and recorded later in 1990.

Lime works along Quarry Road were developed as early as 1810, and land records refer to a quarry in operation in 1811. Thomas Perkins of Boston, one of a three-man partnership, may have provided the initial capital. John Lyman was owner in 1816, and Meeting house accounts show that he furnished most of the lime used for plaster and masonry. Quarry and kiln were used intermittently through the 1800s (and there may have been some connection with a kiln located not too far distant, in the corner of Ferrisburg south of Plank Road). Joseph W. Palmer listed a lime kiln in the county directory of 1881 (Farnsworth 1984:147).

Thomas Perkins of Boston, mentioned by Farnsworth, was one of a consortium of entrepreneurs who formed the Monkton Iron Company at Vergennes in 1809–1816 (see chapter 4, AD-146).

Limestone burned in these kilns came from the south-most of the two quarries identified in this vicinity on the USGS Monkton topographical map. The 1871 Beers map of New Haven indicates "Lime Ledges" directly in the vicinity of the quarries and lime kilns. The lime industry was reactivated early in the 20th century with an expansion to the west and construction of what became the Green Mountain Lime Company (AD-355). Limestone for burning in these later kilns came from the north-most of the quarries indicated on the USGS topographical map. The ruins are about 100 feet north of the Martell house, and between the house and Quarry Road. The area of the ruins is overgrown with dense undergrowth, making measuring and photography difficult. The undergrowth also makes it hard to see the perspective of the entire site. Between the kiln ruins and the Martell house are several hundred feet of exposed escarpment, up to 20 feet high in some places, which was probably an early quarry that provided limestone that was burned in the earlier of the two kilns at this site. The two kilns are built into an approximately 20-foot-high escarpment, which generally runs southwest-northeast.

The northerly ruin appears to be the older of the two lime kiln ruins, being more primitive in construction. It is made from coarse, smaller stones than those of the other ruin, and is a circular collapsed ruin with the usual round depression in the middle. Measurement of the ruin is difficult due to the degree of collapse and difficulty of determining wall locations, but it is estimated that the ruin is about 5 feet high from local ground level (local ground area is covered with scattered stonework) and about 9 feet inside diameter. Stonework connects the ruin to the escarpment behind it. Height of the escarpment here is about half as high as for the southerly ruin, about 20 feet away. No red brick, firebrick, or bindings were seen in association with this northerly ruin.

The southerly ruin is the more obvious of the two, standing about 12 feet high and 18 to 20 feet across the front. The outer wall is made of fine cut ashlar. Although the ruin is partially collapsed in the center, in many respects it resembles the Bristol lime kiln (AD-409). Breakdown is more severe on the southwest wall, where much red brick and firebrick lie about the sides of the ruin. One-inch-diameter iron binders protrude out the upper sides of the breakdown. The rods are end-threaded and contain 1¼-inch-square by 1-inch-thick nuts. On the northeast wall is a unique binding arrangement. Across the front of the kiln are two wood beams; the outer beam about 12 by 12 inches square, and the inner beam about 6 by 6 inches square. The beams supported the kiln wall above the archway, which is now collapsed behind the beams and slumped outward below them. Red bricks measured 8 by 3¾ by 2¾ with no markings. The wedge-shaped firebricks measured 9 inches long by 2½ inches thick, 4½ inches wide at the wide end and 3¾ inches wide at the narrow end. All firebricks appear to be marked *McL&H CO TROY NY*.

About 10 feet north of the older ruin is an approximately 20- by 15-foot foundation wall, which served an unknown purpose. No obvious domestic or industrial materials were



8-19. Spectacular ruins of four lime kilns just east of New Haven Junction. The base of the fifth kiln is at the left.

found on the surface inside the foundation walls.

These lime kilns are two of many similar lime kilns that operated in Vermont in the 19th century and were predecessor operations to the Green Mountain Lime Company (AD-355), just west over the hill about a half-mile away.

AD-355 Green Mountain Lime Company (New Haven): Ruins of the Green Mountain Lime Company were found in 1985, about a mile east of New Haven Junction. The kilns are about a quarter-mile south of Lime Kiln Road, on the property of Dennis Sparling.

Early in the present century the industry was revitalized. The Brewer family purchased another 64 acres lying west of the Palmer lot and went into business as the Green Mountain Lime Company in 1907. At this time a spur track was built to connect the quarry with the Rutland Railroad. After World War II, the property passed to John Dalglish and in 1950 to Vermont Associated Lime Industries, a company with plants at several other locations in western Vermont. For a decade or so the business flourished. Eight men under foreman Howard Beckwith could produce 6 to 10 tons of agricultural lime in an hour and 15 tons of hydrate in an 8-hour day. Powered machinery included quarry equipment and rock crushers. In the production of hydrate, finer pieces of rock were subjected to a hammer mill crusher and then conveyed to an upstairs air separator, which pulled fine materials to the top and deposited waste at the bottom. Water was then mixed in (at an approximate rate of 50 gallons to 1900 pounds), the product machine-bagged, and shipped by rail. Kilns for burning the stone were abandoned when wood for firing them became hard to get, but materials were trucked to a coal fired kiln at Winooski. Business faltered in the mid-1960s and closed soon after (Farnsworth 1984:147).

In 1910, Perkins reported three kilns in operation, capable of producing 350 barrels of lime per day (Perkins 1910:349). Operations in 1916 were owned by The Brewer Company of Worcester, Massachusetts, with W. J. Dandrow, Superintendent. The limestone quarried was difficult to burn but yielded the best-quality lime. By now, five wood- and coal-burning kilns were in operation, using the Eldred Process by which the

kilns were closed at the top and “down-comers” brought the carbonic acid to the hearths. This partially checked the combustion to give a more uniform heat. The quarry was connected with the kilns by a horse tramway. The kilns had a production capacity of 12 tons each per day, but labor shortages prevented maintaining that capacity (Jacobs 1918:162-163). Among brands produced by the company were Chemical Hydrate, Mason’s Hydrate, Snow Fluff Spraying Hydrate, Agricultural Hydrate, and Sure Crop (Jacobs 1937:19). It was not long before limestone was shipped in from Winooski because the local quarry could not keep up with the demand of the five kilns.

Stone Lime.

THE subscriber has on hand and will keep constantly for sale, at the marble quarry, about a mile and a half east of this village, near Millan Stowell’s, on the road to Dea. Boyce’s, a first rate article of Stone Lime, which will be sold on reasonable terms. NATHAN MYRICK.
Middlebury, June 30. 1841. 8tf.

8-20. Middlebury People’s Press, Middlebury, Dec. 14, 1841.

The steel shells of four of the kilns still stand in an east-west line; the fifth ruin, at the eastern end, is totally collapsed. Much brickwork and hardware remain to aid in interpretation of the ruins. Concrete foundation slabs mark the locations of buildings that once were associated with the operations.

Uphill and immediately south of these ruins (between the five iron shell ruins and the water-filled quarry) are possible collapsed remains of two earlier kilns. These could have operated transitionally between the demise of the Lyman-Martell kilns (AD-494) and the more modern five lime kilns at this site.

The 1963 USGS Monkton map shows a spur track leading east from the main line to the kiln site; only an isolated trestle now stands in the middle of the field to mark where the track ran. The four tall, surviving, rusting iron shells are visible southward across the valley from Lime Kiln Road.

AD-LK05 Gibbs Lime Kiln (New Haven): East of Beldens

STONE LIME

Kept constantly on hand and for sale by the subscriber. Kiln two miles east of Middlebury village near David Boyce's. The Public may be assured in the purchase of Lime this Kiln that they will get a first rate article, equal in all respects to any in the County and in whiteness far surpassing any other.

NELSON CHITTENDE N.

Middlebury Oct. 23. 1846.

8-21. Northern Galaxy, Middlebury, June 15, 1847.

Marble Works.

THE subscribers respectfully inform the public that the Marble works lately occupied by Case & Spalding, are now in operation, and they are prepared to furnish all kinds of

Sawed Marble, caps and sills,
Tomb-stones, Monuments,
&c. &c.

at short notice.

STONE LIME,

Kept constantly on hand.

GIBBS & CHITTENDEN.

Middlebury, July 19, 1843.

11; y 1

8-22. Northern Galaxy, Middlebury, Feb. 7, 1844.

was a marble quarry known in the late 19th century as the Cutler marble quarry, where Isaac Gibbs burned lime at an earlier time. The quarry was also known as the North Middlebury quarry and also the Old Middlebury quarry (*Marble Border* 1885:24, 48). The quarry was reported as "celebrated for furnishing excellent lime" (Adams 1846:234-235). Theodatus Phelps originally opened the quarry in 1830 and built a mill for sawing and processing the marble. Gibbs owned the quarry from 1851 to 1861, followed by others until the marble was exhausted and the quarry abandoned about 1885 (Farnsworth 1984:148, 231).

The 1871 Beers map of New Haven shows "Old Middlebury Quarry Co." about two miles east of Beldens on the north (New Haven) side of the Middlebury-New Haven town line. The quarry is not identified on the current USGS map, which does show Muddy Branch flowing northward through the quarry area.

Inspection of the area in 1991 resulted in finding the main quarry, stone tailings, and foundation remains of the marble mill, but no evidence of a lime kiln.

AD-FS97 Plank Road Lime Kiln (Ferrisburgh): An unsuccessful search for a lime kiln in the vicinity of a quarry along the Old Plank Road was made in 1987. A kiln is indicated in the

1871 Beers map of New Haven, but just outside in Ferrisburgh. Only the quarry is indicated in the Beers map of Ferrisburgh.

The site is a low limestone escarpment that might have been worked at an early time. There was no sign of a kiln ruin or remains. The immediate area of the site is about 100 yards south of the Old Plank Road; the intervening area is a cornfield. Reclamation of the land for farming and plowing probably destroyed any surface remains. There might have been some connection with this kiln and those of the Green Mountain Lime Company (AD-355) about a mile south.

AD-LK03 Chaffee Lime Kiln (Granville): Limestone on William C. Chaffee's farm in the north part of the town was analyzed in 1857 as being good for the manufacture of lime (Hitchcock et al. 1861:695). Although this is a vague reference to a lime kiln somewhere, there might still be a kiln ruin nearby waiting to be found. No attempt had been made to inspect this site.

AD-LK02 Marsh Lime Kiln (Hancock): Lime was burned south of the village due west of the bridge over the White River and about 750 feet above the valley floor, on the property of D. G. Marsh (Dale 1915:19-20). The Beers map indicates a limestone ledge at approximately this location.

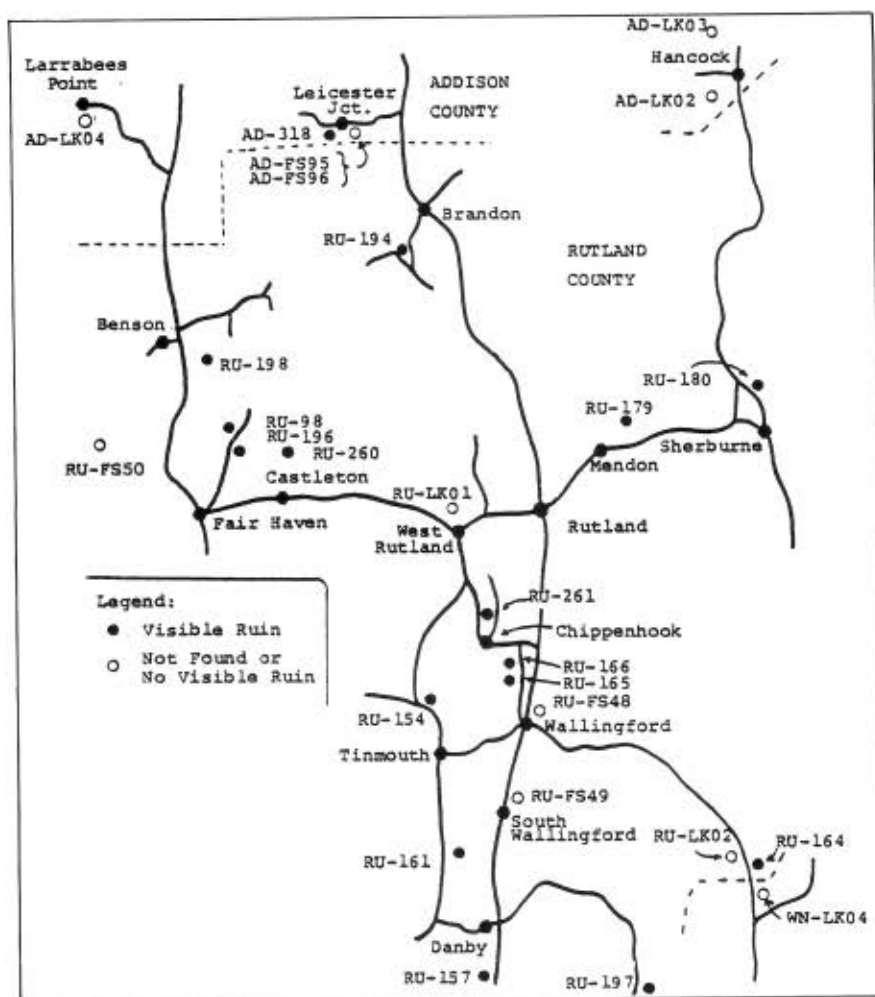
This kiln site is suspiciously close to a reported and yet unlocated charcoal kiln site (see chapter 6, AD-CK01). There might be both charcoal and lime kiln ruins here, or maybe just the lime kiln ruin. When the area was unsuccessfully searched for remains of the charcoal kiln in 1989, it was not known that a lime kiln site was also here.

AD-LK01 Quarry Road Lime Kiln (Middlebury): A lime kiln is shown on the 1857 map of Addison County, about two miles east of Middlebury Village on the south side of Quarry Road. The site appears to be about 500 feet west of Muddy Brook. The kiln is not shown in the 1871 Beers map of Middlebury although the map does show the Vermont Marble Quarry just northwest, on the north side of Quarry Road, which might have had some connection with the kiln.

A drive-by inspection of the site was made in 1991 and nothing resembling a kiln ruin could be seen from the road. The field is fenced and permission will be obtained at a later date for closer ground inspection.

AD-318 Huntley Lime Kilns (Leicester): The lime kiln reported built by J. E. Higgins, John B. Matot, and L. P. White in 1852 might have been the first lime kiln in town. Higgins eventually ran the operation alone, and after his death the business was run by Conant & Bascom. John A. Conant managed the business and eventually took Charles Dennison as a partner, who in 1883 controlled the interest alone (Smith 1886:480).

The 1857 map of Addison County shows the marble quarry and lime kiln on the south side of the road, just west of the railroad station. By 1861, two kilns were operating, run by the Brandon Lime and Marble Company and making 25,000 barrels of lime annually. The lime was sold to the Boston Gas Light Company (2½ tons daily usage), the Waltham Bleachery Company, the Somerville Bleachery Company, and soap manufacturers at the Rumford Chemical Works at Providence (Hitchcock et al. 1861:750-751). Owners in 1886 were J. W. Buell of Orwell and O. C. Huntley, who operated the kilns under the name Huntley & Buell, making an average of 75 barrels of lime a day (Smith 1886:480).



8-23. Southern Addison County and Rutland County lime kiln sites.



8-24. Lime kiln ruin at Leicester Junction, which operated in the 1850s to the 1930s.

In 1918 the operations were owned by Harry B. Huntley and the quarry had grown to 450 feet long, 125 feet wide, and 75 feet deep. The two kilns were fueled by wood and had a daily capacity of 10 tons each. Burned lime was used mainly for chemical purposes but the finer quality went for fertilizer. Price was \$11.00 per ton and \$2.00 per barrel (Jacobs 1918:163).

The kilns operated into the 1930s, burning dolomite from a quarry that was located immediately south of the kiln. Lime from the kiln was used at tanneries for preparing hides, at paper mills, for fertilizer, and for mortar. Annual capacity of the works was 7,000 tons (Oliver Huntley to author, March 11, 1984). It was shipped west on the Addison Railroad to Larrabees Point, thence over a wood trestle across Lake Champlain to Ticonderoga, New York. The railroad was abandoned in 1951 (Shaughnessy 1981:164).

The ruins are on the south side of the highway, west of the Otter Creek, and were inspected in 1984. They are characterized by stone walls, foundations, and the remains of two brick-lined iron shells. One shell is standing; the other has tipped over and rests on its side. The bases of both kilns are intact. The late Oliver C. Huntley, descendent of O. C. Huntley mentioned earlier, lived just northeast of the kiln site and was interviewed about the ruin. He worked at the "newer" lime kilns (AD-FS96) located just southeast, which he managed for a number of years. Students from Middlebury College frequent the ruins as part of their geology studies, courtesy of the owner who preserves the ruins.

AD-FS95 Powers Lime Works (Leicester): About 100 yards south of the highway at Leicester Junction, on the east side of Otter Creek, George Bascom and W. Powers built a lime kiln around 1876, which was immediately purchased and operated by George O. Swinington. It produced about 20 barrels of lime daily (Smith 1886:480). The 1871 Beers map of Leicester shows the Powers Lime Works just south of the road and the quarry about a half-mile south. In 1910, the Leicester Marble-Lime Company, managed by Swinington, produced about 25,000 barrels of lime per year (Perkins 1910:351). The site was not inspected because the access road was chained and posted (1985).

AD-FS96 Swinington Lime Kilns (Leicester): The three lime kilns of this company were erected in 1925, a half-mile south of AD-FS95.

We found a small compact plant where they quarried, burned, and packed in bags a variety of products made from select limestone.

The quarry has been in operation intermittently, ever since 1800 when they used ox carts to haul stone to the retort where it was baked. This original retort, or kiln, is still on the property [AD-318] and although not in use still looks good. It is of stone construction and was used from 1800 to 1863 when it was replaced by a steel kiln.

In 1925 new owners erected three new lime kilns and these are operating 24 hours per day, 7 days per week, and 52 weeks per year.

The stone is quarried in small pieces, loaded in dump carts by two Oliver tractor loaders, one a model 70 wheel tractor with Ware loader and the other a model A crawler with Ware loader, and hauled out of the pit over rails on a steep incline.

The best of the stone is used to make chemical lime for the paper industry; the next grade is used for agricultural quicklime; and what we assume are "leavings" are used as crushed rock for road building and concrete.

The best stone is dumped into the top of the kilns and baked at 2300 degrees for four or five days; that is, they dump continuously into the top and draw off the finished product continuously, taking the required time to pass through the furnaces.

Two firemen are on shift at all times to keep the fires going, using about 100 cords of wood and 25 tons of coal per week.

The plant loads about 200 tons of bagged material into [railroad] cars each week for shipment to many parts of the country. The plant is owned by Dallock Sales Co. of New York City and they do all the merchandising from the main office (*New England Construction* Oct. 1947:39).

The kilns operated to the 1950s and only the kiln bases remain (Oliver Huntley to author, March 11, 1984). The site was not inspected because the access road was chained and posted (1985).

AD-LK04 Peake Lime Kiln (Shoreham): The history of Shoreham discloses that "at an early day there were several kilns for burning lime, but none is now made" (Goodhue 1861:94). One of these early kilns might have been that south of Larrabees Point, on Lake Champlain 12 miles west of Leicester Junction. In a discussion of the value of firestone, its use in the arch of a lime kiln at Larrabees Point is also mentioned (Adams 1845:37), providing a possible early date for the kiln. Although the 1857 Addison County map shows "Marble Quarry & Lime Kiln, R. W. Peake" at the south end of the point, it was referred to as "an old limekiln" only a few years later (Hitchcock et al. 1861:286). Some limestone quarried here was also used as a flux for smelting by the ironworks at Port Henry, New York (Perkins 1933:146), but no mention is made of lime production here in various early-19th-century agricultural and industrial census reports.

Permission to visit the quarry in 1991 was denied by the property resident so confirmation cannot be made whether any kiln remains exist in the vicinity of the quarry. The few residents queried at Larrabees Point knew of no history of lime burning and did not remember seeing any resemblance of a kiln ruin in the vicinity. Larrabees Point became a major lake port and trading center with the opening of the Champlain Canal, and except for the modern cable-guided ferry that still operates between the point and Ticonderoga, New York, the little historic community has retained most of its 19th-century character.

At the state boating access area on the south side of the cove, south of the point, the Addison Railroad once crossed Lake Champlain to Ticonderoga on wood trestles and a floating barge. North from the access across the shallow cove toward the quarry, the tops of wood pilings protrude from the water, possible remains of a small tram railroad that carried marble from the quarry across the cove to the Addison Railroad.

ORANGE COUNTY

OR-FS12 Limehurst Lake Lime Kiln (Williamstown): During the mid-19th century, the bottom of Lime Pond and an area

for several acres around the pond to the depth of 18 feet were found to contain an extensive bed of shell marl, which was dug and burned for fertilizer (Hemenway vol. 2 1871:1140). In the 1830s a mill operator widened the outlet of the pond in hopes of adding power to his waterwheels, only to have the pond run away and empty (Swift 1977:332). Might this event have exposed the marl? The marl was molded into small bricks and dried before burning (Hitchcock et al. 1861:805).

Lime Pond was about two miles south of the village and was renamed Limehurst Lake; today it is a popular private campground and swimming area. While camping there in 1985, no evidence of shell marl or a lime kiln was found.

RUTLAND COUNTY

RU-194 Seager Hill Lime Kiln (Brandon): A lime kiln was found in 1989 at the base of the southwest slope of Seager Hill, five miles southwest of Brandon village. Information leading to location of the kiln came from the lime kiln indication on the 1854 map of Rutland County. There is no indication of the kiln in the 1869 Beers map of Brandon.

The ruin is directly visible from the roadway; the center of the ruin being about 10 feet from the edge of the pavement and built into the side of Seager Hill. It measured 11 feet in its widest diameter; depth to the floor of breakdown is about 7 feet. A small quarry lies about 50 feet uphill from the kiln, but a much larger quarry lies another 50 to 100 feet to the southeast. A narrow path leads from one quarry to the top of the lime kiln.

RU-179 Mendon Lime Kiln (Mendon): Ruins of a mid-19th-century lime kiln were found in Mendon in 1987 through the 1869 Beers map of Mendon. The kiln ruin is about two miles north of the intersection of Old Turnpike Road (Elbow Road on the USGS map) and Route 4 in northern Mendon, and is a half-mile beyond the developed section of road.

The ruin stands on the side of a hill that drops off at the edge of the road. Its square stone walls are about 10 feet high; the east wall is collapsed. Approximate interior width is 8 feet. A small quarry, which possibly provided stone for construction of the kiln, is about 50 feet to the northeast. The quarries are 500 feet east of the road, and because of the magnesia in the marble, it was shipped to a paper mill at Bellows Falls (Dale 1915:20). As far as is known, the limestone was never used for marble (Perkins 1933:228).

RU-180 River Road Lime Kiln (Sherburne): The ruin of an early lime kiln was found in 1987 alongside River Road. General information about this site was provided by Sandy Partridge of Proctor. Specific directions were given by Charles Prior at the Sherburne Grange, where we stopped for directions.

The kiln ruin was found two miles north of the River Road and Routes 4 and 100 intersection. It is in a clearing, very visible from the road, and is built into the side of the hill. The ruin consists mainly of what appears to have been the final charge, still in the kiln, with almost all stones that made up the kiln structure missing (most likely cannibalized due to the kiln's proximity to the road). Only a part of the back wall appears to remain, the top of which is about flush with the surface of the ground. Mr. Prior said that he was born in 1906 and does not remember the kiln ever being in operation.

RU-198 Howard Hill Lime Kiln (Benson): The ruin of this

lime kiln was found in 1989 through the 1854 map of Rutland County, which shows a lime kiln next to the house of "A. Pitts." The kiln is on the Walker farm, immediately across the road from the large barn, about a quarter-mile southwest of the tiny community of Howard Hill. The kiln was apparently square when in operation although fill and hillside collapse cover the back and side walls. The front (south) exposed wall measured 20 feet wide, with the lower half-dozen layers of cut stone still in place. The inside lining rises behind and above the front wall, indicating that the kiln stood at least 12 to 15 feet high at one time. Quarry for the kiln is a limestone ledge that parallels the north side of the road. Dates of operation of the kiln are unknown except for the notation on the 1854 map. From the size of the ruin, this appears to have been more of a commercial operation than a local farmer's lime kiln.

RU-260 Bomoseen Lime Kiln (Castleton): A lime kiln ruin was pointed out to Professor Bill Jordan of Castleton State College in 1991 by a realtor who referred to it as an "Indian oven." The site is about a quarter-mile southwest of the vacation community of Bomoseen, on the east shore of Lake Bomoseen.

The ruin is on the west side of a low hill, about 50 feet south of a private dirt road between Lake Bomoseen and Pine Pond. It measures 15 feet wide across by 7 feet high, in reasonably good condition. Inside is an intact 8-foot-diameter by 5-foot-deep hearth, sections of which are glazed. Around the front and sides of the ruin is breakdown, about four to five feet high, which indicates that the kiln was much taller when in operation. It was built either into the side of the hill behind it, or with a small space between it and the hill; it is difficult to determine which from the amount of loose stone about. On the ground above and behind the ruin is what appears to be a pile of stone waiting to be charged into the kiln. About 100 feet further behind and uphill from the kiln is an overgrown limestone quarry. The kiln appears to have been one of an early commercial variety, possibly operating before the Civil War period.



8-25. Scotch Hill lime kiln ruin, found alongside the road amid slate tailings.

No reference can be found regarding limestone quarrying or burning in the vicinity. The ruin stands on a 100-acre tract that was for sale at the time of the inspection. Bomoseen is a high recreation and development area.

RU-98 Scotch Hill Lime Kiln (Fair Haven): This ruin is five miles north of Fair Haven, next to a slate quarry on the west side of Scotch Hill Road. The Fair Haven history mentions a "lime kiln quarry" that operated near the town line toward West Castleton (Adams 1870:214). But it is unknown for sure whether this or another quarry is the object of the statement since there are many quarries in that area and many of the referenced names are associated with more than one slate quarry.

The kiln ruin was initially found in 1985 as part of a search for charcoal kilns that are indicated in the 1869 Beers maps of Fair Haven and Castleton (the charcoal kiln ruins were not found). No limestone quarry could be found in the area of the ruin. Might slate-quarrying activity in the vicinity during the ensuing 100 years have excavated and/or buried it?



8-26. Lime kiln ruin at Fair Haven, made of some of the abundant slate in the vicinity.

RU-196 Briggs Lime Kilns (Fair Haven): Ruins of two lime kilns were found east off Scotch Hill Road in 1989, about a half-mile south of RU-98. The ruins are adjacent, about 50 feet off the road in a low brush area directly across the road from a long-abandoned slate quarry. This might have been the lime kiln referenced in Adams, the "lime kiln quarry," except that the kilns do not appear directly associated with any quarry (Adams 1870:214).

The ruins sit at right angles to each other. The northern ruin faces east and is made more of flatter stone; the southern ruin faces south and is made more of rough stone. The latter ruin also has what appears to be a collapsed opening inside the back wall, as if connected underground at one time to the adjacent kiln or maybe to some draft-producing shaft. No obvious limestone quarry or outcrop could be found in the vicinity.

RU-FSS0 Doran Lime Kiln (West Haven): Lime was burned about 1,000 feet west of Mrs. Paul Doran's house, just off Doran Road, based on information she provided. Inspection of the site and vicinity in 1985 turned up nothing directly related to a lime kiln, but there is a limestone ledge and a surface feature that appeared to indicate the existence here of a structure at one time. The site is about a half-mile north of RU-99, a blast furnace ruin.

RU-LK01 Vermont Marble Company (West Rutland): Marble dressing produces a large amount of waste marble, some of which was shipped from the Vermont Marble Company (Vermarco) to the blast furnaces at Port Henry, New York. Attempts to burn the marble waste in vertical kilns were unsuccessful because the rock became granulated by the heat and choked the kilns. The rotary kiln, which looked like a long smokestack lying on its side, was installed in 1916 by Vermarco at West Rutland. It converted the waste marble into burned and hydrated lime on a large scale under the name Vermarco Quick and Hydrated Lime. The main kiln building, which stood on the east side of Marble Street about a mile north of Route 4, was made of steel, and was 48 by 422 feet. Two other buildings 30 by 48 feet and 20 by 32 feet housed the gas producer equipment and coal storage. The rotary kiln was 8 feet in diameter by 120 feet long, made of $\frac{3}{8}$ -inch steel plates, and was lined with firebrick from one end to the other. This 118-ton unit revolved on bearings at about one revolution every three minutes, driven by a 30-horsepower motor (see chapter 7, "Vermont Lime Kilns," for a complete description of this rotary kiln).

The 1922 Sanborn fire insurance map of West Rutland shows the lime plant north of the main marble mill with the long rotary kiln inside. The rotary kiln also appears in the 1929 map but not in later maps. A second rotary kiln that was planned for the plant was obviously never installed. Lime was last mentioned being burned at Vermont Marble Company in the 1925–1926 *Report of the State Geologist*. No attempt has been made to inspect this site.

RU-261 Chippenhook Lime Kiln (Clarendon): The collapsed ruin of a lime kiln was found just north of Chippenhook village in 1991, through a reference in the history of Clarendon, which stated that "The remains of a lime kiln and several foundations exist north of the present McLellan property where the early Wescotts and Priests supposedly lived" (Potter 1982:102). The ruin was pinpointed to the north side of a knoll, about a half-mile north of the McLellan property (David E. Potter letter to author, October 1, 1990).

The ruin was found about a half-mile northeast of the West Clarendon Cemetery. It is 200 feet into the pine woods that border the western edge of an open meadow. In the woods are many north-south outcrops of limestone, some of which show signs of having been worked. The kiln ruin is on the larger outcrop, about 100 feet from its northern end. The ruin is circular with its walls caved in. Excavating could probably determine an accurate diameter but there is no visible border to the ruin as it was found. The overall ruin is about 6 to 8 feet in diameter and is depressed in the middle about 2 to 3 feet below the sides. All about the ruin are pieces of white, burned limestone. Some of the limestone that made up the walls of the kiln is pinkish in color. What remains of the ruin



8-27. A lime kiln ruin in a pasture at the Maplebrook Farm in Tinnmouth. The front wall was opened several years ago to rescue a cow, which had fallen through the hole at the top of the kiln.

appears to indicate that it operated more as a farm-type lime kiln.

RU-154 Maplebrook Farm Lime Kiln (Tinnmouth): Ruins of a small lime kiln were found in 1986 in northwestern Tinnmouth. The kiln ruin stands in the woodland fringe of a pasture, a mile east of the junction of Routes 133 and 140, and about 200 feet north of Route 140. Information about the ruin was provided by Trip Westcott (Pittsford), met a week before while searching for the Gibbs and Cooley ironworks at Pittsford Mills.

The kiln ruin is conical-shaped and constructed of stone. Inside height is about 8 feet from the floor, which contains stones from partial breakdown of the front wall. Inside diameter at this false floor is about 8 feet; at a point 3 feet above the floor, inside diameter is about 7 feet. Inside diameter of the top opening is 4 feet. A vertical hole the height of the kiln cut into its north wall is 28 inches wide. Wall thickness at the opening is 41 inches. The kiln is constructed of what appears to be slate. Mortar can be seen between some of the stones.

A sketch made by Westcott showed the kiln built into an embankment, with a "keyhole" opening and circular hole at the top. The owner of Maplebrook Farm said that about five years previous (1981), one of his cows fell into a round stone-lined hole in the ground and he had to break through one wall to free her—thus the front top-to-bottom opening today.

RU-161 Crow Hill Farm Lime Kilns (Tinnmouth): The ruins of two stone-built lime kilns incorporated into a single unit were visited on Clark Mountain in southeastern Tinnmouth. Guided to their "pile of stones" by Caleb and Louise Scott, owners of Crow Hill Farm, we inspected the site in 1986.

About 200 to 300 feet west of the kilns are some holes and a large depression set back into the hill that appear to be remains of iron mining in the area. Local tradition indicates a number of iron mines operating along this ridge in the 19th century, and we found many pieces of iron ore in the vicinity of these holes. It was initially thought that the kilns might have been roasting ovens, to burn impurities and moisture out of the iron

ore so it could be pulverized and separated. But the kilns are somewhat uphill from the mines, which would mean carrying the heavy ore uphill. No iron ore or charcoal was found in the immediate vicinity of the kiln ruins.

The ruins are generally 3 to 6 feet high. Inside diameter of the north ruin is 9½ to 10½ feet (oval) and that of the south ruin 6½ to 8½ feet. The entire two-kiln ruin is about 35 feet wide, not counting an 84-foot-long stone wall that extends south from the ruin. The insides of the kilns show no signs of charring or glazing, but the face of the stone lining does appear parched, more so than the faces of stones on the outside walls.

Quarry for the kilns is a limestone escarpment immediately adjacent to the kilns. Small nugget-size pieces of burned lime were found a few inches below the surface, a few feet in front (west) of the kilns. It was probably a farmer's lime kiln, providing lime for fertilizer for farming operations. Except that it is a two-component kiln, it bears a strong resemblance in size and appearance to the Maplebrook Farm lime kiln (RU-154).

RU-166 Lime Kilns at "The Cobble" (Clarendon): The ruins of two associated lime kilns were located in 1986 about 1¼ miles northwest of Wallingford village. "The Cobble" is the property of Castleton State College, donated by Bud Crossman, who owns the adjoining farm on the south. According to Crossman, the heavily wooded cobble contains a rare type of fern that inhabits the boundary of the base of the cobble, where the shady hilly cobble interfaces with the sunny, flat land. He said that the college students visit the cobble annually.

The two kiln ruins are on the steep southwest slope of the cobble, at the edge of an open hay field. The larger, which is in better condition, is 8 by 12 feet inside diameter (oval-shaped) and lined with stone. Its highest wall section is 8 feet high (from the inside floor); the inside walls are glazed. The lining appears to be sandstone. The smaller kiln is about 20 feet east, on the same general slope, and is 4½ by 6 feet in diameter (also oval) and about 2 feet deep. This smaller unit may have been the original kiln, and its stone walls cannibalized for construction of the second, larger unit. No burned lime was found in the direct vicinity of the kilns.

About 50 feet immediately uphill of the kilns is an outcrop of limestone showing tool-working marks. A road leads from the west side of the kilns, uphill past the quarry, and ends about 50 feet farther uphill. Limestone might have been quarried immediately west of this uphill area also.

Crossman said that his 83-year-old mother (in 1986) remembers as a little girl the burning of lime here (1915–1920?). He guessed that some of the lime was made for mortar, used in construction of local stone houses.

RU-165 Bromley Farm Lime Kiln (Wallingford): A lime kiln ruin was found in 1986 on the farm of Steve Bromley from information provided by Bud Crossman, owner of the adjoining farm to the north (RU-166).

The ruin was found on the south slope of a gentle hill in a cow pasture, on top of which is a cornfield. The ruin is about 9 by 12 feet in diameter (oval shape), lined with glazed stone, and is approximately 6 feet deep. A small tree grows inside the ruin and some burnt lime is on the ground beside the ruin. From its small size and proximity to farms, it appears to have been an early- to mid-19th-century farmer's lime kiln for burning limestone for fertilizer. Quarry for the kiln is about 40 feet

uphill of the ruin. Bromley was unaware of the existence of the ruin, but very interested in finding out about it.

RU-FS48 Village Lime Kiln (Wallingford): The 1869 Beers map of Wallingford shows a lime kiln in the village, on the east side of the main street (Route 7) between Franklin and Maple streets.

Although just north of the center of the village but still within Wallingford (and probably because of that), no kiln remains were expected to be found when searched for in 1990. On the east side of the intersection of Maple Street and Route 7 is a significant limestone outcrop about 25 feet east of the highway, behind a low stone wall and some dense underbrush. About 50 feet south is a house. The vicinity of the limestone outcrop would appear to have been a logical site for the lime kiln to operate and this area coincides with the indication in the Beers map. But much slash and debris are piled at the base of the outcrop, preventing any surface analysis. Highway widening, yard landscaping, and construction of the low stone wall (cannibalized from the lime kiln ruin?) probably contributed to the destruction of the kiln ruin.

RU-FS49 Kelley and Wellman Lime Kiln (Wallingford): The 1869 Beers map of Wallingford indicates the lime kiln of (W. W.) Kelley and (A. J.) Wellman about a mile north of South Wallingford, between the railroad and the Otter Creek. A. J. Wellman is listed in the Beers business notices as a South Wallingford lime dealer.

The area between the Otter Creek railroad bridge and Route 7 was inspected in 1990 without finding any evidence of the

lime kiln. Sometime after 1871, Kelley and Wellman probably decided to exit the lime-burning business and concentrate on quarrying marble. At this time a spur railroad track was laid southward from the main line on the west side of the Otter Creek. This abandoned bed with its pattern of railroad ties was followed from the main line south about a quarter-mile to the backyard of a house near Route 7. The main quarry is just on the other side (west side) of the highway. The abandoned kiln either got buried under the railroad bed or, more likely, was razed and used for fill on which the spur track was laid. The main line also appears to have been raised to allow for the higher bridge over the Otter Creek. Local residents and property owners who are familiar with trails in the vicinity and local traditions know of no lime kiln ruins nearby.

RU-157 Vermont Lime Products Corporation (Mount Tabor): The ruins of three lime kilns were found in 1985 west of Route 7 in Mount Tabor, a mile south of Danby village. The kilns were operated by the Vermont Lime Products Corporation, and operated from 1922 to the early 1930s:

The Vermont Lime Products Corporation was organized in 1922. The three controlling directors were J. Frank Burke, P. F. McCormack, and J. W. Linnihan. The business was located about a mile south of Danby Village, in that part of Mt. Tabor called the South End. Some of the property was purchased from Mr. and Mrs. John Zulinski but the major portion was purchased from the Danby Marble and Lime Company, whose agent was Clark M. Potter. The quarry



8-28. The Vermont Lime Products Corporation at Mount Tabor in this 1920s–1930s view. Note rail car above middle kiln. Road at right is today's Route 7 (courtesy Vermont Historical Society).

was opened and the kilns and buildings were erected on the west side of Route 7. The office was on the east side of the highway. There was a railroad siding from the Rutland Railroad across the highway to the storage buildings. The business consisted of the quarrying of limestone and manufacturing of lime products. This operation was carried on until the early 1930s. In 1949, the town of Mt. Tabor took the property over for delinquent taxes (Crosby et al. 1976:45).

The ruins consist of the bases of the three kilns, made of poured concrete. Each base is 12 feet square and about 7 feet high. The north and south walls have 6-foot-wide by 6-foot-high openings, arched at the top. The east and west walls have 3-foot-wide by 2½-foot-high openings, square at the top. A round, approximately 8-foot-diameter vertical hole extends completely through the base. The ruins are in an east-west line, about 5 feet apart, and 76 feet west of the highway in tall brush behind a line of trees. About 15 feet south of the ruins is an approximately 12-foot-high concrete wall that parallels the kiln ruins. The immediate vicinity of the kiln ruins is littered with automotive and other miscellaneous hardware discard, but no obvious lime kiln hardware.

A large excavation a hundred feet north is today the town's trash center. No evidence of the other lime works buildings and the spur railroad that serviced the kilns was found, destroyed by Route 7 construction and later by earth moving for the trash center. The property owner in 1985 was the late Alfred Bushee, who lived in a house behind the ruins (the house burned to the ground sometime before 1990). Mrs. Breton, who lives about a mile south, said her house was formerly the old marble and lime company office, and was moved as part of highway realignments in the 1950s. Why this lime works was not mentioned in Perkins' or Jacobs' reports on the state's lime industries for the 1920s and 1930s is a mystery.

RU-197 Devils Den Lime Kiln (Mount Tabor): A lime kiln ruin was found near Devils Den in Mount Tabor in 1989 from the lime kiln indication on the 1854 map of Rutland County. Specific information that located the ruin was provided by Bill Badger of Manchester, who had previously found it while hiking in the area. This small ruin lies just downhill and around the corner from the Devils Den escarpment, alongside U.S. Forest Road 10 and a few dozen feet uphill from the old road to Weston.

The kiln was built into the hill with its opening facing downhill. A tree is growing directly out of the kiln opening. The ruin is about 4 feet wide by 6 feet long; walls on the better side rise about 2 feet. Stone for the lime kiln most likely came from the nearby limestone ledge.

RU-LK02 Fuller Lime Kiln (Mount Holly): Marble was burned about four miles southeast of Mechanicsville (today's Belmont) on the road to Weston. The locale was known as the Fuller farm, which later became the C. D. Edgerton farm. Marble openings were on both sides of the road: northwest, southeast, and southwest of the house (Dale 1915:21-22). The kiln operated in the 1860s and intermittently afterward (Perkins 1933:228).

This description might explain an unidentified circular stone ruin (VT-RU-164) that Noel Fritzinger of Weston led us to in 1986, about 50 feet off the east side of Route 155 just north of the county line. The ruin is about 10 feet in diameter, and

built into a small rise. The eastern section of wall, which appears more flat than circular, rises about 7 feet above the inside floor, in which wall breakdown has accumulated. An approximately 1-foot-diameter tree is growing in the 3- to 4-foot-thick north wall. What appears to be an entrance way is in the south wall, which faces on the dirt road that leads uphill behind the ruin. The general configuration of the ruin suggests a lime kiln, but no burned lime or quarry (or charcoal or slag) was found in the vicinity, nor are the inside walls of the structure parched or burned. Cheese being a popular product in the early history of Mount Holly prompted the thought that the ruin might have been used for roadside cold storage. The farm of D. W. Fuller is indicated in the 1869 Beers map of Mount Holly, about a quarter-mile north on the west side of the highway, where a cellar hole was found in 1990. Outcrops of limestone are everywhere in the vicinity of the cellar hole.

WINDSOR COUNTY

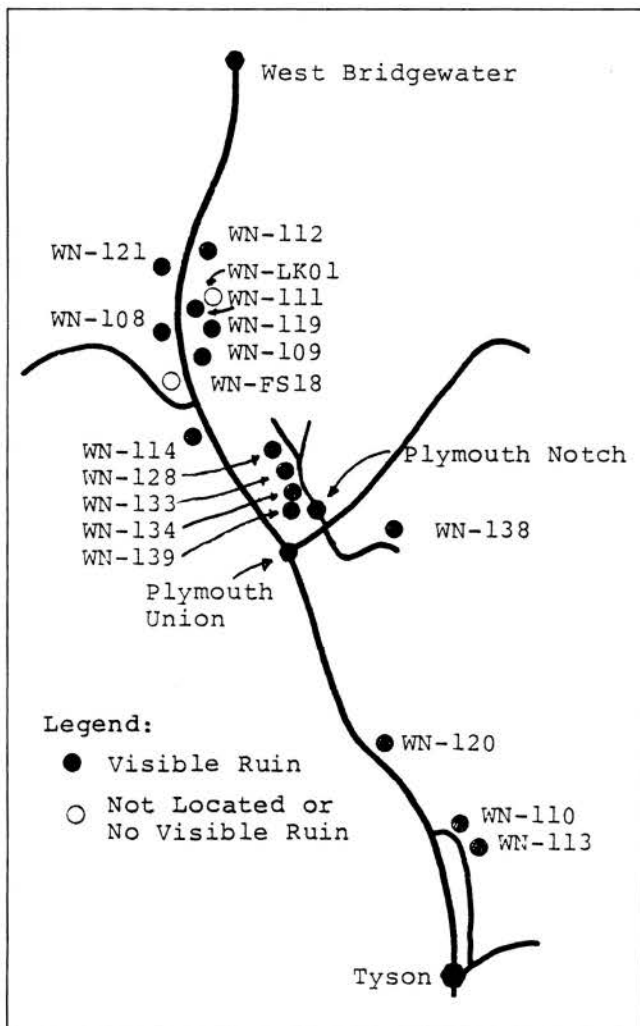
WN-LK04 Shattuck Farm Lime Kiln (Weston): Lime was burned at the Shattuck farm, which was about three miles south-southwest of the Fuller farm (RU-LK02) in Mount Holly (Dale 1915:24). According to the 1869 Beers map of Weston, however, the Shattuck farm is three miles south-southeast of the Fuller farm. Could this be a typographical error in Dale's report? The area three miles south-southwest was inspected in 1990, and turned out to be just south of the Weston Priory. Inspection of an area in the vicinity of the Shattuck farm was made in the spring of 1992. No evidence of the lime kiln was found in either inspection. Work continues on finding this site.

WN-LK02 East Bethel Lime Kiln (Bethel): A lime kiln ruin remains hidden about a mile southwest of East Bethel, near a crossroads and the Quarry School (Dale 1915:22). Another reference has the kiln a bit farther south, west of the brook and southwest of the crossroads (Morrill and Chaffee 1964:7). Inspections of the area in the fall of 1989 and spring of 1992 showed some limestone ledges but no lime kiln ruin. Work also continues on finding this site.

WN-124 Liberty Hill Lime Kiln (Rochester): This kiln site was found in 1989 from information provided by a reference in a Vermont geology guide (Morrill and Chaffee 1964:37).

The kiln remains were pointed out by Robert Kennett, owner of the site (Liberty Hill Farm), after we had walked by within a few feet without seeing it. The site consists of a low, grass-covered mound. Kennett said that the kiln's iron grates were nearby at one time but we could not find them. The quarry is just uphill and visible farther down the road. According to Kennett, the kiln was operated by the Emerson family, after whom this part of the town is named. A descendent of the family lives a quarter-mile farther south along the road in the still-standing Emerson homestead. Another reference has lime burned here on the F. F. Keizer farm (Dale 1915:23). "Eastman & Keizer" is indicated here on the 1869 Beers map of Rochester. There might be more lime kiln ruins in this vicinity (Perkins 1933:232).

Plymouth Area Lime Kiln Sites: Plymouth marble is mainly the dark, almost black variety when polished. Beds from which marble was quarried for many years were a source of lime more than marble, keeping lime kilns in the town busy for a long time (Perkins 1933:147). Eighteen lime kiln sites have been



8-29. Plymouth area lime kiln sites.

documented for Plymouth, at which 17 ruins were found. Little is known, however, regarding the specific history of these kilns. Those of Christopher C. Hall, E. A. Hall, Horace N. Ward, P. P. Crandall, and H. P. Crandall were still burning lime about 1886 (Aldrich and Holmes 1891:399). Limestone from a quarry at the northeast end of Amherst Lake owned by the Neshobe Marble Company in the 1850s was burned and "produced as good lime for mortar or whitewash as can be found in the State," known as "Plymouth White Lime" (Hitchcock et al. 1861:749, 775). The 1880 *Vermont Register* (p. 130) lists C. C. Hall, manufacturer of lime. Kiln ruins found in the Messer Hill Road and Grand View Lodge Road area still display heavy coatings of a very fine, white powder. Most kiln ruins were found through lime kiln symbols on the 1859 geologic map of Plymouth. This map provided information that directly led to the following sites, generally found on both sides of Route 100:

- WN-110 — Rice lime kiln
- WN-111 — Grace's lime kiln

- WN-112 — Knapp lime kiln
- WN-113 — Brookwood lime kiln
- WN-114 — Money Brook lime kiln
- WN-119 — Grass Pond lime kiln
- WN-120 — Frog City lime kiln (no ruin)
- WN-121 — Ward Lime Works (2 ruins)

The following sites were found in the process of additional archival and field work:

- WN-108 — Burnt Mountain lime kiln
- WN-109 — Campground lime kiln
- WN-128 — Messer Hill Road lime kiln
- WN-133 — Lower Grand View Lodge Road lime kiln
- WN-134 — Upper Grand View Lodge Road lime kilns (2 ruins)
- WN-138 — Moore-Calkins lime kiln
- WN-139 — Plymouth Notch lime kiln
- WN-185 — Reservoir Brook lime kiln

The following sites, either indicated on the 1859 geologic map or discussed in the 1913–1914 *Report of the State Geologist*, have not been found:

- WN-FS18 — Hall's lime kiln
- WN-LK01 — Black Pond lime kiln

The sites are presented in a generally north-to-south sequence.

WN-185 Reservoir Brook Lime Kiln (Plymouth): The ruin of this lime kiln was discovered in late fall of 1991, while driving slowly north on Route 100 and glancing into the barren forest on both sides of the highway. The ruin is downhill, off the east side of the highway and on the east side of Reservoir Brook, about 500 feet south of the Bridgewater town line. Due to snow flurries and the cold-running brook, the ruin was inspected from the highway by binoculars and not physically inspected until the spring of 1992.

The ruin is on the uphill side of an old abandoned section of road. The 1869 Beers map of Plymouth shows the road north of Woodward Reservoir crossing the brook twice before reaching the Bridgewater town line. Because the map shows road at this point on the west side of the brook, the road at the ruin is probably earlier than that on the map, dating the lime kiln to pre-1869. Short sections of this road appear and disappear along the east side of the brook north of the reservoir. Today's Route 100 is completely west of the brook.

Appearing merely to be a stone mound from the highway, the ruin's inside is relatively intact with little internal breakdown. The inside looked only slightly egg-shaped, possibly because a section of the front wall had given way and fallen outward. Inside diameter is about 8 feet near the top; inside heights are about 8 feet in front and 12 feet in back. From the amount of breakdown about the ruin, the kiln must have been much higher when operating, possibly 14 to 16 feet internally. Most of the stone lining was glazed; no firebrick was in evidence. The front opening, buried under the collapsed front wall, was only visible inside and appeared to be about 2½ to 3 feet wide by high. Due to inside heights, no attempt was made to jump inside the ruin for close inspection and accurate measurements.

200 Years of Soot and Sweat

Except for the northwest corner of the ruin, all outside walls were buried from view. The visible corner showed the kiln to have been rectangular if not square, but at least not circular. No reinforcement binding or any other iron hardware was found. The rear (east wall) of the ruin was built into the steeply rising hillside, where scattered bits of burned lime were found. Too large to have been a farmer's kiln, this ruin is one of the early commercial variety.

Although in good view from the highway, this is one of the better lime kiln ruins found in Plymouth, probably due to its being across a well-running, cold stream (which had to be waded) and in a less-developed part of town. The nearest resident assumed the ruin to have been a root cellar and could shed no further light on the history of the kiln. It appears in no known archival material.



8-30. Bottom opening of the Knapp kiln ruin near Woodward Reservoir at Plymouth.

WN-112 Knapp Lime Kiln (Plymouth): This lime kiln ruin was found in 1987 about 50 feet east of Route 100, just north of the southwestern end of Woodward Reservoir. Owners of the adjacent campground property, Charles and Keith Knapp of Pittsfield and Rutland, said they felt the ruin was on highway property. The ruin appears more primitive than those found elsewhere in Plymouth due to the nature of its small, stone archway at the base, which faces south. White burned lime is scattered on top of the ruin, which makes it readily visible from the highway.

Due to its proximity to public view and possibility of already being on state property, this ruin, which appears stable and in relatively good condition, might be a good candidate to mark with a historical/educational marker.

WN-121 Ward Lime Works (Plymouth): Two kiln ruins of the Ward Lime Works were found in 1988 about 100 feet west of Route 100 and about a half-mile south of Woodward Reservoir.

The Ward Lime Works are on the 1869 Beers map of Plymouth; also as "W. Ward" on the 1859 geologic map of

Plymouth. No quarry could be found nearby, but recent highway realignment made some new cuts through limestone in the vicinity; an older quarry could have been affected in the process. The two kiln ruins are about 50 feet apart, in dense brush along the side of a low hill.

The largest ruin has a front stone wall about 10 feet high at highest and 22 feet wide at widest. Its hearth is accessed through an opening about 32 inches square about midpoint in the front wall at the bottom. The inside is about 9 feet in diameter and about 4 feet back from the front wall. A scatter of domestic trash litters the front of the kiln.

The other ruin is not as well defined as the first, with no obvious front stone wall. The kiln hearth is about 8 feet in diameter and caved in, but about 2 to 3 feet deep.

A woods road leads from a point about 20 feet from Route 100 (at a small concrete highway boundary marker) to the ruins, then turns north and around the low hill to a cul-de-sac.

WN-111 Grace's Lime Kiln (Plymouth): A lime kiln ruin was found about 300 feet east of Route 100 in Plymouth in 1987, from information provided by the 1859 geologic map of Plymouth.

The lime kiln ruin is an approximately 10-foot-high mound of collapsed stones alongside an abandoned segment of Route 100. The ruin is downhill of the highway, about where power lines cross the highway at a diagonal from southwest to northeast. It is nearly hidden from the highway (but Grace spotted it as we drove by). The field between the highway and the forested kiln site is clear of trees but loaded with high vegetation and berry bushes.

Broken bottles, sheet metal, and an old automobile engine were found in association with the ruin, indicating this was once a trash disposal site. The ruin is about 6 feet high and 6 feet wide, although degree of collapse made measurement difficult. Some burnt lime is visible in the area. No archway or bottom opening was apparent; they were probably located facing the old roadway, about where there is the least kiln breakdown.

WN-LK01 Black Pond Lime Kiln (Plymouth): Another lime kiln is indicated in the vicinity of WN-111 on the 1859 geologic map of Plymouth, but a search on both sides of the Black River (about 200 feet east) proved fruitless.

WN-108 Burnt Mountain Lime Kiln (Plymouth): The ruin of this lime kiln was found near the base of Burnt Mountain in 1987, while driving north along Route 100. Thin foliage along the highway made this find possible.

The ruin is about 50 feet west of the highway, about a quarter-mile south of a power line crossing, and about the same distance diagonally south across the highway from Grace's lime kiln ruin (WN-111). The ruin, built into the side of the hill, consists mostly of side and back walls with enough of the front wall standing to identify the opening. A front lintel stone remains. The remains appear similar in size and configuration with other kiln ruins found in the town and are probably contemporary with them.

WN-119 Grass Pond Lime Kiln (Plymouth): The ruin of this lime kiln was found in 1988 through the 1859 geologic map of Plymouth. It is located at the 1,320-foot elevation on the southwest slope of an unnamed 1,849-foot mountain, and about a half-mile due west of Grass Pond. The ruin is about 400 feet east of Route 100, although it is easiest reached by crossing

Black River about a quarter-mile north and working south along the ridge. A snowmobile trail (VAST) passes a few dozen feet southeast of the ruin; thus, this must be the kiln ruin in which a snowmobile got stuck, per Mr. Harootunian (see WN-109).

The ruin is characterized by an approximately 9- by 9-foot-square by 6- to 7-foot-deep hearth. The outside walls and hearth arch are almost hidden by fallen stone of the collapsed upper portion of the structure. What little of the outside wall could be seen disclosed use of horizontal wood beams in the wall construction. The large mound was estimated to be about 30 feet in diameter and 15 feet high. It was built into the side of the rise with the kiln top only slightly below ground level on its northwest side, but about 15 feet aboveground on its front (or where we estimated the front/opening side to be). About 75 feet southeast of the kiln were the collapsed remains of a wooden cabin.

WN-109 Campground Lime Kiln (Plymouth): This kiln mound is about 1,200 feet east of Route 100 in the northeast corner of the Plymouth Village Campgrounds. It was found in 1987 while searching for another ruin in the vicinity (WN-119), into which a snowmobile had gotten stuck, according to Rick Harootunian, campground owner.

Dimensions of the mound could not accurately be made due to the scattered nature of the mound debris and the nature of the topography. It was difficult to determine what was natural and what was man-made (or disturbed). The mound contains burned lime and stone from the kiln structure. Beyond the mound is low, swampy area. Immediately east of the mound is what could have been the base for an inclined tramway, leading to the top of the kiln.

WN-FS18 Hall's Lime Kiln (Plymouth): A lime kiln indicated on the 1859 geologic map of Plymouth turns out to have been located somewhere downhill and northeast of the Round Top Mountain Ski Area. It is also described as being Hall's lime kiln, about a half-mile north of Plymouth Union and about 600 feet north of a schoolhouse, some 850 feet west of which are several small quarries (Dale 1915:27). The area pinpointed by the map in Dale's report is leveled and on it are the town garage, a shed and parking area for trucks, the elementary school, and the school bus parking area. To the west in the woods is a high, steep, rocky escarpment that could have been the source of stone for the kiln; however, no trace of stone working could be found among the outcrops.

The area was inspected in 1987 without finding any trace of the kiln. Landscaping on the lower grounds of the ski area has significantly disturbed that area. The schoolhouse indicated on the Beers map north of Plymouth Union is approximately where the map indicates it should be although it is not certain this is the schoolhouse that Dale was using as his reference to Hall's lime kiln. It is the only schoolhouse we could find in the immediate vicinity. Pacing off 600 feet north of it in 1990 brought us almost to the Route 100 bridge over Great Roaring Brook, well outside the vicinity Dale pinpointed in his map. There are five houses plus associated buildings on the west side of the highway, the construction of any of which could have destroyed the kiln, had it been near here. A local resident remembered nothing of a kiln or ruin. All things considered, Dale probably meant to write that the lime kiln was 600 feet south, not north, of the schoolhouse.

WN-138 Moore-Calkins Lime Kiln (Plymouth): A lime kiln operated about a half-mile south of Plymouth Church, on the north side of the old road to Five Corners, near a small dolomite quarry (Dale 1915:26). Plymouth Church today is known as just plain Plymouth, or sometimes Plymouth Notch.

Dale's report indicates a small dolomite quarry and remains of a lime kiln about a quarter-mile northeast and across the road from the outlet of Moore's Pond. Field inspection in 1990 turned up neither quarry nor kiln ruin. Local inquiry, however, directed us to a kiln ruin on William Calkins' (formerly Milton Moore's) property, about a quarter-mile east, 300 feet northeast of the dirt road where it sharply turns south and uphill. The ruin is at the edge of the forest line and marked with some white birch trees growing out of it, and contains some recently dumped trash. Sections of the wall are missing, apparently vandalized for other uses. The kiln lining is heavily glazed. The inside is about 8 feet square by 10 feet high. Much lime was obviously burned here.

WN-114 Money Brook Lime Kiln (Plymouth): This kiln ruin was found in 1987 about 50 feet west of Route 100, a mile south of the Route 100 and 100A junction. It is identified on the 1859 geologic map of Plymouth. The ruin measured 16 by 8 feet inside, one of the largest lime kilns encountered in Plymouth. The front wall is 25 feet long and 8 feet high at its center. The archway, facing east toward Route 100, measured 26 inches wide by 32 inches high. Stone walls crisscross the area adjacent and behind the kiln. The ruin appears stable and in relatively good condition. It is not easily visible from the highway, being set back in trees. The woman who lives across the road, however, knew exactly where it was.

WN-120 Frog City Lime Kiln (Plymouth): Surface remains of the Frog City lime kiln were found in 1988 through the 1859 geologic map of Plymouth and a photo caption that mentioned the kiln, but did not illustrate it: "Just up the lower road, out of this picture, was the Frog City School, and beyond it a sizeable lime kiln" (Ward et al. 1983:57).

The site was found while driving north on Route 100; the remains are merely a small patch of burned lime on the roadside embankment. It is about 300 feet northeast of the Frog City Road and Route 100 intersection. Directly uphill of the site is a narrow woods road that leads to a small limestone quarry and continues eastward into the woods.

There are no stone walls or holes associated with the kiln site. The ruin must have been very close to the road and destroyed during highway improvements some 20 to 30 years ago.

WN-128 Messer Hill Road Lime Kiln (Plymouth): This was the first of four lime kiln ruins found alongside this road in 1990. Three other lime kiln ruins were found later the same day farther north up the road (WN-133 and WN-134). All were discovered through information provided by William Jenney, State Historic Sites Administrator at Plymouth Union, and an archival reference: "Christopher C. Hall's lime kiln, on road 3, burns 1,600 barrels of lime per year" (Child 1884:173).

Road 3 is today's Messer Hill and Grand View Lodge roads according to the county map in Child. Any of these four lime kiln ruins might be that referenced in Child; or Hall might have operated them all at one time or another.

The kiln ruin was found less than a one-minute drive north on Messer Hill Road out of the Historic District and about 500



8-31. Other than the lime kiln ruin itself (this one at Plymouth Notch), its most visible indication was the burned lime residue that was sometimes noticed before the actual ruin was found. Yellow birch and white birch were also found in association with many lime kiln and charcoal kiln ruins.

feet north of the stone house, both on the west side of the road. The kiln ruin is about 30 feet from the road in an open section of land, very obvious to anyone driving or walking along the road. High voltage wires pass just over and between the ruin and the road.

The ruin measured about 16 feet inside diameter. Accurate measurement was difficult because trash littered the bottom of the ruin, burned lime thickly coated the inside edges, and half of the front (east) section of the ruin was collapsed. The white birch tree inside the ruin and another about 25 feet southwest were the only ones in the immediate vicinity. Standing inside, the ruin was about waist high. Pieces of red brick were found 6 feet west of the ruin.

The area immediately uphill and between the kiln ruin and road has been disturbed, possibly by bulldozing associated with the high voltage transmission lines that parallel the road. Rusted cans, bottles, paint cans, and miscellaneous hardware lie inside and around the ruin. A rusted culvert section lies nearer to the road. Some farm-type hardware lies beside the ruin and just in the woods to the southwest. Small quarries, some exhibiting white limestone and filled with stagnant water, exist just behind (northwest) of the ruin in the woods. At the nearest quarry is what appears to be a drainage ditch leading eastward to the road, just north of the kiln ruin. Many other quarries and small diggings (test holes?) continue along this side of the road northward for about one-half mile.

The whiteness of the lime in and around the ruin reflects that discussed in the 1861 state geology report and called "Plymouth White Lime," which was produced in the town during that time (Hitchcock et al. 1861:775). "[Before] railroads were introduced, no town in the State furnished more lime for market or of as better quality for mortar, than Plymouth; but since that time the foreign demand has not been so great, and being six or eight miles from the railroad, other manufacturers of lime, where the kilns are contiguous to the road, have an advantage in the cost of freight, hence the manufacture is somewhat limited, as compared with former years" (Hitchcock et

al. 1861:749).

Since there are no indications of lime kilns on the Plymouth map in the 1861 geology report, the kilns along this road probably were closed by that time. No doubt young Calvin Coolidge played in these ruins.

WN-133 Lower Grand View Lodge Road Lime Kiln Ruin (Plymouth): This was the second of four lime kiln ruins found alongside this road in 1990. It was less than a one-minute drive north of WN-128 and just northwest of the intersection of Messer Hill Road and Grand View Lodge Road. Messer Hill Road continues north up the east leg; Grand View Lodge Road starts at the junction as the west leg. The ruin is about 50 feet west of the road, uphill, and barely visible in the foliage from the road (we found it because we were driving slowly and examining the woods carefully). The ruin was betrayed by its coating of white lime, inside and out. The ruin is built into the steep hillside, its circular stone wall about 4 to 6 feet high on the downhill side and the wall continuing around and into the hillside on its uphill side. It measured about 15 feet inside diameter although accurate measurement was difficult due to the amount of burned lime coating the inside edges. Small quarries exist uphill, north and south of the ruin.

WN-134 Upper Grand View Lodge Road Lime Kilns (Plymouth): These were the third and fourth of four lime kiln ruins found alongside this road in 1990. The two ruins were found less than a one-minute drive north of the junction of Town Roads 4 and 9 and observed from the vehicle. Both ruins are on the left (west) side of the road, easily visible in low scrub brush and trees, and about 50 feet apart from each other. The southern ruin is about 50 feet from the edge of the road and the northern one is about 30 feet from the edge of the road. The bottoms of the ruins are about level with the road. Both ruins contain a covering of white lime. The inside of the lower ruin is somewhat rectangular, measuring about 10 feet wide and 12 feet long. Standing inside, it is about waist high. Its front opening is the best defined of the four kiln ruins found along the road. The inside of the upper ruin is more circular

and measured about 13 feet in diameter. Again, as with the other kiln ruins along this road, measurements were difficult due to the quantity of lime covering the top edges of walls. There are small quarries west and south of the site.

WN-139 Plymouth Notch Lime Kiln (Plymouth): While photographing one of the lime kiln ruins along Messer Hill Road in 1990, Mark Shiff pointed out another kiln site behind his stone house, just up the road from the President Coolidge Birthplace at Plymouth Notch. The kiln site is near the uphill edge of the pasture and in a small grove in the open pasture. The grove is about 60 feet across its long axis by about 30 feet wide. At the northeast corner where some white birch stand is the ruin of a lime kiln. Adjacent to the ruin are two depressions containing some trash. The reason for the depressions, which do not appear natural, is unknown.

The ruin is generally circular in shape, about 8 to 20 feet across and 4 to 5 feet high. It is not as well defined as others in the vicinity, appearing more of a mound than a ruin. No firebrick was found and only a very slight glaze was on the inside lining surface, which was buried a few inches below the ground. The kiln was probably operated contemporaneously with the others in the vicinity.

WN-110 Rice Lime Kiln (Plymouth): This beautiful lime kiln ruin was found in 1987 on property owned by Anna Rice of Bethel. Information leading to the site was obtained from archival references (Ward et al. 1983:11) and the 1859 geologic map of Plymouth.

The ruin is about 1,000 feet north of the Amherst Lake public access area on State Road 22, just before the bridge over the river. It is approximately 10 feet high. Internally, it has a square front and rounded rear, is stone-lined from bottom to top, and is in good condition. The 14-foot-wide face of the ruin, with its bottom opening, faces on the road. The bottom opening measured 46 inches total height and 28 inches wide. The archway is made of 17 courses of firebrick that appear to be of a

much later date than 1859. The bricks have burned ends, similar to those seen at blast furnace sites, and might have been cannibalized from the abandoned Tyson blast furnace about 2 miles south.

The archway at present appears somewhat delicate, with one smaller lintel stone precariously hanging over the opening; another, larger, above it is severely cracked. Further movement of the smaller stone could result in collapse of the entire front wall of the kiln. A simple vertical wood or steel post, wedged under the smaller stone, could delay further deterioration. Limestone burned here might have come from a quarry about two miles southeast (WN-113).

Mrs. Rice was interested in selling the property but was also concerned for the safety of the ruin. She asked the state to erect a historic sites marker at the ruin, hoping that would contribute toward its preservation. According to local tradition, the old military road to Crown Point passes through the property.

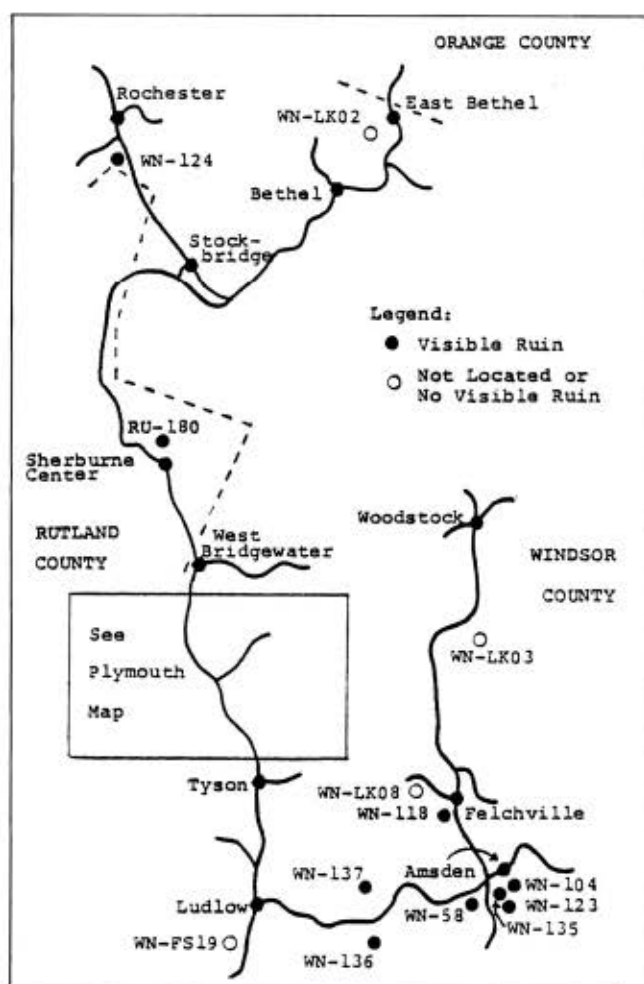
An undated photo of the lime kiln shows the archway in much better condition than it is today, with brick visible to the outside wall. Many rows of brick have since been removed and the scattered few pieces on the ground in front of the ruin account for only a small percentage of them. The missing bricks can probably be found in local backyard fireplaces. The ruin is very obvious along the inside curve of the road, and with no appreciable foliage to conceal it, it has high vandalism potential.

WN-113 Brookwood Lime Kiln (Plymouth): A lime kiln mound was found along the northeast shore of Amherst Lake in 1987 through the 1859 geologic map of Plymouth.

The ruin is an approximately 10-foot-high mound alongside the road that skirts the east shore of Amherst Lake. It is on the east side of the road and between it and the base of the hill is an older lake road. A slight depression at the top of the mound could mark the collapsed interior. Except for bits of burned lime, no other obvious surface features could be found.



8-32. The Rice lime kiln at an earlier time, showing the decorative brick arch which is missing today.



8-33. Windsor County lime kiln sites.

A few hundred feet directly uphill of the mound is a limestone quarry, approximately 50 feet wide and 50 feet deep into the mountainside, about where indicated on the 1859 map. This quarry was owned by the Neshobe Marble Company in the 1850s and the lime produced from it made a high-quality mortar (Hitchcock et al. 1861:749). The quarry might have supplied both this lime kiln and also WN-110, about a quarter-mile north. The quarry trail leads north, gently downhill, reaching the lake road about 100 feet north of the kiln mound. Directly across the road from the mound are summer and vacation homes and cottages, including a mobile home named Brookwood.

WN-FS19 Jewell Brook Lime Kiln (Ludlow): Dale reported the remains of a lime kiln "about 2 miles south of Ludlow, on the east side of the road to Andover, a little south of a road leading to Weston and about 3 feet north of a brook crossing" (Dale 1915:28). The road to Weston is now a trail that follows Grant Brook. The old road to Andover now parallels Route 100 about 500 feet downhill to the west.

The vicinity of Jewell and Grant brooks was inspected twice in 1990 without finding any evidence of the lime kiln, although

limestone outcrops abound. One particularly picturesque limestone escarpment is along Jewell Brook a few hundred yards upstream of Grant Brook. The 40- to 60-foot-high limestone cliff extends 100 feet upstream, creating a miniature chasm.

Enough houses have been built in this hollow to significantly modify the landscape and destroy the kiln site, especially in the specific area described by Dale. One resident remembered a lime kiln ruin being in the vicinity many years earlier.

WN-LK07 Adams Lime Kiln (Ludlow): A lime kiln operated in the south part of town in the 1860s near a limestone quarry that was on the property of A. Adams (Hitchcock et al. 1861:556). The 1869 Beers map of Ludlow shows A. Adams and N. Pettigrew at the end of a road in southern Ludlow, which might be the site addressed. The road is just east of and parallel to Route 100. Driving to the end of the road in the spring of 1992 led us to the residence of Harold Welch, who has lived here for about 20 years but knew of no lime kiln ruin or limestone quarry in the area. He did confirm that Pettigrew was a former owner of the property. Work is continuing on finding this site.

WN-LK05 Hutchins Lime Kiln (Andover): A lime kiln operated on land owned by Mr. Hutchins in the west part of town about 1860 (Hitchcock et al. 1861:556). The 1869 Beers map of Andover shows the farm of W. Hutchison in District 4 in south central Andover, but no indication of the kiln. No attempt has been made to inspect the site.

WN-LK06 North Andover Lime Kiln (Andover): In the north part of town a lime kiln operated in 1860 (Hitchcock et al. 1861:556). No attempt has been made to inspect the site.

Amsden Area Lime Kiln Sites: The Amsden group includes lime kiln remains in Weathersfield (WN-58, WN-104, WN-123, WN-135), Cavendish (WN-118, WN-136, WN-137, WN-LK08), and Woodstock (WN-LK03). Kiln ruins here follow the limestone ledge shown on the Doll geology map in a north-south direction.

Weathersfield and Cavendish have in them extensive beds of limestone, being generally in the western part of the former and in the eastern part of the latter town. Before the introduction of railroads much lime was manufactured in these towns, but recently less has been made, especially in Cavendish. . . .

The lime produced in Weathersfield is of a dark color, and does not produce mortar so white as many other localities; but when used in exposed situations it is found to be very durable, in many cases being nearly equal to water cement. It has been used much in the construction of railroad culverts, piers for bridges, &c., and in the railroad tunnel in Burlington this lime was used instead of water cement. . . . C. Amsden and Azro Craigie, of Upper Falls, are the principal manufacturers (Hitchcock et al. 1861:749).

It is a well-known fact that the dolomitic lime of Plymouth, Cavendish and Weathersfield, makes a mortar that is much more durable for situations exposed to moisture and the weather, than that made from pure carbonate of lime (Hitchcock et al. 1861:781-782).

There were lime quarries all over the west part of town [of Weathersfield]. In the land records . . . on October 1, 1848, John Dunbar was involved in a transaction in which he was going to let Samuel Alford and Roswell Downer dig

and use lime rock "so much as they can burn at one kiln on his land . . . at only one place at a time" (Hunter Nov. 1984:7).

Cordwood for the kilns caused many forests in the area to be clean-cut. Charles Amsden owned much of Hawks Mountain for the wood needed to fuel his kilns. The center of the commercial lime-burning business appears to have been in the Downers-Amsden area. There are probably many more kiln ruins in this area. The ruins are described in a generally north-to-south sequence.

WN-LK03 South Woodstock Lime Kiln (Woodstock): A lime kiln ruin was reported to have been seen up a side road east of Route 106 near South Woodstock. This might have been mistaken identity with a cellar hole near a stone chamber ruin known to be in this area or possibly with the stone chamber itself. No attempt has been made to inspect the site.

WN-118 Felchville Lime Kiln (Cavendish): This lime kiln ruin was found in 1988 on the property of Mr. Taylor, on Route 106 in the northeastern corner of Cavendish. It is about 30 feet west of the edge of the highway, and just inside the edge of the woods behind a wire fence. The front wall of the ruin is about 25 feet wide and 8 feet high; its inside is collapsed but circular and about 6 feet deep. Structurally, it appears contemporary with the Plymouth kiln ruins.

WN-LK08 Knapp Pond Road Lime Kiln (Cavendish): In the northeast corner of Cavendish is the ruin of a lime kiln, somewhere north of what is today the junction of Knapp Pond Road and the Felchville Gulf Road (Dale 1915:31). Dale reported that "marble outcrops cover over an area extending 600 feet across the ridge and 700 feet on it." The marble was quarried on the west side, where the lime kiln is. No attempt has been made to inspect the site.

WN-137 Stearns Lime Kiln (Cavendish): The partially collapsed ruin of this lime kiln was found in 1990 through archival reference: "About 3 miles N. 13° E. of Cavendish village, south of a road fork, a few hundred feet northwest of the old Stearns farmhouse and west of the road, white calcite marble was formerly quarried and burned" (Dale 1915:28).

The ruin is about 400 feet west of Atkinson Road, at a point about opposite the northwest corner of Dale's referenced "old Stearns farmhouse," which is the only stone house in the immediate vicinity. The ruin is across a wet bog and at the base of a low knoll among some trees. It stands about 6 feet high and is estimated at 10 feet wide (north-south) by 12 feet long (east-west). It appeared in relatively good condition, compared to usual lime kiln ruins. No vast amounts of burnt lime were present.

WN-136 Cavendish Station Lime Kiln (Cavendish): This barely standing ruin was found in 1990 through archival reference: "About half a mile southeast of Cavendish station, just south of the sharp railroad curve and a little east of the track are a disused limekiln and a quarry" (Dale 1915:29).

Dale's "a little east" was found to be in error; the ruin was found a little west after spending an hour searching up and down the wrong side of the tracks. Local inquiry directed us to the kiln ruin.

The ruin is south of Cavendish village, across the bridge to the south side of the Black River, through the Green Mountain

Railroad underpass, and along the road that parallels the railroad tracks. Just past where the road and tracks cross, the tracks cut a sharp angle southerly through the side of the mountain. The road continues to parallel the tracks, eventually both heading due south. About 1,000 feet south of the curve is a nearly hidden road leading due west, over the tracks, and into the lime kiln ruin, about 100 feet east of the tracks at the eastern edge of a clearing.

When first sighted, the kiln ruin stack appeared to be fully intact. But on inspection, only the front and some of the side walls are partially standing, much of the structure having collapsed into itself. Nonetheless, it is a strikingly beautiful ruin. (A camper's fireplace in front of a small shack next to the ruin is made of loose stones pulled from the ruin.) The highest point of the ruin is the northeast corner, estimated at 16 to 18 feet high. The front (east) archway, much of it collapsed up to the lower iron binding rod, measured about 8 feet high. The ruin measured 18 by 18 feet outside, at about 3 feet above local ground level. The stonework was mortared. Inside dimensions are unknown due to amount of breakdown inside the ruin.

Running through the ruin at right angles (wall to wall) are 1-inch-diameter iron binding rods, end-threaded, with a 5-inch-diameter binding plate and 1-inch-thick, 2- by 2-inch iron nut. There are an estimated 10 such binding rods; six running between the north and south walls (three each inside the front and back walls running side to side), and four running between the east and west walls (two each inside the side walls running front to back). The existence of these rods most likely accounts for the quality of the ruin still standing.

The back wall of the ruin is about 16 feet from the cliff, and its top at one time probably was level with the top of the cliff to afford access for charging the kiln. A road leads north out of the clearing and doubles back to the ledge above and behind the ruin. Rock outcroppings here and perhaps farther down the road probably provided limestone that charged the kiln.

Dale reported a number of outcrops of dolomite in the vicinity. This, plus the late-19th-century design of the lime kiln, lead to the belief that the ruin of an older and smaller lime kiln might yet exist in the vicinity.

WN-58 Upper Falls Lime Kilns (Weathersfield): A dual lime kiln ruin was found in the Upper Falls section of Weathersfield in 1985 while searching for a ca.-1790 bloomery forge site in the vicinity (chapter 4, WN-FS14). The kiln appears in the 1869 Beers map of Weathersfield identified as "Martin & Gould," about a quarter-mile west of the south end of the covered bridge.

The ruin contains two stone-built kilns, both part of a single structure. The top of the ruin is level with the dirt road that runs just behind it. A side road dips away from the main road accessing the front of the kiln units and returns to the upper road. Because the top of the ruin is level with the upper road and the openings face away from it, the ruin is relatively hidden from the upper road.

Both kiln openings are roofed by single lintel stones; the eastern unit lintel is broken but the western unit stone is intact. These flat stone lintels with their stone side supports look much like various stone chambers found elsewhere in Vermont (Neudorfer 1980:16). Some wood beams appear in part of the ruin, hinting at possible structures once associated near or on



8-34. Partly hidden by tree roots, this primitive-looking lime kiln is one of a pair built into a common structure, just west of Downers.

the kiln. The ruin is 40 feet wide by 10 feet high. The eastern opening is about 5 feet wide; the western opening 4 feet wide. Inside diameters are about 11 feet; the two units are about 12 feet apart. (When revisited in early 1991, the massive lintel of the western unit had broken and fallen in.) Downhill from the ruin are the remains and stone walls of a ca.-1830s to -1840s cotton mill that gave Upper Falls its name.

WN-104 Amsden Lime Kilns (Weathersfield): The standing ruins of two lime kilns were located in 1986 in the village of Amsden through information provided in part by Eric Gilbertson, Director of the Vermont Division for Historic Preservation, and Edith Hunter of Weathersfield.

The ruins stand side by side just east of Route 131, and

between it and a side road that dips down into the hollow and parallels the highway for about 1,000 feet. The top of the south kiln is just below highway level and about 16 feet from the edge of the pavement. The north kiln structure has deteriorated and is not as high. The side facing the highway is partially buried. The ruins are hidden from Route 131 by their low profile and by the roadside trees.

The south kiln measured about 18 feet square, and was estimated to be 18 feet high. The north kiln measured 18 feet across the visible front wall; its side walls extend into the collapsed bank between it and the highway. This kiln appears about three feet shorter than the other. Both otherwise appear similar in configuration and in design of their courses of stone and reinforcing wood beams. At the corners of both kilns, vertical, 1/2-inch-diameter iron binding rods run up the stacks about 6 inches inside each corner. Diagonal iron braces 2 1/4 inches wide by 1/4 inch thick were bent over at each end on the wood beam, 30 inches from each corner of the kiln. The kiln walls are 4 feet thick.

It is unknown when the lime kilns were built. "C. Amsden, lime, Upper Falls" first appears in *The Vermont Directory* in 1869 (p. 85). But this might have been other lime kilns also found in the vicinity. The 1869 Beers map of Weathersfield indicates kilns at Upper Falls P. O., later called Amsden, and mentions "Chas Amsden . . . Manufacturer of best quality of Diamond Lime, in Shermans Patent Kilns." The kilns produced 10,000 barrels of lime annually, widely considered to be of a superior quality (Child 1884:243). In 1910, limestone was burned in two stone perpetual kilns and the lime was hauled by teams to Cavendish for shipment. A new, modern steel kiln was also under construction that year (Perkins 1910:351). The lime owed its peculiar properties to the combination of two carbonates, calcite and dolomite, and its cement color probably to the presence of hematite (Dale 1915:33).

The stone quarried at Amsden was much better suited for burning into lime for use by masons than as an ornamental stone and has always been used and valued for producing lime.



8-35. Ca.-1920s view of lime kilns at Amsden, showing tall iron shell above kiln in background. Whether the two foreground units were in operation at this time is unknown (courtesy Edith Hunter).



8-36. View of lime kiln operations at Amsden, date unknown (courtesy Edith Hunter).

As far as is known, the stone was never used for marble. Four quarries were worked for many years by the Amsden Company; the oldest was worked for 100 years. They were about a mile east of Perkinsville, and the largest was a half-mile south of Amsden on the east side of Branch Brook. Lime made from these quarries could be cast in blocks like cement and it was claimed that no reinforcement was required. The lime was dark, about the color of portland cement (Perkins 1933:217-218).

The post office at Amsden closed in 1914 (Swift 1977:557-559), but the lime company continued to operate for many years. The great flood of 1927 nearly wiped out the lime kilns,

but the company made a large investment in new equipment. By the next summer 125 tons of Amsden Gray Lime were ready for market. This was during the time when the construction industry was shifting from plastering walls with wet lime to nailing drywall sheets (Hurd 1978:128). The Amsden Gray Lime Company was last listed as active in 1930 (Perkins 1930:259).

An undated postcard (1920s?) shows the two kilns in what appears to be a quiet, non-operating period (Hunter Nov. 1984:9). Also in the postcard is the third, modern lime kiln which was built in 1910. Its iron shell extended upward above



8-37. The two surviving lime kiln ruins at Amsden in the spring of 1991.

the kiln to a charging ramp and bridge that ran up to the top of the kiln from the embankment above and west of the highway. No charging ramps can be seen leading to the tops of the two stone kilns.

No surface evidence of the third kiln or of other structures shown in the foreground of the postcard could be found the day of the inspection, although a concrete-block foundation building stood on one of two older-appearing concrete slabs in the vicinity. The office building that housed the works offices still stands at Route 131, just north of the ruins.

WN-135 Upper Branch Brook Lime Kiln (Weathersfield): This lime kiln ruin was inspected in 1990 although located in 1981 by Peter Thomas (University of Vermont) as part of a survey for the U.S. Corps of Engineers. The ruin is about 30 feet off the east side of Branch Brook Road (Town Road 34), opposite the driveway of the first residence (mobile home) encountered after entering the road from Route 131. The ruin is not visible from the road due to its having been built below road level.

This structure is east of Town Road 34, on the edge of a steep bank above Branch Brook. The kiln is built into the bank. Only the back wall remains, and is farthest into the bank. On either side of the back wall the bank slopes considerably, to ground level closer to the brook edge. The kiln was oval in shape before the front wall was removed or collapsed, and is U-shaped in cross section. It is 10 feet wide on the largest axis (east-west) and 5' 8" wide on the north-south axis. The back wall apparently is preserved to its maximum height, which is 8 feet before being capped with larger stones which may have been the vent hole. The kiln is constructed of several courses of stone. The inner wall is approximately 1 foot thick, and is made of dry laid gneiss or schist small stones. The outer wall is made of rocks up to 2 feet in cross section and 1½ [to] 2 feet broad. The total thickness of the wall is about 3 feet. Former owner Mrs. Betty Murray did not know anything about the limekiln.

Walling's 1860 map lists A. Craigie of Upper Falls as a producer of diamond lime. Hitchcock (1861) says that Azro Craigie was 1 of the 2 principal manufacturers of lime in town. The kiln was apparently of the intermittent type, requiring filling after each firing. It is not known if this is Craigie's kiln [or] if the lime was produced for local or commercial use (Thomas *North Springfield Lake* 1981).

The kiln ruin was found generally as described by Thomas when inspected in 1990. Barbed-wire fencing, possibly new since 1981, separates a horse pasture from the kiln ruin. The fence passes within a few feet of the south edge of the ruin, making the steep downhill passage narrow and hazardous between the fence and ruin.

WN-123 Lower Branch Brook Lime Kiln (Weathersfield): This kiln ruin was found in 1988 through the 1869 Beers map of Weathersfield. Two previous attempts to find and record this ruin were thwarted in 1986 and 1987 by the high water of Branch Brook. This time we did not even get our ankles wet.

The ruin is 200 feet east of the Branch Brook, about a half-mile south of Route 131. It is situated on the first rise from the river plateau in a moderate forest and facing westward toward an open field. Front and inside walls of the ruin are

collapsed, but enough fabric of the structure exists to identify it. Inside dimensions are 7 feet wide by 6 feet deep. A long, low stone wall, most likely built after demise of the kiln, runs along the ridge that had been level with the top of the ruin, and a section of the wall runs directly on the edge of the ruin's back wall. A small quarry lies east of the ruin just past a north-south road. About 100 feet south, the trail disappears in an open field. At that point, what appears to have been a narrow inclined tramway leads uphill from the old road eastward for about 30 feet, dead-ending in another small quarry.

The Beers map shows a short, dotted-line road leading from the Branch Brook Road to the river's west bank. A hint of the road can still be seen, leading right up to the edge of the river where there might have been a bridge. No bridge abutments were found.

The Southern District

The southern district consists of Bennington and Windham counties, and accounts for 31 lime kiln sites, or about 27 percent of the known sites in the state. Some of the most impressive 19th-century kiln ruins in the state were found in Windham County at Stratton (WD-88), Wilmington (WD-89), and Whitingham (WD-91).

BENNINGTON COUNTY

BE-141 North Dorset Lime Kiln (Dorset): The ruin of a lime kiln was found in 1989, about a mile northwest of the entrance to Emerald Lake State Park in North Dorset. Information leading to the ruin was provided by Edward Eno, park caretaker.

The ruin was identified by the general configuration of the structure and a patch of burned lime in and around the ruin. Inside dimensions measure about 8 feet wide by 6 feet deep (front to back). The front arch is 22 inches high and 21 inches wide. Thickness of the front wall, which is 8 feet from the road, is 44 inches. The ruin appeared to be just outside of the state park boundary.

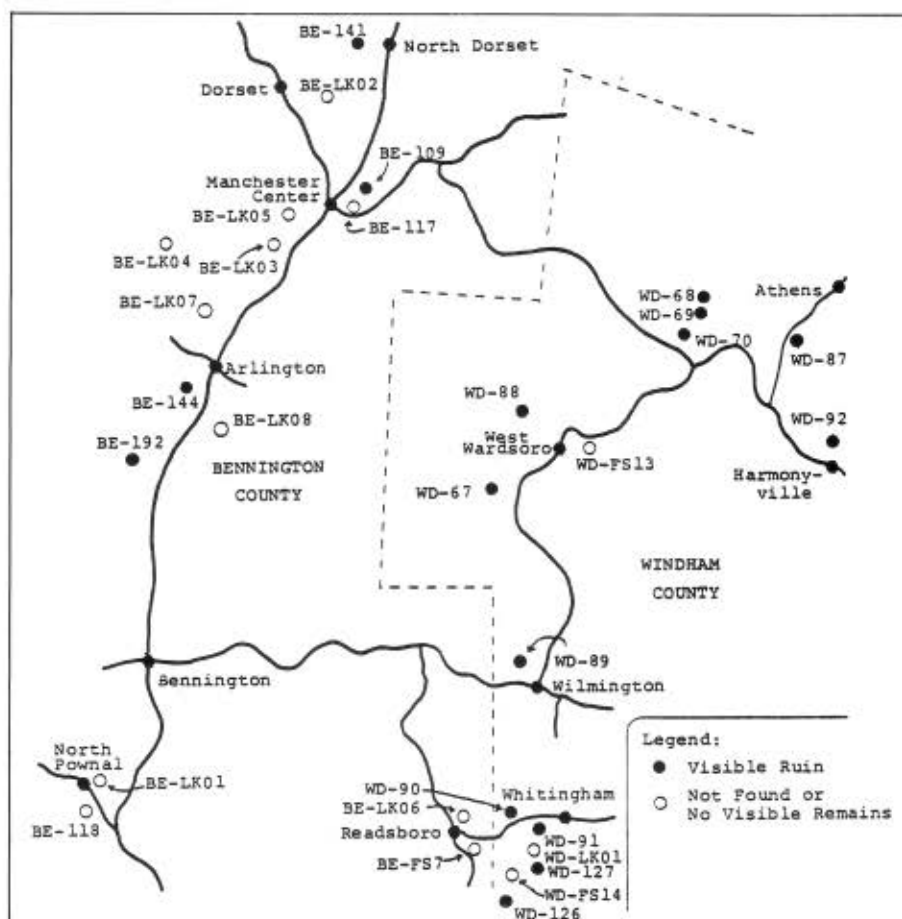
The kiln's period of operation is unknown, but from its similar appearance to lime kiln ruins in Plymouth and elsewhere, pre-1860 operation is suspected. State park records might shed some light on the history of the ruin.

BE-LK02 Dorset Mountain Road Lime Kiln (Dorset): Unsuccessful searches for a lime kiln ruin along the Dorset Mountain Road were made in 1986 and 1989. Reference is made to a kiln ruin here in 1964 (Morrill and Chaffee 1964:17). Nothing further is known about the kiln.

Dorset Mountain Road dead-ends about three miles north of Route 30; the kiln site should be about a mile from the end. The ruin would appear to have been in a low ravine behind some homes in the vicinity. Property owners in the vicinity of the site knew nothing of the kiln or ruin.

BE-109 Barnumville Lime Kiln (Manchester): The ruin of the Barnumville lime kiln was found in 1983, based on information in a history of Manchester (Bigelow and Otis 1961:147).

The ruin is in the woods about 30 feet west of Beech Street, north of Barnumville. It is a shallow, caved-in circular wall of stones, directly across the street from the residence of Allie Hart. The ruin, which measured about 8 feet in overall diameter, is so collapsed that no inside depth measurement could be



8-38. Bennington and Windham counties lime kiln sites.



8-39. Collapsed ruin of a small lime kiln near North Dorset showing section of the front archway.

made. Only one course of kiln wall is visible, and this course does not go completely around the circumference of the kiln.

BE-117 Manchester Depot Lime Kiln (Manchester): The site of a 19th-century lime kiln was found in Manchester Depot in 1987 through the history of Manchester, which mentioned a lime kiln having operated on what is now the property of Dr. Edwin K. Treat (Bigelow and Otis 1961:151).

The kiln site is about a mile east of the Routes 7A, 11, and 30 intersection (known locally as “malfunction junction”). As in the historical account, a surface deposit of white limestone residue is visible under thin foliage cover on the side of the embankment that leads uphill from the highway to Dr. Treat’s house and the buildings of the Green Mountain Veterinary Hospital. No surface evidence of an actual kiln ruin can be seen. Archeological remains of the kiln might lie buried or might have been totally or partially removed during highway work or landscaping. Neither Drs. Robert or Edwin Treat could provide any information regarding the history of the lime kiln.

BE-LK03 Purdy Hill Lime Kiln (Manchester): A lime kiln operated on Purdy Hill, about a mile south of Manchester Village, but has not been found despite many searches since 1985. It was near Route 7A (Bigelow and Otis 1961:151), and was probably destroyed when the highway was rebuilt in the 1950s.

BE-LK05 Equinox Mountain Lime Kiln (Manchester): A lime kiln is supposed to have been at the foot of Equinox Mountain west of the Center Reservoir (Bigelow and Otis 1961:151). Center Reservoir, at the west end of Witherall Road, was abandoned many years ago. A 1990 search uphill of the reservoir proved unsuccessful, although some small quarries were found.

BE-LK04 Hopper Brook Lime Kiln (Sandgate): Somewhere in the wilds of Hopper Brook, east of Sandgate village, a lime kiln operated at an early time (Renner 1961:50). This brook drains the southeast quadrant of the town through some high, steep gorges.

The winding road that parallels Hopper Brook was inspected in 1990 without finding any evidence of the lime kiln. Houses, garages, and driveways dot the road, which has also been widened and straightened here and there. This might have contributed to the destruction of the kiln site, although it might have been missed in some of the heavier roadside underbrush.

BE-LK08 Lawrence Lime Kiln (Sunderland): Edgar Lawrence, who lives at the northeast corner of Bacon Hollow Road and the old Sunderland Road, said that a lime kiln ruin was in the woods about a quarter- to half-mile west of his house. The kiln was operated by his grandfather and made plaster for the walls of the house still standing just southwest of the intersection. The kiln ruin was last seen many years ago and it is believed that little if anything remains of it.

Running parallel to, and approximately a third of a mile west of, the Sunderland Road is a quarter-mile-long limestone ledge, 1 to 2 feet high at the northern end but up to 20 feet high in places at the southern end. A trail (called “the lane” by Mr. Lawrence) that leads to the northern end of the limestone ledge parallels an east-west stone wall indicated on the USGS topographical map, although the eastern half of the wall no longer stands today. The northern end of the limestone ledge, where the trail starts downhill, is the approximate location of the lime kiln. Inspection of the vicinity in 1991 with Mr. Lawrence

failed to reveal any lime kiln evidence. Immediately downhill (west) of the ledge are recently built summer homes. In the landscaped backyard of one might be the buried and scattered remains of the lime kiln. A second inspection after the foliage lessened turned up nothing new.

BE-LK07 Red Mountain Lime Kiln (Arlington): A “Limekiln” is identified on an early-20th-century annotated USGS topographical map owned by Nancy Otis of Manchester. The site works out to be about a half-mile up Fisher Road on the east slope of Red Mountain in Arlington.

The vicinity of the kiln indication was inspected in 1989, about a five-minute walk up a woods road that forks left from Fisher Road. A dozen feet of this woods road is a small cave, and another dozen or so feet downhill from the cave is a 6-foot-diameter by about 6-foot-deep stone-lined cistern, found in association with an abandoned building foundation. The cistern was at first taken to be the lime kiln, but a modern tile pipe leads from the foundation to the cistern and there is no bottom access to the cistern as a lime kiln normally would have. Nearby are limestone outcrops that show signs of being worked. Inside the cistern was a circular iron plate with a pair of heavy iron handles, looking for all the world like a modified top-hole cover from a charcoal kiln (see chapter 6, BE-CK04). Attempts to pull it out for inspection failed since it was securely jammed inside the cistern. The lime kiln ruin has yet to be found.

BE-144 Judson-Howell Lime Kiln (Arlington): The ruin of this lime kiln was found July 4, 1989 at the Howell Campground through information provided by Ken Nickerson who camped there.

The campground surrounds a small pond about a half-mile southeast of Arlington village. The kiln ruin is between the pond and one of the campsites appropriately named Limekiln Site (campsite no. 72), on the west shore of the pond. Walls of the ruin are over 6 feet high but were difficult to accurately measure due to the density of vines on the wall and breakdown at the bottom. It is a large ruin, about 10 feet across, and probably extended 10 feet into the embankment when in operation. The campsite sits directly atop the filled-in ruin, and borders three sides of the top edge of the ruin.

The campground owner said that there was a quarry just uphill, operated by Judson, where marble for a church in the village was quarried. The name Judson appears in various histories dealing with Arlington but in no connection with lime or marble manufacturing. Arlington marble was described as not of fine quality but good for building stone (Perkins 1933:164).

BE-192 Martin Lime Kiln (Arlington): The ruin of a large lime kiln stands in the southeast corner of the Arlington State Forest. It is about a quarter-mile north of Wilma and Al Rice’s house, which stands at the end of Timber Trail Road, west off Route 7A in northern Shaftsbury. Mrs. Rice, who guided us to the ruin in 1991, said that the kiln was operated about 150 years ago by a Mr. Martin. The E. R. & S. E. Martin house is shown here on the 1869 Beers map of Shaftsbury although neither that map nor the 1856 map of Bennington County show the lime kiln.

The ruin is on the west side of a trail that runs across the southeast segment of the state forest property. According to Mrs. Rice, the trail was the road down which wagons carried

the burned lime from the kiln. Burned lime is seen scattered all along the roadbed. The ruin is 8 to 10 feet high and over 12 feet across the front. The collapsed condition of the ruin's corners make it difficult to measure overall dimensions. Inside the ruin is a round, 8-foot-diameter, concave-wall-shaped stone-lined hearth. Only the lower half of the glazed lining exists. Burned lime of a sandy consistency is scattered throughout the interior of the ruin. No firebrick or red brick were in evidence. The front archway is completely collapsed. The exterior walls are made of relatively large blocks of stone, reflecting the labor-intensiveness of the construction effort.

Directly uphill of the ruin is an approximately 100-foot-long limestone ledge and huge piles of stones that were quarried from the ledge. Several quarries were opened in north Shaftsbury well into the early 19th century, but were all closed by 1857. A quarry opened in 1861 by Samuel Cranston was referred to as an old quarry that had been abandoned for several years (Perkins 1933:164).

BE-118 Pownal Lime Company (Pownal): The abandoned ruins of a lime kiln works and quarry were found and inspected in 1987 just south of the community of North Pownal, per the indications in the 1869 Beers map of Pownal.

The remains straddle Route 346 approximately 2½ miles northeast of Pownal village. The quarry is among the Kreiger Rocks formation, mentioned in many town and county histories. The rock formation is visible from Route 7 as far as five miles down the valley.

Surface remains of the quarry and lime-processing operations are many. Starting uphill at the quarry, on the east side of the highway, are the surface indications of a narrow-gauge track leading from near the east end of the quarry, around a curve, and downhill at a relatively steep slope to near the highway, then apparently over the highway on a wood trestle (Parks 1977:101). Where the track bed curved out of the quarry to start downhill are the mounts of steam engine cable hoist machines for raising and lowering the cable cars up and down the tracks between the quarry and the lime-processing buildings below. Steam engine cinder is found in the vicinity. On the west side of the highway and between it and the railroad tracks and the Hoosic River are crumbling concrete and stone wall remains of the lime-processing facility. These ruins are devoid of all hardware except a few mounts that probably supported crushers, rollers, etc. The site of the kiln was found near the southwest end of the remains, as indicated by a circular pattern of firebricks.

In 1918 the Pownal Lime Company had a Boston address and advertised ground limestone for liming purposes (Jacobs 1918:164). The company was still listed as active as late as 1930.

BE-LK01 North Pownal Lime Kiln (Pownal): The 1869 Beers map of Pownal indicates a lime kiln at North Pownal, at a point on land that is in proximity to a quarry on the east side of the village. A search for the kiln ruin in 1987 resulted in finding no ruin or kiln remains. From the size and disposition of the quarry, the kiln ruin was probably razed during expanded quarry operations in the later 19th century, at which time limestone was probably shipped for burning at the lime works a mile south (BE-118).

BE-FS7 Amaden & Son Lime Kiln (Readsboro): A lime kiln

is indicated on the 1856 map of Bennington County about a half-mile southeast of Readsboro village, east of the road that follows the Deerfield River. An adjacent building is identified "A. Amaden & Son," which might be connected with the kiln. Beds of limestone in Readsboro, although mostly small in size, often supplied large lime kilns (Hitchcock et al. 1861:600).

A 1989 search of the area below the village resulted in finding no lime kiln evidence, although there are many limestone ledges in the vicinity. Railroad construction might have destroyed the kiln. There were other lime kilns about a mile south along the east side of the Deerfield River in Whitingham (WD-FS14 and WD-126). The vicinity from Readsboro village south to the Whitingham town line was once known as Lime Hollow.

BE-LK06 Readsboro Lime Kiln (Readsboro): Dale mentioned that a quarter-mile north of the Readsboro dam, on the north side of the Deerfield River, marble was quarried and burned (Dale 1915:52). The area northeast of the North Hill Road and School Road intersection was inspected in 1991 and no remains of a lime kiln were found. The area is now built-up with houses, driveways, and village streets.

WINDHAM COUNTY

Turkey Mountain Road Lime Kiln Sites: Standing ruins of three lime kilns (WD-68, WD-69, WD-70) were found along Turkey Mountain Road in Jamaica in 1986. Information leading to the first ruin was provided by Bob West, who learned of it through one of his students at Burr and Burton High School, Manchester. We were further aided that day in the field by Amos Newton, another student who lives nearby and whose house we visited during the day for more definitive directions.

The 1869 Beers map of Jamaica indicates two lime kilns along the north end of a road that parallels Sharp Brook farther south. The name W. Thayer is associated with the northernmost kiln and A. Howard with the other kiln. Another undocumented lime kiln ruin was found about a mile to the south. The brook is identified on current USGS maps as Little Turkey Mountain Brook; the road at its southern juncture with Route 30 is Turkey Mountain Road.

The 1961 Doll geologic map of Vermont indicates a very narrow northwest-southeast line of "buff dolomite, white to pink calcite marble" running nearly parallel to, or directly on, the road along which the lime kiln is located. Outcrops of limestone were observed at a few distinct places along the road, but not in any great quantity, possibly reflecting the narrow band shown on the geologic map. Except for making lime, limestone from this area was of little commercial value as marble due to the frequent joints in the beds by which solid blocks were spoiled (Perkins 1933:226). There is no known connection between making potash in Jamaica and the lime kilns.

WD-68 Thayer Lime Kiln (Jamaica): This ruin is generally in good condition, and lies about 10 feet east off the road. It is not very obvious when traveling north on the road due to its being tucked behind a low rise, but is very obvious when traveling south. It is probably the kiln reported to have burned local dolomite and associated with small quarries (Dale 1915:41). W. Thayer Esq. was connected with quarry here in the 1850s (Hitchcock et al. 1861:556). The 1869 Beers map



8-40. *The graceful ruin of the Thayer lime kiln at Jamaica, showing the decorative Gothic arch and front portal.*



8-41. *Close-up view of the front opening of the Thayer kiln. Note cracked lintel stone still holding up the heavy stonework above; early Vermonters built well.*

of Jamaica indicates the name W. Thayer next to the lime kiln.

The structure is made of flat stone, accounting for its stability down through the years. Its most distinctive feature is its front Gothic-like arch (lancet arch), built up by successive layers of flat stone. The archway faces northwesterly and is 8 feet wide at the bottom and closes to a point 8 feet high. The highest part of the kiln is 11 feet above the base. The inside walls are glazed. In contrast to the usual circular inside shape of most

other lime kilns, the inside of this kiln is square, measuring 9 by 9 feet. An opening in the wall is in the center of the front archway; the opening measured 2 feet wide by 5 feet high. Wall thickness at the opening is 3 feet. Total outside base dimension is probably 16 feet square (only the front wall was measured; the kiln is built into a low rise so that the base of the other three walls cannot be measured).

A small brook winds in front of the kiln, rising from a beaver pond about 1,000 feet to the southeast. It runs through a relatively deep gully, forming an S-curve just east of the kiln. About 15 feet in front of the kiln an unidentified iron casting was found, as was a piece of red brick. About 25 feet northeast of the kiln is an outcrop of limestone, which appears to have been worked. The outcrop continues upstream along the brook. At the base of the outcrop, small cave-like openings exist. A mound of tailings lies just north of this outcrop; another lies about 50 feet up the gully.

About 100 feet to the east, near the base of the mountain, are two small isolated stone walls of no known connection with the kiln, but possibly remains of a small dam or bridge abutment over another small brook in the area.

WD-70 Twitchell-Howard Lime Kiln (Jamaica): This kiln ruin was found about 500 feet south of the Thayer lime kiln, and is circular in shape in contrast to the Thayer ruin. It was not very obvious the day it was found, being covered with leaves. But a small section of stone wall that peeked through the leaves, plus the shallow depression immediately north of the kiln mound, caught our attention. The mound is about 10 feet high. Its circular inside, which projects through the top, measured 6 feet in diameter. It looks like a majority of the smaller lime kilns found elsewhere in Vermont. No glazing could be seen on the inside surfaces, but then, very little of the inside surface is visible. Most of it is hidden by breakdown.

Directly across the road is what appears to be some limestone outcrop. No other potential quarry was visible in the vicinity.

In 1861 the kiln belonged to A. Twitchell (Hitchcock et al. 1861:556). In the 1869 Beers map of Jamaica the name A. Howard is associated with the kiln. Howard is also indicated at a number of other places in the vicinity, one about $\frac{3}{4}$ of a mile south along the road from the lime kiln site, hinting of the possibility of more lime kiln ruins.

WD-69 Haven Lime Kiln (Jamaica): Grace spotted the Haven kiln ruin while we drove by, about a mile south of the Twitchell-Howard ruin (WD-70). It is circular in shape, similar to the WD-70 ruin but not as high. It has an 8-foot inside diameter, and no glaze coating was seen on the inside walls.

There is stone breakdown on the inside floor of the ruin, along with recent domestic party trash. The front opening, facing east toward the road, is 42 inches wide. The highest section of the north wall at the opening is 36 inches; of the south wall, 44 inches. A large stone slab, which appears to be part of a capstone, lies across the back section of the ruin. The top of the kiln ruin is level with the ground behind it, and the sides of the earthen area behind the kiln are reinforced with stone wall. Both the capstone and the ruin being level with an earthen ramp behind it appear to indicate that the top of the existing ruin is the true top of the kiln.

The kiln is not identified on the Beers map, but a cellar hole adjacent to it is identified on the map as P. A. Haven.

No quarry was seen in the vicinity, but to the north, along the east side of the road, large pieces of limestone can be seen near the base of the escarpment.

WD-87 Bemis Lime Kiln (Athens): A lime kiln operated in the northwest part of the town of Athens, just north of the Townshend line on the east side of the road from Athens to Townshend, on the Bemis farm (Dale 1915:34-35). The kiln was in association with several quarries. Stone from these quarries was never used for marble but only as material for making lime (Perkins 1933:219). William Holbrook, proprietor of the kiln, made 600 to 800 barrels of lime annually (Hitchcock et al. 1861:618).

Dale reported "several old openings and the remains of a kiln" at the southeast intersection of Route 35 and the old road heading northeast to Athens village. The intersection is about a mile north of the Athens-Townshend line. During one false start we found a neat rock cairn in the middle of a wooded pasture (it looked very much like a lime kiln ruin from the road, 100 feet away), but we beat a hasty retreat back to the road when we found we shared the pasture with two large bulls. Inquiry at the Bemis farmhouse from the safety of the pickup directed us to the kiln ruin, about 300 feet east of Route 35 and the same distance north of the town line. The ruin is a 15-foot-high, hollowed-out mound built into the hillside, and is in an advanced state of collapse. Three large white birch grow out of the kiln walls. In a collapsed building immediately north of the ruin are rusted hardware parts of a large rotating sieve and a heavy cast-iron pulverizer, made by the Holland Pulverizer Company of Holland, Pennsylvania. Uphill of this machinery is a small quarry with an old, rusted truck inside. Many small pieces of stone are scattered about the area. Was limestone being pulverized and sifted here after abandonment of the kiln?

WD-92 Gray-Holt Lime Kiln (Townshend): Lime was burned in the 1860s about a mile east-southeast of Townshend village and about 500 feet above it on the Horace Gale farm, formerly the Sharon Gray farm (Dale 1915:35-36). Dale shows the quarry at a point at the top of a mile-long steep and rutted road, northeast from Route 30 at Harmonyville. At the top of the climb in 1989 was the Dan Holt farm. Another reference places the kiln about 250 yards southeast of the road junction near the farm (Morrill and Chaffee 1964:45).

Inspection of the area in 1989 resulted in finding a partially filled-in quarry 200 feet east of the abandoned road to Brookline, southeast of the farm, and a possible kiln ruin about 50 feet up the road to Simpsonville, just across from the Holt farmhouse. The ruin is about 8 feet high by 25 feet wide. The center section of the ruin is slumped out, hiding any evidence of an archway. On top is a circular stone feature that could be the top of a lime kiln. Bits of what appear to be burnt lime are on the ground downhill of the ruin. A hint of a road leads from below the ruin, around the north side of it, and up to the main road.

WD-LK02 Windmill Mountain Lime Kiln (Westminster): A few years ago a small lime kiln was seen deep in the forest about "a mile or two into the woods" west-southwest of the village of Westminster West (Collamer Abbott letter to author, July 8, 1991). The ruin is within a one-mile-wide band of limestone that cuts north-south through the western part of the town and slightly north of a small tributary of Putney Brook. No attempt has been made to find the site.

WD-88 Pike-Bills Lime Kiln (Stratton): An extensive amount of lime was burned from an early time up to about 1910 at a kiln a quarter-mile south of the home of A. J. Pike. The kiln was associated with a quarry that is between the forks of a small brook, a quarter-mile southwest and 100 feet in elevation above the kiln (Dale 1915:43-44). Dale placed the quarry about a quarter-mile southwest of Pike's house, across a small brook and just below the quarry.

When inspected in 1990, the kiln ruin was found exactly where Dale had it, about a five-minute walk along the active logging road southwest of the former Pike house, today owned by Lee Bills. The ruin is about 300 feet beyond a small brook (Pike Hollow Brook?), and 100 feet southeast off the road at an overgrown clearing. The day of the inspection, this small clearing was covered with head-high goldenrod, making walking difficult while tripping over fallen trees and stepping into small depressions, all well hidden from view.

The ruin is a huge, intact 40-foot-wide by about 20-foot-high and 25-foot-deep stonework edifice. At ground level are three openings, about 6 to 8 feet deep into the front kiln wall, the weight of the kiln above each held up by short sections of old railroad track. The track measured $3\frac{1}{2}$ inches high by 3 inches across the base (30- to 40-pound track). All pieces of track were bent downward under the weight of the stone wall above. The openings were about 4 feet wide at the bottoms, 3 feet wide at the top, and about 6 feet high. Thinking this was a three-kiln unit built into a single structure, we were surprised after climbing to the top to find that it was, in fact, a single kiln unit with one large oval opening. Mr. Bills said that the rotted logs inside the kiln were from years ago when his father built a ramp over the top of the kiln and used the ruin as a

loading platform for a logging operation (probably in the 1940s). No firebrick or binding were found associated with the ruin. A trail leads uphill from the top of the ruin in the general direction of the quarry. The limestone was carried from the quarry on small rail cars, probably powered by steam-operated cables, per a photograph that Mr. Bills showed us.

This kiln ruin is one of the more impressive lime kiln ruins found in the state so far. It reflects the labor-intensiveness of the industry at one time, which, when considering the wilderness surrounding of so many of these remote sites today, makes a profound statement about the degree of industrial activity that went on during Vermont's earlier years.

WD-FS13 West Wardsboro Lime Kiln (Wardsboro): The 1869 Beers map of Wardsboro shows a lime kiln east of West Wardsboro and south of Route 100. The area was inspected in 1990 without finding any surface trace of the kiln. A moderate amount of development in the area plus highway work probably accounts for the ruin's demise, although subsurface remains might yet exist.

WD-67 Greene Farm Lime Kiln (Dover): This lime kiln ruin was found in 1986 on the Greene Farm in northwest Dover on the north bank of the North Branch Deerfield River, known locally as Limekiln Brook. Initial information about the ruin was provided by letters between the late Stephen Greene, Chester Liebs (University of Vermont), and Giovanna Peebles (State Archeologist). Specific directions were provided by Janet Greene on the day of the visit and telephone conversations two days earlier with Mark Sprague, her farm manager.

The ruin, which has only one corner of wall visible, is approximately 10 feet high with three trees growing out its northwest corner. It appears to have been out of operation for at least 100 years. It is about 20 feet from the brook, in which are outcrops of pinkish-white marble. Dale made mention of the kiln mound and the colorful marble outcrops in the vicinity (Dale 1915:45-46).

Two marble beds lie close to Mt. Pisgah (Mt. Snow), in the north-west corner of the town. The first bed is about one third of a mile north of the mountain on Lime Kiln Brook, and about one fourth of a mile southwest of the farm long known as Edwin J. Bartlett's, now Stephen Greene's. The marble outcropping measures 47 feet in width and 19 feet in thickness. This Dover marble, coarse-grained, pinkish in color and streaked with green and white dolomite, was never quarried for commercial purposes. For many years the stone was burned for lime, hence the name of the brook (Kull 1961:3).

The 1869 Beers map of Wilmington shows part of Dover then in Wilmington and a limestone ledge indicated near the location of the lime kiln. The map also indicates the home of N. A. Kennon and a sugar house just east of the ledges. Both buildings still stand, the former being Mrs. Greene's house today. No evidence of a quarry was noticed the day of the inspection. The ruin appears to be too deteriorated to justify restoration, as suggested in Mr. Greene's 1978 letter, but it was a nice thought.

WD-89 Grimes-Fitzgerald Lime Kiln (Wilmington): Near an outcrop of marble about two miles northwest of Wilmington village, lime was last burned about 1850. The kiln is described as being just north of the outcrop, which is about 700 feet west

of the W. S. Grimes house at the 1,800-foot level of the mountain. Dale showed it about a mile north of Route 9, west of Haystack Mountain Road, near the end of what is Beebe Road (Dale 1915:47-48).

The site was found in 1990 on Tom Fitzgerald's farm, which includes the old Grimes farmhouse, at the end of Beebe Road. The ruin is a quarter-mile north of the dirt road that leads slightly uphill west of the farmhouse. Between the ruin and the road is a quarry, approximately 200 feet long by 6 to 8 feet deep/wide, looking like a meandering World War I infantry trench.

The kiln ruin has a Gothic-type opening, rising from about 3 feet wide at ground level to a point 4 feet 9 inches high. The outside wall measured about 18 feet square at ground level, which was difficult to measure due to the amount of breakdown. The inside of the ruin, however, is relatively intact, and displays a definite egg shape, measuring 9 feet in diameter at the widest, narrowing at the top and at the bottom. The inside walls are reddish from the heat of burning lime. Walls measured about 3 to 4 feet thick. No firebrick or binding were found associated with the ruin. The front opening faces to the east, on the downhill side. A tree (not birch) was growing inside the ruin.

Mr. Fitzgerald said that the farm was formerly owned by author Elswyth Thane, who wrote many books while living there. One book mentioned the old lime kiln ruin (*The Strength of the Hills* 1950, 1976). Her husband was Dr. William Beebe, the famous explorer and naturalist who headed worldwide scientific expeditions, made a record descent of 3,028 feet into the Atlantic Ocean in 1934 in a diving chamber he designed, and wrote many books on his experiences (e.g., *Half Mile Down* 1934). Although Dr. Beebe did spend some time with his wife at the farm, she and the remote farm were apparently not enough to distract from his main interests in New York City. She built a special room for him in an unsuccessful attempt to entice him to stay more, but he must have considered the rustic old Vermont farm to be the end of the world.

Whitingham Lime Kiln Sites: Nine lime kilns were reported to be in full operation in the town of Whitingham about 1830: three at Lime Hollow, three in the Dix neighborhood, two in the vicinity of the Timothy Jillson place, and one at the Newell place. John Parsons and Benjamin Battles were the "lime kings" of Lime Hollow, and the common at the center of the town was the "grand receptacle" for casks of lime awaiting transportation. The lime business flourished in Whitingham from 1820 to 1840 but by 1894 only two kilns remained in operation (Jillson 1894:46).

Although four lime kiln ruins were found in Whitingham, many more remain to be discovered and recorded. Finding the various houses referenced in the 1894 town history could go a long way toward locating the missing lime kiln sites. The 1869 Beers map of Whitingham shows the residence of T. Jillson in the vicinity of an unlocated kiln on Merrifield Road (WD-LK01), and the "Dix neighborhood" seems to be in the vicinity of today's Route 100, where a kiln ruin was found nearby alongside No. 9 Brook (WD-91). The Newell place might be today's residence of Arnold Kingsley, near another lime kiln ruin (WD-127).

WD-91 No. 9 Brook Lime Kiln (Whitingham): About a mile southwest of the village, about where No. 9 Brook empties

into the Harriman Reservoir, a lime kiln and quarry operated on the west side of the brook (Dale 1915:49-50). Dale shows the site about a mile upstream from Route 100, but the best approach to finding the ruin was downhill, east from the highway.

The ruin was found in 1990 based on specific directions from Robert Filler who lives on Route 100, due west from where the site was thought to be. It turned out to be on the east side of the brook, not the west side per Dale. The ruin stands intact about 18 feet high and 20 feet across the front at ground level, narrowing slightly toward the top. The opening at the bottom measured 4 by 4 feet high and wide, leading inward to a smaller opening, about 3 feet high by 2 feet wide, which opens into the kiln proper. Although the lintel stone above the opening has about a 1-inch-wide vertical crack through it, the stone is still holding up the wall. The ruin faces directly toward the brook, about 40 feet away, and is built into the side of the steep embankment. Extending outward about 6 to 8 feet toward the brook on each side of the ruin are 2-foot-high stone walls, probably to keep the working area at the opening clear from hillside material that might work its way down the steep embankment on each side of the kiln. At the edge of the brook, in front of the ruin, is a low stone wall. This wall might be what is left of a bridge that crossed the brook.

The top of the ruin is relatively intact, showing little sign of stone movement. Two white birch grow out the top; one inside of the ruin and the other outside. The inside of the kiln is about 5 feet deep at the top, and has been the recipient of branches and much domestic trash. The inside diameter measured 11 feet at the widest, but gave indications of becoming wider farther down the reddish inside of the ruin, probably having the same egg-shaped interior as does WD-89. No firebrick or iron binding were found associated with the ruin. One piece of unmarked red brick was found on the ground in front of the opening but appears to be a stray piece, possibly having fallen out of some of the refuse that was dumped into the top of the ruin. The ruin is another magnificent example of 19th-century workmanship. The hint of a trail leads uphill to the southeast from the top of the ruin, somewhat paralleling a rusted barbed-wire fence.

While returning to the west side of the brook, the remains of a road were found opposite the kiln ruin, leading uphill toward limestone outcrop, confirming that a bridge connected the kiln to the west side of the brook. Directly above the outcrop and running north-south at the top edge of the steep incline is a 4- to 5-foot-high stone wall, most likely built to keep cattle from falling over the edge and into the limestone outcrop.

WD-90 Kenfield-Kaufmann Lime Kiln (Whitingham): Two miles southwest of Whitingham village and 1,000 feet south of the highway, a quarry provided limestone for Kenfield's lime kiln, which was near the road (Dale 1915:49). Lime was reported to have been burned here in the early 1860s. Limestone from Kenfield's quarry (spelled Kentfield in the reference) was analyzed at 97½ percent carbonate of lime (Hitchcock et al. 1861:748, 555). The 1869 Beers map of Whitingham shows the J. Kentfield house on the north side of the highway. Dale showed the quarry site just south of Route 100, about 1½ road miles east of the county line.

After spending an hour searching the heavy underbrush on

both sides of the brook south of the highway in 1990, only the quarry was found. Close inspection of a small grove of trees and brush in the open field north of the highway and just east of Bob Kaufmann's house (the old Kenfield homestead) revealed the barest traces of a lime kiln ruin. Most of the kiln's stonework is missing, but enough pieces of burned lime and the general configuration of a lime kiln were found to make the identification. The ruin, only about 50 feet uphill from the highway, must have been very visible in days when most of it was intact. Stonework at each end of the culvert that conveys the brook under the highway about 60 feet away hints at where some of the missing stone went, although close inspection of the culvert failed to reveal evidence of any burned stones. A fine stone wall across the highway, running diagonally southwest behind the barn, could be where more of the stone from the ruin came to rest.

WD-127 Kingsley Lime Kiln (Whitingham): During a repeat search for WD-LK01 in 1991, Arnold Kingsley gave directions to a kiln ruin on his farm, which is about a mile up Merrifield Road from Route 100. The kiln ruin is in a small grove of trees (containing the usual white birch) immediately across the road from the Carley Cemetery. The ruins measure about 12 feet square but are otherwise vague in configuration. There was much burned lime but no firebrick or red brick in evidence. Mr. Kingsley knew nothing about the age of the kiln or who operated it. He said that the farm was bought by his grandfather from Mr. Fortner, who had bought it from Mr. Newell. The 1869 Beers map of Whitingham shows C. B. Newell at the farm, who might have been the kiln operator. The Kingsley house dates to 1799 or 1800.

WD-LK01 Merrifield Road Lime Kiln (Whitingham): Lime was burned about a quarter-mile southwest of WD-90, where marble outcrops occur on both sides of the road (Dale 1915:49). Dale indicated the outcrop in the middle of the road. Inspection of the area in 1990 found stone outcrops everywhere, especially on the west side of the road, but no evidence of a lime kiln. Mr. Kingsley (see WD-127) also confirmed a lime kiln ruin in this vicinity, about a half-mile south of Route 100 on the east side of the road.

WD-FS14 Lime Hollow (Whitingham): A lime kiln is indicated on the 1869 Beers map of Whitingham, just downstream of the county line. Names associated with the kiln are L. and M. B. Bishop. The 1870 issue of *Walton's Vermont Register* listed W. Pike and Luna Bishop manufacturing lime at Sadawga.

The area was inspected in 1990, with no evidence of the kiln found, although the limestone outcrops of the hollow were very obvious. The site is close to the old Hoosac Tunnel & Wilmington Railroad right-of-way in the area of the Harriman Power Plant, either or both of which might have destroyed any kiln remains. This area was once known as Lime Hollow, from the amount of limestone quarried and burned in the vicinity (Swift 1977:514). The railroad bed and present road crisscross south from Readsboro, past the power plant to a gravel pit about a half-mile south of the plant. In some places, the present road was seen about 10 to 15 feet higher than an older road running back and forth beneath. Ruins that might have been here have long since been destroyed by either the road, railroad, or power plant, but subsurface remains might yet exist.

Since it was impossible to relate the present surface topography to roads and landmarks in the Beers map, even a remote guess as to the location of the kiln site could not be made. (Lime kilns also operated about a mile to the north; see BE-FS7 and BE-LK06.)

WD-126 Vermont Lime Company (Whitingham): The Vermont Lime Company operated a lime kiln along the east shore of the Deerfield River at Shermans, a station along the route of the Hoosac Tunnel & Wilmington Railroad. The site of the kiln ruin is about three miles south of Readsboro village, or about two miles north of the Massachusetts line. In the vicinity are also the extensive ruins and remains of the Sherman Carbide Company. The lime company is said to have operated ca.1890 to 1900, but possibly also operated earlier. "The company's logo was the strongest lime in Vermont. In the woods there were about five kilns. The largest of these kilns is oval in shape. If you go around this kiln you will find a hole which you can climb in. Mr. Henry Oakes, who is now 97 years old [1984], used to draw the cord wood that was once used in the kilns" (Lefebvre 1984). Lefebvre mentioned five kilns although only one was found. Dale wrote about the marble outcrop at this site but mentioned neither the lime kilns nor the carbide company that was in operation at the time.

The marble at Sherman has been shown by actual use to be valuable for the manufacture of calcium carbide. During the early part of the war [World War I] a plant for its manufacture was constructed at Sherman at a large cost. A very excellent product was made for six or eight years, but about a year ago the plant shut down and now it is being dismantled. There seems to be no local reason why the process should not be successfully carried forward. But the place is some distance from a coal supply and out on a stub railroad expensive to operate and these things are handicaps. On the other hand the plant is far enough from industrial centers to have little or no detrimental contacts with the large labor problem. Further, the product is claimed to be very superior. The marble is abundant and very easily gotten from quarry to plant. The geologic and geographic conditions may be considered very satisfactory (Hubbard 1924:342).

Three inspections were made, one in 1990 and two in 1991; the kiln ruin was found the third time with the assistance of Readsboro resident and former GE associate Bob Dion. The 20-foot-square and 5- to 6-foot-high stone ruin is uphill and east of the only major brook crossing a mile south of the power station, on the east side of an old road that climbs to eventually overlook a major portion of the carbide works ruins. Because it was pouring rain and conditions were near impossible, accurate measurements were left to another day. No firebrick was found associated with the ruin.

Downhill to the north, west, and south of the kiln ruin are nearly a dozen stone, brick, and concrete ruins of the carbide works on various levels of the hillside that rise steeply immediately east of the abandoned railroad right-of-way. There are three magnificent stone archways, one lined with three tiers of red brick, hinting at some kind of furnace operation; four oval, 1½-foot-high by about 6-foot-deep concrete ovens placed on a high platform of flues; at least two high, square, poured-concrete water towers that look like lime kiln ruins to the

unwary eye (and could account for some of the five kilns referred to by Lefebvre); many, many foundations of varied shapes and undetermined functions; and many cellar holes of houses and at least one hotel. One of the ruins associated with the carbide works might be a more modern lime kiln but this needs further study. One poured-concrete foundation is probably 50 feet square with walls that reach 25 to 30 feet high and reinforcement rods sticking higher at the tops of columns and corners. The building was obviously abandoned in mid-construction. Hundreds of firebricks of many configurations and brand names lay about. Noticeably missing was iron hardware, such as oven doors. Pieces of marble found at the quarry associated with the carbide works were found to contain graphite crystals. The whole area was heavily forested, which reduced visibility and prevented appreciation of the total range of the ruins.

Something very labor-intensive went on here at one time, and it will probably take an intimate knowledge of early-20th-century carbide making to be able to specifically interpret the function of each of the ruins. It is a fascinating site to explore and it begs for serious archeological study.

Summary of Results

The variability in design of lime kilns ranks just behind the variability in design of charcoal kilns. As is the case with charcoal kilns, ruins and remains of lime kilns reflect the various construction materials used, the configurations of the kilns, and the numbers of kilns at each site. Of the 118 lime kiln sites researched, 85 sites were found, and 64 of these (75 percent) yielded 93 ruins. Thirteen out of a possible 43 ruins still contained remains of their tall iron shells. Thirty-four ruins were found to be internally lined with firebrick. Table 8-2 presents the distribution of lime kiln sites and types of ruins by county.

The largest concentration of lime kiln ruins was found in Windsor County at Plymouth, where 17 ruins were found. These ruins are adjacent to outcrops of limestone that were considered in the early 19th century to be of exceptional quality.

Table 8-2. Distribution of Lime Kiln Sites and Ruins

| County | Sites | Type of Ruins | | | Total Ruins |
|------------|-------|---------------|--------------------|----------|-------------|
| | | Stone | Stone/ Concrete | Concrete | |
| Addison | 12 | 3 | 1 + 6* | | 10 |
| Bennington | 15 | 4 | | | 4 |
| Caledonia | 1 | | | | |
| Chittenden | 5 | 1 | | 4* | 5 |
| Franklin | 9 | 8 | 3 + 3* | 2 | 16 |
| Grand Isle | 1 | | | | |
| Lamoille | 5 | | | | |
| Orange | 1 | | | | |
| Rutland | 19 | 16 | | 3 | 19 |
| Windham | 16 | 12 | | | 12 |
| Windsor | 34 | 27 | | | 27 |
| Total: | 118 | 71 | 4 + 9* | 5 + 4* | 93 |

*Contained remains of iron shells.