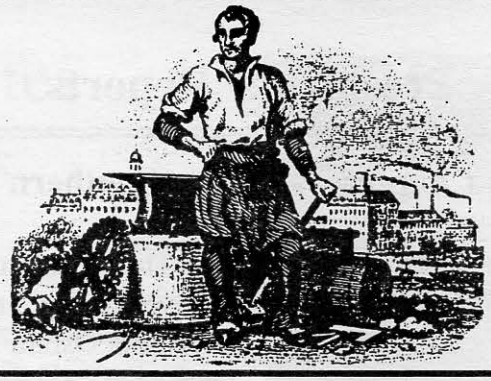

Society for Industrial Archeology · New England Chapters

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CONTENTS

Call for Papers, Annual Conference 1
Presidents' Reports
NNEC 2
SNEC 2
SNEC Tours Sites In Central Falls, Rhode Island 3
L.S. Starrett Welcomes SIA 4
SNEC Tours Rapidly Disappearing Granite Quarries of Quincy, Massachusetts 5
Maine Red Granite Co. 6
The Northrop Metalworking Complex New Milford, Connecticut 7
Clintonville, New York, Bloomery Forge Excavations 11
Membership Application 12

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Call for Papers

Annual Conference on New England Industrial Archeology

February 2, 2002
at Plymouth State College
Plymouth, New Hampshire

Deadline for paper proposals: December 31, 2001.

The Northern and Southern New England Chapters of the Society for Industrial Archeology invite proposals for papers to be presented at the Annual Conference on New England Industrial Archeology. This year's conference is to be held at Plymouth State College in Plymouth, New Hampshire, on Saturday, February 2, 2002. Presentations on all topics related to industrial archeology are welcome. The program committee especially encourages papers related to some of the general themes of industry in New England. Proposals from non-members are also encouraged.

Presentation Format: Proposals may include individual papers or reports on works in progress and are strictly limited to 20 minutes.

Proposal Format: Each paper proposal must include: 1) title; 2) an abstract of not more than 300 words; 3) a one-page resume for the presenter (s) , including postal address, telephone/fax, and email; and 4) a list of audio-visual requirements. All proposers must submit two (2) copies of their proposals.

Deadline: Proposals must be received by December 31, 2001.

Please send paper copies of proposals to: David Starbuck, NNEC-SIA Chapter President, P.O. Box 492, Chestertown, NY 12817. Inquiries are welcome at this address, or you may phone (518) 494-5583, or email to starbuck@netheaven.com

Presidents' Reports

Northern New England Chapter

The Northern New England Chapter held its Fall Meeting on September 29, 2001, at past and present sites of the marble industry in the vicinity of Rutland, Vermont. We are greatly indebted to NNEC Treasurer & Secretary Herman Brown who organized all of the local arrangements. We commenced our tour at the home of the Carving Studio and Sculpture Center (the former Vermont Marble Company general store in West Rutland) and proceeded on to Proctor, Vermont, where we toured the Vermont Marble Exhibit. Lunch was held on the village green across from the Proctor Supermarket & Deli. At our annual business meeting, we elected officers for the coming year who-- to everyone's amazement -- happened to be the same officers as this past year! Hopefully I will be dethroned as chapter president at this time next year. If you have any suggestions for a site in Vermont, Maine or New Hampshire that we can visit for our Spring 2002 meeting (or a good site for a later meeting), please let me know.

Our next chapter activity will be to host the Annual Conference on New England Industrial Archeology at Plymouth State College on February 2, 2002. Please consider presenting a paper, and I hope to see you there!

David Starbuck
Chestertown, NY

Southern New England Chapter

The Southern New England Chapter had an active spring and summer, with tours to the Sylvania Osram light bulb plant in Central Falls, Rhode Island, and the Starrett Tool Company in Athol, Massachusetts. These tours are reviewed and illustrated with articles and photographs elsewhere in this issue. This fall, the SNEC is organizing a joint Southern and Northern New England Chapters tour of USGen New England, Inc.'s early twentieth-century Deerfield No. 4 and Harriman hydroelectric developments on the Deerfield River in northwestern Massachusetts and adjacent southern Vermont. Another event planned for this fall is a tour of the Chester-Hudson and Chester Granite Company granite quarries in the Berkshire Hills of Western Massachusetts, which will provide an opportunity to see historic and modern granite quarry landscapes and technology. The Southern New England Chapter is always looking for new venues for process tours and interesting historic industrial and archeological sites to visit. It has been a while since we held an event in Connecticut. Please let the chapter officers know if there is a site you know of that we can visit in your area.

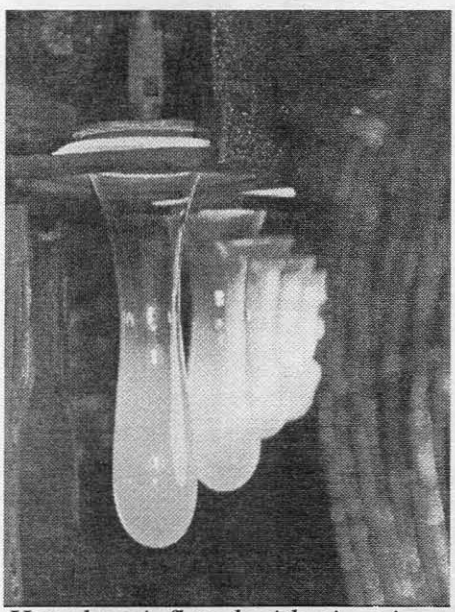
Matthew A. Kierstead
Pawtucket, RI

Tour group in front of display case containing Osram plant products.

SNEC Tours Sites In Central Falls, Rhode Island

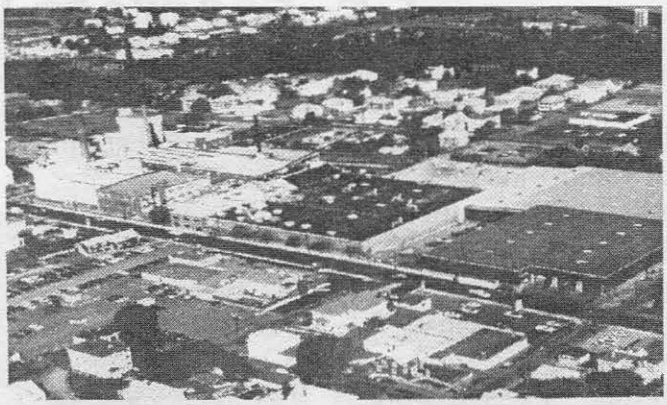
On Saturday, June 2, about fifteen members of the Southern New England Chapter met on a rainy morning for a memorable tour of the OSRAM/Sylvania glass plant in Central Falls, Rhode Island. The plant was first built in 1911 by General Electric and now houses one of four glass plants within the U.S. run by OSRAM. This plant produces the glass elements for fluorescent, incandescent, and HID (high intensity discharge) lamps, as well as some limited runs of glass giftware used to keep furnaces in full production when the demand for bulbs slacks off.

This was an impressive tour of a technology that I never really pondered. Have you ever considered how tubes for fluorescent bulbs are made? Picture molten glass pouring straight down from the ceiling and forming a tube as it bends 90 degrees and runs down a football-field-length hallway, cooling along the way before being cut into sections. How about "pitch ribbon machines" which form large bulbs with air pressure and molds which rotate around the glass as it inflated within them?



Hot glass inflated with air prior to being placed in molds in automatic molding machine.

This factory ships twenty-five to thirty eighteen-wheelers per day of glass products to numerous light bulb production plants. Its products go to Sylvania as well as other bulb manufacturers (such as GE), often perceived as their competitors. It employs over 450 people and has gross sales of about $60 million.



Aerial view of Osram's Central Falls, RI, plant.

Many thanks to the staff at OSRAM for an enjoyable, informative, and fascinating tour. I have to say this is one of the best tours yet, facilitated by the fact that OSRAM provided knowledgeable guides that allowed intimate groups of about five to tour the facility, up close and personal with the equipment.

In the afternoon about a dozen people trusted the weather forecast and were treated to clearer skies and an afternoon tour of the Valley Falls Heritage Park and a ride on the canal boat *Samuel Slater.* The Park tour was ably led by Patrick Malone and Rick Greenwood who were intimately involved in its development. The 2.5 acre park along the Blackstone River in Cumberland, Rhode Island contains a variety of archeological features, some dating to 1820 or earlier. The group heard in detail about the history of the site including the Sayles Finishing Plant which was located there, the various dams and development of the water-power system.

After this walking tour, we proceeded to the nearby boat launch of the Samuel Slater, a British canal boat built expressly for the Blackstone Corridor. We chartered the boat for a short ride upstream and got a sense of how this once heavily industrialized location has become a haven to wildlife. The large storage ponds which once held vast quantities of water to power the various mills have silted in to an extent which is hard to believe.

It was an "enlightening" day of tours!

Greg Galer

L.S. Starrett Welcomes SIA

On June 22, 2001, twenty-two members of the Southern New England Chapter had the privilege of visiting the L. S. Starrett Company complex in Athol, Massachusetts. Located on the banks of Miller's River, which supplies approximately six percent of the company's energy needs by way of two aging turbines, the Starrett Company is a sprawling industrial complex that employs roughly one thousand workers, making it the largest employer in Athol.

In his introductory greeting to the SNEC group, Starrett personnel director Joel Shaughnessy said that the company was founded in 1880 by Leroy Sullivan Starrett, an ambitious former farmer with a knack for invention. After patenting an ingenious mechanical meat chopper, Starrett created his first significant device, a precision combination square that established Starrett as a manufacturer of high-quality tools and measurement instruments. Today, the Starrett catalog features more than 5,000 items; 20,000 - 25,000 of the parts required for these items are manufactured at the Athol plant.

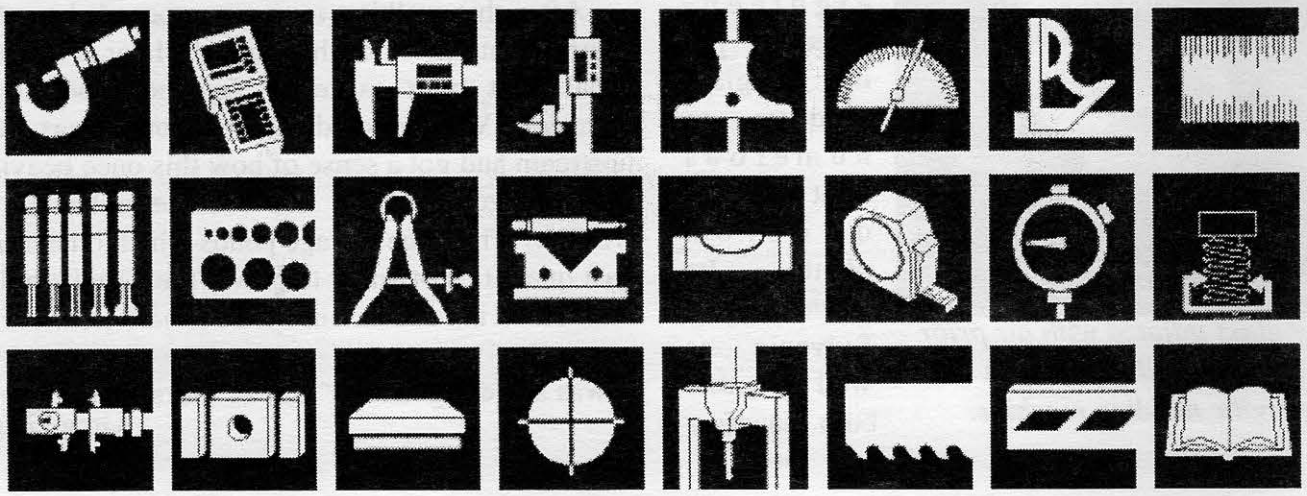
Starrett tool-makers Kevin, A.J, and Astro led SNEC in three groups through the factory, a classic 19th century structure of brick, iron and wood beams with work benches lined up by the windows for light and air. Divided into sections defined by processes -- milling, punching, toolmaking, assembling, inspection and more -- the factory is a living museum to 20th century industry, featuring tools that range from pre-WWII lathes to computerized multi-milling machines.

In fact, if a tour can be described as having a theme, the subtext to the Starrett visit was the reconciliation of 19th century processes with 21st century technology. (My tour guide, Kevin, pointed ruefully to the computer numeric controlled (CNC) laser die-cutting machine, a device that accomplishes in minutes what would have taken weeks for an expert tool-maker.) On the one hand, the flatness of slide calipers is a relatively primitive process that involves placing the caliper on an absolute flat surface before a light source; the presence of light between caliper and surface reveals imperfections that are resolved with a hammer.

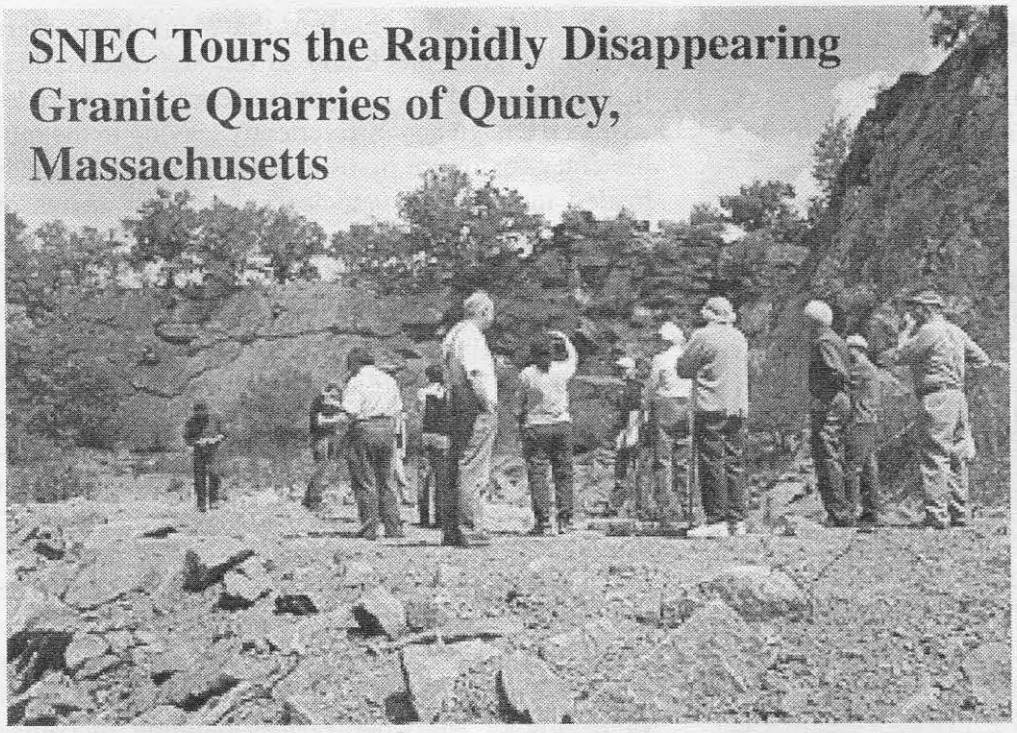
On the other hand, Starrett makes use of modern equipment such as the Japanese Tsugami, a computer-aided multi-milling machine that can deploy as many as 64 tools on a rotating carriage. But Yankee ingenuity may have the last laugh. Frustrated by the short lifespan -- and multi -thousand-dollar expense -- of a crucial triple bearing that typically lasted just six months, Starrett engineers sought an improvement. They drilled a hole into the bearing and introduced an air/oil mixture to the device, blowing out the coolant and adding lubrication. With this adjustment, Starrett has been able to get two-to-three years of life from each bearing!

Other highlights of the tour included the Blanchard grinder (for "hogging off' lots of material), tumbling machines, punch presses, screw machines, and a tour of the Starrett museum. While the tour was scheduled to end by 12:00, the guides generously extended the tour to anyone who wished to stay.

Jonathan Kranz
Melrose, MA



SNEC Tours the Rapidly Disappearing Granite Quarries of Quincy, Massachusetts

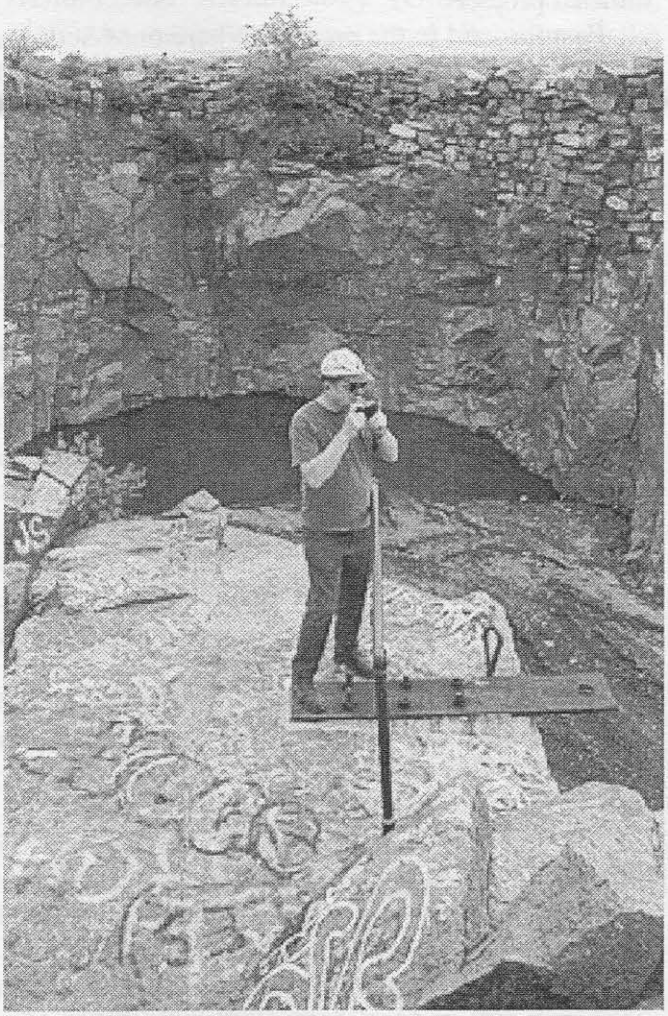


Several members of the Southern New England Chapter met on Saturday, May 18th for a tour of the Quincy granite quarries. Once a thriving industrial district and for many years a regular haunt for Boston area rock climbers and a paradise for dare devil teenage swimmers, many of the great sites of the Quincy quarries are rapidly disappearing under tons of fill from Boston's Big Dig.

Lauren Cooke, who has completed extensive research on these sites ably led the tour along the rugged terrain of cut boulders, loose rock, and steep inclines. Lauren presented a paper, "Landscapes of Waste: Ongoing Industrial Archeology at the Granite Railway Quarry," at this past Winter Conference on Industrial Archeology which captured many people's interest in this site. Lauren's detailed knowledge provided a wealth of information along the tour.

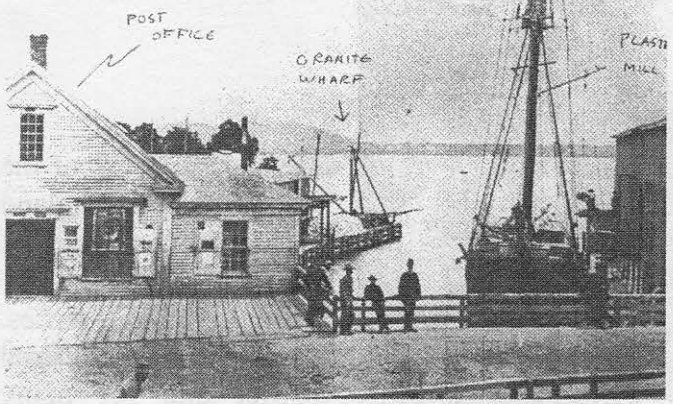
This is one of the first industrial sites I ever visited – a recommendation from a junior high school teacher. It is sad to see the site so vastly altered, although the need to do something to deal with the safety issues is understandable. Personally, though, I am not sure that filling was the answer. Watch for the developing golf course on some of this property and some MDC walking paths and tours in other parts of the quarries.

Greg Galer



SNEC member Charles Sullivan tries not to take too many more steps backwards while getting that perfect shot.

Maine Red Granite Co. 1875 - 1926



Red Beach, Calais, ME, ca 1890

It's interesting to picture some industries at the end of the 19th century. Picture a 25-ton block of granite being quarried in Quincy, Massachusetts. Picture this monolith, along with a host of his smaller brethren, being loaded into a schooner. Picture the loaded schooner with precarious freeboard heading into the Atlantic, then along the coast of Maine for two days of sneaking through fog and avoiding crashing surf along the rocky Bold Coast. Picture the vessel riding a favorable incoming tide from the Grand Manan channel through the Lubec channel and the fog breaks revealing the well-to-do having morning tea on the shores of Campobello. Picture the ship in the Friar Roads, then the master breathing a sigh of relief as he successfully negotiates the Old Sow (the biggest whirlpool in North America), fortunately not at full strength. Picture the schooner emerging into Passamaquoddy Bay, then up the St. Croix river to the village of Red Beach and docking at a special granite wharf. At the wharf the workers unload the giant block and its kin and receive their instructions to dress the stones according to a predetermined design and inadvertently leaving in the rubble clues for future investigators. Picture the stones loaded into rugged vehicles powered by teams of oxen, then hauled a half-mile inland to a large 80 by 240-foot factory. Picture a mammoth overhead crane hoisting the stone behemoth with Scottish workers shouting instructions, and workers on other projects glancing over momentarily to a sight quite familiar to them. Picture the workers with hammers, chisels and up-to-date lathes and polishing equipment finishing stone of local and imported ancestry for use in such places as New York City, Washington, DC, Kansas City and Los Angeles.

Maine Red Granite Company polishing mill.

Fast forward in time to 1926. The fortunes of the parent company, Red Beach Plaster Company, have been generally declining, and a disastrous fire brings the end. The machinery is removed and anything of value is sold. The wood factory building succumbs to the elements, and trees grow up among the half-finished projects.

Fast forward to the present. Where once Scottish workers toiled and sang songs of their homeland and pulleys groaned under tremendous weights and blacksmiths sharpened tools and huge machines finished granite to precise shiny surfaces, now all is silent. The little brook that powered and rinsed and cooled barely speaks; the half-finished giants lie sleeping; their small siblings have been collected by the curious.

But is there a distant stirring of resurrection, not as a working factory but as a display of the past industry? Is activity afoot to tell the story and preserve the remaining stones for future generations to appreciate? The National Park Service may put some resources into the project to enhance nearby St. Croix island where Champlain spent a disastrous 1604 - 1605 winter. Another organization is the St. Croix Estuary Project. We surely wish either or both of these agencies success.

Information and pictures from: C. Brand Livingstone, St. Croix Historical Society, Holmes Cottage, PO Box 242, Calais, ME. 04619.

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Pembroke, ME. 04666
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The Northrop Metalworking Complex New Milford, Connecticut

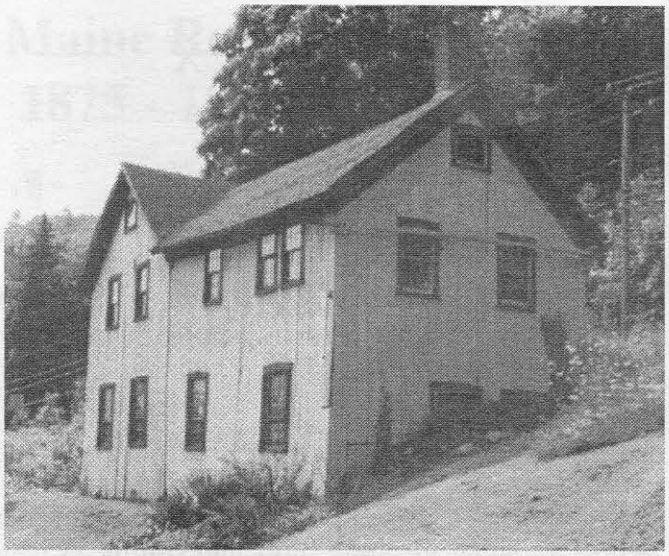
Due to a variety of traffic difficulties, the Connecticut Department of Transportation has been studying a series of road improvements at the intersection of State Route 37 and U.S Route 7 in New Milford, Connecticut. Survey and engineering planning work relating to this project has located the remains of a vertically integrated 19th-century metalworking business in the area just north of the proposed intersection work. Extant buildings include a smithy, storage building, two 19th-century dwellings, and the remains of a foundry and machine shop. This site has escaped prior scrutiny and is not listed in *Industrial Heritage of Northwest Connecticut: A Guide to History and Archaeology* (Gordon & Raber, 2000). As mitigation for potential alterations to the site, the Connecticut Department of Transportation has funded state-level historic documentation of two structures on the site.

New Milford's industrial history dates to the early 18th century with the construction of a gristmill on the Housatonic River in 1717. Iron works were added by 1773 (Raber & Gordon, 2000, p. 188). Warren and Gillet's 1811 map of the state listed 14 saw or gristmills, 3 fulling mills, and 2 iron forges operating in New Milford. By 1845, the town had added 6 hat factories, 2 woolen mills, 6 tanneries, a wagon maker, and a boot and shoe industry to its list of manufactures (Gordon & Raber, 2000, p. 189).

This specific site is the result of the industriousness of the Northrop family. In 1832, Roswell and Sheldon Northrop started a machinery business on a pond north of the current site (New Milford Land Records [NMLR], vol. 33, p. 162; vol. 38, p. 153; and Historical Committee of New Milford, 1907: p. I I I and p. 88). In 1845, Roswell, Sheldon, and their brother David Northrop acquired the water rights to the Bullymuck Brook and land adjacent to it from Theodore Peck and I. Perry Smith (NMLR, vol. 42, p. 605, and Historical Committee of New Milford, 1907: p. 88) and moved their operations to this new location between Kent (now Route 37) and Sherman (now Route 7) Roads. The site, along the southern side of a large brook falling over 60 feet, was ideal for any industrial activity. Over the next few years, the Northrops built an integrated metal working facility on approximately 3.5 acres. The works eventually included a dam, penstocks, a water wheel, foundry, machine shop, and smithy, as well as two dwellings. These structures were mapped on Clark's *Map of New Milford* (1853).

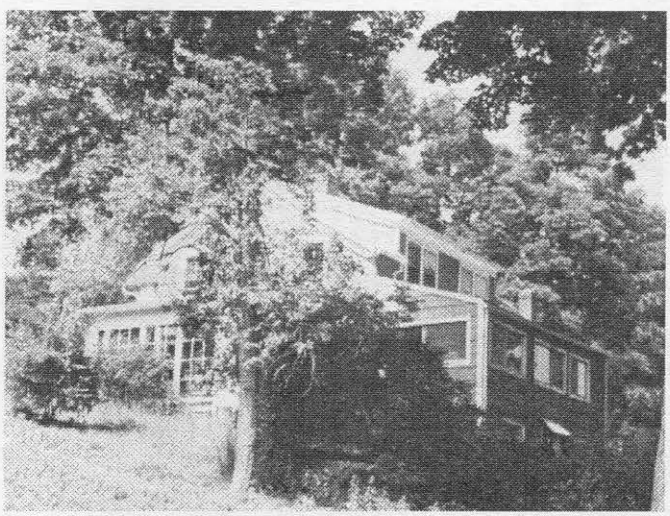
Short of smelting ore, the Northrops performed all types of metalworking and casting. They made "'castings to order, cast-iron fences, and various kinds of machinery," (Historical Committee of New Milford, 1907: p. 88). In the 1850 U. S. Industrial Census, R. Northrop & Bros. Machinists listed the value of their business at $4,000.00. Using 65 tons of iron and 301 tons of coal they employed 10 men to produce "carding and other machines" worth $6,000.00. Given that they spent $8,000.00 on raw materials and $3,600.00 on labor, the Northrops had a poor year. By 1860, Sheldon had bought out his brothers and his business was now listed solely as a foundry. With two employees, he produced 60 tons of castings worth $4,800.00, showing a profit of $2,182.00.

The Industrial Census for 1870 lists S. Northrop and Son as owners of the foundry and machine shop. Run by the waterpower of one 20 horsepower wheel, the foundry had a maximum daily capacity of 800 lbs. Machines listed included one water wheel, several lathes and one cupola (a shaft furnace used to melt pig iron). An average of two hands were employed, both males over 16 years old with a total annual wage cost of $1,800.00. The machine shop operated year-round, but the foundry was only in use six months of the year. The complex produced pig iron (worth $1,200.00), iron fingers (400 feet, value $2,500.00), iron pipes (400 lbs, value $250.00), and miscellaneous castings (valued at $1,050.00). Materials used included pig iron (12 tons), scrap

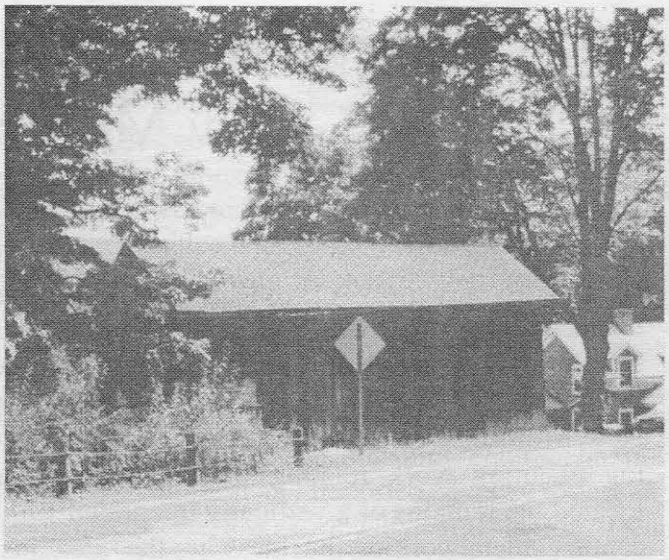


1. Smithy at southern end of property.

2. House south of brook.



3. House north of Smithy.



4. Storage building on Route 37.

iron (40 tons), and lead (12 tons) costing $1,320.00. Consequently, Northrop was ostensibly showing a profit of $1,880.00.

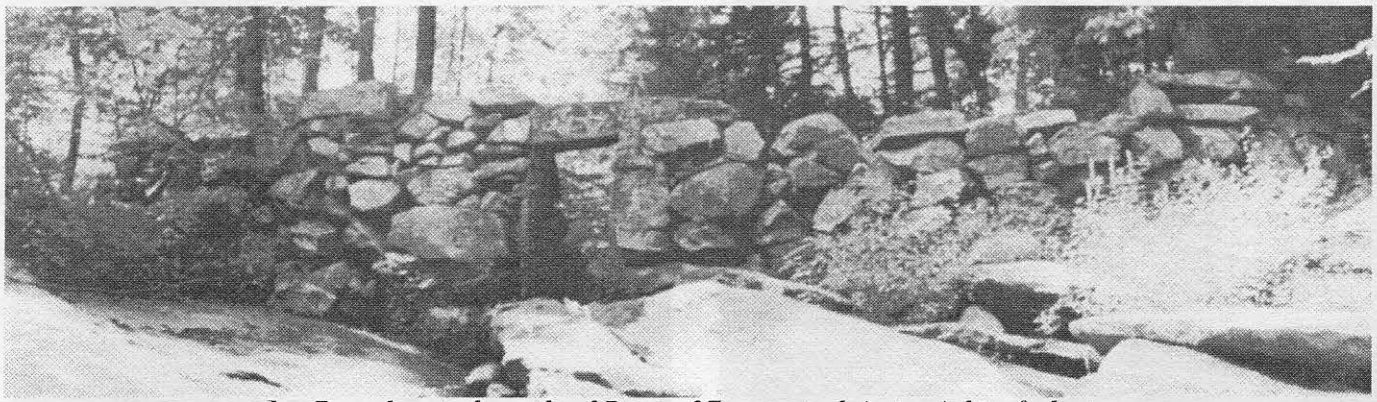
The site appears in the Beer's *Atlas of Litchfield County* (1873), an unattributed map of 1880 located in the New Milford Historical Society (NMHS), and in the 1884 U. S. Geological Survey map of the area. Reproduction of these maps was not possible.

The 1880 Industrial Census lists a Jasper Northrop running the foundry and machine shop. The height of the river fall was listed as 40 feet. The wheel was 3 feet in breadth, producing 12 horsepower, The operation ran 8 months full-time and 4 months part-time, 10 hours a day, with 4 hands. The value of materials on hand was listed as $500, with the value of products listed as $5,000.00.

A check of New Milford Probate Records revealed that Roswell Northrop filed for bankruptcy in 1876 (Probate Records vol. 26, p. 510). His assets did not include any part of the foundry, affirming that Sheldon Northrop had taken over the business.

Sheldon and Jasper continued the foundry business until Sheldon's death in 1887. Sheldon's probate inventory (Probate Records, vol. 31, pp. 64-69) is quite extensive and gives us a snapshot of a small successful foundry and machine shop of the 1880s. A vertically integrated business, the complex was comprised of

Two dwellings
Blacksmith shop



5. Dam located south of Route 37, penstock is to right of photo.

Foundry building
Flask building
Water works including a wheel
Machine shop with shafting

The machine shop contained typical tools of the period including scales, a press drill, metal and wood turning lathes, metal boring lathes, various saws, and a blowing fan. The items in the foundry included wooden flasks and patterns, ladles, scales, and a crane.

Shortly after his father's death, Jasper moved his business to a new facility in the southern end of the village section of New Milford. His new works, located at the western end of South (now Mill) Street, were powered by a steam boiler (Sanborn Insurance Map, 1887). Jasper then produced a financially successful home and domestic hot water heater boiler (Historical Committee of New Milford, 1907: p. 88).

Key elements of the complex have survived. The blacksmith shop (Photo 1), the two houses (Photos 2, 3) and a storage building (Photo 4) have survived intact with relatively little alteration. The blacksmith shop and storage building (possibly the flask building listed in probate) were documented to state-level standards during the summer of 2000.

More surprisingly, the dam (Photo 5), headrace, and portions of an iron penstock (Photo 6) are still extant along Bullymuck Brook. Several sets of stone foundations can be made out in the area south of the brook as well (Photo 7). Metal shafting is strewn in more than one location (Photo 8), while portions of the tailrace (Photo 9) and a small wheel (Photo 10) lie near the brook just before it crosses U.S. Route 7.

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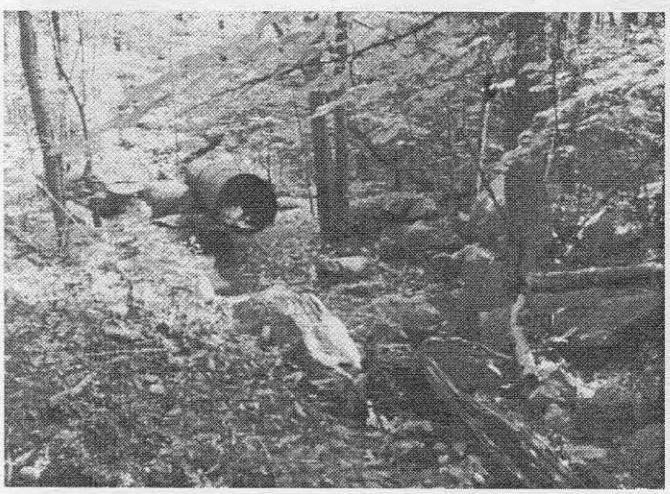
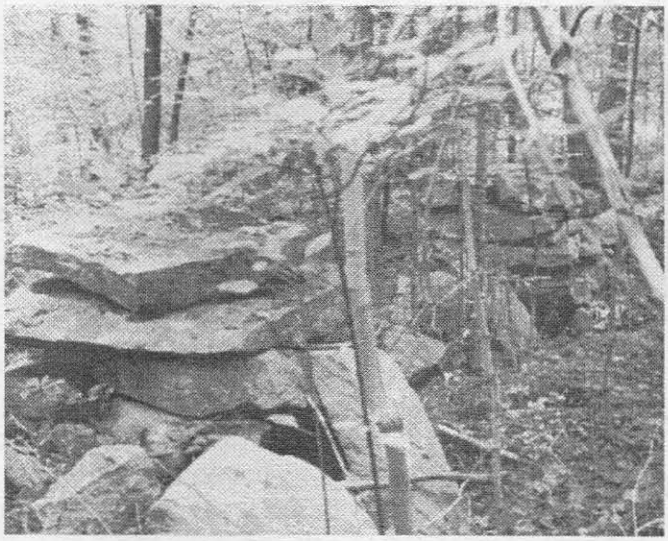
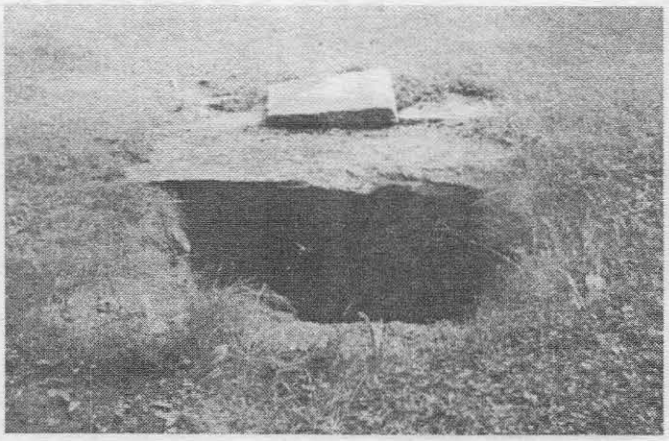


6. Headrace and penstock.

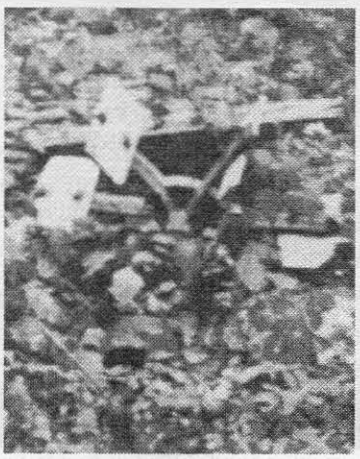


7. Building foundation.

8. Building foundation with shafting.



9.(above) Tailrace located just north of U. S. Route 7.



10. (right) Small wheel adjacent to brook.

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Fitzgerald & Halliday, Inc.
for State of Connecticut
Department of Transporation
Newington, CT

Clintonville, New York,

Bloomery Forge Excavations

Dr. Gordon Pollard, Professor & Chair of Anthropology at SUNY Plattsburgh, reports a fourth successful season of field work at the Clintonville, N.Y., Bloomery Forge Site in the Ausable River Valley on the eastern side of the Adirondacks. For the summer of 2001, as an archeological field school run through Plattsburgh State, he and 12 students worked at the site revealing new details of the large (236'x 52') forge building and associated bellows houses that operated from 1830 to 1890.

Four test pits were excavated, two of which confirmed and defined two exterior stone walls (25" width) for the western bellows house. These two pits (each 4' x 6') revealed additional features, including a lower, inner, stone masonry ledge on the west side of the structure which may have framed the water wheel pit to drive the bellows machinery, and an archway through the south wall which served as an exit raceway for waterwheel (photo 1). Both pits were excavated to a depth of just over 6 feet, requiring the removal of hundreds of large and small rocks that had fallen into the structure subsequent to its abandonment. Both pits also encountered ground water approximately 5 feet below the present ground level, and which had to be pumped out periodically to allow continued excavation "underwater" in only a small section of each pit.

The other two test pits were along the inner, main, south wall of the forge building. One pit (8' x 10') revealed the work area floor adjacent to a stone blacksmith forge (which was excavated in 1996), below which was the unexpected discovery of the foundation of an early bloomery forge for making iron. The forge had been dismantled down to the lowest 2-3 courses of brickwork of the forge's construction prior to converting this section of the building into the blacksmith's area. A puddle of solidified slag tapped off during the last working of iron in the firebox of the forge was still in place at the forge's front and was an exceptionally rare discovery (photo 2).

The last test pit (6' x 10') was placed along a nearby section of the main wall and revealed about two-thirds of the lower portion of another bloomery forge that was also constructed of mortared brick. Here it was discovered that the heavy cast iron plates which had framed and formed the firebox had been removed from the forge when it was dismantled post-1890, and had been stacked at the front of the forge and never taken away for recycling. Only the water-cooled bottom plate, a back plate, and a mantle plate were able to be removed this summer; the others will be retrieved next spring. Another rare discovery was two sections of cast iron pipe that had served as conduits for the air-blast tuyere through the outside of the forge. These were found discarded in the area between this forge and an adjacent one we had excavated in 1998 (photo 3). All of these features had begun to emerge within one to two feet of the present ground surface.

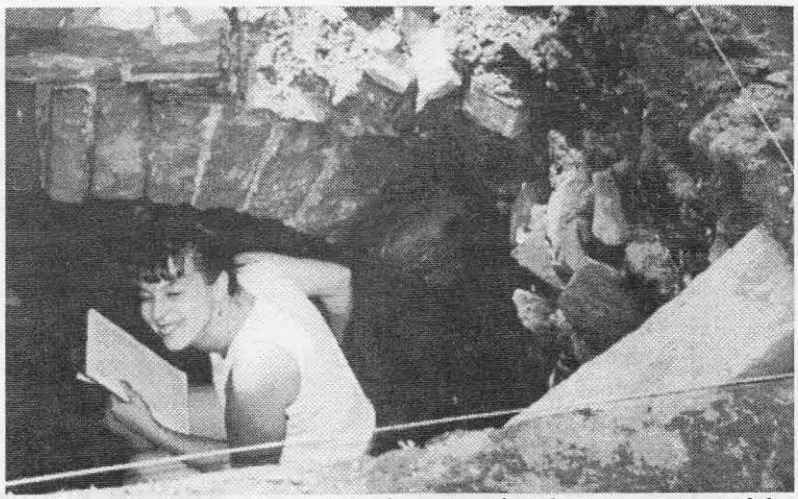

Photo 1. Student Kristina Suckow recording her excavations of the south wall and archway of the west bellows house.

The 2001 excavations add important details to the operation and renovation of the Clintonville forge. Up into the 1870's it was the largest bloomery forge installation of its kind in the world, containing 16 iron-making forges and 6 heavy triphammers, each with its own water wheel, for shaping the iron into billets. The iron works in association with the forge including a nail factory that ceased operation in 1856, and a rolling mill that shut down in 1879. From then until the final closing in 1890, the iron produced was primarily shipped to Pittsburgh for conversion to steel.

Gordon Pollard
Plattsburgh, NY

Photo 2. Brick foundation of Forge 6, a bloomery forge, with in situ *"puddle" of slag tapped during its last operation. A heavy, cast iron flanged "hub" stands in the corner of the structure against the wall.*

Photo 3. Discarded cast iron pipe sections that originally led to the tuyere air nozzle through the side of a bloomery forge. Also visible is the west exterior brickwork of the bloomery forge.

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