

Society for Industrial Archeology · New England Chapters

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Herbert C. Darbee

Herbert C. Darbee, 80, died Jan. 29, 1991 in Columbus, Ohio. He had moved there to be near his son, Jeff, following a stroke in 1985. Born in Baltimore and raised in Brooklyn and western Connecticut, Herb received a B.A. in English from Williams College in 1933 and an M.A. in English from Yale in 1942. He taught at Northwestern University and other schools in Illinois and Connecticut until 1954, when he was appointed curator at Old Sturbridge Village. In 1965 he became the first staff member of the Connecticut Historical Commission, working there until 1976, when he retired as associate director.

Herb was a charter member of the SIA and attended the first annual conference at Cooper Union. According to Jeffrey, "SIA was one of the organizations he valued and enjoyed the most, and his years of association with SIA and the New England chapters brought him great joy."

Contributions may be made to the Southern New England Chapter SIA, 81 Chapman St., Wollaston, MA 02107.

Remembering Herb

No one ever took on a task more cheerfully or performed it more thoroughly than Herb Darbee did. Luckily for the SIA, and for all who care about objects of the industrial past, it was often his job, and always his passion, to know and to preserve the tangible reminders of production.

At Herb's memorial service in Woodstock, Connecticut, John Curtis of Old Sturbridge Village recalled travelling to western Maine with Herb, during a snowstorm, to recover an early turbine. Far from deterring Herb, the snow amused him. Deep snowdrifts over the wheelpit? What a lark. Three feet of ice to chip away to get to the turbine? "Lucky us," was Herb's opinion. He did not rush through the job to get out of the cold, nor consider postponement and the possible loss of the turbine. All of us know something of that thrill of discovery that Herb so exulted in, but few can claim as much tenacity in the less thrilling but more rewarding work that follows-the work that forges knowledge from discovery.

Herb was one of industrial archeology's pioneers. When I came to Connecticut in 1978 to conduct the HAER inventory, the state Historical Commission's existing survey included some 200 entries for factories, dams, lighthouses, bridges, canal locks-the full panoply of IA concerns. At the bottom of every one of those entries was the name "H.C. Darbee." Half in gratitude, half in shock, I asked him why he accorded such care to these places. The answer: "I never thought that history had to leave out what most people did." Herb recorded those sites in 1966, a full five years before those welcome pronunciamenti on the state of IA art began to issue forth from Room 5020 at the (then) Museum of History & Technology. And Herb took that snowbound trip to

Maine almost a decade before the founding of SIA.

Herb was a man of many parts. If you knew him through his work or the SIA, you could not help but be astounded by the range of his other commitments and service. Herb had a hand in every community organization in northeastern Connecticut. One evening, rushing between meetings, Herb arrived at a posh tea in his Scoutmaster's uniform. Perhaps an eyebrow or two arched skyward, but it was Herb's gift to make all grateful for his sincere attention, even if that attention included the gentle puncturing of pretension.

Herb was one of the first to practice industrial archeology, and he is now among the first to leave. We are much the richer for his time among us. He showed the way with humor, with dignity, and with relentless purpose. We are all in his debt, and we will not forget.

Matthew W. Roth From: SIA Newsletter

Editorial

We have had the misfortune to lose three of our most dedicated members within the past six months. In the last issue of our Newsletter, we reported on the loss of Mike Folsom in December, but now we have lost Herbert Darbee and Fred Elwert as well. I am sure that most of you remember Herb as the Southern Chapter Secretary for many years, and you may have been familiar with his many contributions to Old Sturbridge Village and the Connecticut Historical Commission. I am also sure that all of our members enjoyed receiving Fred's used book catalogs over the years, listing books in industrial and architectural history. Mike, Herb and Fred had all been active in the Southern and Northern Chapters since the beginning, and they will be greatly missed.

This Newsleter is a bit shorter than usual, and it is appearing somewhat late

because I have been receiving very little copy. Please send news items and short articles to me at my home address (10 Riverside Street, Fort Edward, NY 12828; Phone: 518 747-2926) so that this Newsletter can start growing again!

I regret to report that the last issue of this Newsletter was mis-numbered as Volume 11, Number 1 (1990) when it should have been identified as Volume 10, Number 2. Hence, you have now received *two* Newsletters with the same numbering!

> David Starbuck Editor

President's Report, NNEC

At the recent Chapter meeting, held at Plymouth State College, the Chapter was treated to a long tour of mills and mill sites in the Plymouth area. After a lengthly presentation by Duncan Wilkie, we drove south to Ashland, past the Bridgewater Power Plant and the Packard Woolen Mill, and looked at the exterior of the Ashland Grist Mill. This last is a good example of adaptive reuse of an old structure. We then drove north, to Campton, to view the remains of the Livermore Falls Pulp Mill.

The second part of the tour brought us west to North Groton. There we saw the remains of three mills along Hall's Brook as well as a house once lived in by Mary Baker Eddy. Continuing to Groton, we viewed the remains of six mills along Punch Brook and by the outlet of Spectacle Pond. Finally, we saw the sites of several mills along the Cockermouth River near Sculptured Rocks. Duncan's work is still very incomplete, and I am looking forward to retracing the Groton part of this tour when Duncan has finished his work there and will be able to interpret the significance of each of the sites for us.

It is not too early to begin thinking about the annual Winter Conference. It is the Northern New England Chapter's turn to host the conference which will be held at Plymouth State College. The date will be announced later. This will be a good time to present the results of your research. The plan is that the papers presented at the conference will be published by the Chapter.

The current issue of IA lists the **Bibliography of State Historic Bridge** Inventories. The inventories of Maine, New Hampshire, and Vermont are missing from this bibliography. One area of interest to industrial archeologists, that may also contain bridges of historic interest are abandoned railroad lines. In New Hampshire, the "Rails to Trails" program has allowed the state to acquire some abandoned railroad lines for use as hiking and recreational vehicle trails. There are timber bridges, steel bridges, and stonework along these lines that should be investigated. Also, where the lines run alongside rivers and brooks, there sometimes are dam sites and mill sites that are not visible from a road.

The Chapter has a new Secretary. Vic Rolando, who has been Secretary and Treasurer for many years, has found that as the Chapter has grown he often needs to be in two places at the same time during meetings. As good as Vic is, he finds that difficult. Vic will remain as Treasurer. The new Secretary is Sue Richardson, of 939 South Hill Road, Canaan, New Hampshire 03741.

The fall Chapter meeting which is being arranged by Bill Taylor will be at the Belknap Mill in Laconia, New Hampshire. By that time Vic Rolando's new book, 200 Years of Soot and Sweat, should be out and available.

> Walter Ryan Claremont, NH

President's Report, SNEC

The Southern New England Chapter hosted the regional SIA Winter Conference on February 9, 1991 in the powerhouse at the Wannalancit Mill. Lowell, Massachusetts. The theme for the morning symposium focused on maritime history and industry, since the meeting date fell under the astrological sign of Acquarius. The first presentation was a video prepared by the National Trust for Historic Preservation titled "Maritime America - a Legacy at Risk." Six papers were then presented on maritime topics. Susan Squires presented her doctoral research on the migration of Nova Scotia laborers to the fishing ports of the Massachusetts colony during the 17th and 18th century. Diana Stockton. Director of the Essex Shipbuilding Museum, described the museum's successful return of the schooner Evelina M. Goulart (one of the last Essex fishing schooners) to Essex from Martha's Vineyard, and the restoration of the vessel as a museum exhibit.

Two papers presented research on vessel survey and history. Arnold Carr of the Historical Maritime Group of New England described the use of sidescan sonar to identify four-masted schooners ("the backbone of 20th century coastal trade") that have sunk in Buzzards Bay. Woody Openo outlined the history of tugboats and their use on the Piscataqua River, Maine. Anne Tait, National Register director for the Massachusetts Historical Commission, presented a detailed analysis of several historic lighthouses in Massachusetts Bay that are distinguished for their engineering features. Pauline Harrell of Boston Affiliates summarized the recently completed study of maritime cultural resources co-sponsored by the National Trust and the National Park Service. The research and subsequent report developed a strategy for conducting a community resource inventory that represents the full spectrum of "Historic maritime resources. Maritime Resources: Planning for

Preservation," has been distributed to all State Historic Preservation Offices as a suggested model for future inventory work.

The afternoon session covered a broader range of topics including bridges and 'the city on the water'. Katherine Donohue from Plymouth State College presented a historical overview of the history associated with the waterfall on the Connecticut River located at Lebanon, New Hampshire. A series of locks and dams constructed over a period of nearly two centuries resulted in the industrial transformation at the falls. Bill Taylor and Duncan Wilkie from the Institute for New Hampshire Studies (Plymouth State College) reported on their documentation project for the Forest Service of a logging railroad trestle located in the White Mountain National Forest. Frank Griggs, Dean of Civil Engineering at Merrimack College, discussed his efforts to save from demolition and subsequently rehabilitate a Moselevdesigned bridge once located across a canal in Lawrence, Massachusetts. Paul McGinley, of McGinley Hart & Associates, reported on his firm's documentation project of several cityowned bridges that cross Fort-Point Channel in Boston. The work was conducted in anticipation of the bridges' alteration or removal as part of the Central Artery project. In a related presentation, photographer Peter Vanderwalker provided a pictorial history of Boston's infamous elevated central artery from its origins in the early 1950's to its imminent demise (to be succeded by the new depressed central artery).

Following the afternoon session, the National Park Service provided a guided tour of the water-powered turbine system of the Wannalancit Mill. Although the mill is privately owned and was recently redeveloped for commercial offices and classroom use by Middlesex Community College, the Park Service has a cooperative agreement to interpret portions of the mill as part of the Lowell National Historic Park.

Next year's conference will be hosted by the Northern New England chapter. In the meantime, the SNEC will be sponsoring a spring meeting at the Fore River Shipyard in Quincy. Once New England's largest shipyard and record holder for the number of vessels produced during World War II, the shipyard is now owned by the Massachusetts Water Resource Authority. Attendees will have an opportunity to visit buildings not open to the public, including the machine shop with a unique array of lathes and presses designed for the manufacture of marine engines, as well as many other components integral to naval and commercial vessels. Part of the tour will include what may be the "last look" at portions of the shipyard before demolition begins to make room for a specialized facility associated with the new Deer Island sewage treatment plant presently under construction at the opposite end of Boston Harbor.

> Jeff Howry Lexington, MA

Current Research in New England

Massachusetts

Upper Quinebaug Mill Survey by Old Sturbridge Village Research Department

Old Sturbridge Village archeologists Martha Lance and John Worrell continue a comprehensive survey of historic agriculturally based water-powered industries with a primary focus on sawmills and the timber trade in Sturbridge and Southbridge, Massachusetts, from 1735-1860. This study, the Upper Quinebaug River Mill Survey, as

part of a larger project entitled, "Tradition and Transformation: Rural Economic Life in Central New England, 1790-1850," is partially funded by the National Endowment for the Humanities. A general research objective of the Quinesbaug project is to utilize all available data-physical and documentary evidence-in understanding how the production and trade patterns of agriculturally based mills changed over time. A secondary goal is to examine what effects the entrance of textile factories and the growth of industrial villages in the study area had on agriculturally based mills.

The documentary component of the study includes extensive title research for all sites. Deed research for the Sturbridge sites is nearly complete and is in process for the Southbridge sites. Through deed research, ownership chronologies and histories of site use and operation for each mill are being compiled. The second phase of documentary research, now underway, includes the examination of period tax records for both towns and existing account books for several mills.

Approximately 62% from a sample of forty wood-related industrial sites in Sturbridge and Southbridge have identifiable archeological remains of past mill activity. Archeological remains are interpreted in a broad sense to include alteration of the landscape by access roads, mill ponds and mill yards as well as more readily identifiable industrial features such as dams, foundations, canals and raceways. Our intent is to understand sites as waterpowered systems, with storage ponds, dams, raceways and waterwheels all contributing to each mill's operation. Where possible overall site maps appended to the more detailed drawings of mill dam and foundation remains illustrate the systemic nature of waterpower exploitation. Archeological evaluation focuses on specific sites and broadens to include how entire streams were exploited by waterpowered mill owners. Equally important to the study is understanding how mills, often with several clustered around single dams or seated along one stream, shared limited hydrological resources.

An assessment of the watershed areas and power potential for each site is in process using soil information, environmental data and archeological data. The hydrological component of our analysis, combining archeological research and evaluation of the present environment, enables generalized hypotheses of site use and longevity. This data will be compared to site histories interpreted from historic documents and archeological analysis.

In addition to proceeding with analysis of mill seat use and patterns of mill ownership, research directed toward understanding the availability and trade of timber products-both finished and raw materials-is underway. We are examining sawmill accounts, farmer accounts, several textile company account books and factory village store production. Research focuses on changes in scales of production, and the consumption of lumber and other wood products by textile companies and factory villages. With the building booms of the 1830s and 1840s, sawmill owners responded by buying woodlots, hiring additional non-kin workers, and altering mill sites to satisfy greater production demands.

A corollary to the main focus on sawmilling is research on the supply and demand for cordwood. Many of the sawmill owners under study increasingly provided textile factories and factory villages with cordwood or refuse boards to be consumed in factory houses or newly erected steamboilers. On at least one occasion, a former sawmill owner sold his mill and became a local lumber merchant selling both wood sawn at mills and cordwood.

Research suggests that woodlots and wood remained highly valuable commodities in the rural economy up until the late 1860s. Several sawmill owners and operators may have continued to operate because of their ability to procure timber by purchasing woodlots or stands of timber. The local timber supply supported sawmilling activity in Sturbridge and Southbridge well through the 1850s, and the remarkable longevity of this one rural industry and how it changed over time will be well documented in this study.

The project research schedule for the next several months focuses on extracting wood-related information from the records of several local textile companies and the analysis of hydrological data. Mapping of additional mill sites will be continued in the fall as will evaluation of the data sets already compiled.

More extensive subsurface testing of a sawmill site located on Old Sturbridge Village property may be undertaken during the 1992 field season. The scenic site straddles a series of spectacular waterfalls and includes two dams, mill foundations, a large storage pond, and a possible mill owner's cellar hole. Preliminary documentary research confirms that a series of mill owners produced lumber at the site from the mid-18th century through the mid-19th century. The longevity of site occupation and the survival of essential elements of the mill seat's waterpower system and mill owner's dwelling make this an exciting prospect for future fullscale excavation.

> Martha Lance Old Sturbridge Village

Connecticut

State Archaeology Library

The Office of State Archaeology at The University of Connecticut and The Connecticut State Historic Preservation Office have jointly established an archeological resource library. Located at the Office of State Archaeology, the library includes a diverse range of site reports, government publications, monographs, journals and newsletters on eastern North American archeology.

The collection includes newsletters, among others, from the Archaeological Conservancy, the Archaeological Society of Connecticut, the American Indian Archaeological Institute (Artifacts), the Society of American Archaeology, the National Park Service (Federal Archeological Reports) and Archeological Assistance Program Technical Briefs), The Rhode Island Archaeological Council, and the Society of Industrial Archeology - New England Chapters. The library's periodical holdings also include American Antiquity, American Archaeology, CRM Bulletin (National Park Service), Man in the Northeast, and Pennsylvania Archaeologist.

Additionally, the State Archaeological Library includes an extensive collection of federal and state archeological reports and management plans, cultural resource management reports, the Delaware Department of Transportation Archaeological Series, the U.S. Army Corps of Engineers Environmental Impact Research Program studies, and the Dolores Archaeological Program reports.

The library represents the combined holdings of the Office of State Archaeology and the State Historic Preservation Office. Of particular note are Ms. Cecilia Kirkorian of Historical Perspectives Inc. and Dr. David A. Poirier of Connecticut State Historic Preservation Office, who have individually donated newsletters, journals and other archeological publications from their personal libraries. Inquiries concerning future donations should be addressed to the Office of State Archaeology.

The State Archaeological Library is an important technical service available to anyone interested in eastern North American archeology. For detailed information concerning the collection and its availability, contact the Office of State Archaeology.

Simeon North Factory Site Berlin

Kevin McBride, University of Con-

necticut, wrote the National Register nomination for the Simeon North Factory Site in Berlin, a late eighteenth/early nineteenth century industrial site associated with the changes that took place in manufacturing at the beginning of the Industrial Revolution in America. The factory was destroyed in a flood in 1857, and the remains on the site, "reflect the transition from small-scale production by individual artisans to large-scale manufacture and assembly of component parts."

Rhode Island

Historic Bridges Search for Blackstone Bikeway

The Rhode Island Department of Transportation, in cooperation with the Rhode Island Department of Environmental Management, is currently completing a federally-funded planning study for the Blackstone River Bikeway, a proposed nineteen mile bicycle route. This route would transect the Blackstone River Valley National Heritage Corridor, a nationally recognized historic industrial landscape; it would also run through a state linear park. For the Blackstone Bikeway Project, seven bridges will need to be constructed; several of the ten existing bridges (all of which require evaluations) may not be suitable for reuse and would be replaced. To provide compatibility with the historic nature of the project area, the Department seeks to install older, historic wrought iron or steel bridges (varying in length from 30 to 180 feet) where feasible, rather than to construct concrete and steel structures.

We are accordingly searching for any available bridges in the southern New England region that could be utilized for this project. We would appreciate receiving documentation on any historic metal truss bridges that will be replaced in the future. Please provide us with all available physical data such as length, width, inspection reports and any photoghraphs.

Should you have any questions, please contact Mr. Michael A. Hebert, Principal Historic Preservation Specialist, RIDOT - Planning Division at (401) 277-2694.

> Richard Snow Chief Civil Engineer Bridge Design - RIDOT



Jean and Charles Davis (Pittsford Historical Society) (left), Toni Howe (NNEC) (right center) and two unidentified volunteers clear the wheel pit as Walt Ryan holds the stadia rod at the Pittsford iron works.

Vermont

Pittsford, Vermont Iron Works

On Memorial Day weekend, May 25-27, volunteers from the New England Chapters and the Pittsford Historical Society worked hard to help make the remains of a 19th-Century standing blast furnace and surrounding mill works a place where the public could learn more about Vermont's impressive historic iron industry. Over twenty people labored at cutting down trees, clearing brush, exposing foundations and surveying the works.





Paul Potvin and student inspect the turbine box of the mill ruin at the Pittsford iron works. Note the iron penstock.

The Northern New England Chapter was invited to aid in clearing, surveying and interpreting the site by Allen Hitchcock, who recently purchased the land and iron works remains to prevent its loss to development. The iron history of the site dates back to the late 18th century when the first furnace was built by Israel Keith. The remains uncovered by the volunteers represented the final works which ceased operation about 1883. (See Vic Rolando's article in this Newsletter for a more complete history of the site.)

Like other 19th-Century blast furnaces in Vermont, the stone remains at Pittsford are quite spectacular, especially when approached through the dense vegetation which surrounded it. The volunteers cleared away much of the brush and trees whose roots were undermining many of the site's components.

Among the features of the site is a wheel pit and tail race constructed with large dry-laid granite quarry blocks. A huge granite slab, 9 feet long, 4 feet wide and 9 inches thick, bridges a portion of the tail race. A limited excavation to remove debris from the wheel pit revealed that one of its walls had partially collapsed into it. Based on the measurements taken at the mouth of the tail race, the wheel pit was estimated to be approximately seven feet deep, leading to speculation that the overshot wheel which drove the blower, which would have been greater than 20 feet in diameter, was mounted on a superstructure. A search for its foundation was not successful. However, future excavation may reveal it.

Another feature of interest at the site is the remains of a mill ruin which was designated as a "machine shop" on an 1850s map, and which had been adapted to a water-powered saw mill and carpenter shop in the 1920s. A rivited iron-plate penstock had been installed through the mill's original field stone foundation wall. Poured concrete was used to replace the section of field-stone wall in which had been intruded by the penstock, and a concrete turbine box had been installed. possibly at the same location as the original turbine box. While many artifacts such as bearings, leather belting and control wheels were present in the mill ruin, the turbine, carriage and saw machinery had been removed. It will be valuable as a research site to trace the adaptive reuse history.

Brush clearing near the earthen

Krista Jackson (NNEC) at the top of the ladder assists with recording the Pittsford blast furnace as other (less courageous) volunteers look on.

recharge ramp revealed several storage bunkers, some containing residue of ore and flux. Also at the site is the foundation of the company store which was not included in the weekend activity. It, however, should also be an interesting site for future research.

On July 4, an iron works exhibit will be opened at the Pittsford Historical Society. SIA members and the public are invited to visit the exhibit any Wednesday, 10:00 to 3:00, throughout the summer. On September 21, as part of Pittsford's celebration of Vermont's Bicentennial of statehood, visitors will be invited to tour the remains of the iron works. For information, please call Lois Blittersdorf, (802) 483-6485, or Jean Davies, (802) 483-6623.

> Dennis Howe Concord, NH



The Pittsford furnace stack, ca. 1955. Old farm machinery was abandoned inside the casting arch. Photo by Vic Rolando.

Article

The Granger Furnace Pittsford, Vermont

[Editor's Note: the following article is excerpted in part from 200 Years of Soot and Sweat: The History and Archeology of Vermont's Iron, Charcoal, and Lime Industries by Victor R. Rolando; to be published later in 1991 by The Vermont Archaeological Society]

Simeon Granger was born in 1770 at West Springfield, Mass., moved with his parents to Sandisfield following the Revolution, and there married Phoebe Couch in 1791. In 1801 he moved to Salisbury, Ct., where he became involved in the iron business. In November 1826, when he learned that Andrew Leach at Pittsford, Vt., had put his blast furnace up for sale, he bought it. Waiting until dark so he wouldn't be missed, Granger left Salisbury and rode night and day to reach Pittsford and made the purchase. On his way to the town clerk to record the deed, he waved the deed to another prospective buyer just arriving from Salisbury, saying to him "You are too late, neighbor; the property is mine!"

What Granger had purchased was the first blast furnace built in Pittsford, built in 1791 by Israel Keith, who came here from Easton, Mass., already an 18th-century ironworks community in its own right. Keith graduated from Harvard in 1771 and joined the army at Boston two years later. He rose to the position of Deputy Adjutant General on General Heath's staff before resigning his commission in 1778 to resume the study of law. He was admitted by the Suffolk County Bar in 1780 to practice before the Massachusetts Superior Court. He retired from the Suffolk Bar in 1790, and the next summer he was in Pittsford, putting idle money to work building a blast furnace.

The ironworks were built on 31/2

acres of land that he bought from Joseph Hitchcock, of which he paid "six pounds lawful money." He also purchased some land from Ira Allen "agreeing to pay him with iron and hollow ware manufactured by him which was to be delivered at Allen's house."

Israel Keith supplied the money; his father Zephaniah and brother Alfred supplied the skill and ironworks knowhow. The works made a good quality iron that found a ready market. Scotland Keith came to Pittsford in 1795, purchased a share in the furnace. and joined the rest of the family in the firm of Keith & Company. The blast furnace was built so near the Chittenden town line, however, that many historians credited that town with the site of Keith's furnace. The error has been copied in a number of published histories as recently as 1971. But Whitelaw's 1796 map clearly indicates the furnace in Pittsford.

Israel Keith sold his furnace property in 1795. Four years later he proceeded to establish another ironworks nearly 90 miles to the north, where he and Alfred built a blast furnace on the east bank of the Black Creek in Sheldon. Returning later to Pittsford he continued his law practice in U.S. and Vermont courts. He died at Pittsford on June 3, 1819 and is buried in the Congregational Church cemetery, at the north edge of the village, where his tombstone stands in the unmaintained section, barely visible amid the high thorn bushes.

Keith's former furnace property in Pittsford had changed hands many times. These partial and full owners included men who, like the Keiths, also came from Easton. Howard Lothrop invested in the works and became superintendent. Nathan and Cornelius Gibbs and Edward Kingman, also from eastern Massachusetts, along with Luke Reed, ran the furnace business in the late 1790s until Nathan Gibbs eventually came into full control. Gibbs enlarged the furnace in 1824, making the bosh 8 feet wide by 27 feet high. He improved the property and operated the works until he died later that year. Nathan Gibbs is buried next to Israel Keith. Andrew Leach, buried nearby in the same cemetery, owned the furnace from 1824 to 1826, when he sold it to Chester Granger.

Chester Granger incorporated the business on November 14, 1826 as the Pittsford Iron Manufacturing Company. Partners of record were Lyman and Chester Granger, a father-in-law Cephos Smith, and Egbert B. Smith. Histories refer to the company as Simeon Granger & Sons. The Grangers rebuilt the furnace in 1827, the year after they bought it, and two years later built a foundry nearby and moved into Keith's former house. A number of items were cast at the furnace, including stoves. A few years later the foundry was moved some 50 to 100 feet west of its original location. In 1834, at age 64, Simeon Granger died, leaving two of his sons, Lyman and Chester, to continue the business.

Lyman Granger had commenced practicing law after graduating from Union College at Schenectady, N.Y., and the Litchfield Law School, Ct., moving to Rutland, Vt. in 1823. With the formation of Simeon Granger & Sons in 1826 he moved to Pittsford and represented the town at the General Assembly during that and the following year. In 1837 his health had already started failing, and he sold his interest in the furnace property to his brother Edward L. When Lyman Granger suddenly died two years later while visiting at Utica, N.Y., Chester and Edward L. Granger formed the company of C. & E.L. Granger. When Edward L. died in 1846, George W. Hodges came into the business under the firm name Granger, Hodges & Company.

Due to poor economic conditons, the works partially suspended operations in 1852. At this time the business was incorporated into a stock company, the Pittsford Iron Company, and the village of Grangerville grew along Furnace Brook near the works. In addition to the blast furnace and Chester Granger's house, there was a cupola furnace at the foundry, a blacksmith shop, company store, inn, furnace school, and about 20 tenant houses for the ironworkers.

In 1853, the furnace was enlarged to 42-feet-high. A 24-foot waterwheel provided the heated blast of 600° F. Production capacity was 2600 tons a year, but the furnace smelted only 350 to 1757 tons a year from 1854 to 1858. The foundry cast 300 tons of stoves a year. There was no production from 1859 to 1863; only 400 tons were smelted in 1864. Why the furnace made so little iron during the Civil War years is puzzling.

Ore for the furnace was found locally in many places. While Granger was excavating for the construction of his new furnace, good quality iron ore was found directly underfoot. Ore was dug nearby on both sides of the stream and from deep mines at Chittenden, 2¹/₂ miles north. These mines remained in operation to 1872. Local ore was sometimes mixed with magnetic ore and boated and carted to Pittsford from mines in New York. In order to obtain maximum yield from its ore, Granger ran the cooled slag through a stamping machine. A stream of water washed away the lighter vitreous portions of the slag, and the heavier iron particles were collected and recycled into the furnace.

After the Civil War, furnace operations consisted of a new group of owners called the Vermont Iron Company. In 1865 the furnace was once again fired, but iron prices fell sharply during the post-war period. Jeremiah Pritchard of Boston was running the works in the 1870s, at which time railroad wheel iron and spiegel (pig iron with high maganese content) were being made.

The Michell ore bed at Chittenden shut down in 1872; five years later, Chester Granger died at age 81. In addition to his involvement with the ironworks, Granger was one of the original directors of the Rutland & Burlington Railroad, director of the Bank of Rutland, and also representative to the General Assembly from 1862 to 1865. He later engaged in an iron business in Pennsylvania but returned to Pittsford where he retired. The works were owned by Naylor & Company from



Damage to the rear of the furnace as seen from the top of the charging ramp, ca. 1955. A portion of the ramp and other fill was bulldozed into the space between the rear of the furnace and the ramp. A section of the top of the tunnel was also gouged out, exposing the base of the top-ovens. The damage was done by a saw mill operator who intended to use the furnace to burn sawdust and slabs. The plan was a failure because the draft of the furnace blew sparks so high that numerous brush fires were started. Photo courtesy Vic Rolando.

1882 to 1886, who were probably gambling on a general improvement of the iron business. The works were called Titan Furnace at this time. There is no evidence that the furnace ever operated after 1883, making it the final operating blast furnace in Vermont.

Of other Grangers, Chester's younger brother Rensselaer Dudley Granger moved to Woodstock about 1830 where he was involved in the mercantile business for several years. He later converted his mill into a foundry, making castings and tools under the name Granger and Swan. He sold the foundry to Daniel Taft around 1836 (Taft at the time owned and operated foundries in nearby Taftsville). Granger then moved on to Troy, N.Y., where he was awarded many patents on stove designs, the most famous being "Granger's Air Tight Parlor Cook" (patent date 1846), cast for many years at Ransom & Company, an Albany, N.Y., stove foundry. William S. Granger, one of Chester's sons. moved to Providence, R.I., becoming treasurer of the Cove Foundry and Machine Company. It was succeeded about 1880 by the Granger Foundry & Machine Company, of which he became president. The company later merged with three other firms to become the Textile Finishing & Machinery Company, a foundry that made machines to bleach, dye, and finish cotton goods.

In an 1953 interview by the *Rutland Herald*, 86-year-old Pittsford native Patrick E. Mooney related his memories of working at the furnace. He started work there at age 15 and was at the furnace 2 years until the last blast in the spring of 1883. Mooney said the works was owned by Gillman Pritchard, who lived in an old brick house (the Ironmaster's Inn) across the road from the furnace. In 1953, the house was occupied by Pittsford sawmill owner Harry Smith.

Mooney said that about 60 men were employed at the furnace, the mine, and the charcoal kilns. The kilns were operated by Bill Taylor, and wood for



The Ironmaster's Inn, across the road from the furnace grounds in Pittsford. The lintels above the windows and doors are said to have been cast at the furnace. Photo by Vic Rolando.

the kilns — maple, birch, and beech came from the surrounding hills. He said that the five kilns took 90 cords at a time (which calculates to 18 cords per kiln; this was low, considering the usual 25 to 40 cords per kiln for the period).

Charcoal and ore were hauled to the furnace by horse teams owned either by the company or by local teamsters. The wagons drew two 3-ton loads daily from a mine in Chittenden. At the furnace, the ore was dumped into a pile where 15-year-old Mooney loaded the ore on a one-horse cart and drove it to the "tophouse". Here the ore was weighed, run over the stack, and dumped in. The furnace had to be charged 13 times in each 12-hour shift. For carting ore from 7 a.m. to 6 p.m., seven days a week, Mooney was paid \$1.15 a day. During this 10-hour shift, the men stocking the furnace had to draw enough ore to keep it going around the clock. The firemen and their helpers worked in two 12-hour shifts, one beginning at noon and one at midnight. They received \$1.75 a day, which was considered good pay, and their helpers got \$1.25 for twelve hours work. In young Patrick's day, "another day, another dollar" was no idle expression.

The furnace sent up flame-colored gases, which at night lit up the yard so one could read a newspaper, said Mooney. It sometimes brought people to the scene, thinking a fire was raging out of control. Every eight hours, men in the casting shed drew out five tons of molten iron and cast it into hundred-pound blocks of pig iron: three feet long, three inches wide, and four inches deep. These were loaded into wagons and taken to the railroad at Pittsford Depot for shipment to Boston. The men led a rugged existence, said Mooney. "They could stand more in a day than they do now" was his opinion.

Mooney spent 59 years in the same house where he was born at Pittsford Furnace and received his schooling, which ended when he was 13, at the Furnace School. His father was a foreman at the furnace, but he died when Patrick was in his teens, leaving his mother with six children to support. Pritchard, the furnace owner, "took a little compassion on my mother," said Mooney, giving him his first job.

The wooden buildings where the ore was handled had been torn down by 1953 and made into a sawmill. The company store, which stood near the road, also had disappeared entirely. The blast furnace still stands off Furnace Road, about a mile northeast of Pittsford village. The stack retains all its iron binders and most of its arch brickwork, but a section of the top of the stack was pushed in some time ago, exposing some of the internal structure relating to the heating ovens that once stood atop the furnace. Associated with the ruin are partially caved-in stone block walls, foundations, and the upstream remains of a dam and head race. The remains of the Smith sawmill are immediately downstream of the furnace under collapsed boards. Under this wood pile is a large concrete foundation in which a turbine once sat, driven by water that was conveyed into it through the existing large iron pipe. Local tradition is that Smith used the furnace stack to burn waste wood from his sawmill. The furnace hearth was still choked with rotted boards as recently as last year until cleaned out by new owner Allen M.

Hitchcock. The entire furnace area is littered with slag, burnt brick, pieces of waste iron, and charcoal. Domestic trash adorns the embankment adjacent to the furnace.

Although it is assumed that Simeon Granger's enlargement of Keith's furnace stack in 1827 completely razed it, an intensive search of Furnace Brook above and below the site has not been made to eliminate the possibility of an earlier Keith furnace ruin/site in existence. Information from the Massachusetts Historical Society, however, appears to identify the area of the Granger furnace ruin also as the site of the Israel Keith 1791 furnace. Keith's house might have been where the 1854 Scott Map of Rutland County shows the house of C. Granger, although this has not been proven. Much work remains in finding the homes of the great Vermont ironmasters.

What has been taken by many to have been the Granger Homestead, across the road east of the furnace ruin, is now generally believed by Pittsford historians to have been an inn operated contemporary with the ironworks by B. H. Trowbridge. Granger's house was a few hundred feet to the north, across the road from the company store according to the 1854 map. Nothing remains of the house today. The old inn was bought by Charles Smith in 1883. Various members of the Smith family owned it until recently, when Allen Hitchcock bought it. Hitchcock is a descendent of Joseph Hitchcock who sold the land to Israel Keith in 1791. Allen sold the homestead to Creg Oosterhart and Mike Greene in 1984: they embarked on the ambitious project of restoring the building to its Federal architectural style. In the process, they discovered some interesting clues about how the building was constructed, but the original construction date remains unknown. Meanwhile, they operated the house as the Ironmasters Inn, a bed and breakfast, until the house again went up for sale.

Many other structures relating to the

ironworks era still stand in the vicinity. At the intersection down the highway from the inn is the old Furnace School, converted into a private residence. Westward on both sides of the highway are what are believed to be former tenement houses, rounding out the community that is still identified on some maps as Grangerville. (The ruins of the five charcoal kilns mentioned by Mooney were found in 1986, a mile up Kiln Brook in Chittenden. Many other charcoal-making sites have been found farther up Furnace Brook in Chittenden.)

Chronology of the site:

- ca. 1791 First blast furnace, built by Israel Keith
 - 1795 Keith & Company formed; later sold to H. Lathrop
- late 1790s Nathan Gibbs owned and ran furnace
 - 1824 stack enlarged by Gibbs; Andrew Leach bought furnace
 - 1826 Works purchased by Simeon Granger
 - 1827 Furnace rebuilt, possibly destroying Keith furnace
 - 1829 Foundry built next to furnace
- ca. 1830 Foundry relocated 50-100 feet west of original location
 - 1853 Furnace enlarged to 42 feet high; "modernized"
 - 1882 Bought by Naylor & Co named Titan Furnace
 - 1883 Probable final year of operation

Vic Rolando Pittsfield, MA

Historic Bridge Inventory

The State of Connecticut Department of Transportation has announced a Final Report: Inventory Phase entitled *Connecticut Historic Bridge Inventory*. It was produced by Historic Resource Consultants, The Colt Armory, 55 Van Dyke Avenue, Hartford, Connecticut 06106.

Exhibit

An Eye For Eternity: 150 Years of New Hampshire Photography

"The Wonderful art of ... transfer(ing) landscapes in miniature upon a permanent plate, merely by the operation of rays of light, is decidedly the greatest discovery of our age." Written in 1840, these words reflect the astonishment of a Portsmouth resident upon seeing his first daguerreotype, picturing a local church building (since destroyed) "so perfectly that even the sashes of the pulpit window can be plainly seen."

The exhibition "An Eye for Eternity: 150 Years of New Hampshire Photography," on view at the New Hampshire Historical Society through December, celebrates the extraordinary power of photography to preserve fleeting images from daily life for future generations to study and enjoy. The special role of photography in helping to document human activity of all types should make this exhibit of particular interest to SIA chapter members, as will he exhibit's focus upon the developnent and changing technology of a unique craft and industry.

"An Eye for Eternity" traces the evolution of photography from a procedure involving special training, long exposures, heavy equipment and complex chemical processes to an activity simple and inexpensive enough for any child. As a result of a series of developments, most notably the handheld stereoscope, lighter photographic equipment and the glass-plate negative, photography became a significant industry in New Hampshire, with Littleton's Kilburn brothers eventually emerging as the leading American manufacturers in the specialized production of stereo views.

The photographic images now on view at the Society's headquarters, at 30 Park Street in Concord, range in date from a pioneering daguerreotype taken

by Doctor Samuel Bemis in Crawford Notch in 1840 to those employing the most modern computer imaging, infrared and electron micrograph technology. Representing a wide variety of New Hampshire people, places and events documented by photography during its first 150 years, the images selected for display are accompanied by examples of the types of cameras used in their production, studio and darkroom equipment, advertising material, local patents and models for stereoviewers, and New Hampshire products incorporating photographic images. Visitors to the exhibit can also

view three-dimensional images through both a hand-held stereoscope and a coinoperated penny arcade.

"An Eye for Eternity: 150 Years of New Hampshire Photography" is open to the public daily, Monday through Friday, 9:00 a.m. to 4:30 p.m., and Saturday and Sunday from noon to 4:30 p.m. A printed gallery guide, summarizing the highlights of a century and a half of photography in New Hampshire, is available to visitors without charge.

> Donna-Belle Garvin Concord, NH



From a stereograph showing women at work in the "Cutting Department of B. W. Kilburn & Co.'s Celebrated Stereoscopic View Factory," Littleton, N.H., copyright 1905 by Benjamin West Kilburn. Employing as many as 120, the Kilburn Company and its predecessors produced altogether over 100,000 negatives from which they published approximately 17,000 different stereo views. (Photograph courtesy of the Treadwell Collection)

New Publications

Berkshire Bridgebuilders Described in New 32-Page Publication

Spanning Berkshire Waterways by Bernard A. Drew, the latest local history publication from a small press located in great Barrington, is something of a departure from previous offerings in that it looks as much at the process of doing research as it does the topic itself.

Drew, in 1976, became interested in the small metal truss highway bridges which still dotted obscure back roads in the Berkshires. Over the next several years, he scoured records, examined town reports, snapped photographs, wrote letters, visited the Smithsonian Institution and U.S. Patent Office, collected anecdotes, chatted with engineers, an artist and a bridge restorer, and drafted a history of Berkshire bridgebuilding.

That manuscript, telescoped into 32 pages, has been framed with a description of how the information was gathered. The country now has barely a handful of 19th century metal highway bridges; a dozen were removed in the 10 years since the research began. Still spanning rivers here are a trio of Berlin Iron Bridge's distinctive "parabolic" bridges (in North Adams, Lee and Great Barrington); an 1890s tubular truss designed and built by an East Windsor machine shop owner; and a bridge in Stockbridge constructed by the nationally eminent engineer George S. Morison. Beyond those and a single 1850s wooden covered bridge, Berkshire's example of this aspect of the industrial revolution have vanished.

Spanning Berkshire Waterways looks at the evolution, at about the time of the Civil War, from the use of wood as a bridge building material to iron. It looks at several bridge disasters as well as success. Besides Ball, Hezekiah S. Russell of Pittsfield was a native bridge builder. Others active here included Richard F. Hawkins of Springfield, Berlin, and others from New York, Boston and Ohio. To find examples of bridges which once existed in the Berkshires, the author and his wife Donna ventured to Albany, N.Y. (Whipple bowstring truss), to Woodstock, Vt. (Parker truss), to Lawrence (Moseley truss) and to Maryland (Bollman truss) to take photographs.

The book is illustrated with more than 100 photos, drawings and patents. Available at area book stores, *Spanning Berkshire Waterways* is also available from the publisher for \$5 a copy, postpaid.

Drew, a past president of the Berkshire County Historical Society, is managing editor of *The Berkshire Courier* in Great Barrington. He has compiled a number of reference books, the most recent being *Heroines Series* & *Sequels* from Garland Publishing in December. Due out in June is *Lawmen in Scarlet: A Reference Guide to Royal Canadian Mounted Police in Fiction and Film*, and in July, *Motion Picture Series* & *Sequels* (Garland). He is working on a second edition to his 1986 Western Series & Sequels for Garland.

> Bernard A. Drew Attic Revivals Press 24 Gilmore Ave. Great Barrington, MA 01230 (413) 528-4953

Historic Maritime Resources: Planning and Preservation

The Office of Maritime Preservation, National Trust for Historic Preservation, has announced a new publication: Historic Maritime Resources: Planning for Preservation. Edited and Revised by Lynn Hickerson, Project Director. It is based on a study by The Cultural Resource Committee of the Massachuestts Bay Marine Studies Consortium, Jay Kaufman, Director. Project team: Pauline Chase-Harrell, Marcia L. Myers, Co-Chairs; Dillon Bustin, Massachusetts State Folklorist; Jeffrey C. Howry, Industrial Archaeologist; Paul Lipke, Museum Small Craft Association; Stephen Matchak, Cultural Geographer; Carol Ely, Historian; Kimberley A. Shilland, Preservation Consultant.

Balancing Historic Preservation Needs Featured in Publication

The Advisory Council on Historic Preservation has issued a new publication, Balancing Historic Preservation needs with the Operation of Highly Technical or Scientific Facilities. This publication recommends ways in which the continual need of scientific and technical institutions to upgrade or modify their facilities or equipment should address the historic nature of many such institutions.

New Members SOUGHT

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The Council, which administers the Section 106 review of the effects of Federal and federally supported undertakings on historic properties, encourages the consideration of preservation values early in an agency's planning process, and the issues raised throughout the text illustrate this.

Single copies of Balancing Historic Preservation needs with the Operation of Highly Technical or Scientific Facilities are available without charge while supplies last. To order, please contact the Advisory Council on Historic Preservation, 1100 Pennsylvania Avenue NW., Suite 809, Washington, DC 20004, or call (202) 786-0503.

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. Membership in either Chapter automatically includes a subscription to the Newsletter.

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