



## Society for Industrial Archeology · New England Chapters

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David Starbuck  
PO Box 147  
Fort Edward, NY 12828

### President's Report, NNEC

I am writing as the newly elected President of the Northern New England Chapter, therefore I have only a brief summary of chapter activities.

Several members of the chapter, including Walt Ryan were involved in the Historical Archeology Field School based at Canterbury Shaker Village this summer. Led by Dr. David Starbuck, the field school team excavated several different sites, including one which was dubbed "Hog Heaven," and one which was the site of a blacksmith shop.

The Fall Meeting of the Northern New England Chapter was held at Canterbury Shaker Village on October 12, 1996. The chapter business meeting was held at the Chapel. The Secretary's Report appears elsewhere, but I do want to thank you for your vote of confidence in the elected board members.

Following the business meeting, David Starbuck gave a slide presentation concerning the Canterbury Shaker families, and described the archeological sites investigated during the summer field school. Participants in the meeting were then invited on a tour of the sites. Those who were interested then stayed on to excavate at the Second Family blacksmith shop. A delicious buffet lunch was available at the North Shop. We were lucky to be able to have Canterbury Shaker Village available to us, for it was a beautiful fall day and the Village is always a pleasure to visit.

We are in the process of considering ideas for the Spring Chapter meeting. We welcome ideas for meeting sites which would also have available areas of interest to industrial archeologists. Please call or write me at: Social Science Dept., Plymouth State College, Plymouth, NH 03264 (603/535-2424) or e-mail me at Katherine.Donahue@Plymouth.Edu or kated@vermontel.com with any ideas you may have.

Katherine Donahue  
Hartland, VT

### President's Report, SNEC

The Southern New England Chapter held a Fall Tour on October 5th at C.B. Fisk, Inc. in Gloucester, Massachusetts, designers and builders of pipe organs. The company was founded in 1961 by physicist Charles B. Fisk, an innovative organ builder who led a return to the mechanical (tracker) key-and-stop action systems of historical European and Early American instruments. The company has constructed the largest four-manual mechanical action instruments built in America in this century at Harvard University in 1967, and at House of Hope Church in St. Paul, Minnesota in 1979. C.B. Fisk has also built instruments based on historical organs, including on at Wellesley College, designed like the North German organs of the early 17th century.

ry, and one at the University of Michigan based on the designs of the Saxon builder Gottfried Silbermann. More recently completed at the shop in Gloucester was a four-manual instrument of 66 stops for the new Meyerson Symphony Center in Dallas, with 32-foot bass pipes. Currently under construction in the shop is an instrument destined for installation in Japan. Greg Bover led our enthusiastic group on a tour of the facility, including the company's on-site metal casting room (unfortunately not in operation while we were there!). Greg presented a thorough overview of the many ways in which traditional designs and materials are combined with modern technologies to produce these complex and gargantuan musical machines. SNEC recording secretary Tom Vaughan captured much of this fascinating tour on video. Thanks to Jane Caroline for the tip.

Those who participated in the SNEC recording session at the Revere Sugar Refinery in Charlestown may recall a second, newer (also defunct) refinery just to the north. The 1960 Domino Sugar Refinery, designed by Bechtel, incorporated many design innovations that distinguished it in appearance and operation from the neighboring Revere Sugar plant. When it learned of pending demolition of the silos and parts of the refining center, the Boston Landmarks Commission again contracted SNEC about arranging emergency documentation of this significant IA site. While the current owners were initially open to SNEC coming on site, and allowed a pre-recording walk through, they effectively withdrew their support by imposing a two-hour limit for on-site recording. The major tenant, the U.S. Customs Service, which uses the landmark, aluminum-clad Sugar Dome warehouse (it resembles a giant space capsule) to house seized items, was also aggressively disinterested in having people with cameras anywhere near this site.

On a more positive note, the Boston Landmarks Commission, encouraged

by SNEC enthusiasm for and interest in Revere Sugar and other local IA sites, is currently undertaking a city-wide survey of historical industrial properties, with work being performed by the Public Archaeology Lab, Inc., of Pawtucket, Rhode Island. The project will draw heavily upon the extensive unpublished research files compiled by SNEC's Peter Stott for the Boston national SIA meetings.

Additional good news on the maritime IA front in Boston is the award of Intermodal Surface Transportation Efficiency Act (ISTEA) funds, on the order of \$750,000, for the restoration of the Tugboat *Luna*. Congratulations to the Luna Preservation Society!

I look forward to seeing everyone at the upcoming Winter Conference in Lowell in February (see the call for papers elsewhere in this issue). Those of you with e-mail should feel free to send me a message at [msteinitz@juno.com](mailto:msteinitz@juno.com). I am compiling an electronic mailing list of SNEC members so we can get announcements out to you quickly by this means.

Michael Steinitz  
Somerville, MA

## Call For Papers

### The Tenth Annual Conference on New England Industrial Archeology to be held February 8, 1997 in Lowell, Massachusetts

Paper proposals are invited for the tenth anniversary joint winter conference of the Northern and Southern New England Chapters of the Society for Industrial Archeology. Proposals are invited by professional and avocational archeology enthusiasts on a full range of research on, or field investigations of, industrial sites, structures or equipment and their historic contexts are

invited. Reports on efforts at conservation, re-use, or public education or advocacy relating to industrial archeology resources are also welcome. Groups of presenters are welcome to propose thematic paper or panel sessions. Video presentations or poster displays will also be considered. Proposers should keep in mind a 20-25 minute maximum paper length, though longer presentations will be considered. Given that this is the tenth anniversary, retrospective papers that review IA achievements, activities or history over the past decade would be particularly welcome.

**Proposals should be submitted no later than January 3, 1997.** Those interested in presenting should submit a title, and a one- or two-page abstract, and should note the author's affiliation (if applicable) and an address and phone number where (s)he can be contacted to:

Michael Steinitz  
167 Willow Avenue  
Somerville, MA 02144  
617 628-2786 (home)  
617 727-8470 (work)  
e-mail [msteinitz@juno.com](mailto:msteinitz@juno.com)

### Society for Industrial Archeology Annual Meeting to be held May 29 - June 1, 1997 at Michigan Technological University

Michigan Technological University is hosting the 1997 SIA conference in Houghton, Michigan, from May 29 - June 1, 1997. Situated in the heart of one of the nation's preeminent copper and iron mining regions, the conference will offer opportunities to attend paper sessions and to tour mining and industrial sites.

Proposals may include individual papers (20 min.), organized panel discussions (90 min.), reports on work in progress (10 min.), or symposia of related papers. Of particular interest will be presentations on: mining and metallurgy, industrial landscapes, historic



bridges, industrial heritage preservation, and/or future directions for industrial archaeology.

An abstract of not more than 250 words is required for all formats. Please include the title of the presentation, the names of participants, brief curriculum vitae, addresses, telephone/fax numbers, and audio-visual requirements. Symposia organizers should submit all of the paper abstracts as a group. **Abstracts are due by January 15, 1997** for review by the program committee.

Send proposals to: David Landon, SIA Headquarters, Department of Social Sciences, Michigan Technological University, Houghton, MI 49931; tel. (906) 487-2366; fax (906) 487-2468; email DBLand@mtu.edu

### **CNEHA Plans I A Theme for Its '97 Annual Meeting**

The 1997 Council for Northeast Historical Archaeology (CNEHA) Annual Meeting will be held in Altoona, Pennsylvania, from October 17 through 19. The region is the site of the first national heritage tour route, the *Path of Progress*, a 500-mile-long driving route that delivers visitors to museums, state and national parks, and natural recreation areas that tell the story of 1,000 generations of American Indians, frontier settlers, Irish railroaders, Polish coal miners, German steelworkers, and many more. The dual conference themes of industrial archaeology and the role of archaeologists in heritage tourism programs are especially appropriate for this central Pennsylvania location where the impact of the American Industrial Revolution is so visible that it is now the focus of an extensive heritage tourism effort.

Some very special Friday workshops are being planned. George Miller will present his ever-popular ceramics workshop. Prepare to spend a glorious

fall afternoon (hopefully!) exploring the industrial archaeology along the Lower (rhymes with flower) Trail, a Rails-to-Trails project along the banks of the Juniata River that features remnants of the Pennsylvania Canal (locks, dams, locktender sites, aqueduct piers), an early 19th-century ironmaking community (furnace, ironmaster's house, forgesmen's log houses, store, tenant house, charcoal house), ganister quarries, railroad structures (bridges, water stations, sidings), and even a few all-concrete houses that have to be seen! A "rolling" workshop of railroad-related sites is also being considered which could include

the Allegheny Portage Railroad (canal boats hoisted on inclined planes over the eastern continental divide), the shops and yards of the Pennsylvania Railroad in Altoona, now home to the Railroaders Memorial Museum (the 300-acre PRR complex in Altoona was the largest railroad complex in the world), and the Horseshoe Curve National Historic Landmark (an incredible engineering feat). "How-to" workshops are being organized on the topics of oral history, heritage tourism, and interpretive skills for archaeologists (or, how to effectively present archaeological information to the public).

On Saturday, we'll travel across the Allegheny Front (the eastern continental divide) to Johnstown for a special banquet and the opportunity to explore the powerful and moving story of the 1889 Johnstown Flood. One-tenth of the people of Johnstown, 2,209, perished as the direct result of the gross neglect of the South Fork Dam. This is a compelling story of flood and fire, power and responsibility, survival and perseverance. Arrangements for a "progressive" dinner in Cambria City, a working class neighborhood that was home to thousands of German, Polish, Slovak, Irish, coal miners, steelworkers and their families are underway. Cambria City retains much of its 19th-

century immigrant character, including at least nine ethnic churches with great cooks who will hopefully be convinced to open their doors and kitchens to us.

Suggestions for paper sessions and other workshops are welcomed and encouraged. Please contact:

Paula Zitzler

RD 2, Box 325

Williamsburg, PA 16693-9736

Phone: 814-832-9224

e-mail: paulaz1072@aol.com

(For more information on the region, visit the Southwestern Pennsylvania Heritage Preservation Commission on the World Wide Web at <http://www.sphpc.org>.)

### **Chapter Members Speak at N.J. Ironmasters Conference 1998 Conference in Connecticut?**

The biennial Ironmasters Conference (ironworks researchers) was held at Ringwood, NJ, during the weekend of October 18-20. Speakers came from all over the Northeast, but included NNEC-SIA Chapter members Vic Rolando ("Restoration of the 1823 Blast Furnace at Forestdale, Vermont"), Matt Kierstead ("Blast Furnace Salamanders at the Richmond, Massachusetts iron Works; Evidence for Hearth Construction and Furnace Operation"), and Robert Gordon ("Ironworks on Mount Riga"). All our papers were well received.

After the paper sessions, Bill Edwards, Matt Kierstead and Vic Rolando agreed to work together to bring the 1998 Ironmasters Conference to the Salisbury area of Connecticut.

Ed Lenik organized this year's conference and led us on a tour of the Long Pond Ironworks the next morning, during a well-timed 2-hour lull in the weekend downpour.

Vic Rolando  
Bennington, VT

## **Saratoga Graphite Mine Recording Project**

The Northern New England Chapter, Society for Industrial Archeology held its Spring recording event at the former Graphite Products Corporation graphite mine and mill site at Wilton, New York on May 11-12. Despite rainy weather and temperatures hovering in the mid-50s on Saturday, the event was productive and well-attended. SIA attendees included Northern New England Chapter president Woody Openo, Bill and Allison Edwards, Karl and Eleanor Danneil, Ken McGyver, Gloria Miller, Phil Whitney, and project leaders Matt Kierstead and Carol Weatherwax. Numerous local volunteers raised the attendance to over two dozen. Stalwart surveyors Gordon and Barbara DeAngelo made excellent progress on the site base map. Krista and Richard Butterfield produced measured plan, section, and detail drawings of the lower mill foundations. Archeological investigators confirmed the location of the mine boarding house and also located the processed graphite storehouse. On Saturday evening, the hosts put on a chicken barbecue for the waterlogged workers at the Weatherwax house adjacent to the site. With some assistance, the project leaders continued documentation work this summer, completing the major part of the base mapping, and a measured drawing of the Upper Mill foundation. Another recording weekend was held on October 26-27.

Matthew Kierstead  
Wellesley, MA

## **Franconia Furnace Recording Project Completed**

The Northern New England Chapter recording project at the Franconia (N.H.) furnace ended in November with the issuance of its final report by project leader Vic Rolando. The report culminates hundreds of hours

of measuring, surveying, photographing, and interpreting the standing ruin and surface remains of the ca. 1805 - 1865 ironworks along the Gale River by Chapter volunteers and friends who came from Maine, Massachusetts, New Hampshire, New York, and Vermont to work at the site.

Two versions of the report were issued. Original copies, which contain original photos, were issued to the Franconia Area Heritage Council (Jewell Friedman, Vice President), the New Hampshire Division of Historical Resources (James L. Garvin, Architectural Historian), and the New Hampshire Historical Society Library (William Copeley, Librarian). Additional photocopies of the report were distributed to all who volunteered their time for the project (Megan Battey, Krista Butterfield, Carl and Eleanor Danneil, Bill & Allison Edwards, David Engman, Dennis Howe, Matt Kierstead, Gloria Miller, Woody Openo, Marjorie Robbins, Walt Ryan, Carol Weatherwax, and Duncan Wilkie).

In addition to an analysis of the standing furnace stack and interpretation of its visible features, the 122-page report contains either everything known to date about the history of the ironworks or bibliographic references to it, copies of a number of field sketches done by the recorders, and many color or black and white photos. The report also includes Matt Kierstead's important analysis of slag found at the site, which should point a direction for future archeological interpretation. With the completion of the project, our collection of drawings, field sketches, bags of artifacts, etc., will be documented and returned to Franconia.

In a letter thanking us, Jewell Friedman said "when we sought advice on how to preserve and perhaps acquire the Franconia iron furnace, we had no idea that we were going to see 19 dedicated persons arrive in town to prepare a written record of the furnace and its surroundings... We intend to make good use of your comprehensive report in order to further our objectives of preser-

vation and acquisition." A complimentary letter of thanks was also received from Jim Garvin.

Since completing the field work phase of the project, the property, including the furnace grounds, was sold by Mr. and Mrs. Kevin O'Brien to a retired sea captain from Australia, with whom the Council is attempting to work out an understanding on the preservation of the stack and grounds.

The project couldn't have been done without the help of all the volunteers, and I thank each of you for your time and assistance.

Vic Rolando  
Bennington, Vt.

## **Request for Information about Knitting Machine Builders**

Richard M. Candee continues to seek documentary materials for the knitting industry and knitting machine builders throughout the Northeast, especially the centers of Cohoes/Troy, NY; the Lakes Region in New Hampshire; Ipswich and Needham, MA; and several Connecticut Valley towns. (See *New England Chapters Newsletter* 1996, 16-1: 6-7.)

He will be on leave from Boston University spring semester 1997 to be in Washington, D.C. He has accepted a Senior Fellowship at the new Jerome and Dorothy Lemelson Center for the Study of Invention and Innovation at the Smithsonian Institution's National Museum of American History. From January to May he will be there to study several important knitting machinery patent models in the museum's extensive collection for his research and writing about the nineteenth century machine lace and knitting industries in New England.

Those with photos, records, or other information can still contact him until January at: 6 Scituate Road, York, ME 03909.



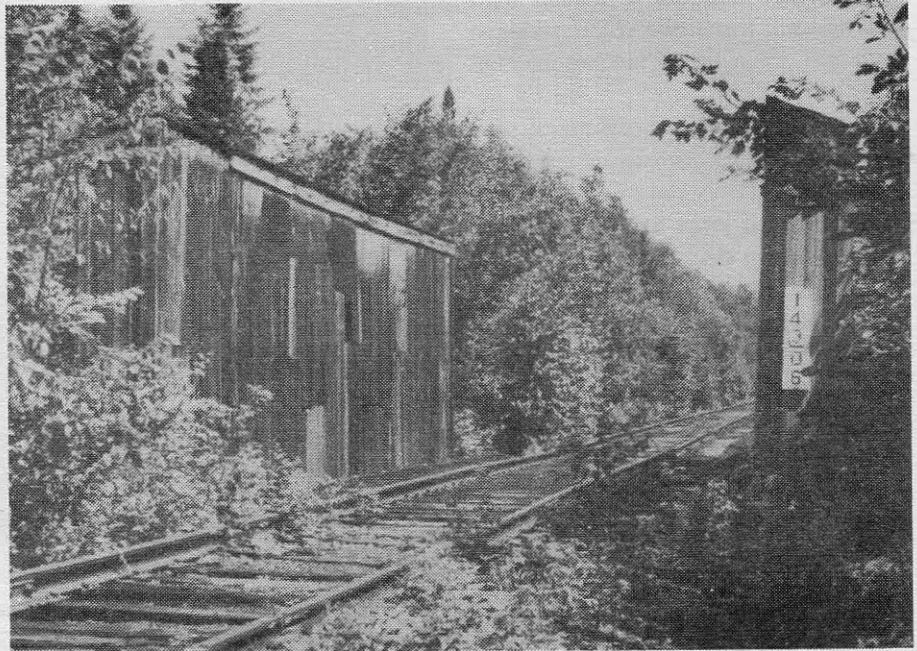
**Letter to the Editor:**  
**Request for Help to Save Rare  
Railroad Bridge**

I am writing this to you, as I do not know to whom else to direct it! It is a matter of some urgency and importance.

I read in one of my railroad magazines (I'm a train nut, with a special interest in railroad bridges) that the State (of New Hampshire) was dickering to buy the ex-B&M (now NH-VT) trackage from Whitefield to Berlin, primarily to tear it out so they can get rid of a low bridge near Berlin that prohibits running twin stacks on the old Grand Trunk, now, I believe, the St. Lawrence & Atlantic, from Montreal to Portland. This ex-B&M trackage has no on-line shippers from Woodsville to Berlin, and bridges at both towns have been embargoed, ie., condemned as unsafe for rail traffic.

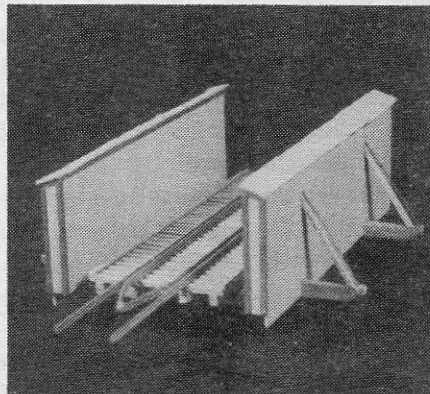
There is one very important structure on that old line. As far as I can determine, it is the **ONLY** surviving covered pony truss railroad bridge in the US; it is the last one ever used by a regularly scheduled common carrier. It was built in 1892 according to Harry Frye, of the B&M Historical Society. There used to be a considerable number of such bridges in the Northeast, but over the years they were destroyed and/or replaced by steel girder bridges. Thus this bridge is unique, and by all means should be preserved. It could be moved to some place where it can be viewed by tourists, such as the Clark's Trading Post little operation at North Woodstock. They already have a covered through truss bridge brought in from Vermont, I think from the old Barre & Montpelier, although I am not sure of the latter. But this bridge should be placed somewhere where it is preserved and protected from vandalism. It is part of our history.

The bridge sits along US Rt. 2 in Randolph, just a few hundred yards east of the major north slopes parking and trail access area. The site is shown on old USGS topo maps as "Appalachia". The B&M at one time had a small flag



*Rare ca. 1892 hybrid Howe-Whipple truss bridge in Randolph, NH.*

stop there to drop off and pick up hikers. In late summer-fall of 1991 or early spring of 1992 the bridge was severely vandalized. The NH-VT repaired it, and it was still in fairly good condition when I last visited the site in 1995. The bridge is actually only about 100 yards south of the highway, and can be seen when the leaves are off the trees. I enclose a B&W photo of the bridge, and the model. The latter gives a clearer view of its construction, unhindered by brush along the right of way.



*William Merrill's 1:87 scale model of the Randolph, NH, railroad bridge.*

In 1979 I measured every accessible timber in it, and built a 1:87 model of it. I have never submitted the plans for publication, but one of these days I may get around to sending it in to one of the model railroading pubs.

Bridge trusses have a maximum length to height ratio of about 7 to 1. Many wooden truss railroad bridges had a ratio of about 5 to 1. If a bridge was fairly short, it took too much timber to get sufficient height to enclose the whole bridge. Therefore, they made deck or through-pony trusses, and merely covered the trusses. Deck trusses were preferred where they had sufficient clearance below the bridge for maximum high water. Where they didn't, they used pony trusses such as seen in the photos.

This bridge also is extremely unusual, as I believe, based on the locations of truss rods, etc, that it is a hybrid Howe-Whipple truss, based on one of Squire Whipple's truss designs (circa 1850s) but strengthened with the addition of iron (or steel) vertical truss rods. The main truss rods are 3.5 inches in diameter, with 5.5-inch square nuts bearing against 12 X 12 X 0.5-inch steel

plates. There also are 4 smaller truss rods in each truss, two side by side at each end, which are 0.75 inches in diameter.

There are pictures of several such bridges in books such as Jones' 'Two Feet Between the Rails', etc. All of those vanished years ago. There was a covered Howe deck truss at Franklin, NH, but it was partially burned and then demolished years ago. See B&M Bull. 1982 11(3):7-11.

What can be done to save this 100+ year-old rare piece of American architecture and bridge engineering?

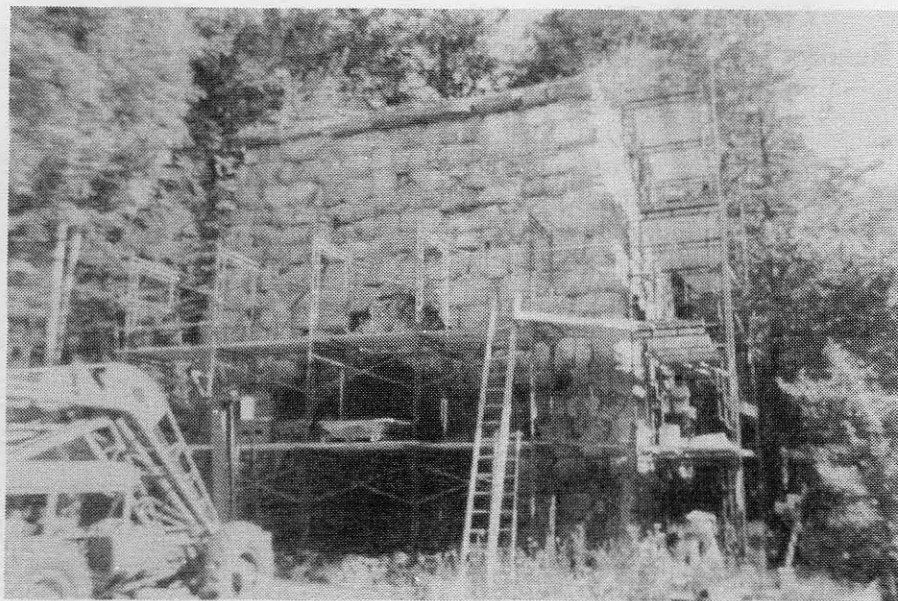
William Merrill  
233 Bradley Ave.  
State College, PA 16801  
814-238-0882

[Editor's note: Copies of this letter were forwarded to appropriate personnel in New Hampshire's Division for Historic Preservation and Department of Transportation.]

### **Restoration Work Under Way at Lime Rock, CT, Historic Blast Furnace**

Work commenced in August in repair/stabilization/restoration of the blast furnace ruin at Lime Rock, Connecticut, located about 3 miles southeast of Salisbury village. Currently owned by Richard and Freya Block, the historic ruin was built about 1865 and operated to about 1919 [an earlier furnace in the immediate vicinity operated from ca. 1825 (1813?) to 1857]. The furnace work is being underwritten solely by Mr and Mrs Block.

As was the case for the restoration of the Forestdale (Vt.) furnace in 1995, architects are Ryan-Biggs Associates, Inc., of Troy, NY, (Steve Sopko, P.E.), restoration work is being done by Joseph Gnazzo Company (Gary Gnazzo) and actual masonry work by Joseph Mazzotta and Sons of Middletown, Ct. (see "Forest Dale



*Work in progress at the Lime Rock furnace during August, showing scaffolding on two sides of the stack. The Salmon Kill is off photo to the right (photo by Vic Rolando).*

Furnace Ruin is Restored by State of Vermont" Society for Industrial Archeology - New England Chapters, Vol. 15, No. 2, 1995, pp. 6-10). Work started August 15 and is expected to continue through Thanksgiving Day. Overall on-site coordinator for the project is Edward Kirby of Sharon, Ct., who has also been doing extensive research into the history of ironmaking at Lime Rock.

The earliest ironworks at Lime Rock was a bloomery forge built by Thomas Lamb, ca. 1734, somewhere upstream of the furnace. A number of people became associated with ownership of the forge, including Philip Livingston of Ancram, NY. The forge operated to at least 1841. The 1825 blast furnace was built by John Holley and John Coffing. A hot blast oven was built in 1845 but rarely used.

The current stack was built in 1864 by the Lime Rock Iron Company. The stack is about 33 feet square and high. A hot blast oven (now missing) stood atop the stack. Blast was provided by a blower across the Salmon Kill. The upstream dam still stand, and nearly 34 feet of large-diameter penstock remain.

During the spring, Bill Edwards,

Karl Danneil, Bob Gordon, Ed Kirby, and the undersigned made a walk-over inspection of the grounds and identified many features associated with the works. Edwards and Danneil returned for more surveying and interpretation work before actual restoration work started. In the process, what we feel is the base of the 1825 stack was found. Matt Kierstead has identified a number of salamanders in the vicinity that probably came from this older furnace.

Ed Kirby has identified the type of stone used in construction of the stack and the firestone, and where they probably were quarried. He has recorded the many physical features found in the vicinity as well as completely documenting the history of the land owners, business records, and technology of the site. We are hoping to see his work published sometime soon.

The masons are rebuilding the three collapsed tuyere arches and pointing up brickwork in the work arch. The bulging walls have been slowly "pushed back" by carefully removing the loose stones, clearing behind them, and reinserting and mortaring them in place. Work also includes stabilizing the interior of the stack. A crew of three to four are work-



ing a five-day week at the site.

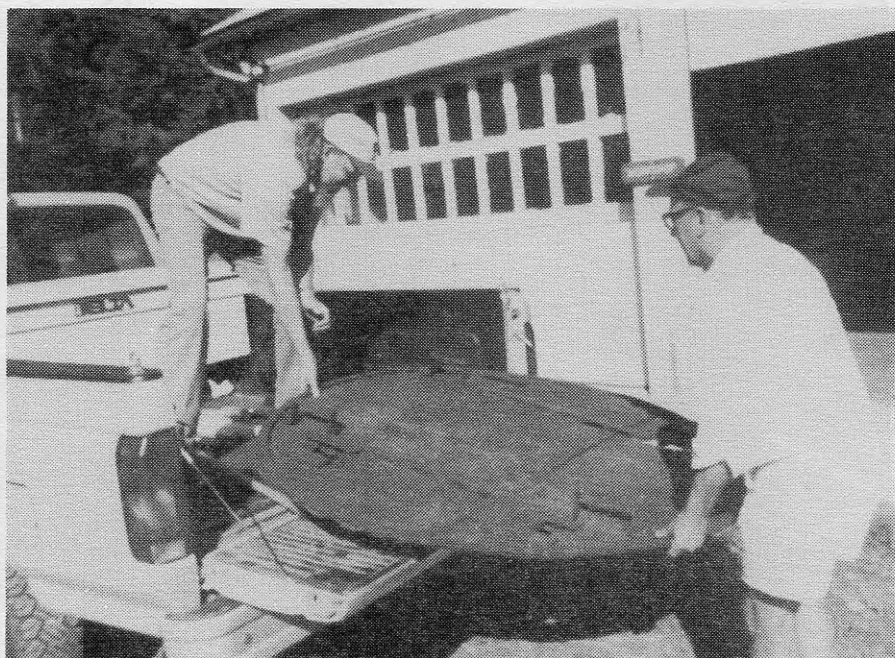
As work continues, visitors are welcome as long as it is understood that it is on private property. Starting at US Route 7 in southeastern Salisbury township, drive west on Route 112. Watch for entrances to the Lime Rock Race Track (on left) and continue through Lime Rock village (few buildings). Slow down at the concrete bridge (Salmon Kill) and make an immediate sharp right at Furnace Road. Take the first driveway (another sharp right) about 100 feet to the Block's house. It is highly suggested Ed Kirby be contacted first at (860) 364-5147.

Vic Rolando  
Bennington, VT

### Unique IA Artifact Salvaged from Green Mountain National Forest

Threatened by the prospect of logging activity in the vicinity, a unique piece of industrial hardware was rescued from a charcoal kiln site in Peru, Vermont, on September 20, 1996. Rescuers were U. S. Forest Service Archeologist David Lacy, Bob West, and Vic Rolando. The site, which contains the collapsed remains of five brick-type 19th-century charcoal kilns, is about 2200 feet up the side of a mountain and is identified VT-BE-41 on the State Archeological Inventory.

The site was first recorded by Rolando in 1983 after being led to it by Bob West of nearby Manchester. The hardware is a kiln cover, made of iron, which used to lay flat atop one of the charcoal kilns at the site, closing its top loading hole. The cover is about five feet in diameter, has four handles, and contains four 2- by 4-inch vent holes. The usual method of controlling the vent holes was to slide bricks across the openings. Although about a dozen top loading hole covers have been found associated with charcoal kiln remains in



*David Lacy (l.) and Bob West (r.) carefully unloading the charcoal kiln top loading cover at the Mount Tabor shed after rescuing it from the National forest (photo by Vic Rolando).*

Vermont, this cover is unique because the vent holes were controlled by little cast iron doors that slid between pairs of recessed mounting plates that were welded to the cover. Of the four vent holes, only one has its small sliding door still in place (see Rolando, *200 Years of Soot and Sweat*, 1992, figure 6-16, for a closeup of this door and vent).

After driving as close to the site as possible, the final half-mile down a long-abandoned and overgrown woods road, we carried the heavy, brittle cover to the pickup through the remaining hundred yards of dense undergrowth. The rescued cover is now out of harm's way at a Forest Service shed in nearby Mount Tabor.

Vic Rolando  
Bennington, Vt.

### Call for Manuscripts

The American Precision Museum invites the submission of manuscripts for publication in its quarterly newsletter *Tools & Technology*. We are particularly interested in the history of precision manufacturing, the ingenuity and entrepreneurial spirit which drive it, and its effect on our everyday lives. Manuscripts should be of between 500 and 2,500 words. Writing should be clear and readable for the aware lay person, with important sources documented by endnotes. All published manuscripts become eligible for receiving the Fairman Prize, a \$250 prize awarded annually, on the basis of *Tools & Technology* readers' choice.

Send manuscripts and supporting graphics to Editor, *Tools & Technology*, American Precision Museum, P.O. Box 679, Windsor, Vermont 05089.



*Windham Road Bridge, c. 1905, with mill dam in background (Postcard Collection, Connecticut State Library).*

## Two Connecticut Historic Bridges Recorded to HAER Standards

Two quite different bridges in Connecticut, one an example of 19th-century vernacular building techniques and the other the product of highly technical engineering, have recently been recorded to the standards of the Historic American Engineering Record by Historic Resource Consultants, Inc. of Hartford. The Windham Road Bridge in Willimantic was built in 1857 in connection with the construction of Mill No. 1 of the Willimantic Linen Company, an enterprise that became a major producer of sewing-machine thread and the town's largest employer. The bridge is an impressive stone arch, 76 feet in length, with a smaller arch spanning the tailrace of the mill. Like the mill itself, it was built by local stonemasons using the gray granitic gneiss that underlies much of the area, including the bed of the Willimantic River. Whiting Hayden, a local textile manufacturer, provided the overall plan

for the bridge, with the actual construction undertaken by masons Lyman Jordan and Nathaniel Olin. Windham Road was a colonial road and later a turnpike that linked Willimantic with points to the south; starting in 1903 the bridge also accommodated tracks (since removed) for an electric streetcar line that ran to Baltic, a mill village some miles away.

The Connecticut State Highway Department built the Mystic River Bridge between Groton and Stonington in 1922 as part of its efforts to upgrade coastal Route 1, the state's most heavily traveled road. The bridge is an 85-foot long single-leaf bascule with overhead counterweights and balance beams, a configuration patented by Thomas E. Brown in 1918. Brown (1854-1922) was a well-known mechanical engineer responsible for numerous innovations in elevator design. He served for many years as chief engineer of the Otis Elevator Company, where he designed the inclined elevators for the Eiffel Tower in Paris. Later, as a consulting engineer, he turned his attention to funicu-

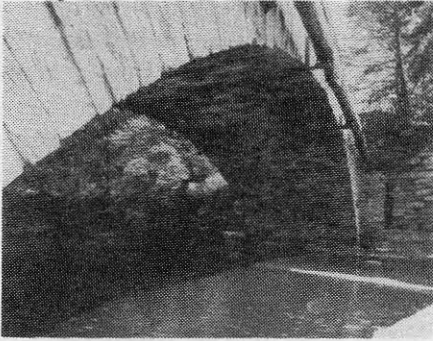
lars (mountain railways) and movable bridges.

Brown's bascules featured complicated linkages but were said to be exceptionally economical. When the Mystic bridge is opened, the balance beams rotate only 69 degrees compared with the bascule's 90 degrees. Because the counterweights do not have to pass through the legs of the towers, they can be kept in the same plane as the bascule girders, greatly reducing lateral forces. Brown's designs were championed by



*Windham Road Bridge, with the mills of the Willimantic Linen Company on right; smaller arch is for tailrace (W. Fleming photo).*





Windham Road Bridge (W. Fleming photo).

J. A. L. Waddell in his textbook *Economics of Bridgework* (1921) and were chosen by Waddell not only for this bridge but also for another large Connecticut highway project for which he served as consulting engineer, the Washington Bridge between Stratford and Milford. The American Bridge Company fabricated and erected the steel for the Mystic River bridge.

Bruce Clouette  
Hartford, CT

## Rolando's Book About Sold Out

Fewer than 100 copies of *200 Years of Soot and Sweat: The History and Archeology of Vermont's Iron, Charcoal and Lime Industries* remain available, according to its author and publisher, Vic Rolando. Published in September 1992, some 1725 copies were printed. The remaining copies are about evenly divided between soft cover (\$32.95) and hard cover (\$39.95) copies. For information or to order, write to Vic Rolando, 214 Jefferson Hgts, Bennington VT, 05201, or phone (802) 442-0105.

Although there are no current plans for a reprint, a few inquiries have been received about the availability of the negatives. Rolando will make the negatives available at no charge or royalty to any not-for-profit institution interested in reprinting (for-profits are negotiable), Reprint cost estimates are available.

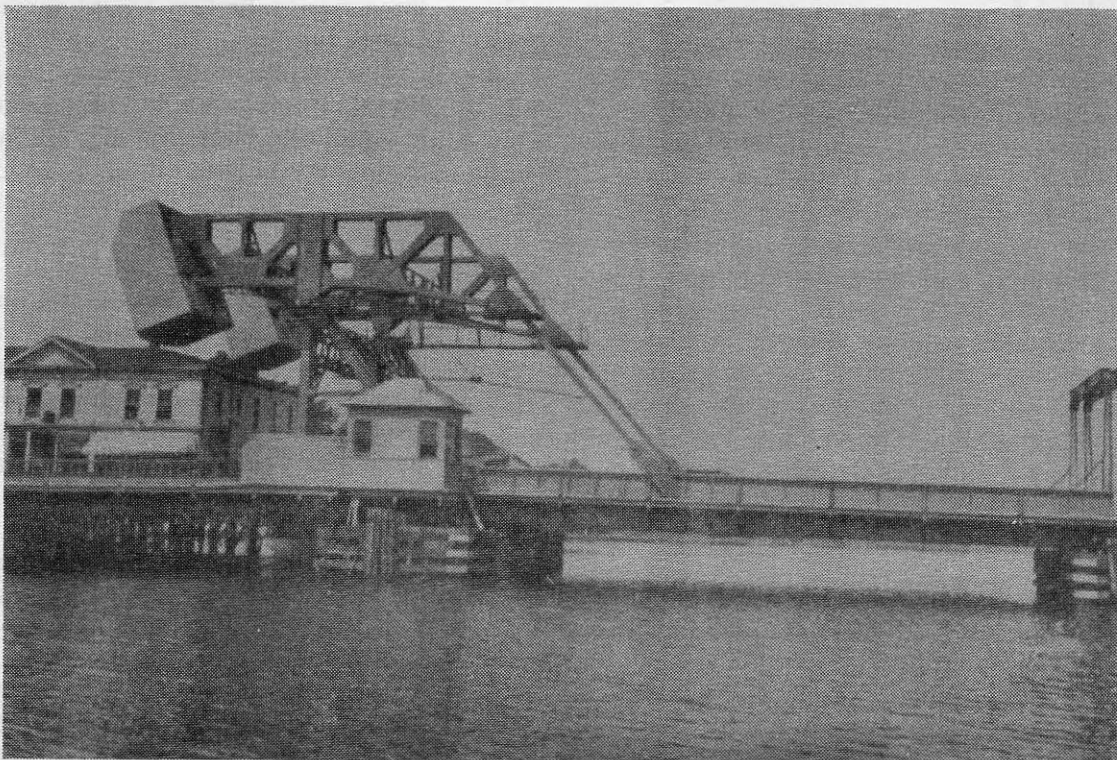
## Ice Harvesting Dates

January 12, 1997, Stamford Nature Center Museum, Stamford, CT

January 18, 19, 1997, Muscoot Farm, Katonah, NY

February 15-17, 1997, Hancock Shaker Village, Pittsfield, MA

Philip C. Whitney  
Fitchburg, MA



Mystic River Bridge as completed in 1922; street-car wire support visible on right at end of the bascule (ConnDOT).

## The Canterbury Shaker Village Second Family Blacksmith Shop: A Preliminary Report of Field Work

### Brief History of the Site

At its height, the Shaker Village at Canterbury, New Hampshire, perhaps America's best known communal community, was the home of as many as 250 believers. Within the village, the Shakers, who practiced celibacy and a strict separation of the two sexes, and who called one another "Brethren" and "Sisters," organized themselves into groups they identified as families which lived together communally. Each family was led by Elders, Eldresses, Deacons

and Deaconesses. Trustees were selected to be responsible for business dealings with the outside world. Because of the practice of strict celibacy, new members were adopted from "the world's people." During the first half of the nineteenth century, Shaker life was attractive enough to eventually draw enough believers to organize four families: the original or Church Family, the Second Family, the North Family, and the West Family. (See "The Shaker Mills in Canterbury, New Hampshire" in *IA, The Journal of the Society for Industrial Archeology* 12, 1 (1986) pp. 73-86)

The Second Family was formally gathered in 1800. However, Shakers had been living on the property, owned by Chase Wiggin (also a Shaker) located on

the west side of what is now Shaker Road, since about 1796. At the time of the gathering, there were about 20 Shakers living there, and Wiggin deeded his property to the Shaker community at that time. The property included Wiggin's house and barn, a house, originally owned by Thomas Ward that had been moved onto the Wiggin property, and possibly a house and barn on the Peverly Lot located directly across Shaker Road from the Wiggin Lot.

A map of Shaker Village, drawn by Elder Henry Blinn, in 1848, shows and identifies the Second Family blacksmith shop and coal shed on what had been the Peverly property.

In 1871, as a result of declining numbers, all but one of the Brothers and most of the Sisters were moved from the Second Family to the Church Family. The Second Family was repopulated in 1894, when the North Family was closed and seven Brothers and 22 Sisters moved into the nearly-empty Second Family buildings.

The Shakers continued to decline in numbers and, in the spring of 1915, the Second Family was finally closed and the surviving Shakers moved to the Church Family.

This site is presently owned by David Curtis, a retired farmer, who lives directly opposite the blacksmith shop site, on the west side of Shaker Road.

### The Grant

Archeological work at this site was funded by federal Intermodal Surface Transportation Act (ISTEA) project funding through the New Hampshire Department of Transportation. Matching funds from Canterbury Shaker Village, Inc., a private, non-profit museum, supplemented the ISTEA funds.

The intent of the ISTEA project was to conduct archeological field tests along Shaker Road through an archeological field school. The field school was organized and directed by Dr. David Starbuck (SIA, NNEC) and was jointly sponsored by Plymouth State College and Canterbury Shaker Village.

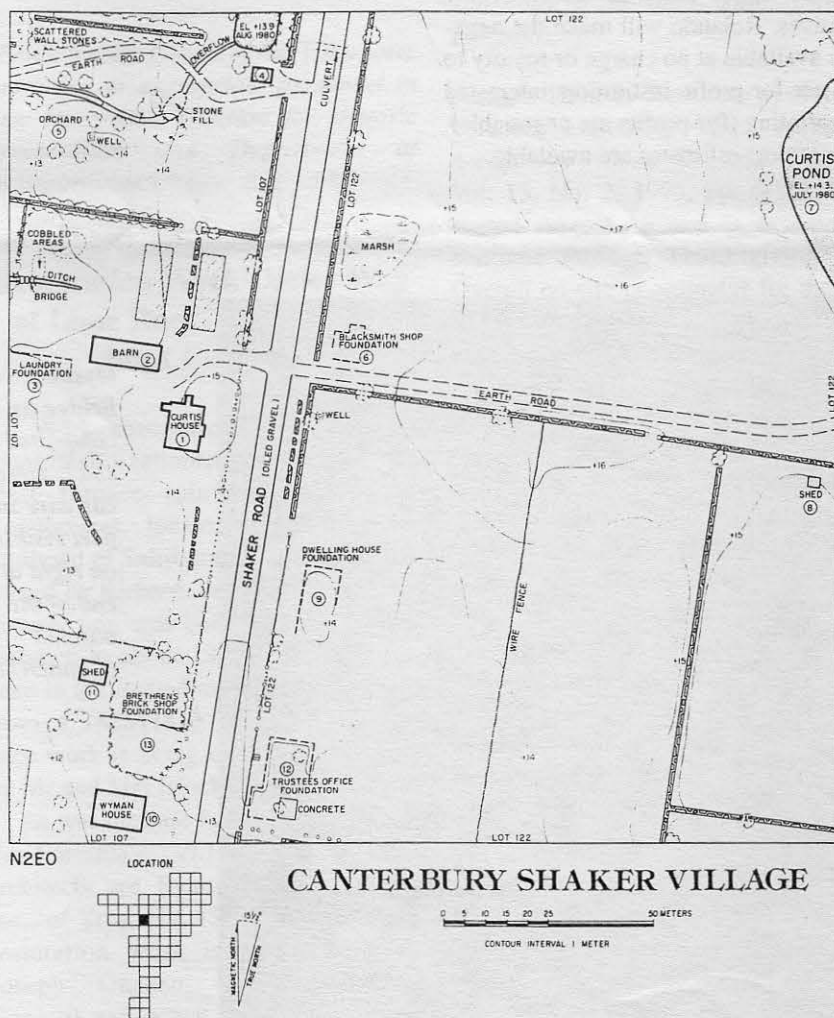


Figure 1. Base map (200 x 200 meters, prepared in 1982) of the Second Family area which includes the remains of the blacksmith shop. Courtesy of the New Hampshire Archeological Society.



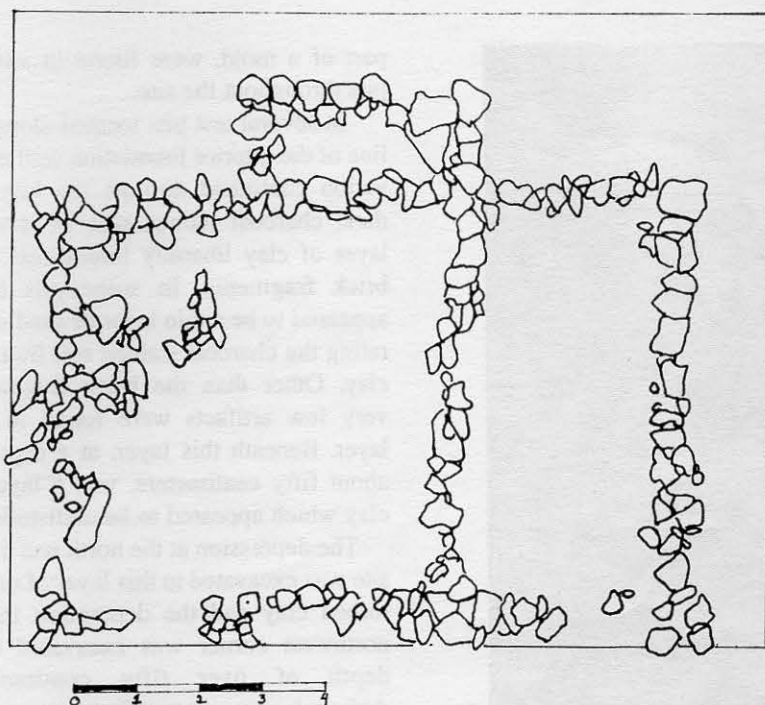


Figure 2. Field sketch plan of the Canterbury Shaker Second Family blacksmith shop foundation remains. Scale in meters. Drawn by Betty Hall.

During the six-week long field school the sites of six Shaker buildings were investigated: the hog barn at the Church Family; the Dwelling House, the Trustees House, and the blacksmith shop at the Second Family; and the Sister Shop and an agricultural/industrial site whose use has not been conclusively identified at the North Family. The following is a brief report of work accomplished at the blacksmith shop site.

#### Description of the Site

The site of the blacksmith shop was described by David Starbuck in 1982 as "... too overgrown with briars and weeds to map it accurately." The Base Map, N2E0, drawn at that time [see "Canterbury Shaker Village: Archeology and Landscape," *The New Hampshire Archeologist*, 31, 1 (1990) pp. 29 and 79], shows the site with the east wall directly in line with the east edge of a one-by-three-meter pit that extends from the north wall (See Figure 1).

After site clearing, it was apparent

that there was a second foundation wall some three and one-half meters to the east. The complete site, then, as indicated by traces of the stone foundation, is approximately ten and one-half meters east to west and seven and one-half meters north to south, with the depression, mentioned above, forming an appendage in the middle of the north wall. (The foundation stones are illustrated in the field drawing, Figure 2.) There is a second depression, approximately two meters east to west by two and one-half meters north to south in the northwest corner of the site. Just to the east of this depression, in grid square N78E0, is the so-called "anvil stone" (see Figure 3). This generally T-shaped stone, some fifty centimeters long, sixty-five centimeters wide at the base, thirty-five centimeters wide at the top, and thirty to forty centimeters thick, with two iron pins protruding from its top, was laid on its side some years ago by Curtis but not otherwise disturbed. Although locally called "the anvil stone," it was probably not used to support an anvil but rather as a machine base of some type.

The entire site, with the exception of the southwest corner, where poison ivy was particularly thick, was cleared. Surface artifacts were collected, and the site was then gridded and mapped.

#### Excavation of the Site

The excavation strategy initially focused on trying to determine the original locations of major features typically found in a blacksmith shop: the forge, the anvil, the quenching tub, and the workbench area. Work was concentrated on the northern and eastern sections of the site because of a combination of extensive surface rock showing in the southern and western sections of the site, to avoid the extensive poison ivy in the southwest corner, and the limited number of diggers available for this site. The initial digging on the site was by soil-color layers in ten centimeter levels. As we developed a better understanding of the stratigraphy, digging was by soil-

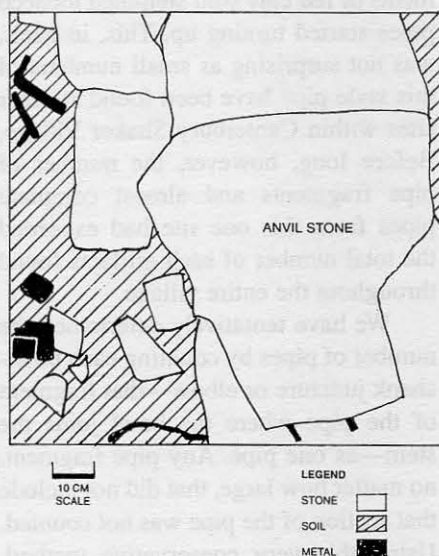


Figure 3. Field sketch plan of the "anvil stone" (on its side) uncovered in the foundation remains of the Canterbury Shaker Second Family blacksmith shop. Drawn by Joe Champlin (type added for publication).



Figure 4. Volunteers excavate the remains of the Canterbury Shaker Second Family blacksmith shop during the Northern New England Chapter's recording weekend in October 1996. Photo by David Starbuck.

color layers only.

Surface clearing yielded numerous metal artifacts consistent with a blacksmith shop. As digging started we worked through a thin layer of surface duff and roots and reached a layer of dark soil, stained with charcoal and containing large quantities of slag. Artifacts in this layer included a great deal of ferrous metal, some non-ferrous metal, glass (principally window glass fragments), and brick fragments. The ferrous metal objects include at least one ax head, several files, parts of twist drills and wood bits, ox shoes, horse shoes, a great deal of what appears to be strapping, and nails, as well as many bits of unidentified metal.

The surface layer is deeper on the west side of the site, and becomes more shallow toward the east. In test pits along the eastern edge of the site, just inside the east foundation wall, there were very few charcoal stains in the soil although many metal fragments were found there.

As the excavation progressed, fragments of red clay stub-stemmed tobacco pipes started turning up. This, in itself, was not surprising as small numbers of this style pipe have been found at other sites within Canterbury Shaker Village. Before long, however, the number of pipe fragments and almost complete pipes from this one site had exceeded the total number of such artifacts found throughout the entire village.

We have tentatively determined the number of pipes by counting each bowl-shank juncture or elbow—that fragment of the pipe where the bowl joins the stem—as one pipe. Any pipe fragment, no matter how large, that did not include that section of the pipe was not counted. Using this very conservative method, we found at least eighty-three pipes. Test pits N81E4, N81E5, and N82E4, located just outside the foundation walls were a particularly rich source of these artifacts.

Several pieces of shaped soapstone, including two pieces that appear to be

part of a mold, were found in various pits throughout the site.

In several test pits located along the line of the interior foundation wall excavation continued through the layer of dark, charcoal stained soil, to reveal a layer of clay liberally intermixed with brick fragments. In some pits there appeared to be a thin layer of sand separating the charcoal stained soil from the clay. Other than the brick fragments, very few artifacts were found in this layer. Beneath this layer, at a depth of about fifty centimeters, was a layer of clay which appeared to be undisturbed.

The depression at the north end of the site was excavated to this layer of undisturbed clay and the depression in the northwest corner was excavated to a depth of over fifty centimeters. Although numerous artifacts were found in these pits the purpose of both these depressions remains unclear.

Other than nails, the only architectural remains found to date are several pieces of roofing slate and many fragments of window glass.

## Interpretations

The Blinn map of 1848 has a deserved reputation for accuracy. It seems certain, therefore, that the site was a blacksmith shop in 1848. It may have been closed as early as 1871 and was certainly abandoned after 1915. The area between the two foundation walls on the east side of the site—an area where there is very little slag or charcoal staining—may indicate a wagon or animal bay. This would have provided an area where horses and oxen could be shod and wagons worked on in inclement weather. The location of the anvil, the forge, and other appurtenances of a blacksmith shop have not been located.

The history of the site before 1848 is open to question. The large numbers of pipe fragments found, some of which appear to be wasters, is a strong indication that pipes were being manufactured there. It seems unlikely that both pipe manufacture and blacksmithing opera-



tions were being carried on at the same site at the same time. One may conjecture that the site was a pipe manufactory before the Shaker community's adoption of the *Millennial Laws* in 1845 which forbade smoking tobacco, and that sometime between that date and the time that Henry Blinn drew his map the site was converted to a blacksmith shop.

Excavation will continue in the Spring of 1997.

Walter Ryan  
Claremont, NH

## New Publication

### *Living on the Boot Historical Archaeology at the Boot Mills Boardinghouses of Lowell, Massachusetts*

Stephen A. Mrozowski, Grace H.  
Ziesing, and Mary C. Beaudry  
Illustrations, paper \$12.95, cloth \$40.00

*Living on the Boot: Historical Archaeology at the Boot Mills Boardinghouses of Lowell, Massachusetts* provides an excellent introduction to the field of historical archeology. The book is written by Stephen A. Mrozowski, Grace H. Ziesing, and Mary C. Beaudry and has been published in paper at \$12.95, cloth, at \$40.00. Using a single heavily illustrated case study to demonstrate the power of their interdisciplinary approach, the authors create a fresh portrait of nineteenth-century domestic life in the company-owned boardinghouses of the Boot Cotton Mills of Lowell, Massachusetts.

From a compendious three-volume site report, the authors have distilled the essence of their findings. They discuss the methods and theory of historical archeology and demonstrate its strengths and limitations in the examination of Lowell. Combining documentary evidence, oral and architectural history, and environmental and material culture studies, they trace the deterioration of living conditions for mill workers and their families as owners began replacing native-born employees with immigrant

laborers. The detection of environmental decay and its implications for the health and well-being of the boardinghouse populations offer a compelling illustration of how information deduced from historical archeology can augment and modify findings based on conventional historical documents.

Stephen A. Mrozowski lives in Providence, Rhode Island, and is associate professor of anthropology at the University of Massachusetts, Boston.

Grace H. Ziesing lives in Oakland, California, and is a staff historical archeologist for the Anthropological Studies Center at Sonoma State University.

Mary C. Beaudry is an associate professor of archeology and anthropology at Boston University. She is a past president of the Society for Historical Archaeology and editor of *Northeast Historical Archaeology*.

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