



Society for Industrial Archeology · New England Chapters

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Norwalk Island Lighthouse, Norwalk, Connecticut. Built in 1868 and listed on the National Register in 1988. See "Historic Lighthouse Stations," page 23. Photo by Norwalk Seaport Association.

Editorial

The Third Annual Conference on New England Industrial Archeology will be held at Plymouth State College on February, 1990. A list of the paper titles and participants is included in this newsletter, and we hope to have a really good turnout!

This issue of the newsletter is running a bit late because very little copy had arrived by mid-fall, which is the time that we usually try to go to press. For the spring issue (Vol. 10, No. 1), please send me articles, current research and announcements by *April 1, 1990*. Mail will reach me most quickly at my home address, which is 86 North State Street, Concord, NH 03301 (603 226-0519). Thank you!

David Starbuck

President's Report, NNEC

This will be my last President's report to the Northern New England Chapter. Walt Ryan, a teacher at the New Hampshire Technical Institute in Claremont, historical researcher and writer, was elected your President at the annual meeting held in North Berwick Maine. I can't think of a better person for the job! I am certain his experience as President will be rewarding as mine has been. The NNEC is a fine group with enthusiastic and helpful members.

Also, elected as officers were Woody Openo (1st VP), an architectural historian and author of *The Sarah Mildred Long Bridge*, the study of an historic draw bridge across Portsmouth harbor, and Dick Borges

(2nd VP), Director of the Old York, (Maine) Historical Society and former collections manager at the Smithsonian. Continuing as Secretary/treasurer is Vic Rolando, a researcher of industrial history and author of a soon-to-be published volume on Vermont's historical iron industry. Their addresses are as follows:

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As for me, I will continue as an active member. Presently, I am the papers chair for the Conference on New England Industrial Archeology. We were fortunate to have many papers on a variety of subjects submitted. Several will present important new research material. Please see the announcement of the conference elsewhere in this newsletter for details.

I look forward to the possibility of having the chapter host a national meeting in the near future in which I want to be an active participant. Our region certainly has an impressive industrial history to demonstrate with tours, and outstanding convention facilities in which to meet. The possibilities are so great, it will be difficult to narrow down the choices of what to see and where to meet, but these will be problems which will be a pleasure to solve.

Congratulations, and good luck to the new officers!

Dennis E. Howe
Concord, NH

President's Report, SNEC

The Chapter held two formal events during 1989: the Spring Meeting on June 17th, arranged by the chapter Secretary, Anne Tait, and Program Coordinator, Jeff Howry; and the Fall Meeting in Charlestown on October 21st, organized by Jeff Howry and Mary McCahn.

The Spring Meeting was organized around a tour of the Holyoke canal system and dam and was led by Dr. Robert Northrop of the University of Connecticut. Prof. Northrop, while working with Northeast Utilities Environmental Lab, helped to plan the transport system which enables shad, salmon, and other fish to overcome the Holyoke Dam in the Connecticut river. Prof. Northrop explained how the use of electrodes stunned the fish, allowing them to fall through a chute to the next level of the canal. The visit also included an examination of the recently constructed Holyoke Heritage State Park Visitors Center.

Mary McCahn has contributed this account of the Annual Fall Meeting: Saturday, October 21st, about thirty members of SNEC braved the first blast of winter to tour sites along the heavily industrialized north shore of the Mystic River. Rich in product handling history, the area still functions as the produce district and bulk fuel storage district for the greater Boston area. The group met at DISTRIGAS in Everett, the country's only active liquid natural

gas import facility. The company graciously opened their state-of-the-art plant to the Chapter and after a provocative explanation of the facility by Manager George Auckey, we toured the plant where chilled gas from Algeria is unloaded from the specially designed tankers and pumped by pipeline to two large storage tanks. The gas, which expands approximately 600 percent before it reaches the consumer, is shipped chilled by tanker trucks to smaller storage facilities within a 100-mile radius of Boston. It is also converted to natural gas for delivery to the Boston gas distribution system. Distrigas LNG is used to augment existing natural gas supplies when demand is high. One of the most impressive aspects of the tour was the elaborate safety system designed to contain a spill or fire.

After lunch and a business meeting, at which the Chapter's annual elections took place, the group toured Draw 7, carrying the former Boston & Maine main line over the Mystic River, and the last horizontally-folding railroad draw bridge in the country. In active use from its construction in 1893-94 until August of 1989, the bridge is the last of a type once common in the Boston area and is representative of the first-generation movable-span technology. Similar folding draws were used on rail lines in the Boston area as early as the 1840s. Robert Simon of Amtrak, which operates Commuter Rail services for the MBTA, provided the Chapter access to the bridge, slated for demolition this summer. Completing the day was an interesting tour of the Whitmore-Wright Company, manufacturers of leather tanning oils since the early 1900s. The family-owned business produces a variety of oils for the national and

international market from its plant housed in a three-story mansard brick building constructed in 1865. It is one of several such manufacturers in the area that still mix oils that originally supplied the tanning industry in Lynn and Peabody. Company president Karl Hoyt kindly provided the Chapter with a top-to-bottom tour of the plant.

The annual Chapter election of officers was held during the luncheon break. The current Program Chair, Jeffrey Howry, was elected president. The new Program Chair elected at the fall meeting is Michael Steinitz, currently survey director at the Massachusetts Historical Commission. He reports that he plans an active program for next year, beginning with a Worcester tour. Further announcements should be forthcoming shortly. Re-elected to their posts as Secretary and Treasurer, respectively, were Anne Tait and Maureen Cavanaugh.

Peter Stott
Craryville, NY
President Emeritus

Meetings and Announcements

The Conference on New England Industrial Archeology to be Held

The Third Annual Conference on New England Industrial Archeology will be held on February 3, 1990 at Plymouth State College in Plymouth, New Hampshire. The conference has been alternately hosted by the Northern and Southern New England Chapters. Many SIA members will recall that Plymouth State College was the site of the first conference in 1988, and last year's conference was held at Old Sturbridge Village, Massachusetts.

Papers to be presented at the Plymouth conference will address a wide range of industrial archeology topics and promise to update current knowledge of a variety of research interests. The presentations will cover hydropowered mills, ironworks, education, resource survey, ceramic industries, early window glass, shipbuilding and more. For the first time a number of papers on research of Vermont industries will be presented. Also, new subjects for the conference will include papers dealing with hazardous waste and underwater research.

Volunteers who participated in the recording of the Forestdale Ironworks will be interested to know that their project along with a survey of early Vermont iron furnaces and charcoal kilns will be featured within the conference program. Also in the conference program will be presentations on other Vermont industrial archeology, including a piano action factory and other mill remains at Barton's Mill Hill area, a 19th-century sawmill at Leicester Hollow, and remains of an ice house once belonging to Justin Morrill.

A unique paper by Jeff Howry will show how the investigation of production methods of historic industries can provide important information on the location of features which may contain hazardous waste materials. Another unique paper, based on results of investigations by Marie-Lorraine Pipes, will describe how a petrographic microscope was used to establish a visual difference between crown and broad window glass, and show that the window glass industry was well underway in this country during the last quarter of the 18th century.

In other papers, Steven Pendery will review the history of the manufacture of pottery in the Boston area and describe current research which includes the compilation of a type reference collection for New England-produced wares, and Victoria Bunker will describe brick production and her research of 19th-century brickyards in the central Merrimack Valley which undoubtedly produced for the construction of textile mills on the river.

Program:

8:30 a.m. Registration, Rounds Hall

9:00 Welcome

Dennis Howe, SIA-NNEC and **William Taylor**, Director of the Institute for New Hampshire Studies, Plymouth State College.

Recent Research and Educational Use of Rural Mills in North Central New Hampshire **Duncan C. Wilkie**, Plymouth State College.

IA Survey of Vermont Furnaces, Forges and Kilns. **Victor R. Rolando**, SIA-NNEC.

The Forestdale Ironworks: 19th Century Iron-making in Brandon, Vermont. **David Starbuck**, University of Vermont.

Mill Hill at Crystal Lake Falls, Barton, Vermont: Grist Mill, Piano Action Factory, Ironworks, and More. **Darlene Young** and **Robin Tenny**, SIA-NNEC.

The Justin Morrill Ice House: Archeological Investigations. **Allen Yale**, Vermont Division of Historic Preservation.

The Decline of Water-Powered Industry and the Problem of Rural Abandonment: the View from Central Vermont.

James C. Garman, University of Massachusetts, Amherst.

Brick Yards and Historic Landscapes in the Central Merrimack Valley. **Victoria Bunker**, Archeological Consultant.

Attempts at Refloating S.S. Ellis Island. **Dick Ping Hsu**, Archeologist, National Park Service.

Historical Perspectives on Industrial Archeological Sites in Killingly, Connecticut. **Jeanne A. Ward** and **Anne S. Dowd**, GeoArch Consultants, Inc.

Clarence E. Kinne and His Collection of Water Turbines. **Jane Mork Gibson**, Valley Forge Laboratories, Inc.

In and Out of Historic Hazardous Waste: Understanding Process Technology in Industrial Archeology. **Jeffrey C. Howry**, SIA-SNEC.

Window Glass Analysis: Its Potential Historical and Archaeological Contributions. **Gary McGowan**, **Nadia N. Shevchuk** and **Marie-Lorraine Pipes**, Louis Berger & Associates, Inc.

Pottery Production in Greater Boston, 1640-1940. **Steven R. Pendery**, Boston City Archeologist.

A Survivor of the Mid-19th Century Shipbuilding Industry: The Clipper Ship Snow Squall. **David Switzer**, Plymouth State College.

Call for Manuscripts

The editors of *Tools & Technology*, the quarterly journal of the American Precision Museum, are accepting manuscripts of 500 to 2,500 words relating to the history of tools and to the broad range of products that tools have made possible. All time periods are of interest, and suitable topics may embrace any of the fields of engineering, the trades, or the professions. Articles that examine the relationship between tools and products are especially welcome, as are synoptic articles in which the broad influence of a particular tool is reviewed. Articles should reflect the mission of the American Precision Museum, which is to promote an understanding of the ways in which the combination of tools, energy, and machines is indispensable to the conversion of raw materials into finished goods for the benefit of human society.

All published articles are eligible for the Dwight B. Fairman Memorial Prize. Awarded semiannually, the Fairman Prize is presented to the best article to appear in *Tools & Technology*. The prize carries a \$250 stipend.

Articles in *Tools & Technology* are intended for the lay person, not the specialist. Authors are encouraged to include photographic prints and/or transparencies concurrently with submission of manuscripts. Formal documentation will be published, and articles should footnote important sources. The editors reserve the right to edit accepted manuscripts, subject to author's review, to conform to the style and usages of *Tools & Technology*. For additional information, please refer to the guidelines below.

- Authors are asked to submit two double-spaced copies of their manuscripts. Footnotes should be double-spaced and placed at the end of the article.
- Articles longer than 2,500 words will be considered, if suitable for serialization.
- Writing style should be simple and direct. Vary the arrangements of sentence elements, paragraph length, and sentence length.
- Avoid one-sentence paragraphs.
- Avoid jargon and non-standard English. Limit use of technical terms to those necessary for clarity and accuracy.
- Graphics should be submitted with captions that complement rather than duplicate the text.
- Avoid extended quotations and parenthetical materials.
- Avoid first-person narratives except in those exceptional cases where the first-person point of view is an essential element of the manuscript.

- Where questions of style or usage arise, refer to *The Chicago Manual of Style*.
- If uncertain of a manuscript's suitability, authors are encouraged to submit inquiries or outlines in advance.
- Manuscripts will be returned if accompanied by a stamped, self-addressed envelope.

Address all correspondence to:
 Edwin A. Battison, Editor
Tools & Technology
 The American Precision
 Museum
 PO Box 679
 Windsor, Vermont 05089

New Course

In Industrial Archeology

This spring semester, starting Monday, January 29th, a new course will be offered entitled "Industrial Archaeology: Topics in History (HIST-380)," on Wednesday night, 6-8:30 pm, Rounds Hall R-307 on the campus of Plymouth State College. Dr. Duncan Wilkie has designed the course for a number of short field trips to industrial sites past and present. The class will assist him in recording archeological industrial sites. Some of the sites will be saw, fulling, grist, paper and textile mills in New Hampshire. The textbook will be *World Industrial Archaeology* and there will be reading on New Hampshire's industrial history such as *Amoskeag Mills*. The class will have a project site just a short distance from the campus to work on over the semester. *Auditing the course is only half price*. Contact the Office of Continuing Education, Plymouth State College, Plymouth NH 03264, (603) 536-5000 Ext. 2227, for registration and information.

Sullivan Fellowships

Doctoral candidates and recent Ph.Ds are invited to apply for *Sullivan Fellowships* for the calendar year 1991. Research topics should be related to the study of the role of the textile industry in the United States between c1750 and c1980.

For a copy of current guidelines for prospective *Sullivan Fellows* write: Editorial and Research Committee, Museum of American Textile History, 800 Massachusetts Avenue, North Andover, Massachusetts 01845.

Summer Job in Archeology

Summer 1990 Field Supervisor:

Looking for an advanced undergraduate or graduate student in archeology. Should have at least 2 full seasons (12 weeks) of practical field experience in either historic or prehistoric archeology (preference on former).

Position will assist Director in teaching *historical archeology at an 1800 mill complex in rural New Hampshire* for 6 weeks (late June to early August). College housing available. Must have driver's license. Base salary is \$2,000 and, depending on experience, may be higher. Housing may be paid for. Deadline is March 31, 1990. Send your resume and name/address of a professional archeologist for recommendation to: Duncan C. Wilkie, Director of Heritage Studies, Plymouth State College, Plymouth, NH 03264 (603) 536-5000, Ext. 2634.

McGraw-Hill Inc. donates special archives to the seashore trolley museum

Kennebunkport, Maine — The New England Electric Railway Historical Society, owners and operators of the Seashore Trolley Museum, announces the donation from McGraw-Hill of New York City, of the archival copies of 274 bound volumes of their pioneering and influential electrical railway and transit periodicals.

This gift consists of full runs dating from 1884 of the widely read trade magazine, *Street Railway Journal*, and its successors, *Electric Railway Review*, *Electric Railway Journal* and *Transit Journal*. In addition, there are whole and partial runs of eight other electric railway, transit and electric railway investment periodicals published from 1883 to 1942.

"These volumes are the definitive key to research in the urban and interurban transit industry and will be the centerpiece of the Seashore Museum's library," said Seashore Chairman, James D. Schantz of Boston. He also notes that the *Street Railway Journal* was the very first publication of McGraw-Hill and the foundation stone of their periodicals and communications empire.

"A unique factor is that these are well-preserved, well-bound, and the corporation's official archival copies. These volumes have an outside appraised gift value of almost \$100,000, the largest non-cash gift ever received by the Museum. They are a most welcome gift on Seashore's 50th Anniversary as the Museum begins a major capital drive to include a new library building," Schantz added.

"Seashore was selected over several other institutions to receive

these volumes and is most grateful to McGraw-Hill for being the chosen recipient," said George M. Sanborn, Seashore Trustee and Library Committee Deputy Chairman.

With nearly 200 electric transit vehicles, Seashore is the world's oldest and largest operating electric railroad museum.

The Museum is celebrating a two-year cycle of the 50th Anniversary of its founding in 1989, through the 50th Anniversary of its incorporation in 1991. Seashore is open to the public and offers regular passenger service April-October and in early December.

For further information please contact Donald G. Curry, Museum Director, (207) 967-2712.

Woodman Elected

Jonathan J. Woodman was recently elected President of the Massachusetts Council of the American Institute of Architects (MCAIA) for 1990. With headquarters in Boston, the MCAIA is the umbrella organization for the three state AIA chapters: the Boston Society of Architects and the Cen-

tral and Western Massachusetts chapters.

Woodman said his goal while in office is to institute a statewide architectural awards program to give credit to projects, programs and legislation promoting a positive impact on the built environment. He will also represent the MCAIA at the New England Regional Council AIA, and at the national level.

Woodman is principal of Woodman Associates, Architects, a firm he founded in 1971, located in Newburyport, MA. Woodman Associates has been responsible for numerous banks, institutions, and architectural restorations in the Merrimack Valley region. Recently, they received an award from the Association of General Contractors for their design of the \$3 million dollar post office in Andover, MA.

Woodman served as a juror on the Governor's Design Award Program of 1988 and on the Regional Design Committee that organized speakers for the November, Build Boston program. For four years, Woodman served as an appointed member of the Designer Selection Board, a committee responsible for choosing architects and engineers

for building projects in the Commonwealth. During the last year on this board, 1987, he served as chairman. Woodman lives with his wife and daughter in Newburyport, MA.

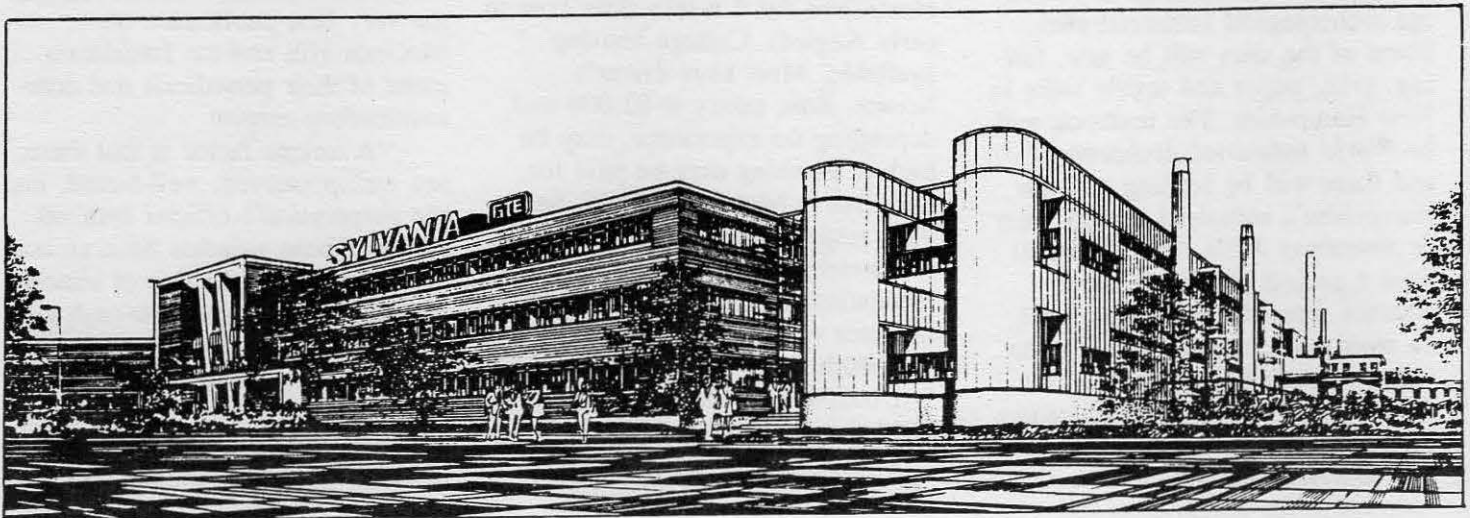
For further information call: Woodman Associates, Architects, 508-462-9522.

GTE: A proposed addition located on the right of the illustration.

Two towers: Part of an air intake and exhaust system that distributes large quantities of air through interstitial space to various laboratories throughout the building.

Stacks: for scrubbers and ventilation.

Building Use: for lighting research.



Current Research in New England

New Hampshire

Update on the Reconstructed Mill in Washington, N.H.

An abbreviated slide show was given on this mill at the SIA Conference at Plymouth State College in 1987. In the spring of 1988 we acquired an Erie Steam Engine which was originally sold by Page Belting Co., Concord, N.H. This engine and others of its size were used at the turn of the century when the big timber cutoff was done in the White Mountains. These engines and the boilers to run them were the first portable sawmill power.

The engine is a center crank type with 11" x 15" cylinder producing 40 h.p. at 150 r.p.m. One pulley is 48", and the other is 70".

In the fall of 1988 we acquired five pieces of machinery which were originally used in the Abbot Downing Co. in Concord who manufactured the famous Concord Coaches.

The list included a 24" single surface planer manufactured in Bristol, N.H., a 36" band saw, a large table saw and a chamfer machine.

The steam engine was donated by Earl Nichols of Warner, N.H., who founded the Kearsarge Reel Co. The five Abbot Downing machines were donated by Larry Smith from Manchester, N.H. He acquired them from an ancestor, John Cate, who bought them when Abbot Downing went out of business in the 1920s.

At the present time we are looking for someone knowledgeable in the art of setting up line shafts.

Harold F. Yeaton
Concord, NH

News from Plymouth State College

At a road stop in Franconia, tourists unpack bologna and liverwurst sandwiches, open a Thermos of lemonade, and stare at a strange old stone structure across the Gale River. Nature and time have altered the building, now crumbling and covered in brush and bramble. But without the identifying historical marker, it is doubtful whether the picnickers would know that they are looking at a truly unique site in New Hampshire — a 19th century blast furnace.

A father asks for the egg salad, then detects two men emerging at the top of the furnace. "How did they get up there," he wonders. And, noticing the sheer drop some 35 feet to the bottom, he adds: "Those guys are crazy."

"Those guys" have spent the better part of the morning bushwacking through someone's backyard, cutting a swath through the overgrowth in order to reach the place known by the locals as "the old stone stack". The furnace is all that remains from an old iron fac-

tory. The original structure stood in the 1790s, was redesigned in 1810, and rebuilt for the last time in 1858-59.

Duncan Wilkie, an associate professor of social science at Plymouth State College and archeologist with the New Hampshire Division of Historical Resources, is considering nominating the blast furnace for the National Historic Register and wants to get a better look at it. With the help of a fireman's ladder, and aided by James L. Garvin, architectural historian for the state, and Rachel Young, an eighth-grade teacher of U.S. History at Memorial Middle School in Laconia and the first candidate for the master's of education degree in Heritage Studies at Plymouth State, Wilkie examines the site.

"This is where Indiana Jones exits, and the boring stuff begins," Wilkie says with a chuckle, grabbing his cameras, notebook, charts, maps, brown paper bags and measuring tape. "There's a lot of work in archeology before you even begin to dig."



Harold Yeaton's mill in Washington, N.H., November 1989.

For Young, who is enrolled last summer in Heritage Studies Foundations I and II — Archaeological Basics and Archaeological Explanation — the work never ceases to be fascinating. “I’ve been putting off getting my master’s for lots of years and I think it’s because I was looking for a program that was more hands-on and exploratory than textbook-oriented,” Young says. “And this is great,” she adds, swatting away a black fly. “I’m outside, exploring... it’s nice to be part of the archeological process, rather than just reading about it in a book.”

The Heritage Studies program is in its first year as an option for Master’s of Education degree candidates. In it, students use local resources to explore the past. Historians, folklorists, geographers, political scientists, archeologists, anthropologists, architects, sociologists and other social scientists look at the past in different but complementary ways. The program, which is offered in cooperation with the New Hampshire Division of Historical Resources, helps educators create meaningful learning experiences for students through a variety of points of view.

“I grew up in New Hampshire and am interested in the history of New Hampshire,” Young says. “Also, I want to find ways to add more active involvement in the study of history within my classroom. I’d like to try to make the story of our culture and heritage relevant to students, so they develop an appreciation and respect for the past.”

Young said she enjoys traveling to the different sites, whether it involves mapping an old blast furnace, exploring steam-powered saw mills or looking for long-forgotten

log cabins. She plans to continue working toward her master’s throughout the year, taking evening courses in the fall, during Winterim, and in the spring, and immersing herself in field work during the summer. Next year, she expects to enroll in the Archaeological Field Methods, in which she will spend four intensive weeks excavating at a dig site.

“One question my students always ask me is ‘How do you know these things happened?’” Young says. “Well, now I can show them.”

Young leaves to find a marker, located on her hand-drawn map, but hidden amid the maze of branches and weeds surrounding the blast furnace. As she searches, Wilkie examines brick from the top of the furnace. Across the Gale River, the well-tended picnic area fills rapidly, its clean wood tables serving as monuments of today’s culture, just as the blast furnace marks yesterday’s.

“We’re kind of a throwaway generation,” Young says, edging her way through the newly cut path. “Styrofoam. The irony is that Styrofoam lasts longer than this stuff. (Young points to the blast furnace.) Students today, I think, need to find ways they can respect and preserve things that are important.”

Plymouth State’s first Heritage Studies graduate student stops talking to look at the old blast furnace. Worn rock tumbles from its sides. Harsh sunlight peeks through narrow openings. Plant life takes root in chinks of stone and brick. “Did I mention respect,” she asks. “Because by respecting the past we can see how it relates to our lives today... and, hopefully, our lives in the future.”

“Besides,” she says with a smile, “I spend my school year with papers to correct, lessons to plan, grades to record, books to read... this is a great way to spend the summer.”

The Notre Dame Bridge Demolished

Industrial Archeologists are saddened at the loss of the Notre Dame bridge. On September 6 its base was cut with acetylene torches, and steel cables in tension toppled the majestic arches over into the river.

“The 400-ton arch of the Notre Dame Bridge tipped a degree or two. Then with a low roar, the Manchester landmark plummeted into the Merrimack River, kicking up a 50-foot-high wall of water.

“A cloud of brown dust hung in the air like fallout.

“And, the magnificent green arches, crafted to last for decades, lay curled across the river.” (*Union Leader*, September 7, 1989.)

The bridge had been nominated to the National Register of Historic Places in 1987 to mark the 50th anniversary of its construction. It had been the only steel-arch to span the Merrimack River in New Hampshire. With its concrete causeways it was 1459 feet long. The arches spanned 444 feet.

The arch bridge had been the subject of a bitter controversy between state and city officials intent on its demolition, and preservationists and many residents of the city who recognized it as a landmark of an important New England industrial city. The bridge had provided access from the west side of the river directly to the Amoskeag Mill Yard. Many French-Canadian families settled on the west side when they immigrated to work for the Amoskeag Company, once the

world's largest textile mill complex. Soon after construction of the bridge as a New Deal construction project, the west side became known as the "Notre Dame" section of Manchester.

Manchester Mayor Emile Beaulieu declared that the city could not afford to keep the bridge. The Cianbro Corporation of Pittsfield, Maine, had been contracted for the demolition and construction of a replacement two-lane span for \$12 million. Perhaps to mask his chagrin, Mayor Beaulieu pointed out that he was having an inventory of historic buildings and landmarks taken so that the city could plan for their preservation and so that "it doesn't happen again."

Dennis Howe
Concord, NH

Preservation Planning for Archeological Resources

The purpose of this brief article is to introduce the membership of the New England Chapters of the SIA to the preservation planning process, and to announce the drafting of three preservation planning documents that may be of interest to SIA members.

To begin with preservation planning in general, the New Hampshire Division of Historical Resources, like every other State Historic Preservation Office, is in the process of drafting a statewide comprehensive plan for historic preservation. This process is being supervised by the National Park Service, which oversees all SHPO operations, and the Park Service's latest comprehensive planning tool is the "historic context". Simply stated, a historic context is a document or a set of documents that encapsulates a variety of information about a thematically related set of historical resources. The definition

for any historic context includes a time period, a geographical range, and a cultural theme. In addition, a fully-developed context will discuss known and expected property types, the spatial distribution of these property types, criteria for evaluating individual properties (based on National Register criteria), additional research and documentation needs, and goals and priorities for the identification, evaluation, registration, and treatment of resources within the context. All this sounds rather complicated, but historic contexts are, in fact, a straightforward and useful way of thinking about and preserving historical resources, and this approach represents a significant improvement over previous approaches that tended to be overly focused on architecture and inadequately concerned with culture and history.

In any event, the New Hampshire Statewide Comprehensive Plan for Historic Preservation currently consists of 66 defined historic contexts, of which five have been fully developed. Of these five, three are likely to be of interest to SIA members. These three historic contexts are: 1) Shipwrecks in New Hampshire Waters, 2) New Hampshire's Inland Lighthouses, and 3) River and Canal Navigation, 1790-1890. These historic contexts are *not* exhaustive, book-length treatments of these various topics, but instead, represent a starting point and a framework for future research and preservation. The shipwreck context and the lighthouse context are nearly final drafts, while river and canal navigation context is a more preliminary draft. However, all three are available for public response, and this article is an invitation to SIA members interested in these three topics. If you would like to read any of these contexts, please

get in touch with me at the New Hampshire Division of Historical Resources, PO Box 2043, Concord, NH 03301. I welcome any comments, corrections, additions, bibliographic citations, or other suggestions or information you would like to offer, and indeed, any such material will become a part of the body of information the DHR is able to use in its efforts to preserve significant historical resources. This is your chance to play a part in the preservation planning process.

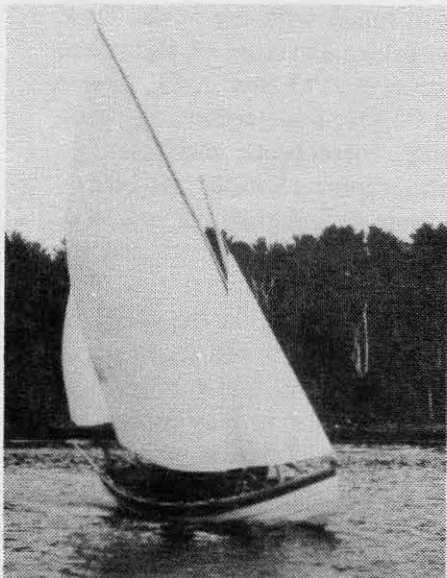
Parker Potter
Concord, NH

Massachusetts

Lowell's Boat Shop

On October 29, 1989, James P. Delgado, Maritime Historian with the National Park Service, U.S. Department of the Interior, was a speaker in Newbury at a United States Coast Guard Bicentennial History Symposium sponsored by the USCG and the Custom House Maritime Museum of Newburyport. Following the symposium, which concluded at noontime on Sunday, it was Jonathan's and my pleasure to take Jim on a tour of our area. We began at the SPNEA (Society for the Preservation of New England Antiquities) restoration site of the first period Spencer-Pierce-Little house, went on to tour the Lowell's Boat Shop, and then the Byfield Snuff Mill.

Jim Odell, owner of the Lowell's Boat Shop, gave us an exceptional tour, and in the process, Jim was so impressed with the authenticity and history of this operation (a part of which was nearly moved to Mystic Seaport Museum) that he returned several days later with his photographer



Lowell 20 ft. yawl-rigged sailing surf dory.

and spent a morning recording the boat shop.

"Lowell's Boat Shop has been in continuous operation since its founding in 1793 by Simeon Lowell, captain, ship-builder, and builder of small craft. Still located in its original building on the north bank of the Merrimack River, adjacent to sites of the great yards of early American ship builders, the ship has been run by seven generations of Lowells and has produced over 250,000 dories, skiffs, and other small craft.

Simeon Lowell is credited with developing the first true dory, probably an adaption of the "bateaux" of the French and Indian Wars. The design for this working boat was so successful that over the years, Lowell's has shipped thousands of dories to the fishing fleets of the world. It was from his design that the Banks or Gloucester Dory

evolved. This lapstrake, straight-sided boat filled the need of the Banks fishermen for a boat that would be economical and seaworthy while taking up minimum space on the decks of the parent ship. A third boat to emerge was the dory-skiff or Amesbury skiff, with square stern and rounded, lapstrake sides. All these, along with the original Surf Dory, are still built by Lowell's Boat Shop." [Current brochure, Lowell's Boat Shop]

In recent correspondence, Jim reported that he is actively working at having this key site receive National Historic Landmark status. Thank you Jim!

The first and only owner of the boat yard outside the Lowell family, Jim Odell, a naval architect with a penchant for building wooden boats, bought the boat yard in 1976. Concerned for its preservation as an historic operation, Jim Odell has seen to it that craftsmanship is still a top priority in this handcrafted operation. Nearing retirement, the problem now facing Jim and his wife is how to pass the Lowell's Boat Shop on, ensuring that it will find its way into sympathetic hands. The economics of

continuing the business is a problem as it is in any highly skilled, labor intensive small craft industry. Should it become a museum? Can it remain a viable business? Tough questions to answer. If any reader has an interest or solution, please contact Jim Odell at 459 Main Street, Amesbury, MA 01913 (508 388-0162).

Betsy H. Woodman
Newburyport, MA

Springfield Armory Update

Michael Raber, Patrick M. Malone, Robert B. Gordon, and Carolyn C. Cooper, a.k.a. the four musketeers, announce the completion of a swashbuckling 395-page (single-spaced) report for the National Park Service, North Atlantic Regional Office in Boston, entitled "Conservative Innovators and Military Small Arms: An Industrial History of the Springfield Armory, 1794-1968." From flintlocks to the M14, it discusses the "very unusual factory system" of the national armory at Springfield, Massachusetts, which overcame the handicaps of a scattered site and spasmodic public funding to achieve interchangeability of manufacture.

The gang of four will next write a shorter illustrated history of the Armory, 1794-1918, to be pub-



Lowell 15 ft. Atlantic rowing dory (dory/skiff with sliding seat).

lished by Oxford University Press. Meanwhile, would-be readers of the report should contact the National Technical Information Service, or visit the recently reopened Springfield Armory Museum, whose library has a copy available for on-site perusal.

For articles on selected topics within the armory's history, see the profusely illustrated and superbly edited special issue of IA, Vol. 14, -1 (1988). It includes what may be the last-ever photograph (by Pat Malone) of the armory's Mill River "water shop" still intact. Its industrial space was leased out in recent years, and the tenants' product (swimming-pool chemicals) caused a devastating fire there in 1988.

Carolyn Cooper
Hamden, CT



Part of Water Shops, Springfield Armory, built c1855-1860; burnt 1988. Photo 1986.

Blast furnace and bloomery forge survey:

Blast furnace ruins/remains generally are located in the western part of the state. Visible ruins (obvious furnace ruins, whether standing or collapsed) are at Forest Dale, Pittsford, West Haven, Clarendon, Tinmouth (2), North Dorset, East Dorset, Troy, and Bennington (2). Visible remains (no obvious ruins,

but visible slag, charcoal, etc.) are at Highgate, Shaftsbury, Sheldon, New Haven, Tinmouth, Tyson, Brandon, Vergennes, Orwell, and Bennington. Additionally, sites documented in archival sources with questionable or no field evidence (but possible subsurface remains) are at Bristol, Waitsfield, Woodford, Manchester, Weybridge, and St. Johnsbury.

Nearly completely standing furnace ruins are at Pittsford, and at Forest Dale where NNEC and SNEC along with the VAS and other organizations and volunteers held an official recording session this past May. The Forest Dale ruin is associated with a deep, stone-lined waterwheel pit, remains of the head race, stone mounts for draft machinery, and a nearby tenement cellar hole. Various surface depressions and mounds hint at more archeological sites in this area. The site is on a 10-acre tract owned by the Division for Historic Preservation. Outside the state property stand the ironmaster's house (Royal Blake) and other structures that either were once part of the works complex or stood inside the 10-acre tract and were moved outside.

Vermont

IA Survey of Vermont Furnaces and Kilns Completes 11th Year

The IA survey of Vermont completes its 11th year with the end of 1989. What started in 1979 as a minimum-level inspection of blast furnace ruins in the state for inclusion in an MA thesis became, by the early 1980s, a serious archival research and field inspection project for ruins/remains of blast furnaces and bloomery forges. The recording of charcoal kiln sites began in 1982, and starting in 1986 lime kiln ruins and remains were included in the survey. To date, 144 iron-, charcoal-, and lime-related IA sites have been recorded and reported to the Vermont State Archeologist; 75+ more sites, either not precisely found or having little-or-no surface remains in evidence, are under continuing study for future recording and reporting. A breakdown of the work accomplished is as follows:

	Recorded and Reported		Not yet Reported		Totals	
	Sites	Ruins	Sites	Ruins	Sites	Ruins
Blast Furnaces	23	11	9+	?	32	11+
Bloomery Forges	22	3	40	?	62	3
Charcoal Kilns	55	176	8	9?	63	185
Lime Kilns	44	70	18	22	62	92
Totals:	144	260	75+	31	219	291+

Notes: Some of the above sites contain more than one component. Recorded iron mines are not included in the above table.

The Pittsford furnace is owned by a descendent of the 18th-century owner of the land on which the original furnace was built (1791; Israel Keith). The present ruin dates from Simeon Granger, who rebuilt the furnace from the apparently razed Keith furnace in 1824. Associated components here are stone walls on both sides of the furnace stack, cellar holes of the works store, charcoal and ore sheds, and standing structures of Simeon Granger's house plus nearby workers' housing.

Both the Forest Dale and Pittsford furnaces and grounds offer a wealth of knowledge and insight into the technology of 19th-century furnace operations in Vermont as well as interpretive social data on ironworker and ironmaster life styles.

Collapsed furnace ruins with significant associated interpretive remains are also at Clarendon, Tinmouth, Troy, and Bennington, all on private property and owned by cooperating property owners (except Troy - owner unknown). The standing ruins at North and East Dorset (NNEC Spring 1983 tour) contain much less visible associated remains than those mentioned above.

No standing or partially standing ruins of any bloomery forges were found in Vermont. Forge sites were identified mostly through archival references and slag finds. Slag found at some forge sites, however, appeared much like that found at some known blast furnace sites, which raised a number of questions regarding kinds of operations carried on here. Forge sites were found distributed in the same relative area as blast furnaces. Although it is felt that the greater proportion of bloomery forge sites in the state have been found and recorded, many more sites await

discovery in the state.

The better identifiable forge sites are at Salisbury (2) and East Middlebury, operating and production capacities of which are documented in mid 19th-century ironworks reports by Neilson and Lesley. Most forge sites in the state operated during the 1790 to 1830 period and were apparently small, as judged from remains of slag deposits within their approximately 1000 square-foot areas and the relatively small streams and brooks alongside which they sought water power. These probably supplied purely local needs and were displaced by iron made more cheaply from outside the state with the completion of the Champlain Canal and construction of railroads.

Charcoal Kiln Survey:

A total of 131 charcoal kiln ruins/remains have been recorded at 45 charcoal making sites. Of the ruins/remains, 14 are stone-type, 8 are stone/brick-type, and 109 are brick type. All except 5 ruins are round, these being rectangular in shape. Three are brick-type, one is stone, and one is concrete block. Numbers of ruins per site vary from one to eight; the average is two to four per site. The additional sites of 45 mound-type charcoal kilns at 10 sites were found and recorded. The sites are generally in upland areas of the state with a higher concentration in the south-southwest area and a lesser concentration in the west-central area.

Brick-type kilns all measured a nearly consistent 28 feet inside diameter. Wall height varied with the remoteness of the site; those closest to trails, roads, and houses were no higher than ground level, while some a distance from much-used trails had walls up to 4 feet high (Bourn Brook area of Winhall). Wall thickness equaled two

brick widths. Vent holes were at ankle, knee, and waist height (appropriately called ankle vents, knee vents, and waist vents). Most kilns were built into embankments to afford access via a bridge to the top charging hole of the kiln, much like a bridge to the top of a blast furnace or lime kiln. Two eight-kiln sites were found: at Bourn Brook, Winhall, and at Old Job, Mount Tabor. The former were in best condition and contained much associated hardware.

The best preserved kiln ruins are those of stone, possibly due to availability of stone throughout the state. Even the most remote brick-type kiln ruins were vandalized for most of their usable brick. Some stone-type kilns had standing wall sections up to 9 feet high. Stone-type kiln ruins resembling "beehive" kilns were found in Stamford, Glastenbury, and Winhall. Some remains at Readsboro suggest kilns made of a stone base with an arching "beehive" roof made of brick (photos exist of these in operation in the Stamford-Readsboro area).

One positive conical brick-type kiln remain was also found in Readsboro with a possibility of two to three others (which were dynamited beyond recognition many years ago by the Forest Service for safety reasons — hikers were camping in them).

Higher concentrations of brick-type kilns were found at Woodford, Winhall, Peru, and Mount Tabor where 78 kiln ruins were found, some with significant quantities and varieties of iron support and reinforcing hardware. They somehow escaped the World War II scrap metal drives. Ruins at Peru, Winhall, and Mount Tabor were generally at 2000 to 2300 feet in elevation. Lesser numbers of brick-type

kilns were also found at Danby, Chittenden, and Ripton.

Mound-type kilns were found at Sunderland, Glastenbury, Chittenden, Salisbury, and Ripton. At first the most difficult to recognize in the field, mound-type kilns are now found almost at will, up any draw along the western slope of the Green Mountains between Glastenbury and Winhall. One site on the high western slope of Bloodroot Mountain northeast of Rutland was found to contain remains of 20 mounds. This area was not exhaustively inspected.

Diameters of mound-type kilns varied from less than 20 feet to more than 30 feet. Many were built upon flat ground but some were built into embankments, much like the stone- and brick-type kilns. At many sites, the circular gutter around the kiln was visible. At one site, stones removed from the kiln site resulted in an area of high stone density immediately around the kiln, hinting at first of a stone-type kiln.

With few exceptions, charcoal kilns/mounds sites are within the Green Mountain National Forest.

Lime Kiln Survey:

The lime kiln survey started in 1986, the result of finding some of these ruins while in the process of searching for charcoal kilns. A total of 44 lime kiln sites containing 70 kiln ruins/remains have been recorded and reported. This phase of the project is still in progress with 18 out of 22 sites unrecorded from 1988-89 waiting for 1990 action.

The kilns were distributed in "clusters," with the most dense of these generally in the central to southern parts of the state. The highest concentration of lime kiln ruins/remains is at Plymouth, where 11 were found. Other areas are

Jamaica, Weathersfield, Clarendon/Tinmouth, Leicester, New Haven, South Burlington/Colchester, and Swanton. Isolated lime kiln finds were also made at Pownal, Arlington, Danby, Manchester, Dorset, Fair Haven, Brandon, Townshend, Rochester, and Charlotte. Most are single-kiln sites; one site, at Fonda Junction, contains five standing ruins and one collapsed remain.

Early 19th-century lime kiln remains consist of stone-lined cavities built into low embankments in the immediate vicinity of small limestone outcrops, usually built by farmers to burn lime for fertilizer. Later kilns are stand-alone units, some with ornamental openings, such as one Gothic-arch kiln at Jamaica. Kilns operating into the 20th century were made of stone/concrete bases with firebrick-lined, 8- to 12-foot diameter, 15- to 25-foot high steel ovens set upon these bases. At some sites, only the base(s) remain. At others, such as Leicester and Swanton (Fonda Junction), the steel ovens remain, however bent, ruptured, or tipping in most cases. At Winooski, the standing ruin of a four-kiln unit stands that operated into the 1950's, next to two deep quarries that straddle Lime Kiln Road. Under the road, a now-flooded tunnel connects the two quarries. Activity is currently under way to place this site on the National Register.

Almost all lime kiln remains are on private property, some without the owner's knowledge that they existed or what they were. Many have been vandalized for construction stone, are caved in and used for dumping, or mostly destroyed as the result of road construction. The only known lime burning in the state today is a modern facility at New Haven Junction,

where no response has been received to an inquiry.

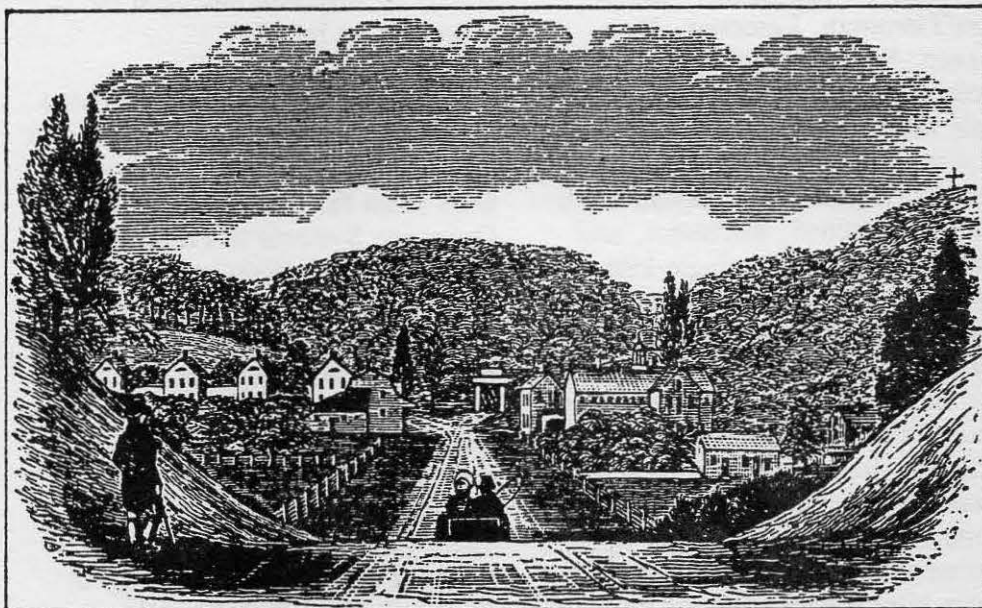
This survey was totally funded by personal expense and carried out on week-ends, holidays, and vacations from full-time work at the GE Ordnance Systems at Pittsfield, Massachusetts. When possible, expenses and effort were recorded and donated to the Vermont Division for Historic Preservation for matching grants, used by the Division for other projects. This survey is the topic of a slide-supported paper to be presented by the author at the Third Annual Conference on New England Industrial Archeology at Plymouth State College, NH, in February 1990. A complete report on the survey will be published by the author in cooperation with the Vermont Archaeological Society sometime in 1990 as part of the Vermont Statehood Bicentennial. Major effort in 1990 is expected to go into the "wrap-up of loose ends" and renewal of efforts toward the thematic National Registration of blast furnace ruins, which was abandoned in 1987 due to work overload.

Vic Rolando
Pittsfield, MA

Connecticut

Eli Whitney's Apprentices Slept Here

The Connecticut Trust for Historic Preservation recently completed restoration of the 1820s boarding house for single men who worked at the Whitney Armory in Hamden, Connecticut. Removal of grey 20th-century fiber shingles revealed clapboards in surprisingly good condition. Newly painted its (nearly) original white, the building now houses the offices of the Connecticut Trust for Historic Preserva-



View of Eli Whitney Armory complex, Hamden, Conn., 1836. Factory buildings are on the right side

of the road; barn and workers' housing on the left.

tion at the corner of Armory Street and Whitney Avenue. Nearby stands the barn that formerly housed the draft animals and farm equipment of the armory community and now serves as a summer-time local center for visual and performing arts.

These structures form part of the complex of the Eli Whitney Museum, under lively new management in its adaptively-reused early-20th century factory building. Besides its continuing exhibit devoted to history of the site, the museum's topical short-term exhibits—recently tools, radio, whistles, and electricity—emphasize hands-on experience and demonstrations of mechanical and scientific principles behind the relevant technologies, as well as their histories. For information write Eli Whitney Museum, P.O. Box 6099, Hamden, CT 06517, or phone (203) 777-1833.

Carolyn Cooper
Hamden, CT

Exhibits

Woonsocket Labor History

The City of Woonsocket has contracted for a project to produce a conceptual design for a Vestor's Center treating labor history in the city, as well as in the Blackstone Valley of Massachusetts and Rhode Island. Larry Gross will be in charge of devising the historical content of the exhibit. He is working with architects Christopher Chadbourne and John Sloane. Michael Roberts and Jane Carolan of Timelines, Inc. are also involved in the historical and interpretive planning.

The exhibit will be developed along the lines of a study of cultural conflicts which can illuminate the interactions of peoples over time and reveal their ways of living and working. The similar lifestyles of Native Americans and Yankees will initiate the discussion, followed by a period of Yankee

homogeneity among farmers, then the division of the new residents according to occupation: agricultural or industrial, owner or worker. These aspects will be preliminary to the part of the story that makes Woonsocket, and this Visitors Center, distinctive, the story of the French-Canadian role in the city and its industry. The Quebecois will be featured in a story of agrarian people entering industrial society, as so many immigrant groups did. However, their situation in Woonsocket differentiated them from other immigrants: they were anti-industrial (and anti-English) before they immigrated; they were the dominant ethnic group in the city in terms of numbers; they were part of an ethnic network stretched across New England. Their ability to maintain their culture in this environment was a remarkable achievement. Ultimately, however, their separatism ran afoul of powerful forces working to homogenize the people of the country in the interests of international expansion, of their situation amidst an industrial society which they confronted with agrarian values, of technological invasion of Americanism through such factors as radios, automobiles, and movies. At this point they developed a class-conscious movement drawing upon traditional French-Canadian and American values to confront the largely absentee and divided owners. Their local industrial union, the Industrial Textile Union, achieved a remarkable level of workplace democracy and shared control. Eventually, it could not - on the basis of a local power structure - successfully confront the forces arrayed against it nationally. It could not prevent the inexorable movement of capital to locations offering labor even more desperate for work, available for

even less money, and which drew, and draws, capital across the United States and around the world in a pattern that has not been altered to this day and the effects of which the people of Woonsocket confront in planning for their future.

Larry Gross
Museum of
American Textile History

Hand Spinning

Museum of American Textile
History, March 5 - August 3, 1990
Hand Spinning in the Industrial
Age: Patented Progress

This exhibit will display patented spinning equipment designed to improve wool spinning in nineteenth-century homes. Earlier wool wheels will appear for comparison and contrast. The exhibit will feature patented accelerating heads, spinning wheels, and spinning jennies.

The accelerating heads, or improved spindle drives, by Amos Miner and others, greatly increased spindle speed, increasing production. They were readily adopted and widely dispersed. Patented wheels were introduced after the advent of industrial wool spinning, indicating the persistence of hand spinning in the industrial period. However, their inventors and manufacturers served markets distant from industrial centers. In these areas on the moving frontier, housing production remained the rule, was part of the local community's economy. These locations moved across the country as transportation networks grew. Upstate New York was still isolated in the 1820s and '30s; and Maine, Missouri, and Wisconsin remained "frontier" in mid-century.

The new wheels enabled the spinner to work while seated, easing, rather than speeding, production. They represented the desire to achieve progress through techno-

logical change even outside the factory system. This tendency conjures images of a peculiarly American faith in inventiveness as well as a possible impact of the cult of domesticity.

Spinning jennies offered increased production and were designed to join home production to the new market economy. Their production moved through commercial, not community, networks. Spinners sold the yarn which others used to make socks, for example, which were then sold in the cities. They represented a short-lived effort to combine the domestic and industrial economies.

All these devices reflect the application of technology to the age-old desire for yarn and cloth. They represent the persistence of traditional production in the new industrial age, as well as the application of the ways of technology to that production. Visitors will see numerous examples of these artifacts, along with patent materials, advertisements, production records, etc.

Larry Gross
Museum of
American Textile History

Article

NNEC Fall Tour: Hussey Seating Co. North Berwick, Maine

On Saturday, November 11, about thirty members attended the Annual Meeting and Tour of the Northern New England Chapter of the Society for Industrial Archeology at the Hussey Seating Company in North Berwick, Maine. The tour was co-sponsored by the Old York Historical Society whose Director, SIA member Dick Borges, made the tour and meeting arrangements. Following a business meeting and a formal presentation by Philip W. Hussey, Jr., President and fifth generation to run the company, an in-depth tour of the company on its present site, a tour of the company museum, and a tour of the original Hussey site (1835) took place.

North Berwick was originally a part of Kittery, as were Eliot, Berwick, South Berwick and a part of Lebanon. This area was known as "Kittery Common". Berwick broke away from Kittery and was incorporated in 1713; the area known as "Doughty's Falls" separated from Berwick and was incorporated as North Berwick in 1831. From the earliest days of settlement, the North Berwick area supported a number of industries. The arrival of the railroad in 1842 contributed to increased manufacturing in the nineteenth century. The lumber business, shoemakers, and other businesses profited from the transportation provided by the railroad.

An 1882 Gazetteer reported the North Berwick Woolen Company, established in 1862, was the major manufacturer. Saw, grist, shingle, and clapboard mills as well as yarn,

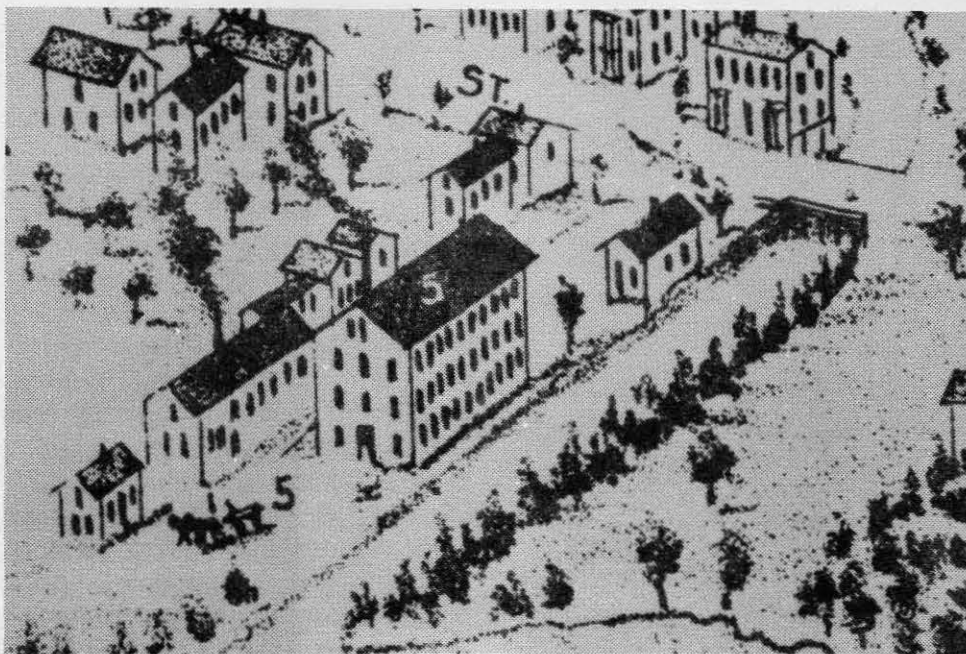


Photo 1: Building #5 is the original Hussey Plow Works at the Elm Street location in North Berwick from a map in 1877. The small building to the right is the office building.

The photos courtesy of Hussey Seating Company, North Berwick, Maine.

box and shook mills and a stove polish factory were also in operation. Even an iron ore industry with the manufacture of crude iron products was attempted.

One nineteenth century firm mentioned in the same Gazetteer still exists today after 154 years of continuous operation. Although the products and location have changed, the same family is still in charge. The Husseys were among the earliest settlers in the area, James arriving in the 1770s. Now known as the "Hussey Seating Company," under the leadership of the fifth and sixth generations of the family, it continues to have an important presence in this town and is now located on the railroad tracks just south of the village center. In its earlier location, the Hussey Plow Works was located behind the present North Berwick Lumber Co. on the Negutaquit River where it meets the Great Works River. Although the main structure burned in 1895, the smaller wood frame office building still exists.

William Hussey (1800-1870), the son of James, was born in 1800

and by 1835 had started the Hussey Plow Works. Prior to 1835, he perfected his plow design from castings produced in a foundry in Newmarket, New Hampshire, continually making refinements. William's eldest son Timothy (1831-1913) joined the company in 1855, and a foundry was erected so that the plows could be cast in North Berwick instead of Newmarket. The foundry was located on Portland Street not far from the present Hussey site. The foundry was under the supervision of Timothy's younger brother, William Penn Hussey. The foundry in this location was operated by steam power; because it was felt to be advantageous to operate it by water power, it was moved about a mile west to the present site of the North Berwick Lumber Company in 1866. It was reportedly moved in less than one day with the help of forty oxen and drivers. This building was replaced in 1875, and a new warehouse building was added in 1887.

It has been recorded "that Timothy, being a real dyed-in-the-wool Quaker, was much opposed to

the taking of a man's life and to war in general. However, as an able businessman, after the Civil War was over he purchased quite a tonnage of old cast iron cannons to melt in his foundry to make the cast iron parts of his plows. He always liked that saying about 'Beating swords into plowshares.'"

In 1895 the Hussey Company almost ceased to exist after experiencing a major fire at the Elm Street facility. With their fire insurance lapsed, fire consumed the "large wooden building where the plows were built and in less than an hour almost the entire plant and over a thousand farm implements, all finished and ready for the market, went up in smoke." All was lost, including the foundry, except the very important original patterns for the plows. After the fire, Timothy turned the remains of the business over to his three sons, William T., Arthur, and Augustine. And within ten months the foundry had been rebuilt, and plows were again being produced on the same site.

With little cash to work with (one \$6,000 insurance policy was

still in effect) the three brothers decided to rebuild but on a smaller scale. The down time caused by the fire, and increasing competition of Midwestern manufacturers, however, did not bode well for the future manufacturing of Hussey agricultural implements. As sales continued to decline, the brothers experimented with contracting iron casting jobs for others in their foundry. They produced such items as sled shoes, sewer grates and manhole covers (several still evident throughout the Town of North Berwick), work sleds, portable gasoline powered wood saws, "park settees with steel legs and slats of oak lumber," among others. But they also did not prove very successful. As reported by the son of Augustine, "in spite of the plant's good 'morale', the agricultural implement business and the efforts of three brothers to find other products to fill in the gap met with very little continuing success."

However, soon they found a new product that they had not

thought of themselves. At the request of a local bank President, they developed a metal ladder that could last indefinitely outdoors, much better than wood, for the regular maintenance of his barn roofs. These hot dipped galvanized ladders brought the Hussey's out of the slump that had been precipitated by the 1895 fire. This line led into the development and manufacture of steel fire escapes that brought the company back into successful operation and eventually took "the place of the fast declining agricultural implement business" prior to World War I.

Soon the expanding ladder and fire escape business needed more floor space. On land that Timothy had previously purchased, adjacent to the railroad tracks just south of the village center, they built a 40' x 50' plant in 1912 where the fire escapes could be assembled and loaded directly on freight cars. The power source for their activities was an early three horsepower electric motor, the first one for the

company.

In about 1913, it was decided to separate the two business lines. The brothers Arthur and William retained ownership of the Hussey Plow Company; Augustine and his son Philip assumed responsibility for the ladder and fire escape section. The new business started very slowly in a very austere facility. They expanded their product line to include flag poles, the First World War creating an increased demand for them. But aside from this, the war did not generate any additional work for the small manufacturing facility and, indeed, the amount of work actually decreased. But new construction after the war soon generated a need for fire escapes and other light iron building components. In the late twenties a new office and new manufacturing space were built on the new location.

The Husseys were brought in for this work, and orders started to come in again. Even during the Depression the company was able to increase its orders, some of

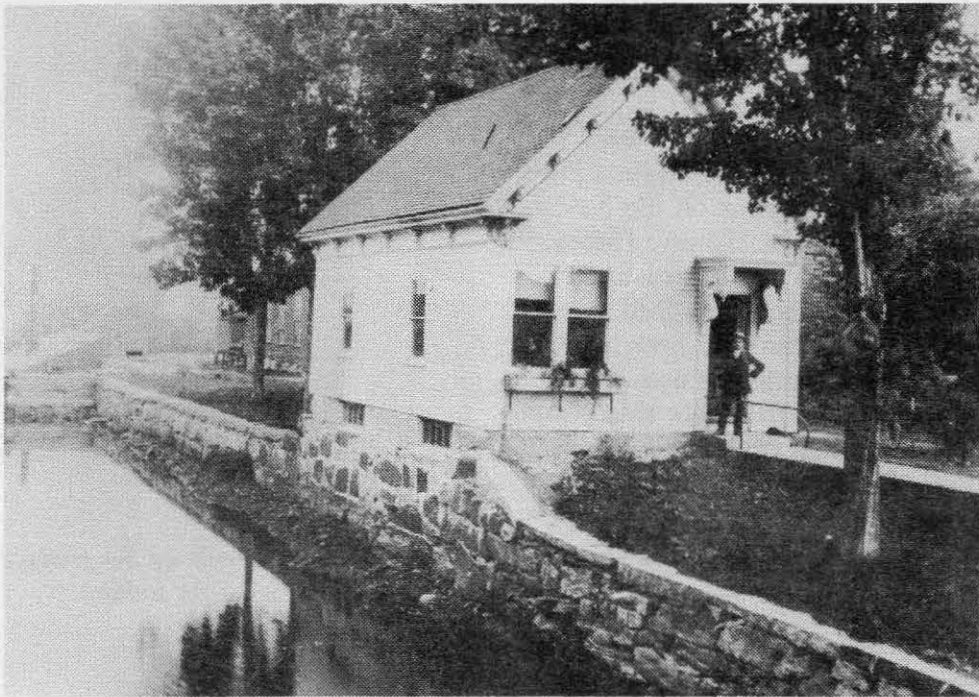


Photo 2: The Hussey Plow Works Office about 1900. Augustine Hussey is in the doorway, and his wife Helen is at the typewriter in the window. The small building to the left was used at the start of the business and has since been moved to the present Hussey site and serves as a company museum.



Photo 3: The Hussey Plow Works as it looked in early 1895 just after the fire. The Woolen Mill can be seen in the background.

which included the iron parts to bleacher seats being installed in the new Boys Club building in Portland. This was the start of a major new line of products: portable bleachers for sporting events. This product soon developed into the production and installation of permanent seating for grandstands. Business increased until World War II when materials for manufacturing non-war related items became scarce. But the company was able to secure some specialized war-related work, including "various iron and steel items for ship-building," to keep them going during these years. After the war, however, the seating business increased dramatically, and the business expanded at a corresponding rate. Their newest product was the indoors seating design and production.

By 1947, the company had expanded rapidly, and Augustine was getting old, so the decision was made to change from a business partnership to a corporation: the Hussey Manufacturing Company

with Augustine as President until he died in 1956 at the age of 90. His former partner and son Philip then became President. In 1967 his son Philip Jr. succeeded him. By the end of the 1970s, Hussey became "one of the top spectator seating manufacturers in the United States". By 1976 the company employed 200 people. Hussey is now, truly, a worldwide business.

Of special interest to readers may be the museum that is now located at Hussey's North Berwick location. In 1977, the original plow works building, now on the National Register of Historic Places, was purchased and moved to the new site. It was refurbished as a company museum and now houses many Hussey artifacts and manuscripts. After more than a century and a half of continuous operations, the many Hussey enterprises remain an important part of the community of North Berwick, Maine.

Richard C. Borges
Director,
Old York Historical Society

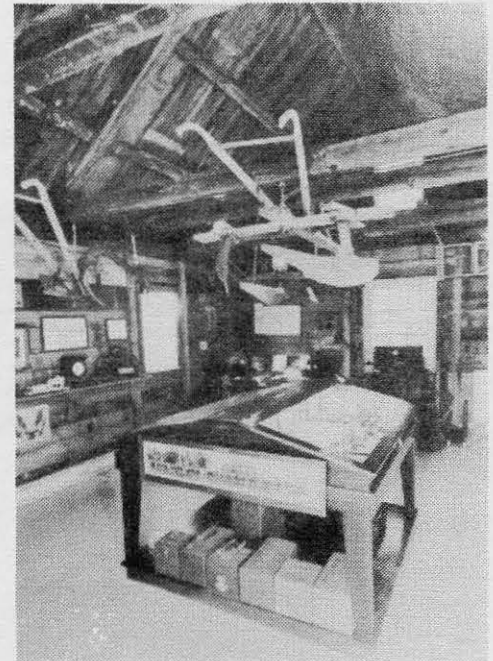


Photo 4: The interior of the Hussey Museum as it appears today.



Justin Morrill Ice House, standing in a neighbor's yard.

Article

CONFIRMING THE ORAL TRADITION:

The Morrill Ice House?

The Morrill Homestead is a state-owned historic site interpreting the life of Justin Morrill, the nineteenth-century political leader who authored the Morrill Land Grant College Act of 1862. This Act promoted agricultural and mechanical education by the sale of Western lands. Senator Morrill had a strong personal interest in innovations in horticulture and architecture. This is reflected in his home. In the 1850s Morrill designed and had built a Gothic Revival home, surrounded by formal gardens of his

design. Over the years of his residency in Strafford nine out-buildings were constructed.

As part of its Heritage '91 Program, the Division for Historic Preservation plans to restore the Morrill complex to its appearance during Morrill's tenure. This would involve the reconstruction of the formal gardens, structural repairs to the barns, installation of interpretive exhibits in the barns, and the restoration of the ice house.

Reportedly the ice house has been moved to a neighboring farm, and before the spring of 1989 we had located an early ice house that was still standing behind a neighbor's house.

The object of the Ice House Archeology Project in 1989 was to use the ice house foundation at the Morrill Homestead — represented by two short, intersecting stone walls — to answer questions about the "Morrill ice house" in anticipation of its reconstruction. These were:

1. What evidence, if any, links the off-site building to the foundation?
2. Is there any evidence that the existing building was an ice house? Is it a Morrill outbuilding?
3. Is there any evidence that the foundation is that of an ice house?
4. Is there any evidence that it is the foundation of the building under study?
5. How did the ice house sit on the foundation?
6. What, if any, construction detail can be uncovered to assist in an accurate reconstruction?

In preparation for the proposed reconstruction of the ice house, several nineteenth and twentieth century books and articles on ice houses were consulted, including Dan Cassidy's work on the ice house at the Billings Farm in Woodstock, Vermont, and Halsted's 1881 *Barns, Sheds and Out-buildings*. Most sources stressed the importance of building on ground with good drainage, or providing a drainage system, but also of preventing the access of air through the drain because this would accelerate melting. Another point stressed is the use of sawdust or similar material as insulation under, over and around the packed ice. Also mentioned was the need for vents to remove warm air from the

ice house and keep the sawdust dry.

Of special interest were Halsted's recommendations on the design of small domestic ice houses:

"The base is a frame of eight by eight inch hewn or sawed timber, forming a square, twelve by twelve feet. This is laid on a stone foundation. . . . The outside is covered with inch boards. Rough pine boards, somewhat knotty will answer. The cracks may be covered with narrow battens. Inch boards, laid horizontally, line the inside up to the plate, and the eight-inch space is filled with sawdust. The flooring is simply boards laid upon the ground or upon small cobble stones. . . . The outside boards can be rough or planed and painted to correspond with the house or other buildings."

Local sources were consulted to discover specifics about the ice house at the Morrill Homestead. The 1877 Beers Atlas map of Strafford Village indicates an ice house on the property of Justin Morrill. The map shows the ice house on the south side of the brook, while the foundation in question is on the north side of the brook.

Elwin Coburn, the current owner of the neighboring farm, on which the "ice house" stood in early 1989, claims that the ice house was moved in 1938 or 1939 during the ownership of Mark Harvey. It was originally moved onto a concrete foundation on Coburn's place, to be used as an ice house, but later was moved to its latest location by an owner who wanted to use it as a blacksmith shop and was afraid that the first location was too close to the other barns in case it caught on fire. Before owning the property Coburn moved ice when the

building sat on the concrete foundation. A measurement of the concrete foundation matches that of the structure in question.

Earl Silloway, a nonagenarian from Strafford, remembers harvesting ice from the pond behind the Morrill Homestead in the late 1910s and storing it in an ice house on the property.

The Morrill "ice house" foundation consists of two short stone walls at right angles on the north side of the brook that bisects the Morrill property. A portion of the wall near the corner had collapsed, and the top edge of the north wall was not level, but sloped down toward the west. It was at first thought that the building sat on top of these two walls.

An examination of the building purported to be the "Morrill ice house" on Elwin Coburn's land gave some architectural and construction detail which would help to decide if the building could have, in fact, been an ice house that once stood as part of the Morrill estate.

The building was 12 feet by 12 feet, and of post and beam construction with timbers of 4" x 8". The exterior was sheathed with planed vertical board and batten siding. The framing and much of the sheathing was cut on an up-and-down saw, suggesting construction prior to the late nineteenth century. The nails varied. The rafters were spiked with very large cut nails, and much of the siding was nailed with cut nails. This may represent repairs to the siding. There is evidence that the exterior had been painted a pink which matched the color of the buildings on the Morrill homestead. This last discovery was tempered by the discovery that this farm had also belonged to Morrill, and many of its buildings had also been painted pink.

The original height of the building is difficult to determine because it had been sitting on moist soil, and the shortest corner had rotted twelve inches more than the longest. The only indication of a bottom sill was that the longest corner was a square cut with a small portion of rotten sill nailed perpendicular to the post. This post was 83 inches long.

The building's ornamentation with the geometric cut-outs in the barge board, the steep pitch of the roof, the turned finials at either end of the ridge, and the board and batten siding are all characteristic of the Gothic Revival style. The front wall had a door and a vent. The back had a 42-inch door. There were no openings on either side, and no openings which could be considered windows. Over the front door (which was much too low) was a triangular repair on the exterior sheathing which hints to the prior existence of a gabled porch roof. This clue is reinforced by the existence of two notches with blocks of wood at right angles. This may be all that remains of supports for the porch roof.

On the top plate were notches about 24" apart. These may indicate interior studs for an interior wall. The horizontal nailer 55 inches below the top plate may indicate that the side walls were as high as 9 feet, as horizontal nailers for vertical siding are usually placed halfway between the two plates.

The color and Gothic Revival style are consistent with it having been a Morrill building. Several features suggest that it could have been an ice house. The 12-foot-square plan is exactly that of a small ice house described by Halsted in 1881. The lack of windows argues against it being a tool shed or hen house. The plate not-

ches may have received vertical studs for an interior wall with a cavity between the two walls which may have been filled with sawdust. The louvered vents is also consistent with ice house design. There is a strong likelihood that the "Morrill ice house" was, in fact an ice house which was a part of the Morrill estate.

What remained was to determine if the foundation was that of an ice house, and to link it to the structure. This could best be done with an archeological excavation of the site. To accomplish this the Division hired Dr. David Starbuck.

The project began on June 5th. The first week the crews consisted of from five to eight individuals. They were a mix of professional archeologists and volunteers. Many were only able to spend one day at the site. The project continued sporadically throughout the summer and fall with Division staff and an occasional volunteer.

The site (six meters by six meters) was laid out on a grid of meter squares. As the building was to be reassembled at the original level, it was decided that every square would be excavated to floor level. In addition, a couple of pits would be dug deeper to seek additional information on construction details.

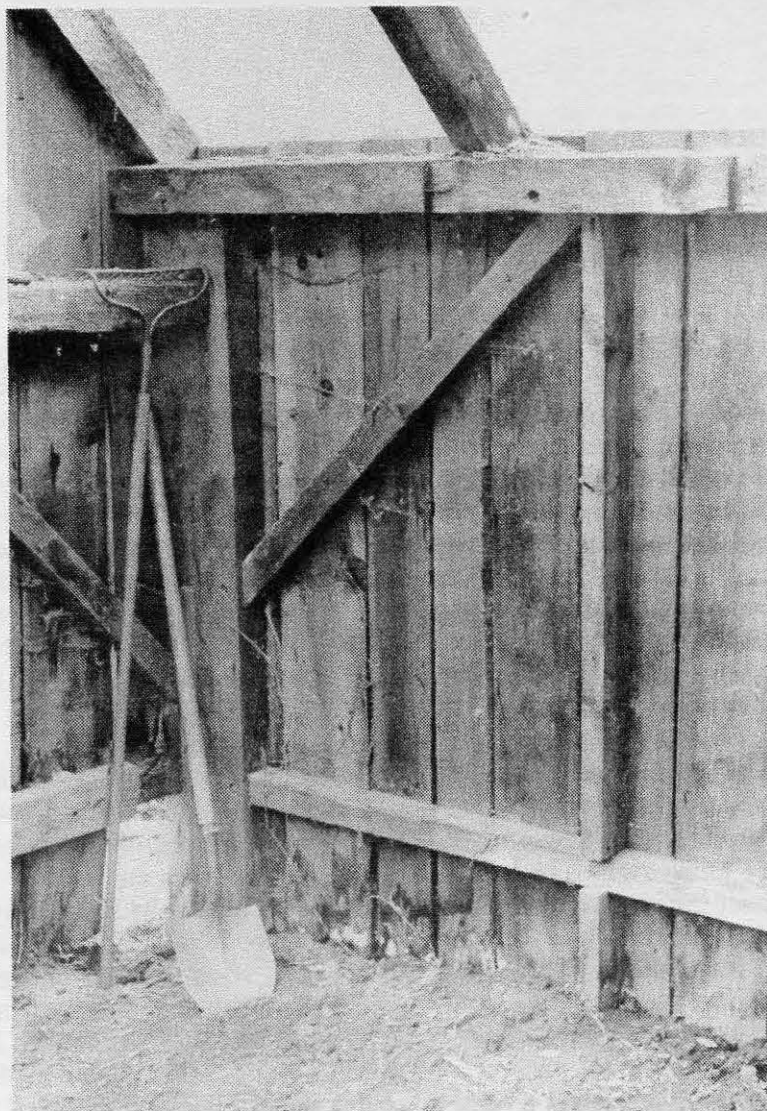
Since the site had been a garbage dump during a period after the removal of the building, there was considerable discussion about the appropriate archeological protocol for removing the overburden. In the end a fairly conservative strategy was adopted. The squares were excavated with trowel, and occasionally skimming with a spade. All material was screened through 1/4-inch hardware cloth. Most squares were dug in 10 cm levels. All artifacts were provenienced by

square and level. This resulted in garbage bags of twentieth century trash of questionable research value, but left us with clearer consciences about thorough data recovery. Scale drawings of the excavation were prepared, and the work was documented with color slides and black and white prints.

Excavation began at several dispersed squares, chosen for their likelihood of addressing different research questions. The first square was selected at the point of deepest

overburden to determine the nature of the overburden. A second square was selected in hopes of finding evidence of the end of the foundation at the lower level.

The initial finds consisted of mid-twentieth century domestic trash: tin cans, jars, bottles and broken dishes. A major problem was the large quantity of fragile rusty tin cans which offered negligible data, but greatly slowed troweling. Prime identifiable items include 1 1/4 pound Dinty Moore cans, cat-



Justin Morrill Ice House. Interior view before disassembly.



Justin Morrill Ice House. Foundation of the ice house prior to excavation.

sup and mustard jars, and Alka Seltzer bottles with the cotton still in. There were almost no faunal remains until the lower levels near the stone walls were reached. There, joints of cattle and other smaller domestic herbivores were found, as well as a nearly complete woodchuck skeleton. But all of this was incidental to the primary research goal — to determine details about the ice house.

The first real find relating to the ice house was in pit S2W5. The south end of the square began to reveal small round stones, or cobbles. At about the same depth some reddish-brown material was uncovered. It was immediately suspected, and soon confirmed, to be decayed wood. Carefully troweling around it revealed a long piece of wood bisecting the square. Between the wood and the retaining wall was just dirt. We began to

speculate that the wood could be a piece of the bottom sill. This would indicate that the building did not sit on the stone walls but inside them.

The next day a team working at the opposite corner of the grid exposed another fragment of wood resting on flat stones. Those volunteers working in the center of the grid were consistently reaching a level of small rounded stones at about the same level.

The fourth day it was decided to excavate the square directly west of the first evidence of wood, hoping to find the west end of the foundation. What was found was another piece of wood perpendicular to the first, about 3-4 inches high and about 6-8 inches wide, resting on several layers of flat stones. Inside the wood "sill" were small round stones almost to the level of the top of the wood.

Meanwhile, the volunteer who

for three days had been patiently troweling around tin cans in the initial square, the one with the deepest overburden, reached a piece of rotten wood apparently in line with that in S2W5, with cobbles to the south and clear dirt between the wood and the retaining wall.

By this time it was fairly clear that wooden sills had rested on a foundation of flat rocks, with the interior filled with round cobbles. Much of the rest of the excavating was to see how much of the sill existed and to see if the pattern was consistent. Eventually the entire sill of the north wall and much of that for the east wall would be unearthed. The sills and foundation stones indicate that a building twelve feet square stood on this site.

There were still a couple of research questions to test. Since the building was square, it was hoped that some clue as to the orientation

of the front of the building would be found. Since there were retaining walls to the north and east, the door would have been on either the south or west. The center square outside the sill in each of these directions was excavated. The square toward the house, the logical direction of the entry, proved sterile. There are rocks on the bank of the brook that appear to be an abutment for a foot bridge which would have crossed the brook between the ice house and the main house. The one to the west revealed a few flat rocks that could have been the base of a porch. Some weeks later the excavation of the adjacent squares exposed more flat rocks, which together form a rough square, 4 feet by 4 feet, suggesting the foundation of a porch. This would indicate that the ice house faced west, toward the road.

Two research questions still await testing. One square of cobbles near the center of the foundation needs to be excavated to see if we can discover any evidence of a drainage system. The other is to measure the nails in the northern sill to see if they match up with the notches in the plate, confirming the existence of interior studs, and perhaps giving conclusive evidence that the sills are those of the building.

Conclusions:

A 12 foot by 12 foot building sat inside the retaining walls. It rested on a foundation of flat rocks and had a floor of cobbles, perhaps covered with a layer of wood. The entry of the building faced west. To date no references have been found in the literature to any outbuilding with a cobble floor other than ice houses. What remained of the sill was approximately of the same dimensions as the timbers used to frame the building under study.

Nails in the outside of the sill indicate vertical siding. All the evidence seems to confirm that the building on the adjacent property was the Morrill ice house that stood in the foundation on the north side of the brook.

Postscript - This summer the State of Vermont purchased the "Morrill ice house"; disassembled it; and it is now in storage in one of the barns at the Morrill Homestead. It is hoped that in the summer of 1990 the ice house will be reassembled on its original site with an exhibit on ice harvesting and storage.

Allen Yale
Vermont Division
for Historic Preservation

Article

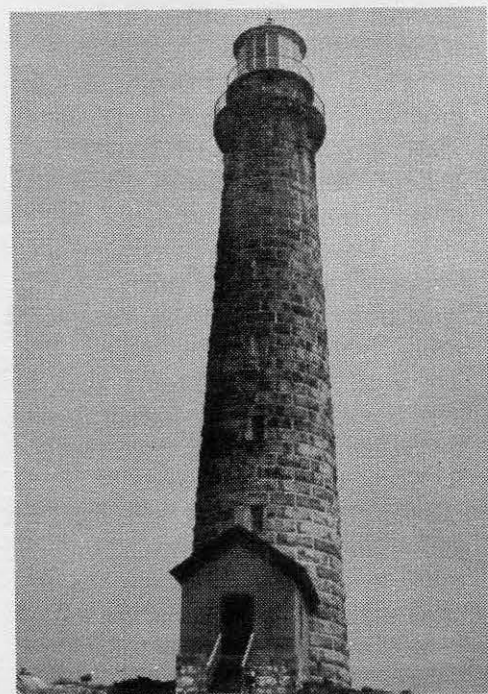
Historic Lighthouse Stations

Over the last two years, the U.S. Fish and Wildlife Service has undertaken restoration work at three historic lighthouse stations within National Wildlife Refuges in New England: on Monomoy Island and Thacher Island in Massachusetts and on Petit Manan Island in Maine. All three stations are on the National Register of Historic Places.

Monomoy Light was built in 1849 near the south end of long and sandy Monomoy Island, south of the elbow of Cape Cod. It was part of the system which guided a vast amount of traffic around the turn of the Cape prior to construction of the Cape Cod Canal. It has an unusual cast iron tower, composed of five overlapping cylinders, and a free-standing brick lining tied into the exterior by iron rods. The original timber external braces were replaced, probably in the 1890s, by tension rods. The heavy cast design

may have been chosen due to lack of a firm base for the foundation, while the brick core and bracing further ensured stability. In hindsight, the bracing seems to have been unnecessary (rather like wearing a belt and suspenders) as it was missing for many years with no visible effect. In addition to the tower, the station also includes its original frame keeper's dwelling (with 1890s modifications) and a small brick oil house built in the 1890s. The boathouse washed away many years ago, and today's visitors to the island must "hit the beach" like John Wayne.

The station was sold to private owners in 1923 and later became part of Monomoy National Wildlife Refuge. It stood abandoned for many years, and all three structures had deteriorated and been badly vandalized by 1987, when Raber Associates was contracted to do HABS recording. Due to funding constraints and the poor condition



Thacher Island, north light.

of the buildings, the Fish and Wildlife Service was then considering possible demolition of the keeper's dwelling and only minimal stabilization of the tower. Fortunately, the timely award of a National Park Service Bicentennial Lighthouse Grant by the Massachusetts Historical Commission, and additional funds from the U.S. Coast Guard, enabled restoration of the entire station exterior. The Preservation Partnership (New Bedford, MA) did the design work for all three restoration efforts. A crew from K & K painting (Baltimore, MD) had to camp in primitive conditions on the island while undertaking restoration, which was completed in 1988. Interior utility work, using in-house funds, brought the keeper's dwelling to habitable condition. The Cape Cod Museum of Natural History, under a cooperative agreement with the Fish and Wildlife Service, now uses it for wildlife research and as a summer base for guided bird-watching tours.

Cape Ann Light Station has impressive twin granite towers built in 1861. Thacher Island National Wildlife Refuge includes the north tower, which was abandoned in 1932. Two keeper's dwellings, a tramway, and several other buildings remain near the automated south light, outside the refuge. The Town of Rockport, through the Thacher's Island Association, leases the island's south part from the U. S. Coast Guard, and has a cooperative agreement with the Fish and Wildlife Service to maintain the north tower. The Association maintains a keeper year-round on the island, and operates a boat in summer.

Work on the north tower was funded through a Bicentennial Lighthouse Grant and additional

*Monomoy Light,
west elevation.*



funds from the U. S. Coast Guard. The Thacher Island Association did some initial stabilization in the early 1970s, with Fish and Wildlife Service and Coast Guard assistance, but iron deterioration and masonry cracking remained severe, and the entry had been reduced to a brick shell.

International Chimney Corp. (Buffalo, NY) has now completed repairs to exterior ironwork and masonry, as well as restoration of the entry, but repairs to the interior metalwork and masonry will continue in 1990.

Petit Manan Island, off the coast of Washington County, is the most remote component of Petit Manan National Wildlife Refuge. This small, rocky island contains the first U. S. light seen by vessels arriving from northern Europe. Researchers from the College of the Atlantic live on the island each summer, studying an endangered species of terns which nest there. The island is often fog-bound and there is no public boat service. Public access is strictly by permission of the refuge manager, to minimize disturbance to nesting birds.

Petit Manan Light Station resembles Cape Ann in some respects, with a single granite tower built in 1855 (retained by the Coast Guard, and now automated), to-

gether with a keepers dwelling and several other buildings from the last quarter of the century. The harsh weather at this station resulted in leaking roofs and lifted siding, while the shallow bedrock caused a drainage problem which threatened to undermine brick foundations. A combination of Bicentennial Lighthouse Grants awarded by the Maine Historic Preservation Commission, in-house funds, and private donations has enabled repairs to several roofs and areas of deteriorated masonry, as well as new siding and a new chimney for the keeper's dwelling. These repairs have all been done by volunteers and Fish and Wildlife personnel, with logistical assistance from the U. S. Coast Guard and Maine National Guard. Studies are underway for restoration of the boat house, which wind and waves have reduced to virtually a ruin, and development of a long-term solution to the drainage problem.

Although much remains to be done at Thacher Island and Petit Manan, the combination of funds from a variety of sources with the cooperation of numerous agencies and individuals has enabled significant progress in the preservation of these picturesque reminders of our maritime heritage.

John Wilson
U. S. Fish and Wildlife Service

Article

CP-STOTT

(Editor's Note: Outgoing SNEC President Peter Stott was one member of a team hired by McGinley Hart & Associates to conduct a railroad bridge survey for the MBTA. Both the text and the accompanying sketch were prepared by Peter Whitman, a professional renderer, who shares space in McGinley Hart & Associates' office. These were prepared on the occasion of a farewell party for Peter Stott that was held last May in Machinery Hall of the Museum of American Textile History in North Andover, MA.)

Continuing the practice of the old New York Central Railroad, today's Conrail System uses the letters "CP", for "Controlled Point", as a prefix when designating important track features such as diamond crossings, junctions and crossovers. Traffic is regulated at these points by remote control using an array of signals called an interlocking plant which is linked to the dispatcher. CP is customarily followed by either the milepost number, some initials or a name completing the nomenclature thus: CP 44, CP-SK (Selkirk yard limits) or CP-NORTH KEATING. If McGinley Hart Assoc. embraced this system, we would patronise CP-JOHNSON'S for reprographics, CP-PHOTO QUICK for slides and CP-SAL'S for lunch. Simple enough.

CP-STOTT. Named after a place? No. It was named after an event - or better yet, a participant in an event. This illustration dramatises what happened about a year ago, on a fine spring day, during a routine, but unscheduled, commuter rail movement.

The scene shifts to the head end of Passenger Extra 1052 East, on the main track in 79-mph territory. Accelerating to track speed, the crew could see the array of green signals in the distance, indicating clear track through the interlocking around the bend. Confidently, the engineer opened the throttle wide, and sat back to enjoy the fine weather.

A couple of miles ahead, at CP-19, we join our historic bridge consultant, Peter Stott. He has just completed his photo shoot of a long double-track through plate girder bridge, rusting peacefully above a tranquil

river. Assured by timetable that nothing is due for a couple of hours, he calmly stows his tape and clipboard in his ubiquitous backpack. He mounts the vintage handcar so generously provided by railroad (museum) for use in visiting these remote sites and shoves off. A few good pumps on the handles and the thing is trundling happily down the line.

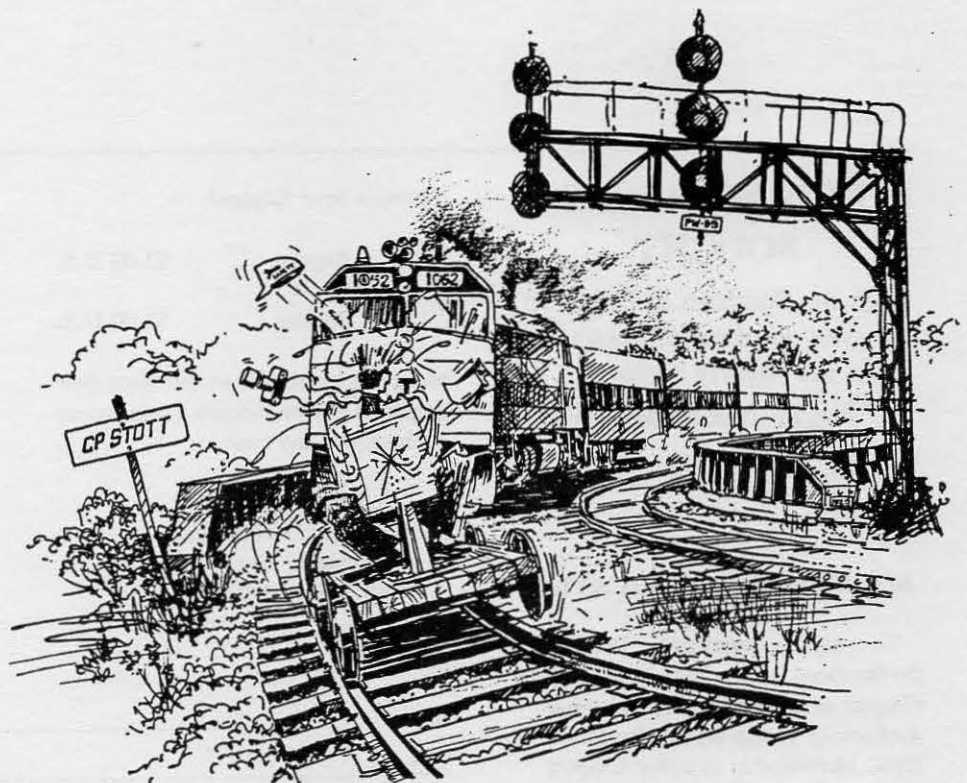
Now this author must confess that he has never experienced TRUE panic. I have only heard about it. It is hard for me, therefore, to identify fully with consultant Stott's reaction when he happened to glance over his shoulder and took in the awesome spectacle of Extra 1052 East bearing down on him. Instantly the whole western hemisphere seemed filled with the glare of headlights, the whine of turbochargers and the shriek of air-horns. Later the engineer shared my incredulity when he reported that, rather than leaping off the thing, the

guy began frantically working the handles in a desperate attempt to stay ahead! By the time he laid his hand on the airbrake valve, the handcar was disappearing below the nose of his engine. A second later, the handcar miraculously reappeared! It began pulling ahead of the speeding train! A mile-and-a-half down the track, both parties ground to a halt, one totally burnt out, but both thankful.

From that moment, CP-19 was renamed CP-STOTT, in honor of the first man to attain 81mph on a piece of rolling stock moved solely by human propulsion.

Nietzsche said that whatever fails to kill him makes him only grow stronger. This implies some risk, Peter. Keep an eye over your shoulder when you're on the tracks, and God bless you in all your endeavors!

Peter Whitman



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