



## Society for Industrial Archeology · New England Chapters

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### EDITORIAL

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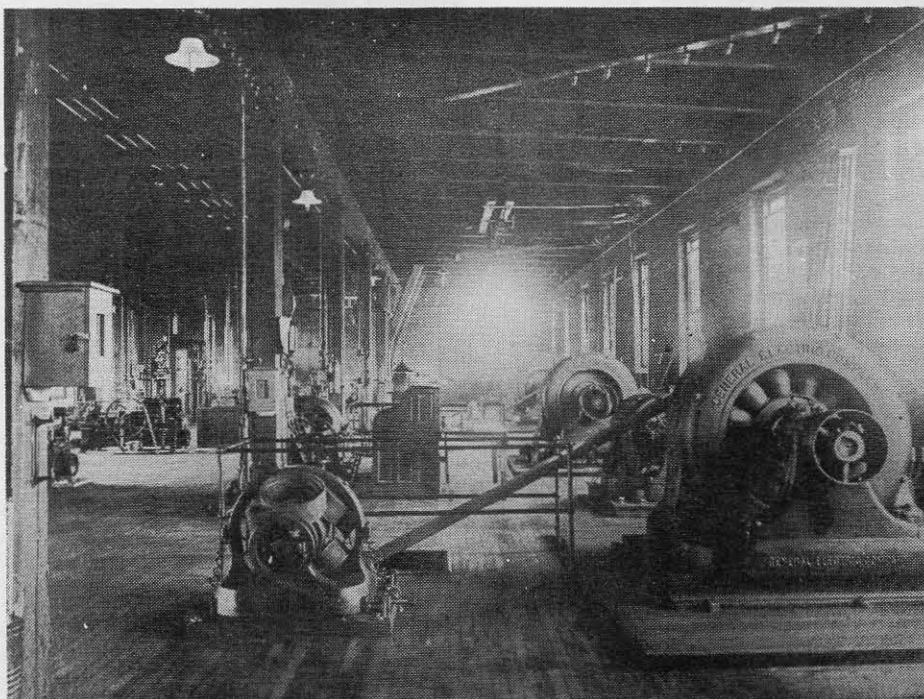
The Newsletter is jointly sponsored by the Southern and Northern New England Chapters of the Society for Industrial Archeology. This issue was typeset and printed by The Printed Word, Inc. of Concord, NH.

The number of submissions to this Newsletter has been down over the past few years, and I am often forced to wait publication until enough material has arrived with which to publish a full-sized issue. I regret that this issue is late to appear (as usual!), but it would really help in getting out the Spring 1986 issue if I could receive all Newsletter copy by mid-March. Otherwise, additional months may go by before I can publish the next issue.

Among the writeups featured in this issue is a lengthy article by Dan Burnham, a resident of Dublin, N.H., who is describing the prolonged controversy that has surrounded the building of a Rt. 101 by-pass in the vicinity of

Dublin and Harrisville, N.H. This is a subject that has been addressed in past issues of this Newsletter and of the national SIA Newsletter, and undoubtedly more years will go by before any highway is actually built. However, because of the national significance of Harrisville, and the present threats to its industrial and rural character, it was decided to include this article to bring our members up-to-date on the complexities of this issue. The fight between Dublin and Harrisville continues to be a bitter one, and it can only be hoped that the corridor which is ultimately selected will disturb as few resources as possible in either town.

David Starbuck  
Rensselaer Polytechnic Institute



Interior view of original hydropower plant at Sewall's Falls, Concord, NH with four belt-driven General Electric generators. Date of the photo is unknown, but was probably taken around 1900. (See Current Research in New Hampshire.) Photo courtesy Concord Electric Company.

## PRESIDENT'S REPORT, SNEC

During the past year, the Chapter's activities have principally involved a spring Chapter Meeting, preparation of a membership brochure, and planning for the national SIA Fall 1986 tour.

The Spring Chapter Meeting was held on June 8, 1985 at the recently restored Zeiterion Theatre in New Bedford, Massachusetts. Topics discussed included Chapter publications, membership, and recording projects. The Chapter currently has a supply of tour brochures and IA of Greater Boston books remaining from the 1984 national conference. Some have been sold at Boston-area bookstores, as well as by Chapter members. The complete set of tour brochures is available for \$5.00; the IA of Greater Boston for \$8.00. Either can be obtained from the Chapter's treasurer or Peter Stott (P.O. Box 356, Newton Highlands, MA 02161).

In an effort to expand the Chapter's membership, a SNEC brochure is being prepared for distribution with publications or to interested individuals. Once completed, the Chapter hopes to recruit new members from professional societies whose fields include IA-related areas (e.g., IEEE, ASME, ASCE). Articles or announcements in regional newsletters will be one approach. Membership has become a critical issue for the Chapter, as the Chapter's membership has declined during the past two years, thereby making it difficult to support the SNEC/NNEC Newsletter.

In a related effort to expand membership and provide a special opportunity for present Chapter members, a recording project is being considered that will involve participants from outside the traditional ranks of IA enthusiasts. Suggestions for possible sites are welcomed.

SNEC will host the national SIA Fall tour in 1986. The tour's theme will be 350 years of maritime New England history and will feature historic industrial sites in southeastern Connecticut and neighboring coastal Rhode Island. The tour is being primarily organized by Chapter members in the Connecticut Historical Commission and the Rhode Island Department of Environmental Management. The tour will take place in October 3-5, 1986, with Mystic, Connecticut as the tour's center.

The Fall 1985 SNEC meeting was held in Rockville, Connecticut on November 9th. The town and its mills represent a macrocosm of New England textile

history, spanning the period of 1836-1910. The meeting began at 10 a.m. at the Rockville Public Library and was followed by a local tour.

Jeffrey Howry  
Lexington, Mass.

## PRESIDENT'S REPORT, NNEC

The Northern New England Chapter of the SIA became five years old on August Ninth of this year. One of the first activities of the Chapter five years ago was the recording of the Concord, New Hampshire Gasholder (see IA, Vol. 10, No. 1, 1984). It seems appropriate that the Chapter celebrated this anniversary by beginning a recording project this fall at the Sewall's Falls dam and electric power generation complex (ca. 1894), also in Concord, when 20 members turned out to measure, photograph, and document what was claimed at the time of its going on line to be the country's first commercial, water-powered, three-phase electric generator.

The Chapter has done well since its beginning five years ago, but it's a good time to consider what we're all about, to assess our strengths, and to plan some of the things we should accomplish in the next few years.

As a group we are a good balance of professionals and buffs. A survey taken earlier this year by David Shayt at our Society's national headquarters reveals that the SIA has a membership of thirty-two percent engineers and architects, thirty-one percent people who find a personal satisfaction in industrial archeology but do not have related work or schooling, twenty-one percent who work at a museum, library or preservation office, and fifteen percent who study or teach in a related subject. I am sure our Chapter conforms to these national percentages. It means we are a Society with broad knowledge and varied skills which can be brought to bear collectively on our objectives and challenges.

The Northern New England Chapter is faced with some tough challenges. One is that we occupy a large geographical area with no great industrial metropolis with which to form a substantial core membership. We are dispersed over hundreds of square miles and do not have an organizational structure which can easily adapt to the Chapter's growing management needs. With this in mind we have established a Bylaws Committee of

David Starbuck, William Taylor, Robert Dupre, Stewart Read and Dennis Howe which is to recommend to the membership improvements which will enable us to involve more of our members in working to meet our objectives, and to provide for each individual member's expectation of the Society. All members are encouraged to communicate their ideas to the Bylaws Committee members. Should we have more officers, more frequent meetings, or more frequent Newsletters? The Committee's recommendations will be presented to the membership for consideration at the Spring 1986 meeting.

Although we spend a lot of time promoting the study of our surviving industrial heritage, we need to make a greater effort to work more closely with other historic preservation groups, agencies, and site owners to encourage the physical preservation of this heritage; otherwise, we will become a Society "of last resort," documenting that which is about to be destroyed or adapted. For example, this spring after our meeting we toured slate mines in Poultney, Vermont. The long-abandoned Eagle Mine that we saw is a preservation need which should not be ignored. The remnants of the Welsh immigrant workers' homes (one with walls of slate block still standing) may be the only physical remains in this country of this important ethnic and industrial heritage. This Chapter should be considering the action necessary to save what is left, not to simply record it. I would like to see the Chapter form a standing committee for preservation, and I welcome ideas and suggestions from members as to how the Chapter should address this and other historic industrial sites.

As individuals and as a Chapter we can do much more to support the activities of the National Society. More of us should become involved in current national projects and attend meetings and tours. More of us should be submitting articles and papers for publication in the Newsletter and IA Journal. Dust off that typewriter or word processor and finish those writing jobs you've been putting off! The effort is certain to benefit you and the Chapter.

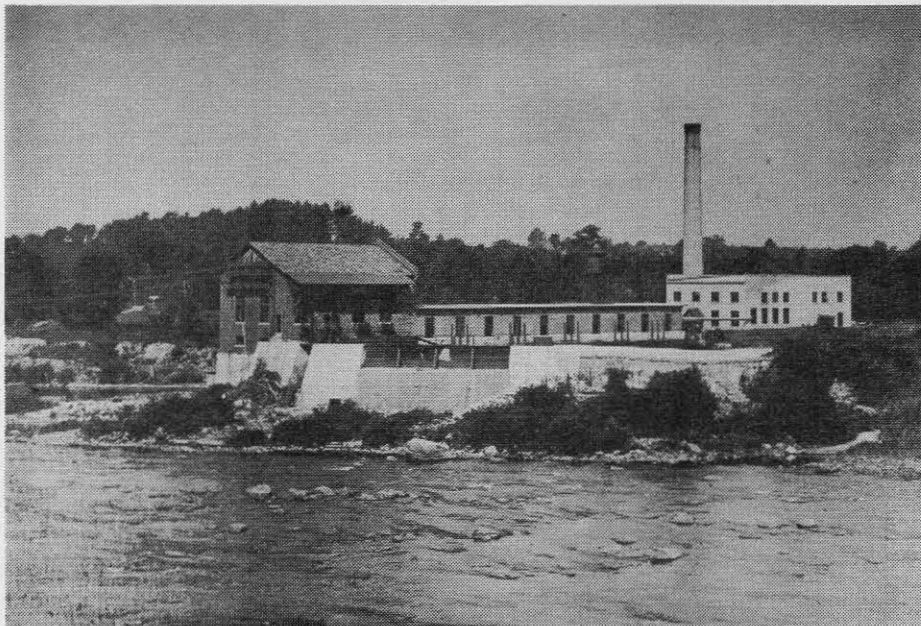
The 16th Annual SIA Conference (1987) is planned to be held in Troy, New York, hosted by the New York State Museum and Rensselaer Polytechnic Institute. I encourage our members who reside in that area to volunteer now to work on its planning, organization and execution. I propose that we make it a goal of the Northern New England Chapter to work to insure that the SIA's "return to Troy" is the finest National Conference ever.



So much for what we should do. As for the past year, there has been progress. Both the Spring Meeting in Poultney, Vermont and the Fall Meeting in Concord, New Hampshire were well attended, although for some it was a long way to travel. Many from our Chapter attended the Newark Conference this spring. Over the past year we have increased our membership by about twenty percent. Some members of the Chapter participated with other archeological groups to defeat a poorly written skeletal remains bill that initially seemed certain to be passed by the New Hampshire Legislature. We are providing technical support to a TV Drama concerning the impact on workers of the closing of the company which manufactured the famous Concord Coach. We have an important recording project underway at Sewall's Falls. In all, it has been a good year.

The Spring 1986 Meeting of the Northern New England Chapter is planned for the Portsmouth, NH/Kittery, ME area (see "Meetings and Announcements").

Dennis Howe  
Concord, NH



The Sewall's Falls powerhouse. (See article, page 10.) Date of photo is unknown. Photo courtesy Concord Electric Company.

## Act I, The Dublin By-pass Decision: Politics Take the Upper Hand

The long-awaited, highly-disputed, archeologically-significant by-pass recommendation for the Route 101 by-pass around Dublin, N.H., is here. After some 15 years of controversy, on November 26th, New Hampshire's highway commissioner, John Chandler, (who has since resigned) announced his choice of an alignment: The Town Line North route. This \$23 million by-pass would skirt Dublin and Dublin Lake by thrusting around and across two wonderful old lumps of the Monadnock Highlands--Beech Hill and the connected Beech Hill Ridge. They constitute the major geographic separation between Dublin and, to the immediate north, Harrisville.

Commissioner Chandler's decision in effect brought down the curtain on the first act of a three-act play. Dramatized in Act I was public participation. Something like a half-dozen information meetings were held; the longest draft and supplemental environmental impact statements in New Hampshire's highway history were published--and thrashed to the pulp in the ensuing Dublin v. Harrisville debate; two marathon corridor hearings at the armory in Peterborough were staged. Then, at an early morning press conference in Concord, and, to the

cheering of those in Dublin who preferred the Town Line North alignment as a second choice, Commissioner Chandler formally announced his recommendation to the Federal Highway Administration.

"The corridor selection is not an easy one to make," he wrote in a prepared statement. "Clearly there is no alternative which avoids all adverse impacts upon people, natural resources and cultural resources...while one may wish to minimize impacts upon people as a first priority, it must be recognized that the law of the land places very specific emphasis upon the protection of natural and cultural resources".

From the viewpoint of this long-time critic of any corridor north of Dublin (since all would shave off some 20 acres of my 257-acre farm), the most damnable flaw in the script of Act One is that the environmentalists, archeologists, historians, and cultural conservationists were developed as the victors, winning the support of every federal and state agency (outside the federal and state highway organizations) for an alignment south of Dublin known as Scheme C. Nevertheless, the first act closes with Commissioner Chandler selecting the most environmentally and

historically damaging route. New Hampshire politics did us in.

Putting aside as improbable the option of doing nothing to improve Route 101, Commissioner Chandler apparently thought seriously of only Scheme C and his ultimate choice, the Town Line North route. This was out of some 13 choices. To be sure, at the press conference he discussed the overwhelming opposition to the third choice, the B-3 corridor which was the long-time, first choice of an important Dublin contingent. But Governor John Sununu--and Harrisville opposition--had effectively squashed that alternative more than two years ago.

Starting on the eastern side of Dublin, the Scheme C alignment swings southwesterly of Route 101, paralleling by a couple of thousand feet Route 101 and by-passing the Route 101 hill in Dublin Village. When it approaches--and is blocked--by the steep eastern slope of ridge called "Snow Hill," it cuts northward, traversing the ridge, and crossing under Route 101. There it breaches the Dublin Village Historic District. Leaving to its immediate west some six of the Village District's historic homes, it swings in a gentle arc northwest of these homes and the Dublin Cemetery, and returns to Route

101, in the Dublin Lake Historic District, well down towards the western end of the northern shore of Dublin Lake, at Merryman Road.

The Commissioner's choice, the Town Line North alignment, swings northwesterly from the eastern side of Dublin, also paralleling Route 101 by a couple of thousand feet--but to the north of Dublin. As with Scheme C, it is blocked, too, by a Monadnock Highlands terrain: Beech Hill hulking over Dublin's northern shoulder. When the Town Line North alignment reaches the eastern slope of Beech Hill, it traverses it, crossing the Dublin School's ski slopes, and then swings westerly atop the ridge behind it, the Beech Hill Ridge. On the ridge, the Town Line North alignment heavily impacts two of Harrisville's historic districts, the Beech Hill Summer Home District and the Harrisville Rural District. It also approaches sufficiently close to the Harrisville National Landmark to impose with the intrusive sights and sounds of a modern two-lane highway (with a truck passing lane) upon the town's two great, rural mills, and a scattering of brick homes, shops, boarding houses, etc., clustered around the southern end of a placid mill pond.

At the western end of the Beech Hill Ridge, Town Line North finally cuts back southwesterly to join Route 101 long to the west of Dublin Lake at a point near Howe Reservoir.

Act II will be staged in Concord, N.H. and Washington, D.C. over a period of as long as 24 to 36 months. It will bring to the stage the complex and bureaucratic procedures of the Federal Highway Administration and its massive parent, the U.S. Department of Transportation, which under federal law must seek the comments of some 26 federal and state agencies concerning a final environmental impact statement. That document will be published, along with a complete transcript of the public's comments, sometime in 1986, according to state highway officials.

At issue will be the essential question, forced on modern highway planning by the Federal National Environmental Policy Act of 1969: Will the highway department's choice, the Town Line North alignment, do less harm to the environment, i.e., farmlands, wetlands, and water resources, than the southern Scheme C?

It's been tacitly conceded by both the state highway department and the Federal Highway Administration that Scheme C is, in fact, the better, environmental choice. It simply impacts nowhere near as much square footage of farmlands and wetlands. And because it

lies back from most of the immediate, northern shore of Dublin Lake, its impact on the water quality there is considered easily mitigable, and, to a considerable degree, positive. Here is how Commissioner Chandler described the comparative environmental impacts of the two routes at his press conference:

Scheme C: "The natural resources agencies (Environmental Protection Agency, Fish & Game department) have found no adverse impacts which cannot be mitigated." The Department and the Federal Highway Administration, however, have "serious concerns" about the "water quality" (apparently involving Dublin Lake).

Town Line North: "The natural resources agencies find some adverse impacts of a limited degree. The State and Federal Highway Administration believe that . . . the natural resource impacts can be mitigated."

Whether the lesser environmental impacts of Scheme C provoke a major, inter-departmental fight in Washington remains to be seen. The state highway department appears to be expecting to offer enough mitigation measures such as building sound beams along the Town Line North alignment to avoid such a squabble. But there is the possibility that one of a number of Federal agencies --U.S. Fish & Wildlife, the Soil Conservation Service, the Corps of Engineers, the Environmental Protection Agency and the Department of Interior, to name only some of the major organizations--will balk at Commissioner Chandler's recommendation, and fight his choice of the Town Line North alignment clear up to the top, seeking a determination by a Federal watch-dog operation called the Council on Environmental Quality.

Meanwhile, the dramatic essence of the second act will come from the Secretary of Transportation, Elizabeth Dole. There is within the U.S. Department of Transportation Act, an item called "Section 4(f)." Federal courts have said this section requires her to select the alignment which will have the least impact on the historic properties of Dublin and Harrisville. In recent times, the Federal Highway Administration has struggled with Section 4(f) all the way to the Supreme Court to no avail. So the paramount question, of particular importance to historical and industrial archeology, is which of the two alignments, Scheme C or Town Line North, does, in fact, have the least historic impact? Furthermore, if it is Scheme C--rather than Town Line North--will Secretary Dole still choose Commis-

sioner Chandler's Town Line North?

It's far too early to tally up the final opinions of the various agencies and organizations involved in making such a determination. But from the day in 1984 when the Town Line North alignment was first proposed by the state highway department, its potentially adverse effects have brought monumental opposition. Only this die-hard group of highway organizations still stand for the alignment: Secretary Dole's Department of Transportation, the Federal Highway Administration, and Commissioner Chandler's New Hampshire Highway Department.

Arrayed against them are the blue-bloods of historic preservation: New Hampshire's State Historic Preservation Office (State Archeologist Gary Hume is the project leader), the National Park Service of the Department of Interior, the Advisory Council on Historic Preservation, and the National Trust for Historic Preservation.

Even Patricia L. Weslowski, a preservation consultant and a former state historic preservation officer for Massachusetts, who was hired by a group of Dubliners favoring the B-3 corridor first and the Town Line North route second, wrote: "I fully agree with the New Hampshire State Historic Preservation Officer that (the Town Line North alignment) would have severe adverse effects on the Beech Hill Summer Home District." And she concluded by specifically recommending against its selection.

For the New Hampshire State Historic Preservation Office, the difference between the impacts of the Town Line North and Scheme C is dramatic; There is a "quantum jump between the adverse effects on the historic properties" of the Town Line North alignment in Harrisville "as compared to the effects of several alignments to the south of Dublin," (including Scheme C), wrote the State Historic Preservation Officer, John T. Flanders. His concern was the possible adverse effects (the introduction of sights and sounds, the destruction of historic property, the splintering of a property, etc.) on what is sometimes described as an area's "cultural landscape."

Wrote Don L. Klima, chief, Eastern Division of Project Review for the Advisory Council on Historic Preservation:

"Although the Town Line North alternative would be physically removed from the Harrisville Historic District, it would introduce visual and audible elements that are out of character with the District's setting...The topographical situation of this



alignment, located high on a hillside (the Beech Hill Ridge) that is visible from Harrisville, would give a visual and audible prominence to the road that would intrude on the traditional setting of Harrisville. It is important to note that no such roadway currently exists; Town Line North would be an entirely new element in the wooded trees and ridges, but segments would still be conspicuous from Harrisville.

"The Town Line North would also transect the southern portion of the Harrisville Rural District. The Rural District contains six extant 18th century and 19th century farmsteads and twelve archaeological remains of such farmsteads, all within a rural setting...It is not simply an archaeological site which can be satisfactorily mitigated by data recovery; a great deal of its significance is embodied in its echoes of the historic landscape. The visual and textural pattern of stone wall boundaries, wood lots, homestead clearings and rural roads would be intruded upon in ways not amenable to simple mitigation measures..."

Such historic damages were openly acknowledged as greater than those of Scheme C by Commissioner Chandler in his press statement: Of Scheme C, he wrote: It "has been found by the three historic preservation agencies (the Advisory Commission, the Department of Interior and the State Historic Preservation Office) to be an acceptable short scheme and further to impact least adversely of the three corridors on historic resources." Of Town Line North, he said: It "has been found by the historic preservation agencies to impact adversely on historic resources on several counts."

The November recommendation of Commissioner Chandler was made, of course, on behalf of the highway department. Clearly, it was also made following approval by Governor John Sununu, who, four days prior to the announcement, held a meeting with the Commissioner and two members of the executive council, Peter Spaulding and Bernard Streeter. At that meeting, Commissioner Chandler announced that a team of engineers had re-designed Scheme C so that he was able to reverse an earlier ruling that Scheme C could only be built to handle traffic traveling 35 to 40 miles per hour, rather than the normal 55 miles an hour.

Both executive councilors at the meeting say Governor Sununu was visibly upset by Commissioner Chandler's

engineering reversal, removing the only known, technical argument against Scheme C. The Governor reportedly told the Commissioner that he would not want to reverse an earlier commitment to some Dubliners that the Scheme C was engineeringly not feasible. Many of the agency personnel opposed to Town Line North believe this advisory from Governor Sununu forced Commissioner Chandler to choose it.

Regardless of who prevails--Governor Sununu, the state highway department, or the environmentalists and historians--the curtain will come down on Act II when the final environmental impact statement and its accompanying public transcript is submitted to the Federal Highway Administration. It is the traditional, legal moment when Federal Courts will first consider a court action, which, in this case, may be brought by a number of national and state historic and environmental organizations, possibly the Town of Harrisville (which in three previous town meetings has voted funds to legally fight such an alignment as Town Line North), a number of local organizations, and, of course, a number of impacted, individual landowners.

If the Commissioner's decision is taken to Federal Court, the plaintiffs will probably challenge the Town Line North route decision on both environmental and historical grounds, with the primary thrust concerning Section 4(f) and whether the least damaging alignment was selected.

But it will be the approval of the Secretary of Transportation which will trigger the actual design of the by-pass at the state highway department in Concord. This also may trigger an adverse ruling by Executive Council and the Governor. With the Executive Council's dividing district boundary between Mr. Streeter and Spaulding drawn on the Beech Hill Ridge along the Harrisville Dublin town line, each appears at this moment to oppose the by-pass proposal which lies in his territory. Thus, there is already a split and the chance that Councilor Spaulding, representing Harrisville, will convince a majority of the five-man council to table Commissioner Chandler's Town Line North choice.

And lastly, after the Council's vote and after the federal courts have handed down their rulings, the state highway department will eventually have to seek construction funds from the legislature. That body may also say no for the Town Line North will cost an estimated \$23 million to build, roughly two times the cost of Scheme C.

For off Broadway, it's high theatre.

Dan M. Burnham

*D. M. Burnham is a journalist and a member of the board of trustees of Historic Harrisville, Inc. He is opposed to the alignment selected by the New Hampshire Department of Public Works and Highways. He lives with his wife and family on a farm in Dublin which would be adversely impacted by the alignment.*

## CURRENT RESEARCH IN NEW ENGLAND

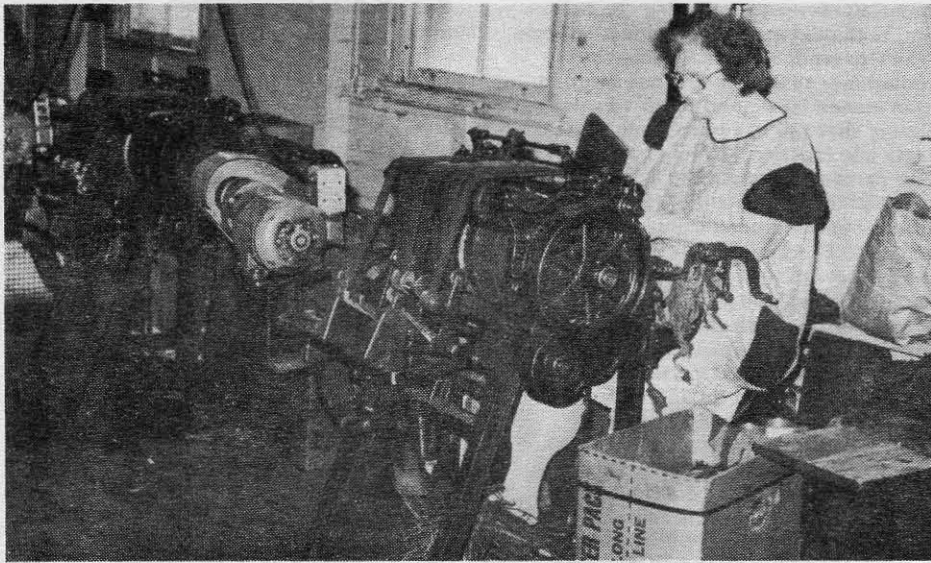
### Connecticut

#### A Visit to a Cigar Factory

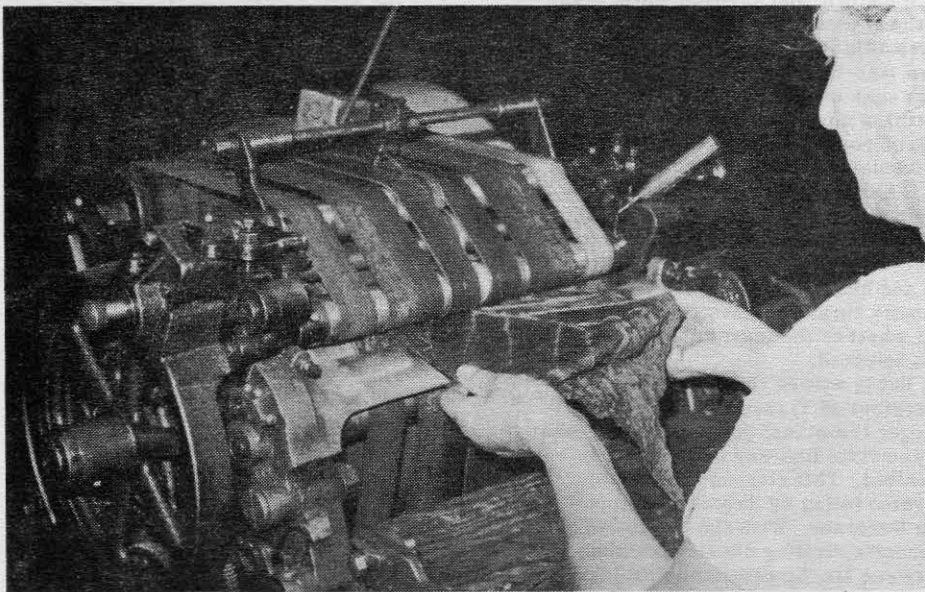
Tobacco has been grown in Connecticut since before European settlement. In the 19th century at least three cigar manufacturers chose to locate in New Haven to exploit the availability of Connecticut broad-leaf tobacco for the outer layers of cigars. The gauze-shaded fields and drying sheds for broad-leaf tobacco are still a prominent feature of the landscape around Windsor Locks, but the sole surviving cigar-making firm in New Haven, F. D. Grave & Son., which was founded in 1884, has recently moved its manufacturing operation to a less expensive location in McSherrystown, Pennsylvania.

In mid-September, 1985, an ad hoc group of Southern New England industrial archeologists--Stephen Victor, Anstress Paine, Matthew Roth, Carolyn Cooper, and Cecilia Bucki--visited F.D. Grave on State Street in New Haven for a last-chance tour of the manufacturing system. We were guided through the handsome but antiquated four-story brick building by Dorothy Grave, a young member of the family firm. At the time of our visit, the beginning of the cigar-making process--the unpacking and humidifying of the tobacco leaves and the shredding of the (non-Connecticut) filler tobacco--was not in action; nor was the end--the labelling and packaging by a series of cellophane-wrapping machines. Consequently we focused most of our attention on the middle--the forming of the cigars themselves.

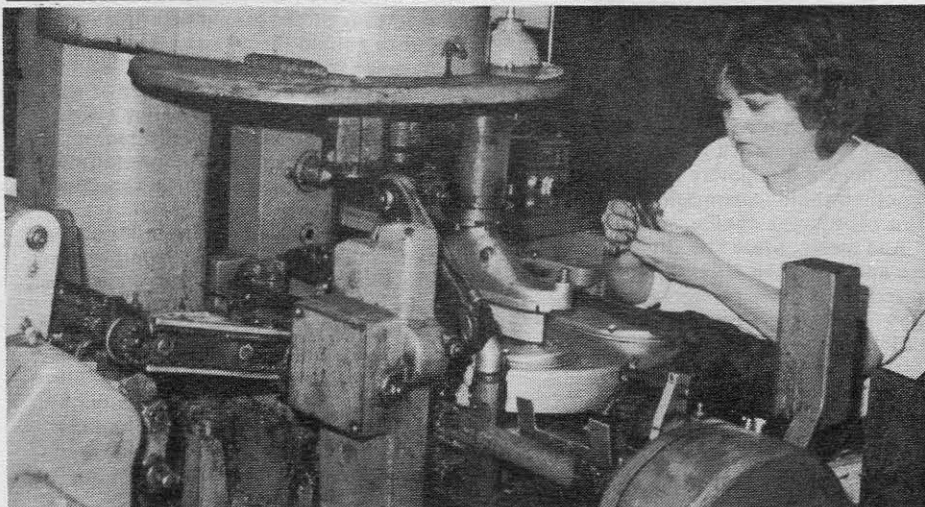
Three women were running machines to strip the tough mid-vein from each broad leaf and separately bundling the resultant left-hand right-hand halves. Other women, in teams of two, were



Machine for preparing tobacco leaves for forming cigars. The operator feeds each leaf between rollers; a circular cutter removes its mid-vein (waste on floor). She then stacks left halves and right halves together. Courtesy of Carolyn Cooper.



Connecticut broad leaf tobacco for outer binding and wrapping layers of cigar is fed into machine that removes central vein. Courtesy Carolyn Cooper.



Cigar machinery -- wrapping. The operator spreads one-half leaf over the specially-shaped plate; the cutter cuts it out like a cookie, and the machine wraps it around the cigar. Courtesy Carolyn Cooper.



operating complex machines that cut out each half-leaf into either a binder or wrapper, rapidly rolled a binder around a handful of shredded tobacco to form the cigar, then wrapped the wrapper around it. Some of the women had been operating these automatic cigar machines for about thirty years. The two operators of each binding and wrapping machine were dependent on each other for speed of output, since either one could stop both operations if anything malfunctioned. As we watched one such machine, the binding operation miscarried several times, and the binding operator, who had saved some bound cigars for that purpose, had to slip one into the transfer arm to deliver it to the wrapping half of the machine, so that the team could maintain their pace. Output per pair varied from about 4000 to 6000 cigars a day. Before the adoption of automatic machinery at Grave and Son in 1938, cigar makers wielded knives to cut out the curious shapes for binders and wrappers, and formed the cigars by hand in wooden forms. We were told that the present machines, 30 to 35 years old, were under lease from a firm in Brooklyn that has ceased to manufacture or repair them. Repairs were therefore done on the premises by F.D. Grave machinists.

The commercial headquarters of this centenarian company will remain in New Haven.

Carolyn C. Cooper  
New Haven, CT



Wooden Indian. F.D. Grave and Son, New Haven. Front office. A reminder that tobacco smoking is a pre-Columbian habit. Courtesy Carolyn Cooper.

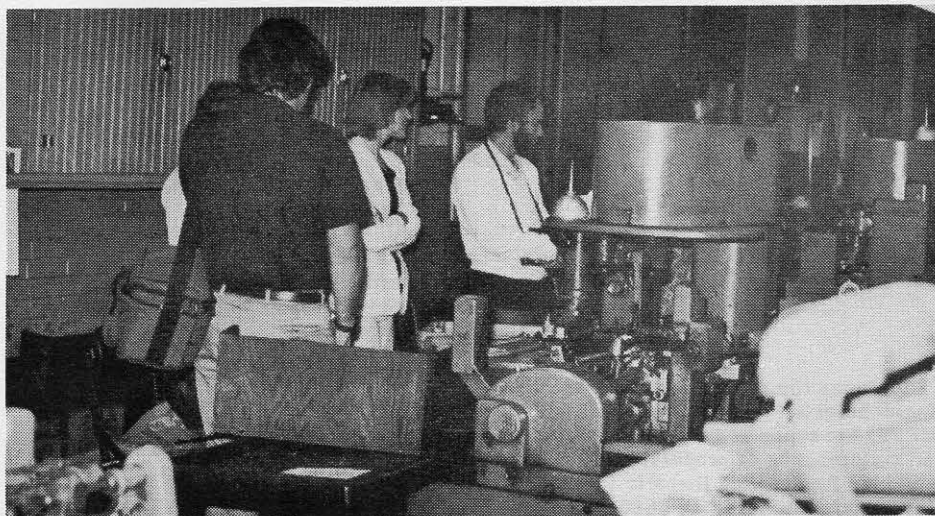
## Massachusetts

### History of the Springfield Armory

Michael Raber, Carolyn Cooper, Pat Malone, and Robert Gordon are preparing a history of the Springfield Armory for the National Park Service. The Armory is a National Historic Landmark, part of which is now a national park. Its history has long been of interest to small arms collectors and, more recently, has attracted the attention of historians of technology because of its role in developing the so-called "American System of Manufacturers." Machinery originally developed at the Armory before 1850 and later made by commercial tool builders such as Robbins & Lawrence of Windsor, VT, the Ames Manufacturing Company of Chicopee, MA and Pratt & Whitney of Hartford, CT, became the first high technology products to capture a world market for the United States.

Writers with specialized interests have explored many aspects of Springfield Armory history, but there is no comprehensive account of the complex. The current project will cover events at the Armory from its founding in 1795 to its closing in 1968. The evolution of manufacturing technology will be related to the growth and arrangement of physical plant, changes in management and labor conditions, and the relation of the Armory to the surrounding community and to private industry. Research will include some less well known but critical aspects of Armory history, such as research and development activities. The history will be based primarily on documentary evidence, which, while abundant, reveals relatively little about actual manufacturing procedures and working conditions. Maps, artifacts, and some site examination will amplify the documentary record; much of the physical plant remains in use by Digital and Springfield Technical Community College.

The results will most likely appear as a two-part history. A chronological overview of Armory history, including detailed "snapshot" descriptions of the site representing important periods of development, will be followed by a series of essays on topics which cut across these periods. The essays will address the evolution of manufacturing methods and management, labor forces,



Visible visitors to the F.D. Grave cigar factory, September 12, 1985. l.to r.: Matt Roth, Cecilia Bucki, Steve Victor and Anstress Paine. Courtesy Carolyn Cooper.

and the relative place of the Armory in the development of commercial mass production practices. The project will be finished in about two years.

*Michael Raber  
Raber Associates  
and  
Robert Gordon  
Yale University*

## The Emerson Bixby Site

During 1985 Old Sturbridge Village continued to investigate the family, craft, and community life of Emerson Bixby, an early-19th-century Barre, Massachusetts blacksmith and farmer. Funded by a grant from the National Endowment for the Humanities, this study is part of an extensive research program to examine the day-to-day economic lives of early-19th-century central New Englanders.

David Simmons and John Worrell directed the 1985 fieldwork, including the 7th annual O.S.V. Field School in Historical Archaeology. Major excavations this season focused both upon the front and rear yard space adjacent to the Bixby house and on the remains of Bixby's smithy across the road. Test excavations were also undertaken at several outbuilding sites on the homelot. In the front yard, we exposed more of two features, both of which preceded the building of the house: a line of stones which appear to be the remains of an impermanent structure; and the third and fourth in a series of dry-laid stone post supports, all aligned and regularly-spaced, six feet apart--possibly footings for a fence. Excavations against the early well addition and well enclosure have provided a determination of architectural phasing lacking in the structural evidence. Architectural information relating to the former location of a parlor door was also recovered from the back yard, as was dense, laminated, ceramic sheet refuse of the former dooryard.

Our initial season of work at the blacksmith shop was very promising. While the hearth was torn down and the structure apparently moved early in this century, hammer scale deposits have suggested the location of the anvil, and we have been able to determine the probable location of several other interior work areas. Following a sampling strategy devised by John Light (Parks Canada), who assisted us in the field, and John Stewart (Parks Canada), soil samples have been taken from 50 cm. quadrants across the shop floor. Analy-

sis of iron concentrations in these samples, by Parks Canada, will provide additional clues about shop activity areas. Excavations outside the shop have provided information on traffic ways and refuse spaces.

As the excavation progressed, Yankee Intern Lorinda Rodenhiser (Boston University) assisted us in the development of several computerized databases: a summary record of material culture, and detailed databases for both ceramics and soils, all of which will anchor the ongoing data analysis.

Detailed survey and mapping of the historic neighborhood landscape surrounding the site was a major component of the season's fieldwork. A map covering an area approximately one-half mile square is being prepared to show the topography and property boundaries, together with mill, shop, house and school house remains, as well as extant houses and homelots. This will provide the primary reference for the record of spatial and cultural changes that took place through time as the small but busy agricultural/crafts neighborhood burgeoned and declined during the 19th century.

The archeological site work is complemented by extensive documentary research overseen by O.S.V. Research Historian, Myron Stachiw: detailed computer-assisted analysis of Bixby's account book, including a study of trading partners; neighborhood family reconstitution and property reconstructions; and social and economic network analyses.

Work on the Bixby project will continue throughout the year with another archeological field school in the summer of 1986 (see "Meetings and Announcements").

*David M. Simmons  
Old Sturbridge Village*

## Massachusetts Historical Commission

FY86 marks the second year that the Massachusetts Preservation Projects Fund (MPPF) has supported the preservation and maintenance of properties listed on the State Register of Historic Places. Matching funds, totalling \$640,000, have been allocated to 25 sites throughout the Commonwealth. The following is a summary of the FY86 projects.

Millyard Hollow Frame Dam, Amesbury  
MPPF Share: \$8,000

Reconstruction of a ca. 1870 wood-frame dam located on the Powow River.

Old Jail and Customs House, Barnstable  
MPPF Share: \$6,500

Production of an Historic Structure Report on the three building complex to guide future restoration.

Burial Grounds Initiative, Boston  
MPPF Share: \$20,000

Gravestone conservation in King's Chapel Burial Ground, Boston's oldest cemetery, and emergency shoring of the Tombs in the Central Burying Grounds, Boston Common.

Cambridge Public Library, Cambridge  
MPPF Share: \$30,000

Window rehabilitation and consolidation on the 1889 Richardsonian Romanesque-style Library.

Fall River Public Library, Fall River  
MPPF Share: \$45,000

Extensive repointing, flashing, and sealing of parapet, skylight repair, and installation of a new roof to this turn-of-the-century Classic Revival-style building

Independent Christian Church, Gloucester  
MPPF Share: \$35,000

Funds will be used to stabilize and reinforce the church's 105 foot steeple.

First Parish Church, Groton  
MPPF Share: \$18,000

Stabilization of the rear wall, interior structural reinforcement, gutter installation, and drainage improvements.

First Church of Christ, Lancaster  
MPPF Share: \$30,000

Structural support beneath the sanctuary and vestibule areas of this Bulfinch-designed church as well as exterior repointing.

St. Luke's Church, Lanesborough  
MPPF Share: \$7,000

Stained glass restoration and structural stabilization in the ca. 1840 Gothic Revival church.



Walter Gropius House, Lincoln  
MPPF Share: \$25,000

Roof replacement and window conservation on the home of this well-known 20th century architect.

Eliot Presbyterian Church, Lowell  
MPPF Share: \$27,000

Conservation of the church's stained glass rose window and repair and consolidation of the wooden tracery.

Isaac Royall House, Medford  
MPPF Share: \$20,000

Painting, partial roof replacement, and window repair on the Georgian-style main house and painting and gutter rehabilitation of the adjacent slave quarters.

Thomas Macy Warehouse, Nantucket  
MPPF Share: \$27,000

Repainting, structural stabilization, and window conservation of the ca. 1845 Greek Revival-style warehouse.

William R. Rodman House, New Bedford  
MPPF Share: \$30,000

Roof replacement, gutter, flashing and downspout installation, and skylight repair of the granite mansion house built in 1833.

Corliss Memorial Building, Newburyport  
MPPF Share: \$30,000

Repainting, chimney repair, and gutter replacement on this Richardsonian Romanesque YMCA building.

Parson Barnard House, North Andover  
MPPF Share: \$30,000

Prevention of moisture penetration in the form of roof replacement, gutter repair, and drainage improvements of this significant First Period house.

Thomas Crane Library, Quincy  
MPPF Share: \$40,000

Roof and flashing repairs and turret water proofing on the H.H. Richardson designed library.

Dimock Community Health Center, Roxbury  
MPPF Share: \$40,000

Extensive slate roof restoration, gutter, flashing, and cornice repairs for this 1873 High Victorian Gothic building originally designed as a hospital for women.

First Church, Roxbury  
MPPF Share: \$5,000

Preparation of an Historic Structure Report to assess the future restoration and maintenance needs of this Federal period church located in John Elliot Square.

Fogg Library, South Weymouth  
MPPF Share: \$29,500

Window sill stabilization, stone reconstruction, and slate roof/flashing repair to prevent further water penetration on this 1898 library.

Somerville Historical Museum, Somerville  
MPPF Share: \$30,000

Repainting, foundation water proofing, drainage improvements, and roof/flashing repairs.

Connecticut Valley Historical Museum, Springfield  
MPPF Share: \$15,000

Chimney repainting, window conservation, slate/flashing repair on this granite Georgian Revival style building.

Central Fire Station, Taunton  
MPPF Share: \$30,000

Slate roof and trim repair, masonry repointing, and window rehabilitation of this 1869 Italianate-style fire station.

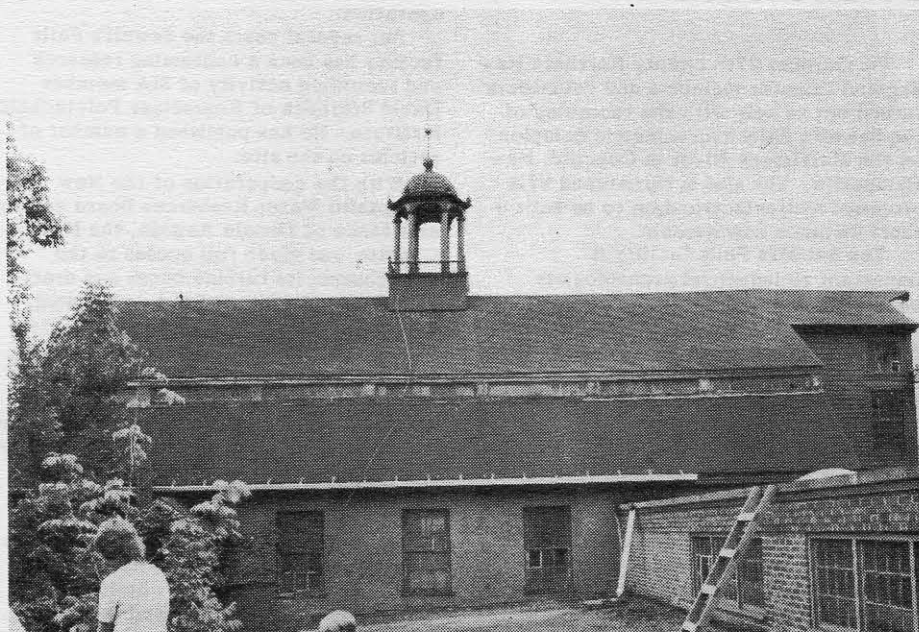
Nathan Fisher House, Westborough  
MPPF Share: \$22,000

Structural reinforcement, foundation repair, roof replacement, gutter and flashing installation and chimney repointing, on the future home of the Westborough Historical Society Museum.

Old Mill and Forge, Whitinsville  
MPPF Share: \$40,000

Major work items include slate roof replacement, masonry stabilization, and window and door conservation on this early 19th century mill complex.

*William Smith  
Mass. Historical Commission*



Old Mill and Forge, Whitinsville.  
Courtesy of William Smith.

## New Hampshire

### Hillsboro Covered Railroad Bridge

On the night of October 30, 1985, a fire consumed one of the last covered railroad bridges in this country. Built in 1903, the 208-foot-long bridge was destroyed by arson. According to the Concord Monitor (October 31, 1985), "It was the only curved railroad bridge with a walkway. It was the ultimate, the luxury model. That makes it a double shame that some idiot burned it . . . The bridge, built by Boston & Maine Railroad in 1903, has not been used for at least 25 years. Its design was based on the engineering of Ithiel Towne, the inventor of the lattice truss. The design was simple and sturdy enough to support the heavy locomotives of the late 19th century, said Richard Roy, vice president of the National Society for the Preservation of Covered Bridges."



The Hillsboro Covered Bridge. This postcard shows the bridge as it appeared in 1929.

### NNEC Assists with Recording New England's First Commercial 3-Phase Hydroelectric Facility

On October 27th twenty Northern New England Chapter members and volunteers turned out to help with the recording of the Sewall's Falls hydroelectric complex on the Merrimack River in Concord, New Hampshire. The site is threatened by a proposed hydroelectric dam to be built a short distance downstream.

The Sewall's Falls facility is important to industrial archeologists because it has the remains of the world's longest timber crib dam (497 feet between abutments), and claimed by at least two historical sources as being the first 3-phase commercial power system in the United States (Concord Evening Monitor, February 28, 1894, and George B. Lauder's history of the Concord Electric Company). This first-in-the-nation claim is disputed, however, by the Electrical Review, November 29, 1893, which announced that a power transmission plant in Redlands, California was the first to generate 3-phase power on September 7, 1893.

The complex at Sewall's Falls is also considered unique in that, thanks to Concord Electric Company's consistent maintenance, it supplied electric power continuously, except during floods and low water volume, from the time of its completion in 1894 until its closing in October, 1966. Although two direct-

shaft dynamos were added in 1907, the original four leather-belt-driven 225 KW generators were never abandoned and continued to supply power over the station's entire seventy-two years of operation.

For several years the Sewall's Falls facility has been a continuing research and recording activity of SIA member David Starbuck of Rensselaer Polytechnic Institute. He has published a number of articles on the site.

With the cooperation of the New Hampshire Water Resources Board and the assistance of Donald Rapoza, the NNE Chapter was given full access to the powerhouse, its turbine boxes and draft tubes; the recording of the dam, canal, and surrounding property will add important support to Dr. Starbuck's work.

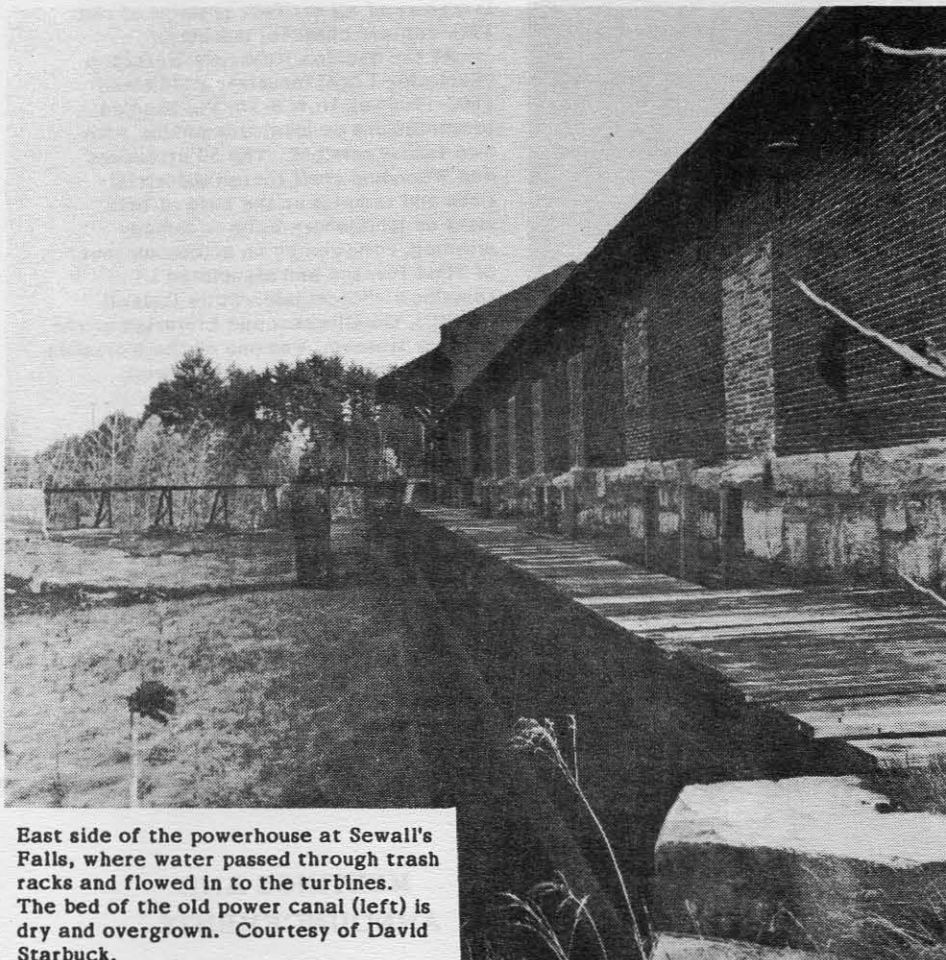
During a full day of hard labor, members and volunteers photographed the entire internal components of the powerhouse designed by Eugene F. Carpenter, including its below-water-level features (which has never been done before), and took precise measures of the timber crib dam to compare with the original construction drawings by E.F. Smith of Philadelphia. A few hundred feet west of the canal Chapter members cleared brush and debris from a large boiler shell and several foundations which revealed a new dimension in the industrial use of the Sewall's Falls area.

The foundations and boiler shell had been located earlier this year by Chapter members as they surveyed the site to determine the extent of modifi-

cation to the landscape by construction of the dam and canal, and to locate possible construction worker housing sites. It was first thought that these features were part of a plant originally built to generate lighting power for dam construction, but because of the peculiar configuration of the boiler shell (it seems a special purpose water-tube design), extensive foundations, and distance from the actual construction site, the Chapter may have discovered an unrecorded historical manufacturing site.

The historic record provides scant information concerning a manufacturing plant at Sewall's Falls, but there are few clues. The company responsible for building the power generating facility, Concord Land and Water Power Company, provided the only known reference found to date in its January 1, 1896 report to its stockholders: "During the year arrangements were made for the establishment of a manufacturing plant upon the property at Sewalls (sic) Falls, and the buildings are now completed." In a short paragraph in the Concord Evening Monitor in August of 1895 there was a statement that Charles Page, a founder and director of Concord Land and Water Power Company, was involved in the discovery and development of a graphite mine in Salisbury, New Hampshire, about thirty miles north of Concord. Since many carbon arc-light rods of various sizes were found at the site, it is possible that Page planned to process graphite for arc-lighting. The power company had financial problems and dec-





East side of the powerhouse at Sewall's Falls, where water passed through trash racks and flowed in to the turbines. The bed of the old power canal (left) is dry and overgrown. Courtesy of David Starbuck.



One of the draft tubes inside the powerhouse at Sewall's Falls. (The turbines have all been removed.) Courtesy of David Starbuck.

lared bankruptcy in 1897 which may have also ended the manufacturing plant.

If the plant was a financial failure, either as a result of the failure of Concord Land and Water Power Company, the petering out of the graphite mine, or any other reason, it had only a few months of operation and may not have had enough economic or scientific impact to have been documented at the time. Although a study of historic documents is continuing, it is probable that information concerning the plant's products and manufacturing processes will be revealed mainly through archeology, an exciting prospect for the Society for Industrial Archeology.

*Dennis Howe  
Concord, NH*

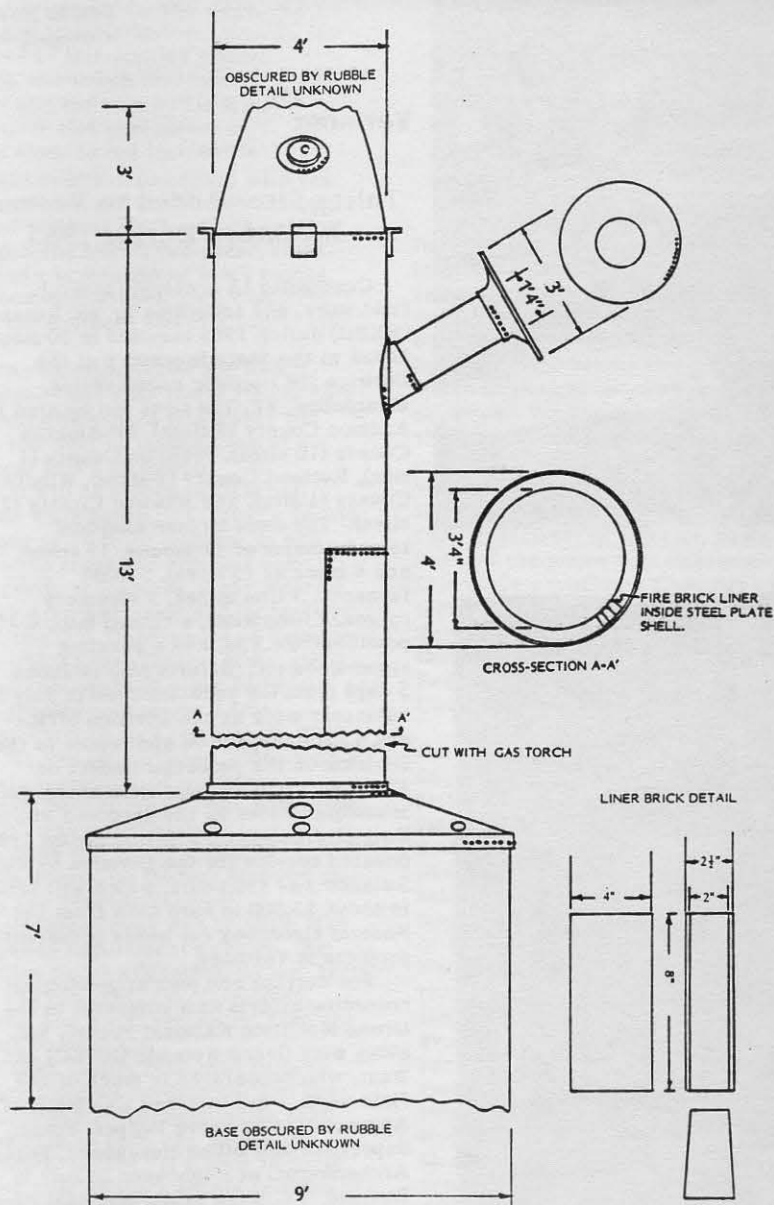
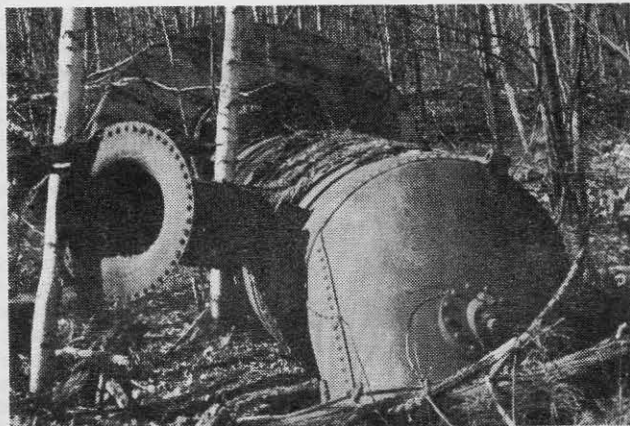
## Vermont

### Thirty Sites Added to Vermont Inventory During 1985

Continuing IA archival research, field work, and recording by Vic Rolando (NNEC) during 1985 resulted in 30 sites added to the State Inventory at the Division for Historic Preservation, Montpelier, VT. The sites are located in Addison County (9 sites), Bennington County (10 sites), Franklin County (1 site), Rutland County (7 sites), Windham County (1 site), and Windsor County (2 sites). The sites include charcoal kilns (remains of 11 mound, 12 stone, and 4 brick at 15 sites), 5 blast furnaces, 3 iron mines, 2 bloomery forges, 2 lime kilns, a cotton mill, a possible coke kiln, and a puzzling stone-lined pit. Efforts also included 5 days from GE vacation time in July for volunteer work at the Division office and a field inspection and report to the Division on the potential impact on 19th-century industrial sites along the Missisquoi River by the proposed Swanton Dam Hydroelectric Project. Total 1985 donated service for the Division by Vic Rolando was 430 hours, which will bring in about \$3,000 in hard cash from the Federal strongbox for needy preservation projects in Vermont.

For current and past archeological recording efforts as a volunteer in the Green Mountain National Forest, Vic, along with Grace Rolando (NNEC) and Bob West, who cooperated in much of the field work, were awarded Certificates of Appreciation by Steve Harper, Forest Supervisor and Billie Hoornbeek, Forest Archeologist, at a luncheon in July in Rutland, VT. Work in the National Forest currently includes a definitive

The peculiar boiler shell near Sewall's Falls Dam. Dimensions are shown in sketch below.



inventory of all artifact remains of the 19th-century charcoal industry.

At the Sheldon Museum's Workshop "Exploring Local Industry: Middlebury 1800-1900" on Nov. 8-10, Vic handled presentations on local ironmaking with two 1-hour sessions. The 50 attendees and Workshop staff toured industrial sites and remains at the base of both sides of Middlebury Falls on Sunday morning, followed by an afternoon tour of blast furnace and associated IA remains at Forestdale. Polly Darnell (NNEC), Co-Director and Librarian at the Sheldon Museum, was one of the Workshop planners. Six NNEC members were workshop attendees.

Future work in Vermont includes continuing IA archival, field work, and recording in areas of iron and charcoal-making, foundries, lime and brick kilns, and iron-truss bridges. In addition to avocational volunteer status for the Division and the National Forest, Vic is NNEC Secretary and Treasurer. Vic's full-time profession is Technical Editor at the GE Ordinance Division, Pittsfield, MA; Grace Rolando is a Registered Nurse at the Berkshire Medical Center in Pittsfield.

Vic Rolando  
Pittsfield, MA

## MEETINGS AND ANNOUNCEMENTS

"The Light Must Be Kept Burning," a traveling exhibit on the past, present, and future of Rhode Island's lighthouses, can be seen at the following sites:

January 20-February 28, 1986  
Woonsocket Public Library

March 4-21, 1986  
Barrington Public Library

March 22-April 14, 1986  
Open

April 15-May 7, 1986  
Warwick Museum

May 9-30, 1986  
Herreshoff Marine Museum, Bristol

June 2-27, 1986  
Museum of Yachting, Newport

To confirm sites and dates, phone Sarah Gleason at (401) 277-6800 (Department of Environmental Management, Office of Information and Education, State of Rhode Island.)



## NNEC To Hold Spring Meeting in Portsmouth, NH Saturday, May 17

The Northern New England Chapter will hold its Spring Meeting and Tour in Portsmouth, New Hampshire on Saturday, May 17. An interesting day is planned by co-chairs Faith Harrington and Woodward Openo. Following the morning business meeting at Strawberry Banke there will be an industrial sites boat tour of Portsmouth Harbor. Richard Candee, Director, Boston University Historic Preservation Program and author of *Atlantic Heights* will be our narrator.

Look for the meeting announcement in the mail. The number of persons which can be taken on the boat will be limited, so mark your calendar and respond quickly when the announcement arrives.

## OSV Field School

The eighth annual Old Sturbridge Village Field School in Historical Archaeology will be conducted from June 23 to August 8 at Old Sturbridge Village and at the home and workplace of Emerson Bixby, an early-19th-century blacksmith and farmer of Barre, Massachusetts.

Following a week of intensive orientation to the historical and material culture of early-19th-century rural New England, students will spend six weeks learning the methods and techniques of field archeology, working at the Bixby site. The Field School will involve students in excavation, survey, measured drawing, conservation and other field, lab and recording activities. Lectures, workshops, and informal seminars will complement the work in field and lab.

This is the third season of a three-year project to develop new historical information for exhibits and interpretation at Old Sturbridge Village. The focus of the 1986 field-work will be selected areas near the house, several outbuilding sites on the homelot, and the remains of Bixby's nearby blacksmith shop.

The Field School is designed as the equivalent of two full courses at either the graduate or undergraduate level. Eight semester hours of credit are available through Clark University in Worcester, Mass. for an additional fee of \$100. The basic program fee of \$500 covers all materials and fees and includes complimentary admission to Old

Sturbridge Village during the program. Housing at Clark during the Field School is also available for an additional fee. Participation is limited to 20 students. Applications will be processed as received. For further information and application forms, please contact: David Simmons, Archaeology Field School, Old Sturbridge Village, Sturbridge, Mass. 01566. Telephone (617) 347-3362.

## Hunter Memorial Publication Fund

Editor's Note: I received the following letter this past November, and because of its relevancy to many of our members, I am reprinting it here in its entirety.

Dear Dr. Starbuck:

Over a year has passed since Louis Hunter's death and we particularly want to express how important it was to us to have your many expressions of affection and appreciation in March of last year. We are writing now to tell you that we have created a memorial fund to cover the production costs for the publication of the third volume of Louis' *History of Industrial Power*.

It is hard to think of Louis without thinking of his work, and we know that many of you will be interested in knowing the status of the latter volumes of his *History of Industrial Power*. We have recently received word that Volume II, currently in the hands of the University of Virginia Press, is soon to be published. Eight chapters remain on various topics concerned with the use of energy by American industry, all planned as parts of this major study.

We, family and friends, want very much to erect a memorial to Louis. We think that the publication of the remaining chapters as a third volume would be the best way of commemorating Louis Hunter's life and work. The work of preparing the manuscript for publication has been underway for the past 18 months. Lynwood Bryant (who has been involved with the project since 1975), has undertaken the most demanding job of editing, supported by Dolly Bryant and the two of us doing bibliographical work, the typing and preparation of illustrations. We estimate that at this stage about 60 percent of the text (six out of nine chapters) has been edited; much remains to be done, including bibliographic work and illustrations.

Our intention is to produce the third volume as Louis planned it, with the same high standards of scholarship and book design as the first two. Our hope is that another year will see the

manuscript nearly complete and ready for publication.

The editing of the book has been a "labor of love". Our best estimate is that \$30,000 will be required for production and distribution. Contributions from friends and colleagues will be very important to the success of this effort. The Hunter Memorial Publication Fund has been established for this purpose and currently has a balance of \$15,000. Suggestions of funding sources that would be interested in seeing this volume through to publication would also be welcome. If you wish to learn more about this project, we would be delighted to hear from you.

Very sincerely,

Grenelle Bauer-Scott  
53 Linden Street  
Brookline, MA 02146  
(617) 566-7673

Jean Chapin Smith  
54 Sacramento Street  
Cambridge, MA 02138  
(617) 876-2113

## RECENT PUBLICATIONS

Candee, Richard. 1985. *Atlantic Heights: A World War I Shipbuilder's Community*. Portsmouth: The Portsmouth Marine Society.

Dupre, Mary B. 1985. Searching for New Hampshire Redware Potters. *Historical New Hampshire*, Vol. 40 (1-2):47-60.

Garvin, James L., and Donna-Belle Garvin. 1985. *Instruments of Change: New Hampshire Hand Tools and Their Makers, 1800-1900*. Canaan, N.H.: Phoenix Publishing. (\$15.00 from Phoenix Publishing, Canaan, N.H. 03741)

Greenhill, Ralph. 1985. *Engineer's Witness*. Boston: David R. Godine. "a rare and vivid photographic record of nineteenth-century American engineering and energy" (\$35.00 from David R. Godine, Publisher, 306 Dartmouth Street, Boston, MA 02116)

Massachusetts Historical Commission. 1985. *Historic and Archaeological Resources of Central Massachusetts. A Framework for Preservation Decisions*. Boston: Massachusetts Historical Commission. 434 pages, 25 maps. The report for the Cape and Islands study unit will be out in early 1986. The authors are: Claire Dempsey (architectural historian), Leonard

LoParto (archeologist), Peter Stott (industrial archeologist), and Michael Steinitz (historical geographer). Work has also begun on the Essex study unit with Dempsey, LoParto, and new team members: David Zarowin (industrial/economic historian), and Montine Jordan (historical geographer).

Phelan, Thomas. 1985. The Hudson-Mohawk Gateway: An Illustrated History. Northridge, CA: Windsor Publications "the dramatic story of five Gateway municipalities -- Troy, Cohoes, Waterford, Green Island, and Watervliet" (\$22.95 from the Hudson-Mohawk Industrial Gateway, Troy, NY).

Rivard, Paul E. 1985. Made In Maine. An Historical Overview. Augusta, Maine: The Maine State Museum. This commemorative publication was prepared in celebration of the opening of the "Made in Maine" exhibition on October 20, 1985, at the Maine State Museum, Augusta, Maine.

Society for Industrial Archeology. 1985. People, Places, Power. A Work Book for Industrial Archeology. Designed and produced by Pamela E. Beall, Graphics, Ltd., Brimfield, MA.

Starbuck, David R. 1985. The Industrial Archeology of New Hampshire. Historical New Hampshire, Vol. 40(1-2):84-99.

Starbuck, David R. 1985. The World's Longest Timber Crib Dam: The Sewall's Falls Dam in Concord, New Hampshire. The New Hampshire Archeologist, Vol. 26(1).

Starbuck, David R., and Mary Bentley Dupre. 1985. The Hazeltine Pottery Site, Concord, N.H. (NH37-8). The New Hampshire Archeologist, Vol. 26(1).

Also, Fred Elwert is now distributing a new catalog (Catalog #7) on "Architectural Books & Books on Related Fields." If you haven't received a copy yet, you may write to: F.P. Elwert -- Architectural Books, P.O. Box 254, Rutland, VT 05701 (802 773-3417).

## NEW MEMBERS SOUGHT

Both the Southern & Northern  
New England Chapters  
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All members are asked to  
**ENLIST NEW PEOPLE  
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## MEMBERSHIP APPLICATION

To apply for membership in either the Southern or Northern New England Chapter of The Society for Industrial Archeology please fill out the following form. (Members must also belong to the national Society for Industrial Archeology.) Membership in either Chapter automatically includes a subscription to the Newsletter.

Southern New England:

\_\_\_\_\_ Regular \$5.00 U.S.  
\_\_\_\_\_ Student \$3.00 U.S.

Northern New England:

\_\_\_\_\_ Regular \$5.00 U.S.  
\_\_\_\_\_ Student \$3.00 U.S.

Make checks payable to: Southern New England Chapter, Society for Industrial Archeology and mail to :

Fred Roe  
Treasurer, SNEC-SIA  
837 Winter Street  
Holliston, MA 01746

or

Northern New England Chapter Society  
for Industrial Archeology and mail to:

Vic Rolando  
33 Howard Street  
Pittsfield, MA 01201

Name: \_\_\_\_\_

Address: \_\_\_\_\_