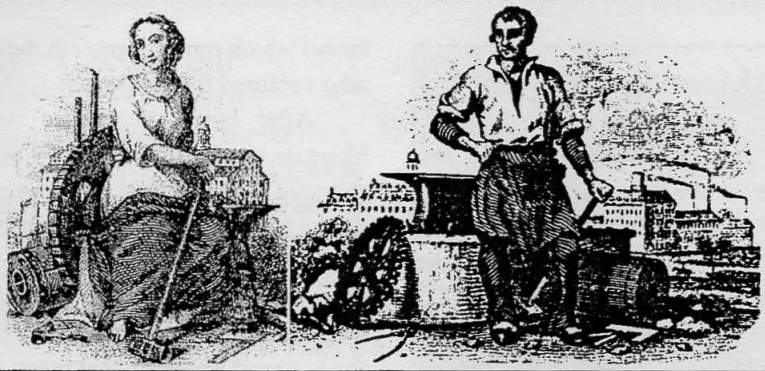


Society for Industrial Archeology · New England Chapters

VOLUME 33 NUMBER 1 2012

CONTENTS

NNEC-SIA President's Report

Hello; thank you for the opportunity to serve as your leader this year. I look forward to meeting many (most?) of you at our spring tour in Claremont, NH, on May 19th. This tour is packed with industrial archeology and it's all in one place except for the High Bridge which is only about two miles downriver. Bring someone along. We all must know at least one other person who would enjoy an SIA tour. Show him/her the flyer and invite them to ride with you. You'll have a good time talking about industrial history as you ride together, especially on the way back. You pay their $5 donation but plan to stop for gas on the way and they will surely offer to kick in $10.

We'd like you to be a part of our management team. Your input would be appreciated and respected as the second vice president. Sometimes people shun leadership positions until they get involved and then they're glad to be part of the inner circle. That's where you learn the most and learning about industrial history is fun. Please call me to discuss this at (603) 526-6939. Thanks.

Recommend a new tour. What site have we overlooked or what new type of site haven't we considered? Call me on that too or e-mail dunmark@tds.net

DIY industrial archeology. Enjoy researching something small in your own back yard. How often have you driven by an old dam, bridge, mill building, foundation and/or smoke stack and wondered what the story behind it was? It probably wouldn't warrant an SIA tour by itself but you could have the fun of researching it. Then take a picture and send a short write-up to David Starbuck, our editor. Start by asking at the town office for who would know the most about it and then call that person. While at the town office ask to see the town "tax maps;" they're open to the public (real estate people use them all the time). Find the site's lot # and you'll be able to read the ownership history of the lot. That will give you more detail for when you go to see someone. For instance, the owner in 1885 might have been NH Box Company. Go ahead, have fun and then send it in to David. Don't break a leg on someone else's property though; get permission first.

David Dunning
NNEC President

Fall 2011 NNEC Meeting and Tour

The Northern New England chapter held its fall meeting and tour on Saturday, Oct. 29th at the Manchester Millyard Museum. The museum had also invited its members and the general public to join us for either the morning session or the whole day. A short chapter meeting was held where David Dunning was nominated and voted in as our new chapter president. We now have David's former position of second vice-president open if someone would like to become more involved with the chapter.

Bill Gerber, a member of the Middlesex Canal Association, began the day with a presentation on the "Canals of the Merrimack River." Starting in Concord and ending in Lawrence, Mass., he showed pictures of the many canals which once lined the river, allowing boats to bypass rapids as the river flowed to the Atlantic. Bill also discussed the dates when these canals were opened and the construction methods used. The canals were built between the years 1792-1815 and generally operated until the 1840's-1850's. The new railroad lines besides the river could haul freight at a lower cost and year round, providing competition to the canal and in time their demise.

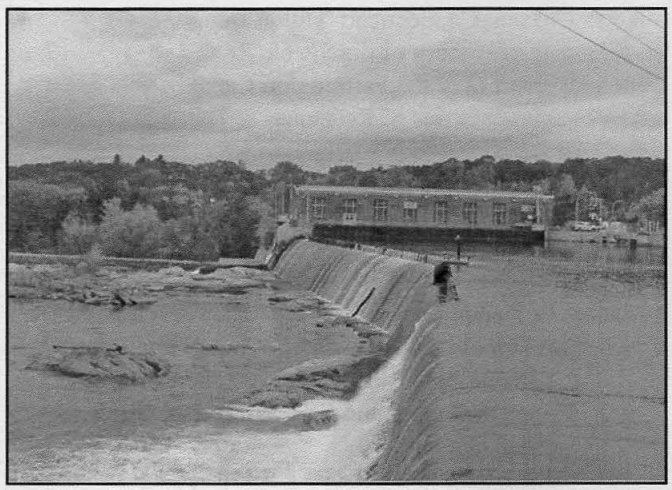
After the presentation we took a short walk to the Merrimack River to see the remains of Merrill's Falls canal which was built between 1808-1813. Considering it was built 200 years ago, and the numerous floodings since then, it's surprising how visible this canal is today.

We then went inside the old canal gatehouse, which controlled the water going to the two canals which ran under the brick mills and once turned the turbines. An employee of Public Service of New Hampshire took us through the gatehouse, pointing out the old gates and gearing to open and close them. We had an excellent view of the Amoskeag dam and water running over it, while learning about the dam's history and the hydro-power provided today by its turbines. The high point of the day was descending down a stairway to a tunnel which runs underneath the dam, an experience that all who ventured forth enjoyed!

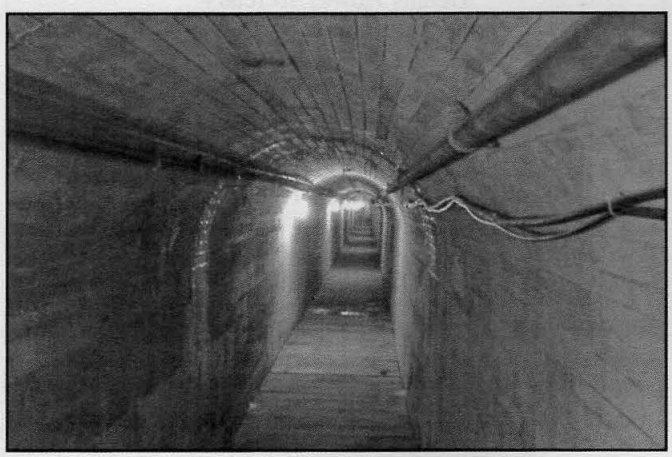
After lunch, there was time to visit the Millyard Museum as part of the day. Of special interest is an exhibit showing how the canal water would flow through huge penstocks under the brick mills, turning the turbines which powered them. Aurore Eaton, Manchester Historical Society Director, had arranged for free admission for members who were interested in visiting the SEE Science Museum above the Millyard Museum, and many members took up this offer. For others she led an afternoon tour of nearby millyard worker housing units. This area has the largest remaining number of 19th century millworker housing left in the country. Aurore described how the workers lived while working in the mills, and the company programs available to them despite the long hours, low wages, and poor working conditions. As snow began to fall, we finished up this fine day and headed home as the largest snowstorm of the winter arrived that evening.

Dave Coughlin
NNEC Member

Aurore Eaton, Manchester Historical Society Director, describes the development of the Manchester Millyard.



The Amoske ag dam and hydropower station seen from the old gatehouse.



The tunnel under the Amosk eag Dam.

"Silver City" Talk & Tour

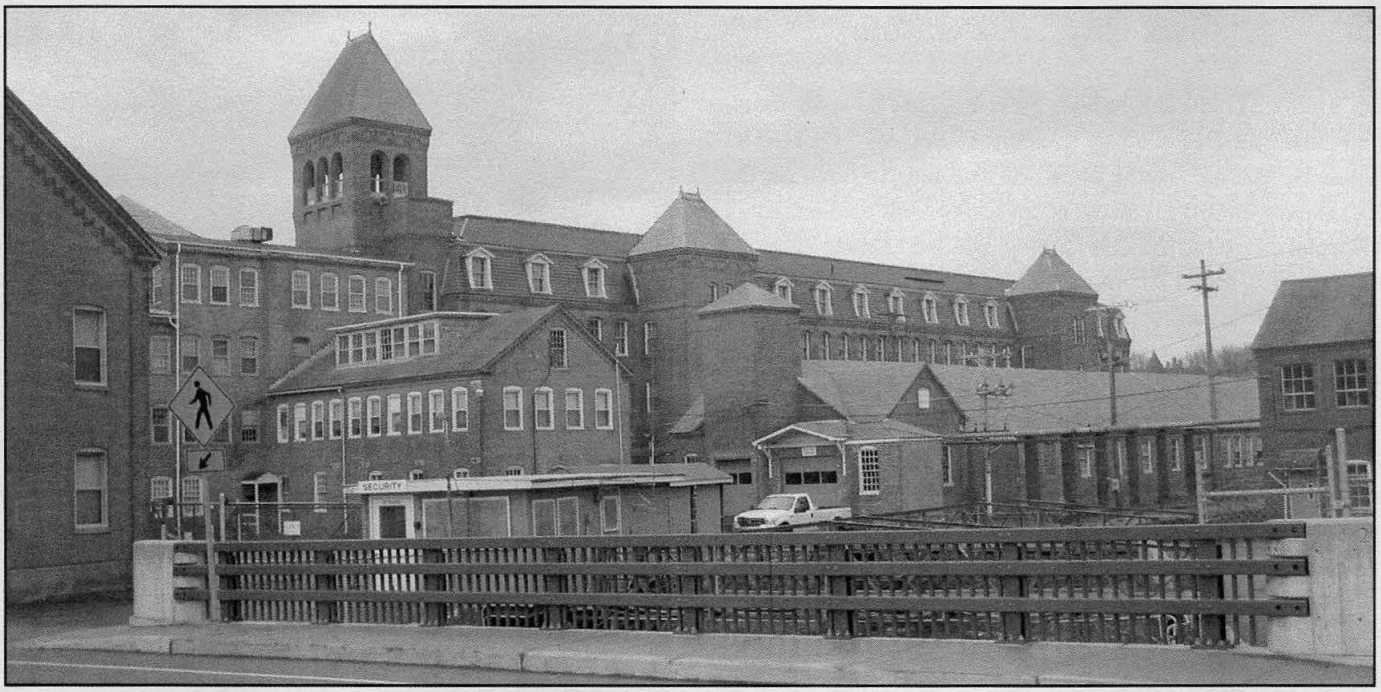
On March 31, 2012, Southern New England Chapter members met the Old Colony Historical Society (OCHS) in Taunton, Massachusetts, for a talk and tour focused on the local silver industry. The event coincided with the last day of a special exhibit at the Old Colony, entitled "Lester Vaughan & Taunton's Metal Artisans," featuring an extensive collection of pewter wares, equipment and other items from a noted Taunton whitesmith, as well as the numerous other Britannia, silver and copper companies that once operated in Taunton – the "Silver City."

After members gathered and had a chance to view the special exhibit, Jane Hennedy, director of the OCHS, gave a presentation entitled "From Simple Start to Silver Finish: Reed & Barton, the First 100 Years." The well-known Reed & Barton company traces its origins to 1824, when Isaac Babbitt, a jewelry maker and dealer, perfected his own version of Britannia metal, a shiny variation of pewter, then being imported from Great Britain, that was gaining popularity in the United States. (Although formulas vary, Britannia metal contains about 93% tin, 5% antimony and 2% copper, while English pewter contains about 91% tin, 7.5% antimony and 1.5% copper.) Babbitt soon partnered with William Crossman to produce Britannia wares from a small rented shop on Spring Street in Taunton. In 1826 they opened a small new factory on nearby School Street. This shop, built on a site lacking water power, was fitted with a James rotary-valve steam engine, said to be the first steam engine used in Taunton. Among the workforce of Babbitt & Crossman were two young apprentices, Henry G. Reed and Charles E. Barton. During this time, the company produced its first teapot – in a style copied from a British design. One of these early Britannia teapots was on display at the OCHS as part of the special exhibit.

In 1829, Babbitt sold his share in the company to Zephaniah A. Leonard, and the firm was reformed as Crossman, West & Leonard, with the addition of William West. Babbitt remained with the company as an employee (as superintendent). The company soon encountered problems due to cramped quarters, lack of operating capital, and high costs associated with operating the inefficient engine. In August 1830, the company was dissolved, and a new, joint-stock company was formed under the name Taunton Britannia Manufacturing Company. With the influx in capital from Horatio Leonard, and several others, a new three-story, 40 ft x 100 ft, brick factory was built at Hopewell Village in Taunton. Power was supplied by the Mill River with a bucket wheel measuring seven feet wide by fourteen feet in diameter. The engine from School Street was also moved to the new plant to provide supplemental power during summer months. The section of Taunton where the factory relocated soon became known as "Britanniaville." In 1833, an employee named William Porter developed a hard version of Britannia metal for use as bearings in the iron rollers used by the company. Isaac Babbitt took particular interest in Porter's invention and later patented its use for certain applications. This became known as "Babbitt metal," still used for bearings today. A portrait of Isaac Babbitt hangs in the main hall of the OCHS.

The fron entry of the Reed & Barton company, which traces its origins to 1824, when Isaac Babbitt, a jewelry maker and dealer, perfected his own version of Britannia metal.

After a promising start, the Taunton Britannia Manufacturing Company failed in November 1834 during a national economic crisis. In early 1835, idled employees Henry Reed, Charles Barton and Benjamin Pratt convinced Horatio Leonard to rent them space and equipment within the shuttered factory, which Leonard still owned. Work began again in April 1835, with ten employees, including Horatio's son Gustavus. Despite the crushing debt which loomed over the company, there was still a demand for the teapots, castor frames, oil lamps and other items they produced. In February 1837, Reed, Barton, Pratt and Gustavus Leonard formed a new partnership as Leonard, Reed & Barton. The new company survived the financial Panic of 1837 and the lean years that followed, largely through the technical skills and shrewd management of Henry Reed. In 1840, Gustavus Leonard left the company, which was renamed Reed & Barton, as it remains to this day. Through the 1840s the company's fortunes gradually improved. During the period from 1852 to 1857, the company expanded its facilities several times.



The Reed & Barton works in Taunton, Massachusetts.

In 1848, Henry Reed began to experiment with silver plating. The methods for plating cheaper metals with silver on a commercial level had already been in use in Great Britain since the mid-1830s. The process employed a Smee battery – comprised of six jars containing sulfuric acid with copper and zinc plates suspended in the acid by wires. The plating solution, comprised of a mix of silver and potassium cyanide dissolved in water, was contained in a separate vat. The piece to be plated was placed into the vat, suspended by a wire attached to the zinc plates in the battery jars. Also in the plating vat was a sheet of silver connected by wires to the copper plates in the jars. An electrolytic process deposited the dissolved silver onto the negatively charged piece, while the suspended sheet of silver replenished the solution. The process resulted in a rather dull, rough finish that required the skills of a burnisher to give the plated item its real shine. Initially, the company simply plated its regular Britannia ware, but this was soon replaced by items made from nickel silver (an alloy of copper, nickel and zinc). With the rise in popularity of silver plated wares, the production of Britannia items ceased by the 1860s. In 1863, a new three-story office was built on the east bank of the Mill River, along with a new burnishing shop. In 1864, a three-story spoon and fork mill was built behind the original 1830 factory. Further expansions also occurred in 1873 and 1881.

Charles Barton died in 1867. The following year, a new partnership was formed with Henry Reed, Henry Fish and George Brabrook purchasing Barton's interest from his widow, along with permission for continued use of the "Barton" name. In 1888 the company was finally incorporated. By this time the company employed over 800 people. Production of sterling silver items began in 1889. Over the decades Reed & Barton had built its reputation on producing the highest quality merchandise possible. It also spent increasing amounts of time and money on design and marketing. Its first patented design was the 1868 "Roman Medallion" flatware pattern. In 1885, following the lead of competitors such as Meriden and Gorham, the company introduced its first catalog. It was a monumental undertaking that took three years to produce, containing 400 pages with over 4,000 wood engravings. The total cost of production for the 7,000 volumes produced is said to have been over $100,000.

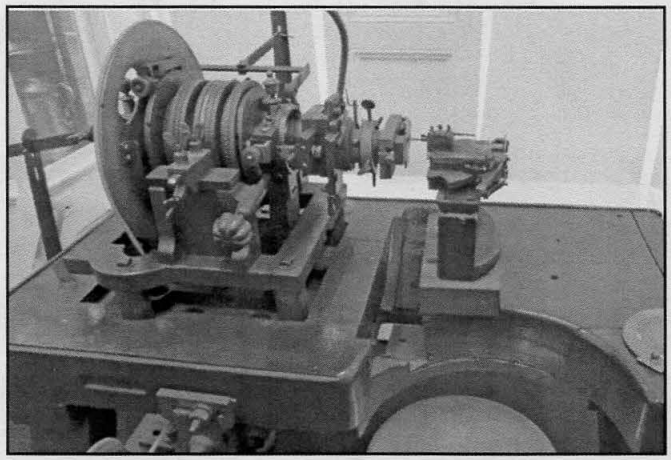
After the death of Henry Reed in 1901, the leadership of the company was transferred to his son-in-law William B. H. Dowse. A financial master with a background as a patent attorney, Dowse undertook an overhaul of the company's bookkeeping methods, and a major restructuring of the plant layout and manufacturing processes. He hired a team of consultants to upgrade machinery and overhaul the factory's inefficient power system. New turbines were installed, replacing the old vertical water wheels, including the original 1830 bucket wheel that was installed by the Taunton Britannia Manufacturing Company. In 1923, Dowse transferred control of the company to his son-in-law, Sinclair Weeks. During World War II, Reed & Barton produced stainless steel flatware, surgical instruments, and parts for radar systems. The post-war boom of the 1950s marked a high point in the history of the company. Large, modern additions were made to the plant, which employed over 1,000 people

at its peak. The demand for fine sterling silver items such as wedding gifts was at an all-time high. By the 1970s however, the company's successes had declined, due to increased competition, price wars and a sharp rise in silver prices. The 1980s saw a shift in demand for more stainless steel flatware and silver plated hollowware. During the 1990s, manufacturing was gradually moved from Taunton to Asia and other parts of the United States. In 1996, the company produced the metals for the Centennial Olympics in Atlanta, one of which is on display at the OCHS.

After the talk, the group was given a tour of the second floor museum, featuring an array of artifacts associated with the history of the Taunton area, including its many industries. The museum is divided into three rooms; the first and largest contains a mix of various items. The second room is devoted to military history associated with Taunton, and the third room is entirely devoted to the silver industry. Among the many items of special interest to SNEC-SIA members was an early 19th century nail cutting bench, typical of those once used by area farmers to produce cut nails for supplemental income during the winter months, from nail plate and rod furnished by nearby slitting and rolling mills. The museum also features a collection of cast iron stoves made in Taunton, including those by Glenwood, White-Warner, and others. Articles from Taunton's various other iron industries were also on display, including nails, tacks and miscellaneous iron implements, as well as a sample of bog iron, which once exclusively fed the many iron works in the region during the 17th and 18th centuries.

The military room features a collection of artifacts from all periods, including Taunton's role during WWII with Camp Myles Standish. Located in the city's north end, abutting I-495, the site now contains one of the largest industrial parks in New England. The room also includes an impressive collection of historic firearms, from a huge 17th century musket to 20th century military weapons. Within the collection is a Civil War-era Springfield rifle manufactured in Taunton by the Mason Machine Works.

Lester Vaughan Pewter on display at the Old Colony Historical Society photo by Robert Hayden



Engine Turning Machine photo by Robert Hayden

The silver room contains an extensive collection of silver items, mostly manufactured by Taunton companies, and a few pieces from other places. The room also features an 1860s-era hand-operated turning engine donated from the Reed & Barton factory. The lathe-like machine was once used to carve complex concentric patterns into disc-shaped pieces, such as plates and dishes. Chapter members also got a glimpse of the Old Colony's extensive archive library devoted to Taunton-area history.

Unfortunately, a tour of the NRHP-listed Reed & Barton factory complex was not possible. While the company has maintained its offices there, along with a factory store, since 2009, it is no longer used for production. The privately held company does not readily divulge information about its business to the general public. Regardless, a few members visited the site after the meeting, to view a glimpse of the historic complex from the sidewalk.

Marc N. Belanger
SNEC Member

Other Sources:

1943 *The Whitesmiths of Taunton – A History of Reed & Barton 1824-1943,* George Sweet Gibb.

2008 *A History of Taunton, Massachusetts*, William F. Hanna.

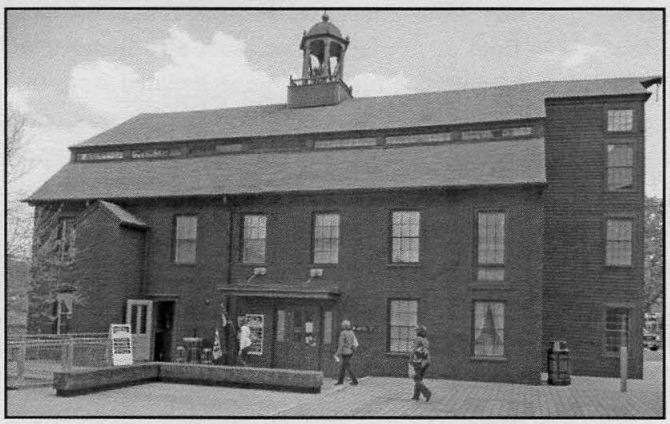
1999 *Sterling Seasons--The Reed & Barton Story*, Alvin, J. Silk, Reed & Barton Corporation.

2005 *International Directory of Company Histories*, Vol.67. St. James Press.

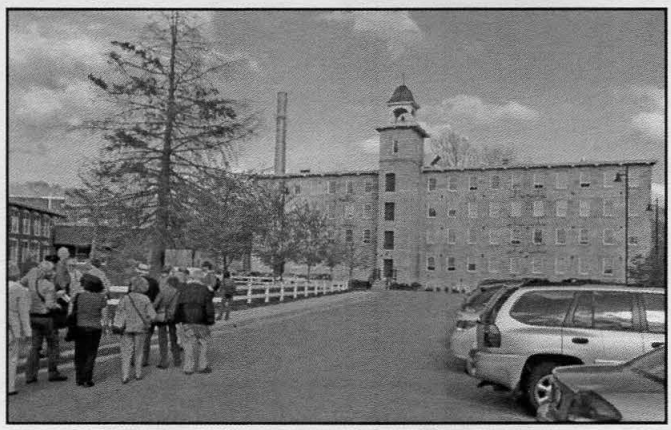
Annual Rhode Island Statewide Historic Preservation Conference

A handful of members from the Southern New England Chapter attended the 27th Annual Rhode Island Statewide Historic Preservation Conference in Woonsocket on April 21. The day began with introductory remarks inside the Stadium Theater with a focus on the efforts by the Blackstone River Valley National Heritage Corridor to become a National Historic Park that will tell the story of how America's industrialization began. Draft plans for the park include Slater Mill in Pawtucket and the historic districts of Ashton, Slatersville, Whitinsville, and Hopedale; a decision from the National Park Service is expected in 2012. The rest of the day was split between tours, presentations, and panel sessions. The SIA members chose to tour the Whitinsville mill village in the morning with Blackstone Valley ranger Valerie Paul. The tour included the worker and management housing and ended with lunch at the Whitin Mill and an explanation of the renewable energy technologies that were developed during its rehabilitation. The Whitin Machine Works sits on the Mumford River in Northbridge and became one of the largest textile machinery companies in the world. It is remembered for developing an early cotton picking machine and, more notably, the ring spinning frame. The afternoon tour of choice visited Slater Mill and Slatersville and was led by SIA historian Rick Greenwood, Slater Mill curator Andrian Paquette, and ranger Kevin Klyberg. The tour of Slater Mill was somewhat mundane and perfunctory, but the group spent a fascinating hour visiting Slatersville and the mills that were converted to apartments in 2007. Slatersville was developed from a sleepy crossroads by Samuel Slater and his brother in 1807. It was the first mill-based community developed in the US, and it became a model for other "Rhode Island system" mill villages across New England.

Michael Green



The 1826 Brick Mill at Whitinsville is one of the oldest textile mill buildings in Massachusetts.



The Center Mill at Slatersville was converted to apartments in 2007.

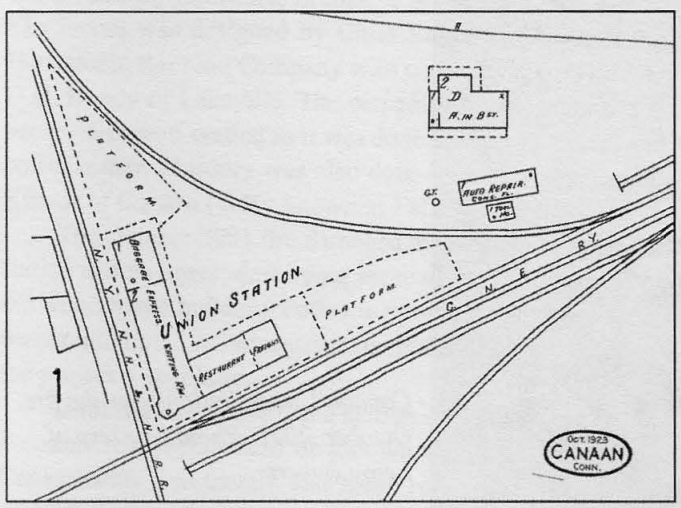
The Center Mill prior to the rehab in 2005 (photo: Marc Belanger)

North Canaan, Connecticut Union Depot:
One of the country's oldest rail stations gets a new lease on life

The Canaan Union Station, originally known as Union Depot, in North Canaan Connecticut, sits where the former Connecticut Western railroad (east-west travel) meets the Housatonic railroad (north-south travel). It is one of the oldest operating railroad stations in the United States and was placed on the National Register of Historic Places in 1972 only to be mostly destroyed by children playing with fire in 2001. The station was, in its prime, a hub for passenger as well as freight travel across the northeast region of the United States. The village of North Canaan grew up around the station and the economic vitality of its downtown has been strongly influenced by the station's activity (both in good economic seasons and poor ones) ever since.

A rehabilitation and adaptive reuse program is currently underway, sponsored by the Town of North Canaan and the Connecticut Railroad Historical Association. The program is being funded through the Connecticut Department of Transportation with federal Transportation Enhancement Act monies. This article shares an overview of the station's critical significance to the history of the town of North Canaan and to the early regional rail system on through the 20th century. Also described are its notable architectural features and plans for the station, looking into the future.

Canaan Union Station was constructed in 1872 to establish a critical stop at the juncture of two railroad lines, the Housatonic Railroad Company and the Connecticut Western Railroad. Prior to construction of the station, trains stopped near the Peck's Hotel (built circa 1831), to pick up passengers. The hotel served as the passenger depot for 40 years.



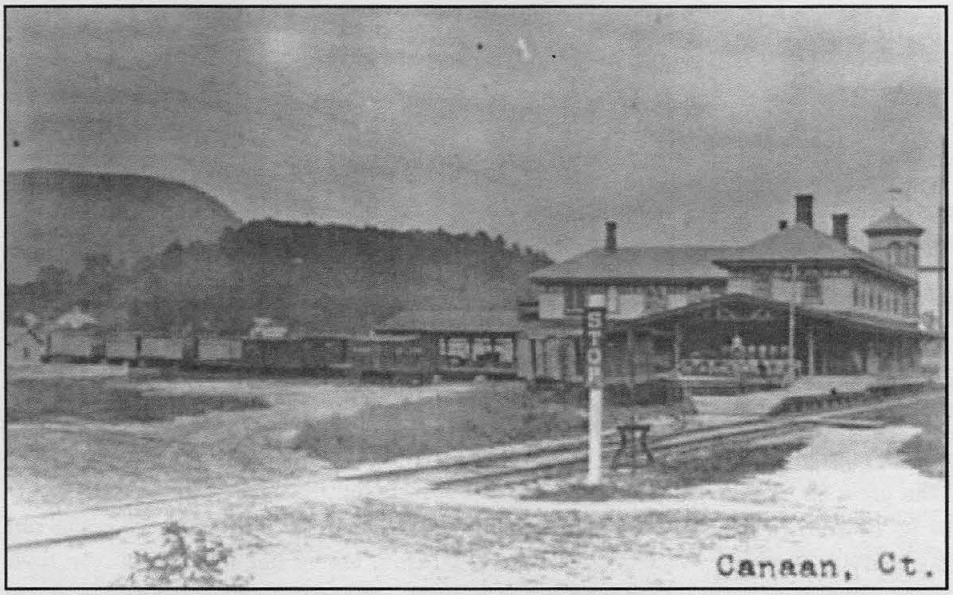
October 1923 Sanborn Fire Insurance Map of Canaan Union Station; the two platforms each had a roof, but were open pavilions that served waiting passengers.

Union Depot Railroad Station, North Canaan, Connecticut, as it looks today in 2011. It has been partially restored but the new framing and walls contrast poorly with the historic elements and character.

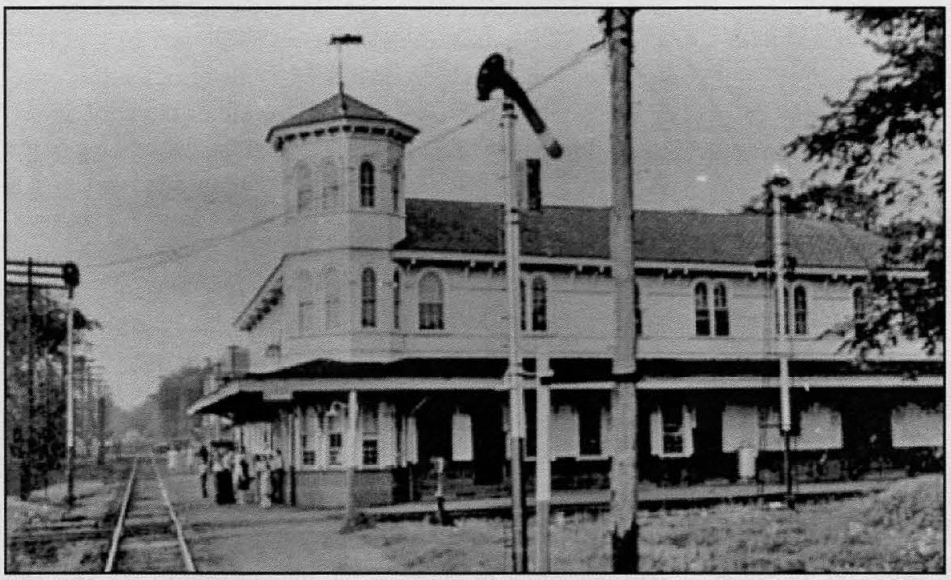
But, as demand for use of the stop grew, so did the need for a full service station. Initially known as Union Depot (a variety of names have been used over its history), the L-shaped building provided passenger services out of the north leg of the building with baggage service from the western leg of the building. Over the years the station was expanded and its layout redesigned. For example, the original semi-circular lunch counter known for its homemade pies became a full restaurant by the 1920's and the passenger platforms were enclosed. By 1909, in its heyday, the building included a railroad express office, passenger waiting room, telegraph office, rooms on the second floor which may have been let to boarders, and a freight office. The floor mounted scale that was in the freight office remains in place today. As of 1923, the platforms at either end of the building had also been expanded, extending to the edges of the triangular-shaped parcel nestled in between the intersection of the two rail lines.

Union Depot was an active passenger station until 1971. The stationmaster and ticket office operated from the unusually large three-story octagonal-shaped tower on the station's southeastern corner. In 1891 there were reportedly 26 passenger trains a day with stops at the station. Passenger lines through North Canaan offered regional connections to Boston, the Hudson River Valley, New York City, and Philadelphia. Schedules published in 1857 show north-south service from Bridgeport, Connecticut, to Pittsfield, Massachusetts.

The last freight agent was withdrawn from the station in 1974 when the last owner, the Penn Central Railroad, went into bankruptcy. A limited number of freight trains still travel past the station regularly and stop at nearby sidings. The region surrounding North Canaan has been known for its production of agricultural products, as well as limestone, iron ore, marble, and granite. The station was a commercial center and has been an important way station in the transport

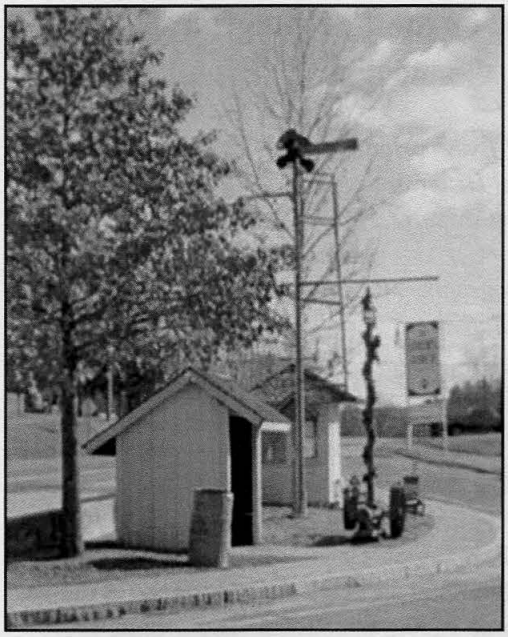


Undated photo: Union Depot at North Canaan; UConn Dodd Center Archives- note that trains pulled up to the station on two sides.

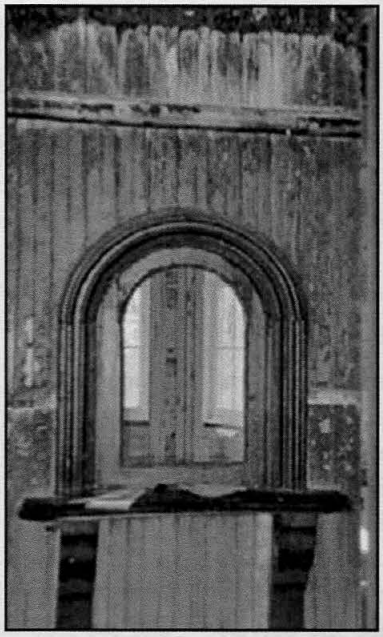


Undated photo: Union Depot at North Canaan; UConn Dodd Center Archives- note train-shaped weather-vane on top of the tower.

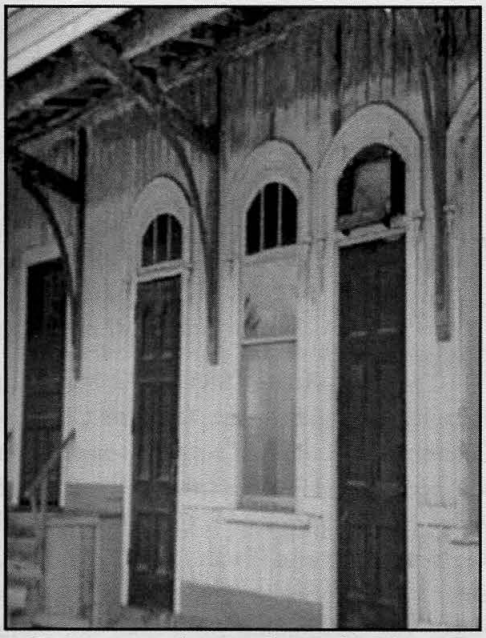
Canaan Union Station after the fire, October, 2001: Photo courtesy of Leroy Roberts



Original signaler and switchman's hut remain on the Union Depot site today.



The original ticket window is being incorporated into the restored station



Exterior windows with iron brackets at eaves today

of raw materials and goods throughout its history.

The design for Union Depot had some elements common to most other rail stations of the era, being built in the Victorian style. It was distinctive, however, for its large size, octagonal tower with copper weathervane in the shape of a train, decorative ticket window, and ironwork brackets under the eaves which extend more than a foot from the building edge.

Each wing was ninety feet in length and two stories high. The exterior had board and batten siding and many windows of varied sizes; mostly they were double hung with round heads. The roofs of the wings are low-hipped and each has a chimney indicating fireplaces for heat on the interior. The Depot was designed by Chief Engineer Shunk of the Housatonic Railroad Company with carpentry supervised by G.H. Bundy of Lakeville. The carpentry for the station was particularly well-crafted as it was done by a local cabinet and coffin maker. Masonry was also done by a local craftsman, Kilmer of Canaan (today known as Falls Village).

The October 2001 fire damaged the western wing of the station and its tower; destroying approximately 60 percent of the wood frame building. Following the fire, the then-current owner attempted to reconstruct the building but abandoned the project a year later.

Until the fire in 2001, the station continued to serve as a commercial center and downtown destination in North Canaan with a restaurant and some retail shops. In recent years, a scenic railroad has used the station as a one of its termini. Throughout its history the Canaan Union Station has been a significant commercial anchor in the heart of the downtown, helping to create a sense of place there.

In 2003 the Connecticut Railroad Historical Association, Inc. purchased the building. Since that time, the Town of North Canaan, with funding from the Department of Economic and Community Development, rebuilt the structural framework for the lost portion of the building. In 2003, the Town began the process of applying for further funding and in 2005 was awarded a Transportation Enhancement Program Grant to establish a railway museum in the new structure and restore the station. Plans for the reconstruction remain consistent with the historical design, to the extent possible. Today, the exterior walls for the station have been closed in and the interior framing is complete. The final design for the restored station is underway.

As in many communities, downtown North Canaan has been struggling economically and has had many empty storefronts in the past decade. It is expected that the presence of the railway museum as a new destination for tourism may be a catalyst to change those circumstances. It is hoped that renewed interest will stimulate the re-establishment of the scenic railway service, encourage renewed interest in America's rail history, and encourage infill development in both the station building itself and in the downtown. The restoration project creates an opportunity for the station to regain its role as an economic development driver and vital asset in community renewal for North Canaan.

Carol Gould, AICP
Community Planning Team Leader
FHI Fitzgerald & Halliday, Inc.
Innovative Planning, Better Communities

Synopsis of History of the SR 68/70 Stone Culvert over the Farmington Canal

Town of Cheshire, New Haven County, Connecticut

Prepared under contract to Connecticut Department of Transportation by
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AECOM, One World Financial Center, 25th Floor, New York, NY 10281
and
Robert Stewart & Fern Wildman-Schrier, Photographers
Historical Technologies, 1230 Copper Hill Road, West Suffield, CT 16093

The State Route (SR) 68/70 Stone Culvert over the Farmington Canal in the Town of Cheshire, New Haven County, Connecticut, is a single-span masonry culvert that was constructed by the town circa (ca.) 1866 (Figure 1; Photo 1). The Farmington Canal was listed in the National Register of Historic Places (NHRP) in 1985, and is significant for its historical, engineering, and archaeological importance. The nomination form does not include the culvert because it post-dates the period of significance of the canal, which corresponds to its years of operation, 1828-47. However, like the canal, the culvert is also significant. Constructed of masonry blocks and slabs, it is a rare surviving example of a ca. 1866 culvert over the Farmington Canal, and the evolution of transportation technology over the course of the 19th century in Cheshire.

Because the culvert is located on a state route, the Connecticut Department of Transportation (CTDOT) is responsible for its maintenance and repair. The culvert was in poor condition, and therefore, CTDOT recently replaced it during Winter 2012, with final paving slated to occur during Spring 2012. In compliance with Section 106 of the National Historic Preservation Act (NHPA), CTDOT and the Connecticut State Historic Preservation Office (CTSHPO) have concurred that the culvert replacement would affect the integrity of the NRHP-listed Farmington Canal. However, the action would not constitute an adverse effect on the canal provided that CTDOT prepare and submit a CTDOT Historic Bridge Inventory Form to CTSHPO, and prepare this brief synopsis of an article concerning the project which has been posted on CTDOT's website at www.ct.gov/culturalresources. It should be noted that the bridge form was submitted to CTSHPO in 2010, and is available for review upon request.

The Farmington Canal was constructed through Cheshire in 1827 and attempted to emulate the success of the Erie Canal in New York which opened in 1825. As a result, investment in canals spread quickly across the Northeast and Mid-Atlantic United States in the mid-to-late 1820s. The Farmington Canal was completed in 1829, connected to the Hampshire & Hampden Canal in Massachusetts, and formed an 86-mile long canal which linked New Haven, Connecticut, to Northampton, Massachusetts.

According to an 1828 map of the Farmington Canal, a bridge spanned it at the location of present-day SR 68/70 Stone Culvert. The map depicts the bridge as narrower than the road itself, typical of canal road bridges. It should be noted that the Farmington Canal was crossed by 90 road bridges and 45 farm bridges that were constructed of timber, and set atop stone rubble abutments. These high, narrow bridges were a source of contention among some Cheshire residents because they were difficult to cross with animals and goods, and were often poorly constructed and neglected. The Farmington Canal had a favorable impact on the econo-

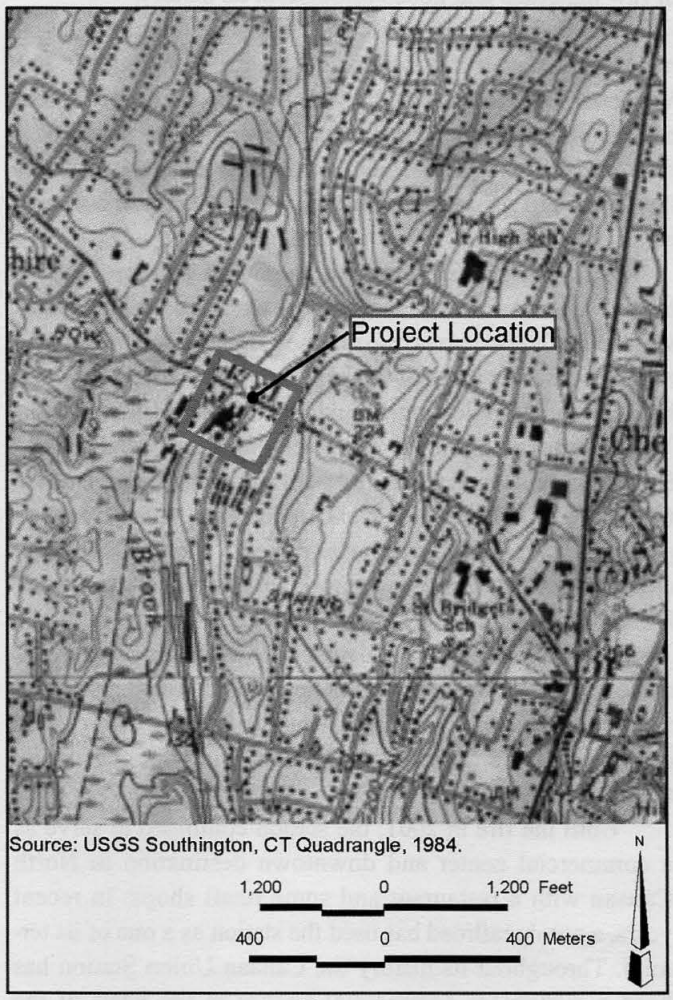


Figure 1

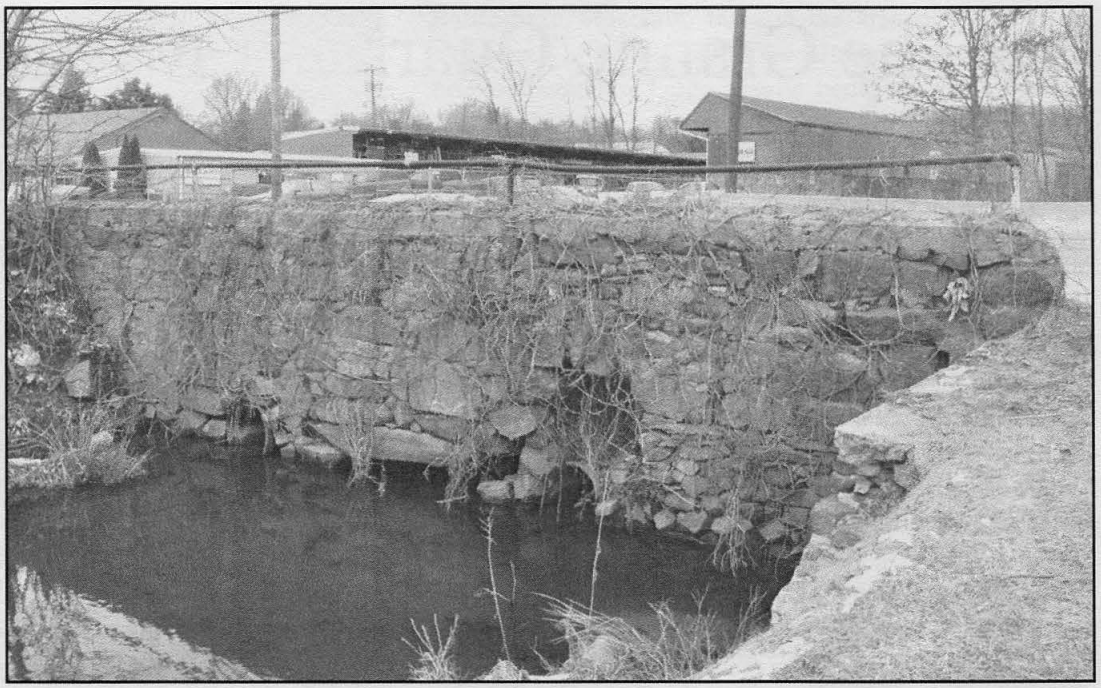


Photo 1: View looking northwest toward south face of the SR 68/70 Stone Culvert. Note high water level which obscures inlet.

Source: Robert Stewart, 2010.

my of many of the towns it bisected, including Cheshire. However, the canal was not a financial success, in part, because it was inadequately financed. In addition, it was rendered inoperable in the winter months by ice, and in the summer months by drought. In 1835, the Farmington Canal Company and the Hampshire & Hampden Canal Company merged to form the New Haven & Northampton Canal Company. The canal became known as the New Haven & Northampton Canal, and continued to be plagued by financial troubles. During this period, the canal also became susceptible to a new form of transportation that was rapidly gaining in popularity: the railroad.

In 1845, the Harford & New Haven Railroad surveyed the Farmington Canal route to determine the feasibility of converting it into a railroad right-of-way (ROW). The report recommended that a new railroad be established primarily along the canal tow-path, and noted that the income generated by a railroad would increase earnings generated by the canal. While the report lauded the benefits of the railroad, it also indicated that the canal would continue to be utilized in conjunction with the railroad.

Therefore, in 1847, the New Haven & Northampton Canal Company began construction of a New Haven & Northampton Railroad ROW along the canal. The canal remained in use during construction; however, it appears its maintenance was overlooked. Numerous bridges that spanned the canal were in disrepair, likely including the bridge in Cheshire. It was the responsibility of the canal company to repair the bridges, and they were thus notified by the Town of Cheshire Board of Selectmen in 1847. As a result, it is possible that the canal bridge in Cheshire may have been repaired during this time.

By the end of 1847, the last barge floated down the canal through Cheshire despite the suggestion that the railroad and canal would operate concurrently. By 1848, the railroad bisected Cheshire along the tow-path of the canal. The tracks crossed the east/west-oriented, present-day SR 68/70 west of the canal bridge. By the early 1850s, a train station was located on the south side of present-day SR 68/70, west of the railroad and canal bridge.

Although the canal was no longer in use, the New Haven & Northampton Railroad was responsible for maintenance and repair of canal bridges within its ROW. Meeting minutes from an 1852 Town of Cheshire gathering indicated that the town was responsible for repair and maintenance of town highways and bridges, with the exception of the bridge over the Quinnipiac River and canal bridges. However, in 1866, the Town of Cheshire assumed responsibility for the culvert that is the subject of this report when it authorized construction of a 60-ft long stone bridge over the canal.

Town of Cheshire records do not indicate exactly when the SR 68/70 Stone Culvert was constructed, or by whom. However, it is likely that local labor was used to construct the culvert. Because the culvert was wider than the predecessor canal bridges, the canal bridge's stone abutments may have been incorporated into the culvert substructure. Although portions of the canal were utilized for skating and pleasure cruises for several years after the construction of the culvert, the culvert itself rendered the canal impassable at SR 68/70, thereby reinforcing the shift in transportation modes to railroads and roads in the late-19th and 20th centuries.

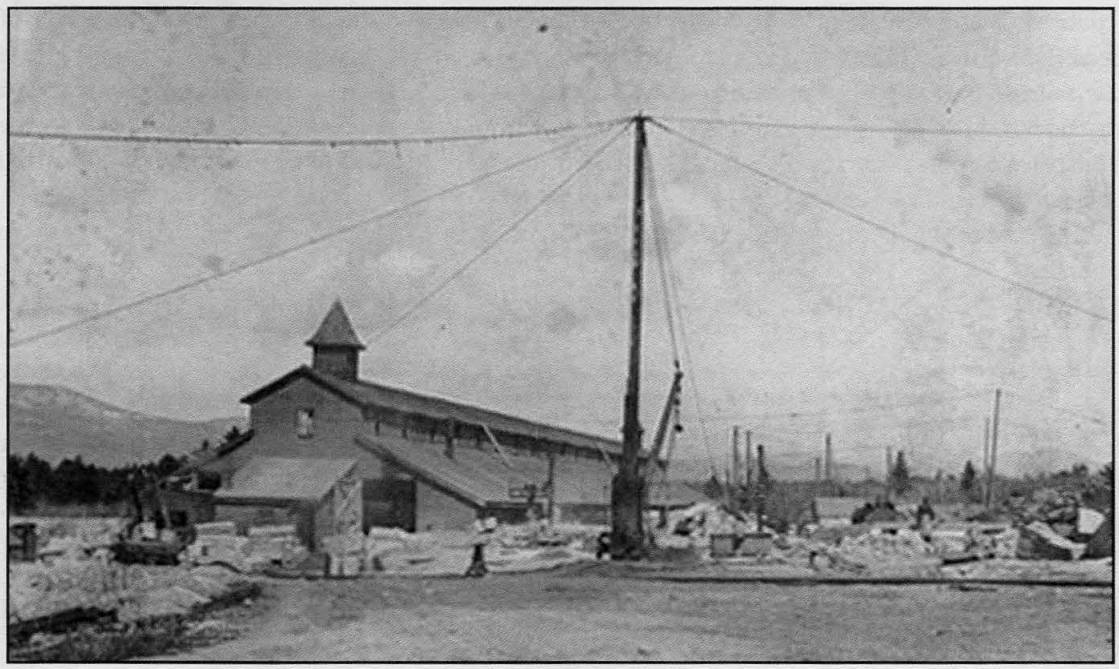
The Granite Quarries of Redstone

The granite quarries on Rattlesnake Mountain in Redstone, NH (part of the town of Conway), together with substantial remains of buildings and machinery dating back to the late 1800's, constitute one of the most interesting industrial archeological sites in New Hampshire. Visiting the area is like taking a step back in time. Portions of two tall wooden derricks remain standing in one of the quarries, barely supported by old guy wires dangling in the trees, and coils of wire cable lie rusting on the ground.. Other derrick booms and masts lie rotting on the ground where they fell when operations ceased in the late 1940's. Large lathes used to turn and polish granite columns are rusting away among the trees that are reclaiming the area. An engine house, with machinery still inside, remains at one of the quarries. Shells of other original buildings survive and there are foundations of others.

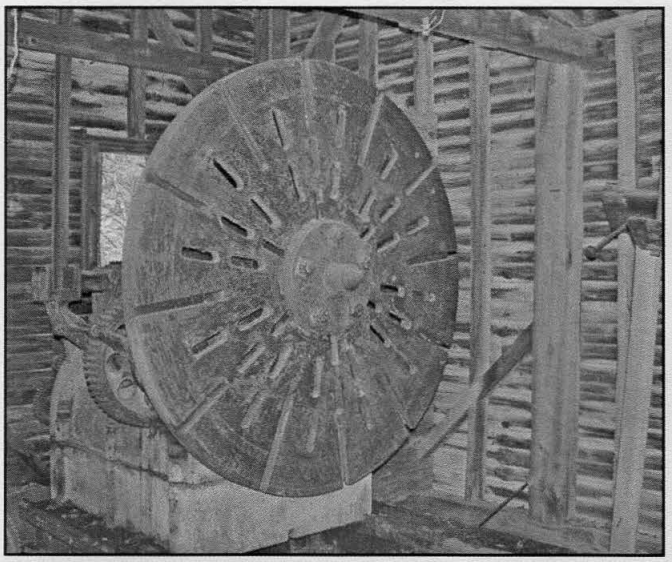
Standing exposed to the elements are two large rusting coal-fired boilers along with two giant air compressors, now obscured by vegetation. The building that once housed them is gone. These boilers generated steam to run air compressors that supplied compressed air for pneumatic tools and machinery in the quarries and stone sheds. Portions of the piping used to distribute the compressed air are still on the ground. Some sections of railroad track remain. Gravity railroads, or tramways, transported heavy granite blocks from the quarries to the once-busy stone yard and sheds at the base of the mountain for processing. At one time, over three hundred men worked in the quarries, yard and finishing sheds. Old photos show these buildings, including the main stone shed, a huge wooden building over 300 feet long, which burned in 1930. The Boston and Maine Railroad brought in raw materials and supplies and finished product was shipped out by rail. Old maps show the extensive rail system that once serviced the site.

Like all quarry sites, there is a great deal of waste granite in massive dumps. Partially processed granite blocks are scattered around the site. Why they were abandoned is not known. High up on the hill, not far from where they were quarried, remains a stack of pink granite saw blocks, weighing twenty-five to thirty tons each. Nearby, a block of roughed-out granite, obviously intended to be a round column, lies next to a still-bearing apple tree. Beside the path that was formerly the main Boston and Maine spur into the quarry lies a rejected polished green granite pilaster about twenty feet long. It's flat on one side, designed to stand against a building. These, and many other relics, are all that remains of a once-thriving business and village; both succumbed to changing technology and changing economics.

Although most of the buildings have collapsed, with the help of old maps, old photographs, studying remnants of foundations and listening to memories of local senior citizens, the story of the facility can be reconstructed. In 1871, the Portland and Ogdensburg Railroad (on their way from Portland to Fabyan's and beyond) laid track at the base of



Wooden Stone Shed, 1906, Redstone



5' Face Plate of Polishing Lathe, 2009, Redstone

Rough Turning Lathe, 2009, Redstone

Winch Operated Railroad track for Green Quarry, 2009, Redstone

Rattlesnake Mountain, through the area now known as Redstone. In the late 1870's the railroad needed granite for bridge abutments. Large granite boulders at the base of Rattlesnake Mountain provided the needed stone. The stone was uniform in composition, split easily along the "grain" and its proximity to the existing railroad line made it easy to transport.

A few years later, George W. Wagg, General Roadmaster for the Maine Central Railroad (which had taken over the P&O RR), noticed the large granite outcroppings higher up on Rattlesnake Mountain. In 1884, in partnership with Payson Tucker, President of the Maine Central Railroad, and J.H. Emery of North Jay, Me., Wagg formed the North Jay Granite Co. The granite in North Jay was a fine-grained, light grey granite similar to that in Concord, NH, and Barre, VT. Three years later, the company combined with the Redstone Quarries under the name of the Maine and New Hampshire Granite Co. The quarries in Redstone produced two different colors of granite: red and green. The Maine and New Hampshire Granite Co. was able to offer three distinct colors of stone; grey from North Jay, plus red and green from Redstone. The two quarries at Redstone lie within a few hundred yards of each other and their geological proximity is a rare occurrence. Earlier maps and photos of the pink quarry indicate quarrying began there, further toward the southeast, and gradually moved northwest, closer to the green quarry. The first rail line, or tramway, ran to the pink quarry.

In the late 19th century, granite was an important building stone and used for paving blocks, in the streets of major cities in the Northeast. Granite was also popular for memorials because of it durability compared to marble or limestone. The availability of three distinctly different colors of stone from one company was a definite competitive advantage to the Maine and New Hampshire Granite Co. By the early 20th century, Redstone was an established and thriving village with workers living in company-owned houses or the company boarding house. Many commuted daily from the surrounding villages. During peak production periods, the quarries employed as many as 350 men. There were quarrymen, cutters, polishers, engineers, carpenters, blacksmiths, and skilled carvers. Following the introduction of pneumatic tools (about 1904) fewer men were required.

Each morning, following a five-minute warning whistle, the 7:00 a.m. whistle blew and the men were expected to be on site, with tools in hand ready to start work. There were no coffee breaks or personal visits allowed during working hours. The men in the yard and stone sheds often walked back to the boarding house for lunch and were back on the job by 1:00 while men working up in the quarries carried their own lunch. Depending on the workload, sometimes

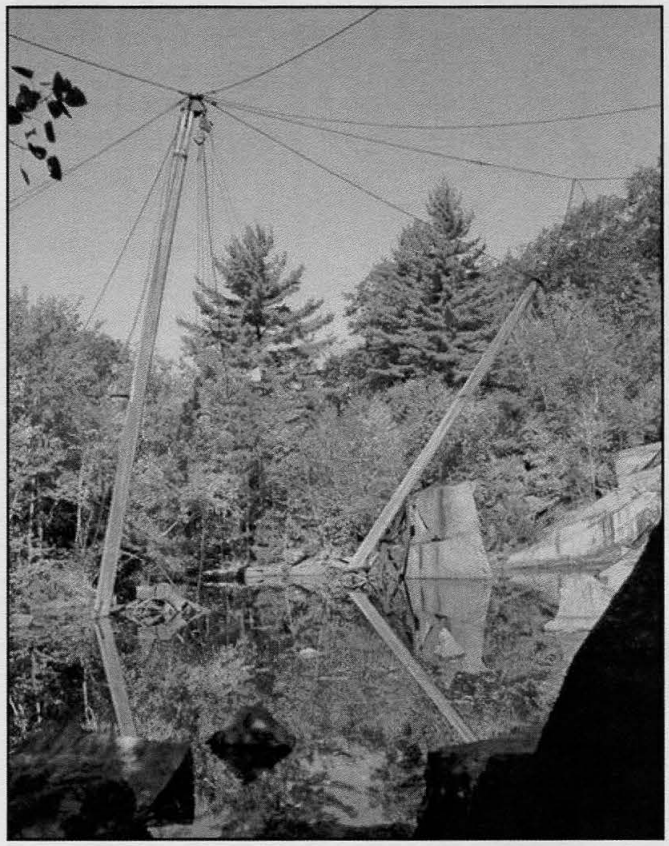
drilling, cutting and polishing operations called for more than one eight-hour shift. In the early days, according to the literature, a driller could earn $1.75 a day while a first-class stonecutter earned $2.00 a day. In 1922 a tool boy earned $11.00 a week while a stone carver with special skills could earn $9.00 and up for a day's work.

By 1889, each day the company was shipping six to nine freight car loads of finished product. Paving blocks for city streets shipped all over the US, New York City using the most. At one time, Redstone shipped as many as 1,700,000 paving stones annually. Eventually the Maine Central Railroad built a line directly into the stone sheds with four spurs to handle coal, lumber and supplies. One spur ran under the "crusher" where granite scraps ("grout") was crushed and used as ballast for railroad track.

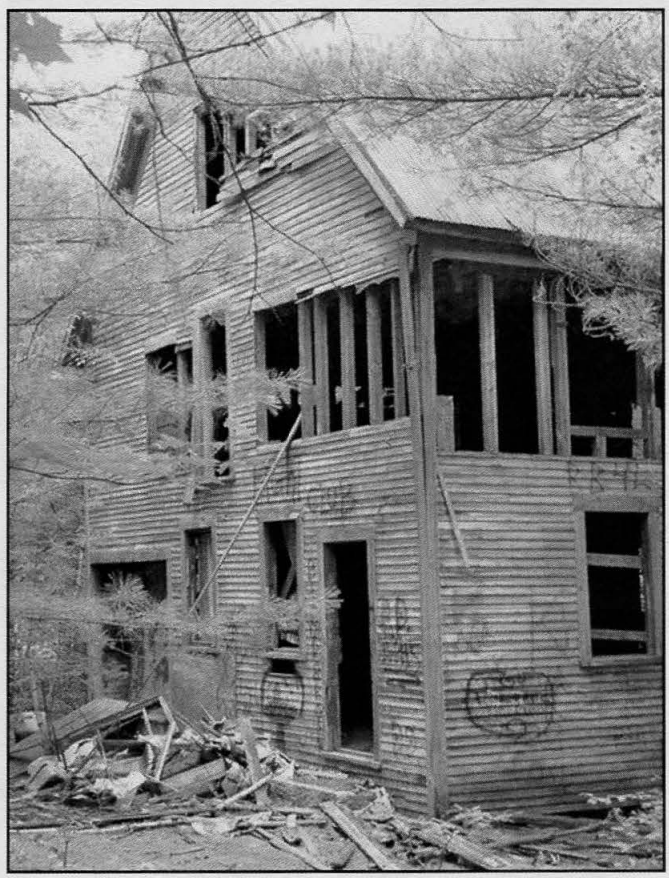
Both the green and pink quarries lie several hundred feet up slope from the cutting and finishing area. Most large pieces of stone moved down by either derrick or the tramway systems. One old photograph shows a 66-ton block resting on a rail sled, known as a "go devil" or "crab." A massive set of "dogs" and chain hangs from the top of the block. So-called "dogs" are simply large tongs used to lift heavy blocks of stone. At first, the large granite blocks were transported to the finishing sheds by wagons, pulled by horse or ox teams. Later, inclined rail lines, or tramways, moved the large blocks from the quarries down the hill. A single winch-operated tram ran to the green quarry. Double, counter-weighted trams ran to the pink quarry. Horse or ox teams and wagons moved smaller loads on level ground. Another old photo shows smaller derricks, cranked by hand, or a "bull wheel" powered by a team of horses, were used to move blocks of granite in the stone yard. These derricks also moved granite to and from the lathes and polishing machines. Existing maps show that there were as many as ten derricks, with engine houses, placed around the quarries and stone yard. Each had a coal stove for heat in winter. There were two blacksmith shops; one near the pink quarry, and the other in the large stone shed. In addition, there were numerous storage sheds, horse barns, garages and warehouses. Initially, most of the machines were steam powered, which required coal-fired boilers. Later, many machines converted to compressed air and electric power. Water was essential for blacksmiths, for polishing and for cooling various cutting tools. Water came from a local pond or the water was continuously pumped from the green quarry.

Maintenance of tools, machinery and buildings was an on-going challenge due to the heavy loads and resistant material. Before the advent of hardened steel and carbide tipped drills, many tools had to be sharpened and tempered by the blacksmiths each day.

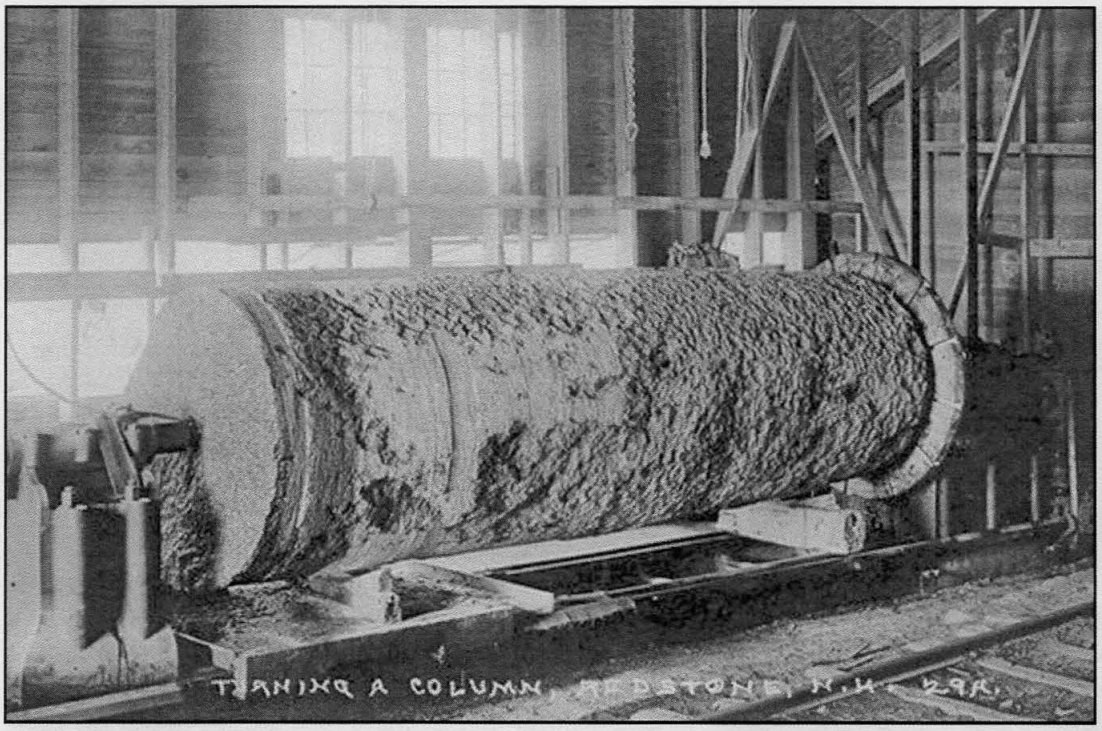
Lathes were used to rough-turn and polish granite



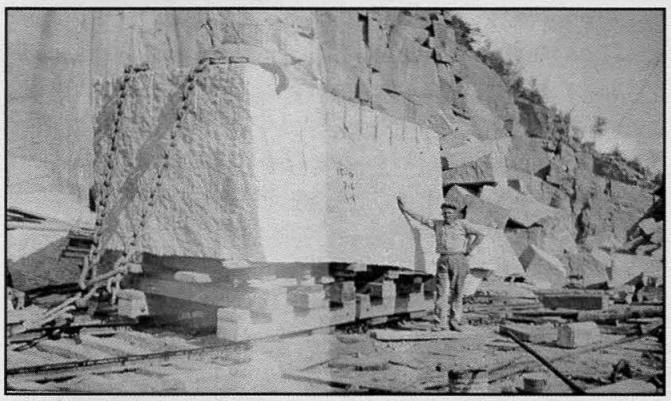
Derricks in Green Quarry, 2009 Redstone



Carpenter Shop, 2009, Redstone



Rough-Turned Column on Lathe, c. early 1900s, Redstone



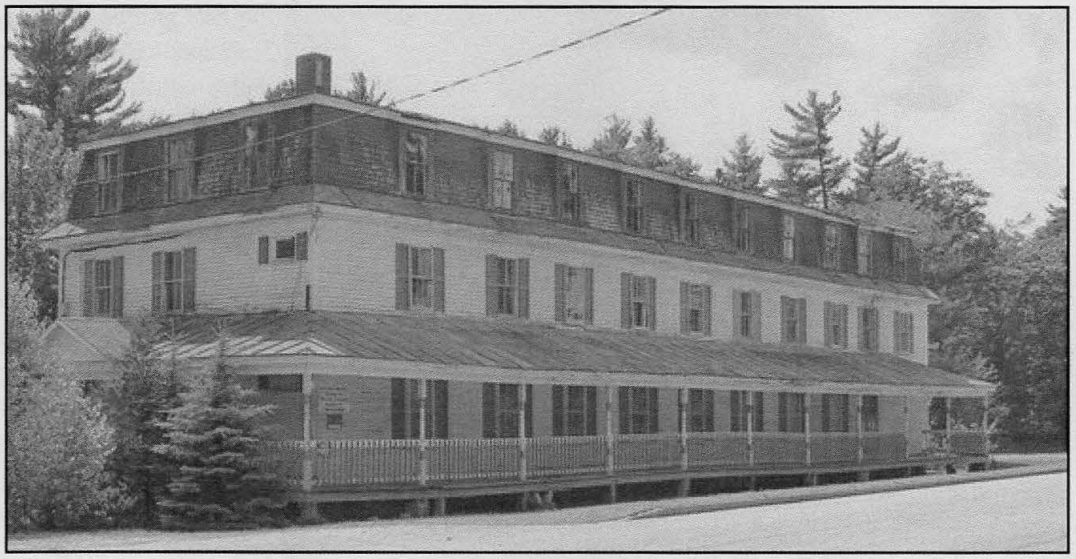
66 Ton Block From The Pink Quarry, Redstone

columns (some as long as 22 feet). A very large lathe, with a faceplate more than five feet in diameter, did the final polishing. This lathe, and the building that housed it, remain today, surrounded by the forest. The building is one of the best preserved on the site. Most of the roof was open, allowing large granite columns to be lowered and removed by a derrick from above. Sections of the single tram to the green quarry remain near this building and the massive iron hardware once attached to the derrick rusts nearby. Portions of the wooden boom and mast lie rotting on the ground with hardware still attached. This was a particularly important derrick as it serviced both pink and green quarry rail lines as well as the stone yard and lathes. The wooden booms and masts, some as tall as 120 feet, were of Douglas Fir brought from the Pacific North West on articulated railroad flat cars. In the early 1920's, primitive band saws, known as "gang saws," were installed to speed up the initial cutting of the large granite saw blocks. These crude steel blades, mounted in a crib, moved back and forth over the granite blocks, cooled by water with steel shot added as an abrasive. The gang saw greatly increased the speed of the initial cuts. Eventually, as technology improved, hardened steel and improved abrasives were adopted.

Though heavily vandalized, most of the three-story carpenter shop still stands near where the stone shed once was. Several carpenters were kept busy building and maintaining structures, and crating finished products to protect edges and surfaces during shipment by rail.

Redstone endured its share of accidents and tragedies, including the deaths of men who were in the wrong place at the wrong time or who were careless for a moment. One worker, who was reportedly hard of hearing, was run over by a railroad work car. Many workers suffered from silicosis, referred to at the time as "stone cutter's consumption," a serious lung condition attributed to inhaling stone dust and fine metal particles from the drills. Prior to the 1930's, when a ventilating system was installed in the re-built metal stone shed, little attention was paid to protecting workers from the hazard of inhaling stone dust. Many workers did not live much beyond 45 years of age.

Granite from Redstone and N. Jay was used in most of the early Maine Central (later the Boston and Maine) railroad stations. Most no longer exist, due to the decline of the B&M but some, such as the one in Laconia, survive. Buildings in Portland, Boston, New York, Washington, D.C., and as far away as Denver, CO, and Havana, Cuba, used Redstone granite. The Hatch Memorial Shell, in Boston, used green



The Company Boarding House, Known as "The Schooner" Still Stands on Rt. 3, Redstone

granite. Grant's Tomb in New York, the National Archives building in Washington, and the George Washington Memorial Masonic Temple in Alexandria,Va, used pink granite. Supplying granite for the Masonic Temple was the largest job ever undertaken by Redstone. It required twenty-four polished columns, each 22 feet long and each weighing 18 tons. The six-year job, completed in 1929, was a financial boon to the company. It should have given them a solid bank balance for the on-coming depression but apparently it did not. Evidently, during this lengthy and lucrative contract, management became careless and the business went into temporary bankruptcy. Redstone definitely felt the economic effects of the depression, but some long-term government contracts allowed production to continue, although on a reduced scale.

In addition to producing paving blocks, dimension stone and various size columns, the company also turned out carved statues as well as pediments for columns and other decorative pieces. A number of skilled Italian stone carvers worked at Redstone, typically on a temporary basis for a particular job. The most recent map of the village (dated 1948) shows a number of company homes then occupied by families with Italian surnames. Granite blocks from other quarries in Maine were shipped to Redstone for final fabrication and carving. Scraps of non-Redstone granite are found in the former stone shed dump.

By the early 1940's much of the quality granite in Redstone had been removed and the company was no longer competitive with other suppliers. By this time, the owners of the Redstone Properties (John Swenson Granite Co. of Concord, NH, and H.E. Fletcher & Sons of Chelmsford, MA) each had their own, more modern facility and production came to a halt. During World War II Redstone converted to defense work. For a brief period, forges were installed in the stone sheds for the production of metal castings. The large metal stone shed was sold and moved to a General Electric war plant in Lynn, MA. Local women worked in the large boarding house dining hall, assembling metal fittings for wire nets, woven in the Swenson Granite Co. sheds in Concord, NH.

Reportedly, granite was last quarried in Redstone, in 1948, for an addition to the Criminal Courts building in New York City. The architect specified Conway green to match the stone in the original building. Soon thereafter, the entire Redstone property, equipment, and the company-owned village was sold at auction. Residents of the company houses had first option to purchase their homes and many did. Why so much of the machinery remains at the site is not known. Redstone was, and still is, a village within the town of Conway, NH. It was originally a company town built by the Maine and New Hampshire Granite Co. In its prime, it had a boarding house, a school (K-8), a church, a poolroom, a dance hall and stage over the company store, a railroad station and twenty houses for the permanent employees along Mountain, Greenstone, Redstone and Church streets. The large boarding house was demolished in 2011.

In 1975, the US Energy Research and Development Administration undertook a geothermal drilling project. The object was to explore the possibilities of geothermal heat from the natural decay of several radioactive minerals in the local granite. They drilled to a depth of 3002 feet, but results were disappointing and further exploration discontinued.

Extensive business records of the Maine and New Hampshire Granite Co. are available to researchers at the Maine Historical Society in Portland.

Additional photographs, both vintage and current, are on the web, http://whitemountainhistory.org/Home_Page.php

Rick Russack
NNEC Vice President

A Stone Arch Bridge in Connecticut's West Hills

The Skilton Road Bridge, Litchfield County

Introduction

The Skilton Road Bridge, designated as Bridge No. 4408 in the Connecticut Department of Transportation's State Highway Bridge log, is located along a small rural road in the northwestern portion of Watertown, crossing over the Nonewaug River. Skilton Road is generally less than 20 ft. in width and narrows to 14 ft. at the bridge. The bridge is located approximately 2,500 ft. west of Guernseytown Road. The Nonewaug River runs north to south through the project area with the western bank consisting of a vertical rock face. The eastern bank is steep but vegetated. The river's substrate under the bridge consists of cobbles, stones, and boulders. The original bridge appears to be founded on bedrock and crosses a naturally occurring constriction of the channel. A stone masonry dam located approximately 200 ft. upstream of the bridge may have been functional at one time, but the dam was partially breached during a storm in 2011. The impoundment is now completely filled with sediment and a common reed dominates the marsh.

Bridge Description

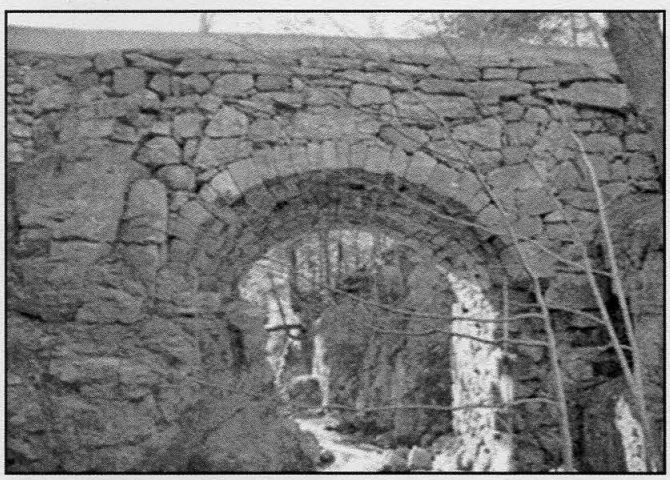
The bridge is a single-span stone arch structure with a bridge span length of 20 ft. and an overall length of 35 ft., and a standing of approximately 30 ft. above water (Photograph 1).

Taking the overall form of a semi-elliptical arch, the bridge lies on a rock outcropping at its eastern end and rests atop a rubble wall on the west. Different cuts of stone are used for the construction of the bridge; ashlars were used for the barrel of the bridge's arch (Photograph 2). The stone faces were cut to provide a smoother bearing surface. The wing walls of the arch barrel are made of smaller field stones that are roughly cut or uncut. The spandrels, which function to accommodate the outward push of fill, are made from uncut field stones of varying sizes locally quarried and show no signs of intentional shaping. The stonework is characteristic of rural dry-laid masonry techniques.

Historical Background

The original request for purchase of land in the area dates to 1674 when 26 men from Farmington submitted a petition to the general court in Hartford for land to be used for a plantation near what is now known as the Naugatuck River. The land grant accorded by the Court included present-day Waterbury, Watertown, Plymouth, Thomaston and portions of Wolcott and Prospect. The Watertown area was settled in 1684 and officially became a town in 1780.

I ncluded in the limits of the town was what was known as Guernseytown (Garnsey Town District), land found northwest of the town center and originally owned by Joseph Guernsey of Milford who had purchased it in 1730. Guernseytown Road crossed the center of the town from south to north while Skilton Road was the main artery running east to west, providing the primary travel route from Watertown to Bethlehem. However, the Nonewaug River



Photograph 1

Photograph 2

provided a serious impediment to travel as it flowed in a deep gorge that dissected the road from north to south. The bridge spans what has been referred to locally as "the Guernseytown section's Great Gulf. The gulf is a deep ravine that was carved out over the centuries by Great Swamp Brook, a tributary of the Nonewaug River" (Petersen 1987:A4).

A grist mill, known as Skilton Mill and dating probably to the beginning of the 19th century, was located just north of the bridge's eventual location on property owned by Mrs. Henry Skilton. A small shop that manufactured shingles, churns, cheese presses and boxes did business in conjunction with the mill's operation. The mill seat was eventually purchased by an M. Cleveland and became known as Cleveland's Grist Mill.

The ever-increasing need to provide an effective means of crossing the river at the mill's location eventually led the Watertown voters to authorize the selectmen in the fall of 1865 to proceed with the construction of an arched stone bridge across the Nonewaug River (Clouette and Roth 1991:8-1 from Watertown Town Meeting Records). The cost of building a stone arch bridge was usually twice the one of erecting a wooden structure. However, it would have been eventually more expensive to build a wooden bridge because of its location above the river's gorge. As well, there was a need for a bridge that could withstand the severe rainstorms that caused rivers to swell, particularly since there was a millpond located upstream, and mill dams usually were susceptible to failure during flooding events. The bridge was finally constructed during the following year and continued to be used for the next 100 years.

Locally available materials were used on the construction of these bridges: brownstone in the Connecticut River Valley, gray granite in eastern Connecticut, or gneiss in The Western Hills. As well, the towns themselves provided the skilled labor for their construction. It was common in the 19th century for a growing Connecticut town to have carpenters that could shape wooden forms upon which the stones were laid, and masons, who set the stones.

A number of stone arch bridges of similar construction were built in Connecticut, starting from the late 18th century through to the beginning of the 20th century for similar reasons. The need for a sturdy structure located on an important roadway that could withstand potential floods warranted the additional cost. Today, most of these bridges have long disappeared or have been drastically altered. There are twenty-one of these stone arch bridges extant in Connecticut and the Skilton Road Bridge is only one of three remaining examples in Litchfield County.

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Luc Litwinionek
Historical Perspectives, Inc.

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