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The Institute for the History of Technology and Industrial Archaeology, and HAER

A Ten-Year Retrospective

As covered bridges go, the one in Philippi, West Virginia, was large, handsome, and quite historic. Union and Confederate forces had clashed at the bridge in the opening days of the Civil War. It survived the war to stand for nearly 130 years, but on a cold night in February 1989, the 1852 Philippi Covered Bridge burned. All around West Virginia, a state born of the Civil War, people mourned the loss of this cherished monument.

Within days of the fire, Governor Gaston Caperton announced that the bridge would be rebuilt to its Civil War condition. To complete the work, West Virginia University Provost William Vehse launched the Institute for the History of Technology and Industrial Archaeology (IHTIA) with Professor Emory L. Kemp at the helm. The arrangement came as no surprise, for in the preceding decades Kemp had established programs in the history of science and technology and in public history at WVU and had positioned the University as a regional center and national leader in preserving and interpreting the industrial foundation of American society.

The new institute had a clear and unique mission: research, teaching, and service in the history of technology, industrial archeology, and the preservation of historic engineering works. Now, at the close of its first decade, IHTIA has completed over 10 million dollars in projects sponsored by a broad array of private and public interests ranging from local historical societies to federal agencies. Among these, the greatest sponsor by far has been the Historic American

Engineering Record (HAER), a program of the National Park Service, which has funded about one-third of IHTIA's work.

For 30 years, HAER has documented significant historic industrial sites and engineering structures with large format photographs, ink-on-Mylar measured drawings, and written histories. HAER documents sites with summer field teams comprised mostly of architecture and history of technology students supervised by professionals. These methods were refined by HAER's elder sibling, the Historic American Buildings Survey (HABS), which dates back to 1933. It was through this program that Professor Kemp had arranged and managed the documentation of industrial sites and structures in central Appalachia in the 1960s. These projects were different than most at HABS, for they not only documented structures but often interpreted processes. After helping to establish the HAER program, Kemp worked with Eric DeLony and others to explore new methods of industrial documentation and preservation. By 1975, HAER had completed motion picture documentation of the Seneca Glass Works and the Bretz Coke Works, two anachronistic industries in West Virginia's Monongahela Valley.

Throughout the 1990s, IHTIA and HAER helped pioneer new methods in industrial archeology using such tools as computer-aided drafting (CAD), close-range photogrammetry, the analysis of historic photographs with PhotoCAD to produce accurate restoration plans, and Geographical Information Systems (GIS) to produce more accurate and affordable maps and site plans. In recent years, both organizations have exploited the three-dimensional applications of CAD, and IHTIA has used a new ArcView GIS application to create three-dimensional representations of historic industrial landscapes. Many of these tools and methods have become conventional while others, like GIS, are attracting great interest.

Several of IHTIA's interdisciplinary staff of professionals and students have worked on HAER summer projects, normally in the role of historian or field supervisor. Likewise, former HAER summer interns have gone on to work at IHTIA's headquarters in Morgantown, West Virginia. Over the past decade, IHTIA has employed nearly 100 people, including student interns, graduate research assistants, post-doctoral and visiting fellows, and a wide range of profes-



The Philippi Covered Bridge was built as a link on the old Fairmont to Wheeling turnpike, modern U.S. route 250. The rebuilding of the bridge after a fire in 1989 helped launch the Institute for the History of Technology and Industrial Archaeology. Photo by John Nicely, IHTIA.

sionals including architects, engineers, historians, videographers, graphic designers, landscape architects, photographers, writers, and editors.

Where documentation is the primary mission of HAER, for IHTIA it is only a means to an end. As a unit of West Virginia University's Eberly College of Arts and Sciences, its mission goes beyond pure research and documentation to include service and teaching. Thus HAER-type documentation is completed as a step toward the preservation of important industrial structures and as an interpretive tool to enhance scholarly studies and public outreach in the history of technology. Aside from HAER documentation, IHTIA fulfills its mission by completing historical and industrial resource surveys, contextual histories, historic structure reports, historic landscape reports, historic furnishing reports, and national historic landmark and National Register of Historic Places nominations. It produces video documentation, designs brochures and exhibits, and publishes technical reports and historical monographs. IHTIA staff has helped in the stabilization and restoration of over three dozen structures, and has organized and participated in numerous conferences, seminars, and workshops. In addition, the staff has responded to nearly 500 requests for service, sharing resources and expertise in documenting, interpreting, and preserving America's industrial past with students, academic scholars, the general public, and private industry. It is feasible to talk in broad terms about the range of these projects and describe a few of the more intriguing efforts in some detail.

During its first five years, IHTIA focused mainly on the preservation and interpretation of sites in West Virginia, the Upper Ohio Valley, and the Mid-Atlantic region, but also invested a great

deal of energy in its teaching mission. In the summers of 1992 and 1994, IHTIA taught its first field schools in industrial archeology and edited the text book, *Industrial Archeology Techniques* (1995, Krieger Publishing). IHTIA hired an Associate Director for Education, Michal McMahon, to teach courses in the history of technology at WVU, Records Manager Larry Sypolt began teaching a course on archival management, and several staff historians collaborated with Professor Barbara Howe to teach segments in public history courses. Today, WVU offers courses in the history of science, the history of technology, industrial archeology, public history, historic preservation, archival management, historic site interpretation, environmental history, and a variety of related disciplines.

Because of the many inquiries about its work, the Institute makes copies of some project reports available to the public through its Technical Report Series. This series includes landscape documentation and restoration studies, historic structure reports and a historic furnishing report, a structural analysis of the patented Bollman suspension truss, oral histories of early-20th-century oil and gas workers, an archeological and historical survey of a historic turnpike, and a historical context for coal mining in northern West Virginia. In 1992, IHTIA established a monograph series with *The Alexandria Canal, Its History and Preservation* and followed two years later with *Cement Mills Along the Potomac*.

Among the most notable of IHTIA's early outreach efforts was the Society for Industrial Archaeology's (SIA) annual conference and tour, held in 1993, in Pittsburgh, Pennsylvania. In partnership with HAER and the SIA Three Rivers Chapter, IHTIA helped organize the conference and paper sessions. Dr. Kemp and his associates at WVU had organized the SIA annual meeting in Wheeling in 1988, along with the accompanying *Wheeling Port of Entry, An Industrial Guide*. This was followed in 1992 by the extensive industrial survey of Fairmont, West Virginia, which included documentation of over 70 industrial sites in this historic coal mining, railroading, and manufacturing center, resulting in the publication, *Industrial Fairmont, a Historical Guide*.

In 1995, the Hay Creek Valley Historical Association, a non-profit group of over 1,000 enthusiasts, hired IHTIA to help them restore the 1798 Joanna Furnace complex. After com-



The Vance Farmhouse (c. 1854) at West Virginia University, headquarters for the Institute for the History of Technology and Industrial Archaeology. Photo by John Nicely, IHTIA.

pleting field measurements, IHTIA produced a series of five drawings documenting the extant remains of the iron furnace and related structures. In 1996-97, the contract was renewed and IHTIA produced two restoration drawings that used supplemental measurements derived using PhotoCAD analysis of historic photographs. In the third phase, 1997-98, IHTIA produced two isometric drawings: an interpretive cut-away of the entire furnace complex showing the ironmaking process, and a detailed restoration drawing for the blower-engine house, the boiler, and hot blast stove. With the drive and enthusiasm of the dedicated Hay Creek Valley group, the next decade is sure to witness the full restoration of this historic site in the hills of Berks County, Pennsylvania, 50 miles west of Philadelphia.

IHTIA continued its work documenting, interpreting, and preserving historic transportation works with the 1997 publication of Michael Caplinger's *Bridges Over Time: A Technological Context for the Baltimore and Ohio Main Stem at Harpers Ferry, West Virginia*, that contains many historic photographs and drawings of the structures and sites around this crossing. It was followed in 1999 with Thomas Hahn and Emory Kemp's *Canal Terminology of the United States*. This heavily illustrated monograph, the first to explore the historic jargon of canal boatmen in the United States, was sponsored by HAER and the American Canal Society.

Nineteen ninety-nine was a busy year for IHTIA in organizing conferences and workshops. The 150th Anniversary of the Wheeling Suspension Bridge, the world's first single-span of over 1,000 feet, was celebrated with its restoration and an International Historic Bridges Conference attended by nearly 200 historians, engineers, and preservationists. The complete proceedings were

published prior to the conference through a new relationship with West Virginia University Press. Senior Project Coordinator Lee Maddex organized the 1999 Ironmasters Conference at WVU. In addition to the many papers presented, the conference included a hot metal tour of Wheeling-Pittsburgh Steel's Steubenville South Works, and the LaBelle Cut Nail Plant, which still uses 19th-century machinery. Anachronistic industries like LaBelle were the focus of a workshop in Shepherdstown, West Virginia. IHTIA will expand a survey of anachronistic industries over the next two years and is placing the first year results on its web page. HAER provided seed money for the two conferences and underwrote the workshop and survey.

A decade of research has put IHTIA in a position to share its expertise on industrial works and trends on a national level. Much research over the past five years in particular has been completed with this broader focus in mind. In 2000, the Institute will complete the research to produce historical contexts for two of America's greatest industries: Michael Workman's study on coal and Maddex's on iron and steel. In addition, a recently completed set of measured drawings exploring coal mining techniques in both the anthracite and bituminous fields should prove valuable to students of the U.S. coal industry. Larry Sypolt's *Preservation Resource Guide for Public Works Professionals* was financed and published in 1998 by the American Public Works Association and the National Center for Preservation Technology and Training (NCPTT). His *Civilian Conservation Corps: A Selectively Annotated Bibliography* will be published in 2000 by Greenwood Publishing Group, and his historical context on CCC construction is also nearing completion.

IHTIA's work on the historic oil industry began with a local project, and like so many others, has expanded broadly. This started with a study of the endless wire system of the Volcano field, near Parkersburg, West Virginia. Oral history interviews were recorded in 1993 in northwestern Pennsylvania where the U.S. oil industry began. Four years later, IHTIA returned to the region with HAER to complete a series of 14 measured drawings, focused mainly on the old power houses that remain in Allegheny National Forest. In 1999, IHTIA traveled to Ontario, Canada with a field team and is currently completing a series of seven drawings that explain and

interpret the anachronistic jerker-line system of pumping oil that operates on the Charles Fairbank property in much the same manner as it did in the 1880s and using much of the original equipment. IHTIA is organizing an industrial archeology field school in Ontario for the summer of 2001 to further document and interpret this surviving historic industry, and it has also begun writing a historical context for 19th-century oil pumping in North America to share this work with a wider audience.

The Institute continues documenting and interpreting 19th-century turnpikes and roads with work on the Midland Trail and the National Road. In 2000, IHTIA will complete its fourth project for the Midland Trail Association, producing several short interpretive videos in collaboration with the Walkabout Company. These vignettes, interpreting the intrinsic qualities of this southern West Virginia highway, will be shown in a series of roadside kiosks. Next in the IHTIA Monograph Series is the long-awaited analysis by former IHTIA Associate Director Billy Joe Peyton of the construction of the original stretch of National Road, from Cumberland, Maryland, to Wheeling, West Virginia. This work will feature photos and measured drawings completed by IHTIA along with images of artifacts, including early photos, drawings, and written documents discovered during the Institute's historical resource survey.

The National Road entered the Ohio River Valley by crossing the mountains that make up the watershed of the upper Potomac Valley. Later

in the century, the Baltimore and Ohio Railroad and the Chesapeake and Ohio Canal were built along similar routes in the Potomac corridor, competing for commercial dominance in central Appalachia. These three routes served as the conduit of settlement and directly influenced the economic development of the region. As we enter the 21st century, they are being rediscovered as a means of economic development through the public's growing enthusiasm for heritage tourism. Much of IHTIA's decade of research on the transportation corridor will be disseminated on the Internet.

The historic structures and sites recorded by HABS/HAER and IHTIA, those on the National Register of Historic Places, and those designated as national historic landmarks will be entered into a GIS database along with significant engineering works. The data will be displayed via an Internet web page that is being produced in cooperation with the Resource Management Division of the WVU College of Agriculture, Forestry, and Consumer Sciences. It will serve as a tool for heritage tourists and a model for developing similar tools for other regions and routes. This comes on the heels of another collaborative effort among branches of WVU. IHTIA has worked for years with the WVU College of Engineering and its Constructed Facilities Center developing new non-destructive testing methods for historic structures and the use of Fiber-Reinforced Polymers (FRPs) in the rehabilitation of historic structures. FRP rods were seamlessly integrated into the historic beams of the Barrackville Covered Bridge during its recent restoration, and FRP decks have been approved for two pending projects.

As IHTIA enters its second decade it will continue to seek new ways to fulfill its mission. It will continue its relationship with HAER, using the traditional methods of industrial archeology and preservation, exploring new technologies, cooperating with other branches of the National Park Service, other units of WVU, and with the Library of Congress. It will continue to seek new partnerships and contracts with other agencies, public and private, that are working toward similar goals.

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*The 1904
Thurmond Depot
of the
Chesapeake and
Ohio Railroad in
the New River
Gorge of West
Virginia. HAER
documented the
site in 1988.
IHTIA followed
with historic
structures and
furnishings
reports in 1992.
Photo by Robert
J. Hughes, 1990.*

