



# SOCIETY FOR INDUSTRIAL ARCHEOLOGY

## NEWSLETTER

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### LITTLE-KNOWN WATT STEAM ENGINE IN AMERICA

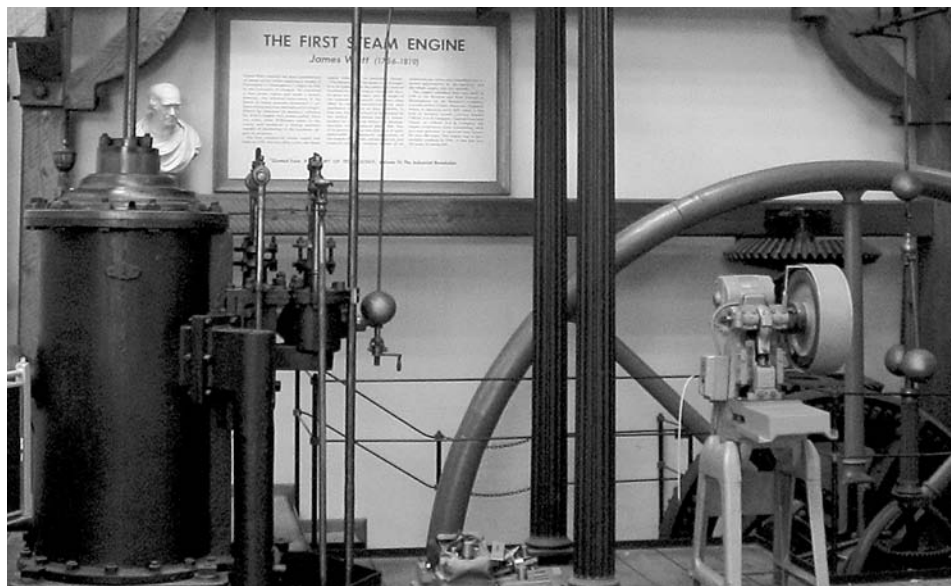
*In Winter 2003, the SIAN ran a query from the Somerset (U.K.) Industrial Archaeological Society seeking information on a Watt rotative beam engine that was believed to have been shipped to America after WWII. R. Damian Nance [SIA] recognized the engine as one displayed in the headquarters of the DoALL Co. in Des Plaines, IL. He has since done exhaustive research on the engine and submits the following report.*

**T**he Soho Works of Matthew Boulton and James Watt in Birmingham, England, played such a pivotal role in the course of the Industrial Revolution that Henry Ford, in connection with his interest in invention, had two of their innovative steam beam engines (built in 1796 and 1811) shipped to his museum in Dearborn, MI, following a visit to Britain in 1929. A third Watt engine in possession of the Science Museum in London (the 1788 Lap Engine), he considered of such historical importance that he commissioned a full-scale replica. All three of these engines are now prominently displayed at the Ford Museum.

Henry Ford, however, was not the only American entrepreneur whose interest in innovation led him to have a historic Watt engine shipped to this country. In 1957, Leighton A. Wilkie, founder of the DoALL Co. in Des Plaines, IL (just west of Chicago), purchased a rotative beam engine from the Holyrood (lace) Mill of Gifford, Fox & Co., in Chard, Somerset, U.K. Like Ford, Wilkie was interested in the role of industrial enterprise in American prosperity. To illustrate the importance of innovation in machine tools that he felt his company exemplified, he established a “Hall of Progress” at the company headquarters in 1958-59. The centerpiece of this now-dismantled museum was a giant sunburst, the rays of which symbolized “the 10 broad mainstreams of human activity that, together, have created the modern age of abundance.”

To highlight the importance of metal-cutting machinery in this scheme, Wilkie chose to flank the Hall’s sunburst on the one side with a full-scale replica of John Wilkinson’s cylinder-boring machine of 1775 and on the other with a Watt steam engine, power plant of the Industrial

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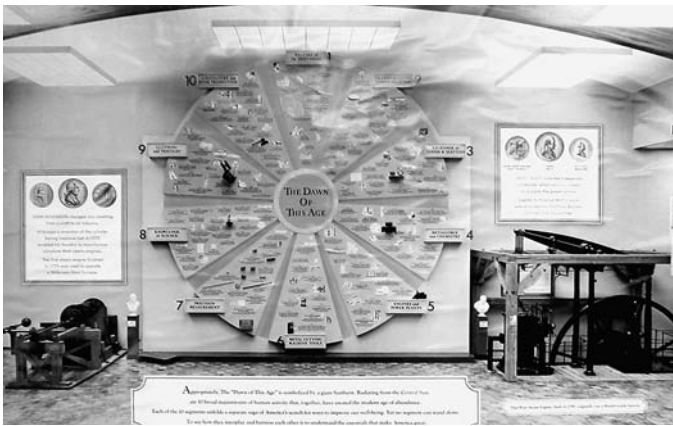


R. Damian Nance

*Gifford, Fox and Co.'s engine at the DoALL Company in 2003.*

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Wilkie's "Hall of Progress" at the DoALL headquarters (c. 1958), showing sunburst exhibit flanked by the Watt engine and a replica of Wilkinson's cylinder-boring machine of 1775.

Revolution, the cylinder for which was made possible by Wilkinson's machine.

In the absence of an available original, Wilkie had the Wilkinson machine built in-house by DoALL's Contour Saw Division in consultation with the Science Museum in London. For the Watt engine, however, he elected to pur-

chase an original. It is unclear how Wilkie first became aware of the Watt engine at Gifford, Fox & Co., of Chard, Somerset, England, or the fact that it was on the market\*, but until last year, when his museum was dismantled, the engine was prominently displayed at the DoALL headquarters. The engine was reportedly set up to be operated on steam from the boiler used to heat the building and, until its dismantling, was still operational on compressed air. The engine was displayed along with an extensive collection of machine tools, leading up to the company's production of band saws. Wilkie, not to be left out of the classic march-of-progress story, was the inventor and manufacturer of the metal-cutting band saw, claimed by him to be the only modern machine tool.

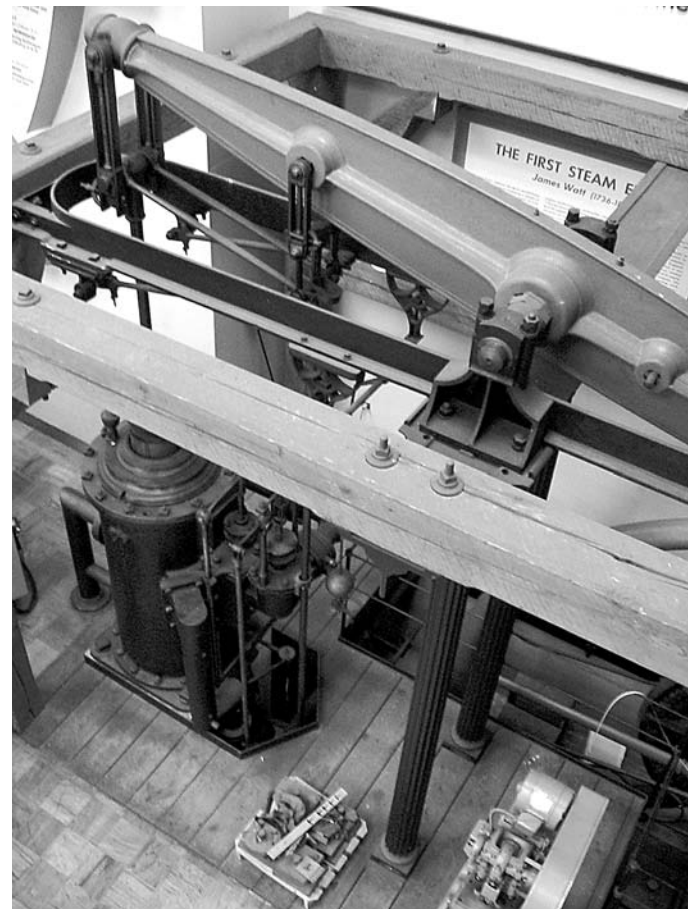
**Holyrood Mill.** Information sent to Wilkie by Gifford, Fox & Co. at the time of the engine's purchase describes the engine as a 60 hp steam engine "built between the years 1797 and 1800 at the Boulton & Watt Factory at Birmingham, which is now the Royal Mint" (i.e., the Soho Works). The engine is further described as having been purchased in Frome, Somerset, and brought to Chard in 1827, where it was assembled in what was to become the Holyrood Mill. The engine's governor is said to have been added in 1857 and one of the valves is said to be stamped [with the date,] 1797. However, the firm pointed out that "this might

The *SIA Newsletter* is published quarterly by the Society for Industrial Archeology. It is sent to SIA members, who also receive the Society's journal, *IA*, published biannually. The SIA through its publications, conferences, tours, and projects encourages the study, interpretation, and preservation of historically significant industrial sites, structures, artifacts, and technology. By providing a forum for the discussion and exchange of information, the Society advances an awareness and appreciation of the value of preserving our industrial heritage. Annual membership: individual \$35; couple \$40; full-time student \$20; institutional \$50; contributing \$75; sustaining \$125; corporate \$500. For members outside of North America, add \$10 surface-mailing fee. Send check or money order payable in U.S. funds to the Society for Industrial Archeology to SIA-HQ, Dept. of Social Sciences, Michigan Technological University, 1400 Townsend Drive, Houghton, MI 49931-1295; (906) 487-1889; e-mail: [SIA@mtu.edu](mailto:SIA@mtu.edu); Website: [www.sia-web.org](http://www.sia-web.org).

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The *SIA Newsletter* welcomes material and correspondence from members, especially in the form of copy already digested and written! The usefulness and timeliness of the newsletter depends on you, the reader, as an important source of information and opinion.

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Detail of indoor end of Watt engine's beam, parallel motion, and entablature (2003).

R. Damian Nance



have been used in a previous engine and does not necessarily mean that the machine itself was made entirely in that year." The engine is also described as mechanically sound and last worked in 1945. It was still in place when it was purchased by the Wilkie Foundation in 1957.

It is thanks to the late George Watkins (the well-known steam-engine historian), who visited the engine in 1936 and whose photographs are held by the National Monuments Record (NMR) Centre in Swindon, U.K., that details of the engine's arrangement at the Holyrood Mill are on record. On the NMR's record card (WAT36), it is described as "very lightly built and undoubtedly one of the oldest mill engines in the West" (of Britain). Powered by two Lancashire boilers, it drove both storied and single-floor lace mills until 1934, when it was replaced by a Petter oil engine and generators to motors. The claim that the engine was last used in 1945 suggests it continued to serve on stand-by. Watkins lists the maker and date of the engine as unknown, describing it only as very old ("believed pre-1840") and unaltered.

**Age and Origin of the Watt Engine.** Although DoALL's exhibit claimed the engine to have been "built in 1799 at the Boulton & Watt factory in Birmingham, England," little is actually known of the engine's age and manufacturer. In a letter dated Nov. 27, 1957, W.G. Brockett, director of Gifford, Fox & Co. certified that the engine was "certainly over 100 years old," and that the "first mention we have of the engine are [sic] between the years 1797 and 1800 but we have no authenticated records of anything before this." Similarly, in a letter to Wilkie dated Apr. 10, 1959, M. E. Hlava of DoALL, who had researched the engine's date of manufacture, stated, "Frankly, I don't know the origin of the

1799 date we are using. The only source I know of is the material we received from Gifford, Fox & Co., and they said sometime between 1797 and 1800."

Gifford, Fox & Co. did provide, however, one tantalizing clue to the engine's origins. They stated that the engine had not been acquired new, but rather had been obtained secondhand from the Sheppard Co. of Frome, Somerset, in 1827. Following the Sheppard Co. lead, Tim Procter, senior project archivist of the Soho collection at the Birmingham City Archives, suggests that even they were unlikely to have been the engine's original purchaser. The Sheppard Co. name does not appear in Boulton & Watt's Engine Order Books between 1797 and 1827, nor does it appear in a volume called the "List of Engines made at Soho." Nevertheless, Boulton & Watt's letter book for 1813 to 1815 contains two letters to Messrs. H. G. & W. Sheppard of Frome, dated Nov. 1814. The original letters from the Sheppards are now missing, but Boulton & Watt's first letter of reply gives general information about their engines and mentions a comparison with those of another unspecified maker at Meux Reid's brewery in London, which the Sheppards had obviously referred to in their original enquiry. The second letter refuses to enter into a tendering process for the Sheppards' order, saying that if Boulton & Watt were to do that, the business would almost certainly not come their way. The Boulton & Watt collection contains no further letters to the Sheppards between 1814 and 1827, nor is there any reference to Gifford, Fox & Co., and there are no drawings of any engines for either concern.

From the tenor of Boulton & Watt's correspondence of Nov. 1814, price was obviously important to the Sheppards, so it can be speculated that they bought a secondhand

*(continued on page 21)*

## Proposed SIA Membership Dues Increase

Under the SIA by-laws, the Board sets the dues for most classes of membership. From time to time, most recently about 14 years ago, the Board raises membership dues so that they keep pace with the costs of providing the benefits of membership. Only the membership of the Society, however, can authorize an increase in annual dues for regular membership.

Operating costs for the Society, including printing, postage and office support, have increased with time even as the regular dues have not. In the past two years, the costs for running the Society have outdistanced the income from dues, contributions, and investments, and the SIA's annual operating budget has been balanced only by tapping into its financial reserves.

While the reserves are adequate to continue deficit spending for the immediate future, prudent financial planning prescribes that we return to balanced annual budgets starting in 2007. After a line-by-line review of the budget, the Board believes an increase in the regular membership dues is indicated at this time. The Board has

proposed the following increases: Regular members from \$35 to \$50; Joint members from \$40 to \$55; Contributing members from \$75 to \$100, and Sustaining members from \$125 to \$150. Other categories would not change. For a regular member, this amounts to an increase of \$1.25 per month.

The Board believes the proposed dues increase and some cost-saving measures will allow it to balance the annual budget for 2007 and for several years beyond. The Board will also be addressing ways to increase our investment income and will continue to institute cost-saving measures that are consistent with the mission of the Society and benefits to its membership.

Under the by-laws, the members must vote on the proposed increase prior to Dec. 1, 2006. Official ballots will be sent out to members by Oct. 1, 2006. Please vote and mail your ballot to SIA Headquarters promptly.

*Bob Stewart  
President*

## IA in St. Louis

# Review of the 2006 SIA Annual Conference

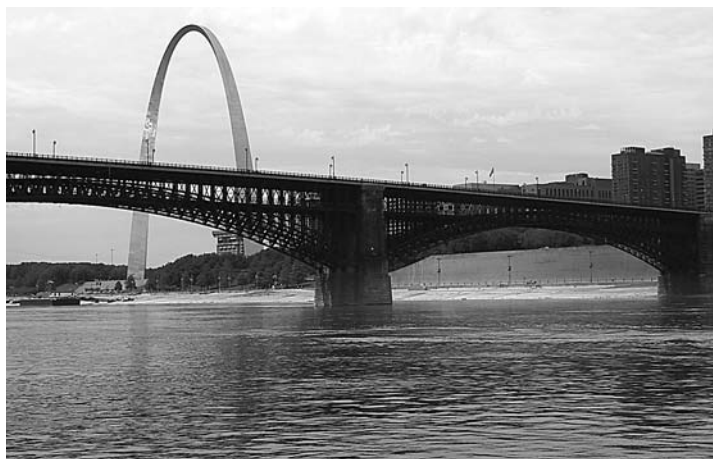
Over 190 SIA members converged on the Gateway City, June 1 to 4, for the 35th Annual Conference. It was the Society's first visit to St. Louis and those who attended were treated to the city's distinguished industrial heritage, including breweries, bridges, steelworks, mines (lead), and refineries (zinc and lead). The conference headquarters appropriately was the Hyatt Regency at the magnificent **Union Station** (NHL), built by the St. Louis Terminal RR in 1894 and a highly successful story of preservation through adaptive re-use as a swank hotel and shops.

The conference kicked off with a reception at the **Missouri History Museum** in Forest Park, on the grounds of the 1904 World's Fair. Robert Archibald, president of the Missouri Historical Society, one of the conference's co-sponsors, gave a presentation on St. Louis's heritage. The other conference co-sponsor was the Landmarks Assn. of St. Louis. And AMEC made a generous donation toward our paper session expenses. Thanks!

This year's tour schedule followed the pattern of past years with three early bird tours on Thursday; a selection of four process tours on Friday; and paper sessions and the annual business meeting on Saturday followed by a guided tour of the **Eads Bridge** (1869-74) and a banquet at the **Morgan St. Brewery** in the shadow of the bridge. Sunday wrapped up with a morning river cruise and an afternoon architectural walking tour led by guides from the Landmarks Assn. The SIAN sent out a call for volunteer correspondents to provide reports and photos, which have been received for the following tours and activities.

### Making Music—Early Bird Tour, June 1

This tour filled quickly with 27 lucky attendees visiting the **Fabulous Fox Theatre** and hearing a performance by Stan Kann on the smaller of the theatre's two organs. The larger one was not available due to unloading of sets for an upcoming performance of *Phantom of the Opera*. From



The Annual Conference's brunch cruise offered fabulous views of the Eads Bridge (1869-74) and the Gateway Arch.



Beer storage and lagering cavern, Lemp Brewery

Bob Stewart

there, the group traveled to **Wicks Organ Co.** in Highland, IL, for a tour of the process of building one of the musical behemoths. After that, a more heavenly installation at the **Christ Church Cathedral** received the group's attention. The church has a 1965 Aeolian-Skinner organ, built by a Boston firm, that is the fourth in a line of organs going back to 1840—*Mary Habstritt*

### Breweries of St. Louis—Early Bird Tour, June 1

Susan Appel [SIA], professor of art history at the Univ. of Illinois Champaign-Urbana, led the sold-out tour of St. Louis breweries past and present, beginning with a stop at the privately owned **Schlafly Bottleworks** in suburban Maplewood. St. Louis's second-largest brewer (there are only two), Schlafly (President Tom Schlafly is a nephew of Phyllis) began brewing draft beer in 1991. On April 7, 2003, marking the 70th anniversary of the repeal of Prohibition, the microbrewer opened its own bottleworks in a former Kroger supermarket. With a 2005 production of 15,000 barrels, Schlafly today produces more than 30 styles of hand-crafted beers annually, and its products reach a market within a radius of 230 miles. Following a tour of the brewhouse, we adjourned to the tasting room, gratefully sampling the Pale Ale (the largest seller), Hefeweizen (wheat beer), Pilsner, and other brews.

St. Louis once had several dozen large breweries, most located on the city's south side, home to a large German population and the site of an extensive network of natural caves that could be conveniently used for beer storage and lagering. (German-style lager requires beer to "rest" for a period of time at cool temperatures.) Following a drive-by of the former site of the infamous Pruitt-Igoe public housing complex (completed in 1955 and imploded in 1973), we visited the former **Columbia Brewery** (1892), designed by E. Jungenfeld & Co. and listed in the National Register of Historic Places as part of the Clemens House/Columbia

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# MINUTES OF THE 2006 ANNUAL BUSINESS MEETING

## St. Louis—June 3, 2006

President Christopher Andreae called the meeting to order in the Grand Ballroom of the Hyatt Union Station.

**Secretary's Report:** In the absence of Secretary Richard Anderson, James Bouchard announced that the minutes of the 2005 Annual Meeting had been published in the *SIAN* (Summer 2005) and asked if there were any additions or corrections. There being none, the Secretary's report was accepted by motion and unanimous vote.

**Treasurer's Report:** Treasurer Nanci Batchelor reported that the SIA is classified as tax-exempt under the IRS Code 501(c)3 as an educational organization. The SIA files a Form 990 tax return yearly. It maintains books and records on a cash basis and a calendar year. The report that follows is an accounting of the year that ended Dec. 31, 2005.

The SIA began 2005 with a total fund balance of \$251,962. Cash receipts for the year totaled \$88,924. The majority of our annual income comes from the various membership dues categories. In 2005 the total dues received were \$64,995. The balance of \$23,929 was comprised of interest income (\$2,496), publication sales (\$1,204), donations to our preservation grants program (\$11,720), and finally contributions, both general and restricted (\$2,951). Total expenses for the year were \$108,753. The production costs of our major publications combined for a total of \$41,317. The balance of \$67,436 was spent on a combination of labor (\$35,699), postage (\$3,754), insurance and legal fees (\$1,249), prizes and awards (\$1,300), preservation grants program (\$12,567), and a few miscellaneous items. The SIA closed 2005 with expenses exceeding revenues by \$19,829 and a total fund balance of \$236,955, of which \$25,888 is in restricted funds and \$16,634 is reserved for preservation grants. To date in 2006, the SIA has had a total of \$30,010 in cash receipts and has expended \$53,808. The treasurer's report was passed by motion and unanimous vote.

**Business Cards:** Bill McNiece directed the members' attention to the SIA business cards, which had been placed at every table setting in the hall. The cards, which are embossed with the SIA's logo and address, are for any mem-

ber to present to prospective members or interested parties. McNiece advised, "Never leave home without one!" More are available on request to headquarters.

**Board Report:** President Andreae announced that Mary Habstritt will leave her position as SIA Events Coordinator at the end of August. He thanked her, and she was awarded with a round of applause. Andreae commented that Mary's services had allowed the SIA to hold its events in cities that did not have the same strong volunteer base that we had relied on in the past. Members are requested to make suggestions for future conference and tour locations.

The Board has voted to increase membership dues. The dues now only cover about two-thirds of operating costs, and there has not been an increase since 1993. The Board proposes an increase of \$15/yr. for most membership categories. By-laws require advance notice and a vote of the general membership before a dues increase can go into effect.

President Andreae thanked the departing members of the Board for their service. Vance Packard is leaving as Past President after nine years on the Board. Lynn Rakos has done a remarkable job as the chair of two committees (Grants and Local Chapters). James Bouchard also rotates off the Board this year.

**Student Scholarships:** President Andreae acknowledged four students who received grants to attend this year's conference: Elizabeth Cahill, April Caruso, Liz Norris, and Efstathios Pappas. The student scholarship fund supports the next generation of SIA members.

**Preservation Program:** The grants program is in its third year. The committee received 13 proposals for 2006 and will make grants totaling \$12,000 to five of the applicants. Two previous grants recipients have completed their projects and submitted reports; three others are in progress, and several others are starting. These grants are funded out of a restricted fund, and they will continue even when that reserve is exhausted.

**Local Chapters:** As is the tradition at annual meetings, President Andreae called on members of each chapter to stand

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Perry Green

2006 SIA Student Scholarship Recipients. (L to R) Efstathios Pappas, Elizabeth Cahill, April Caruso, and Elizabeth Norris. Student scholars receive a stipend to offset some of the costs of attending the Annual Conference. Members are encouraged to make a voluntary contribution to the student scholarship fund. Help support the next generation's involvement with the SIA. Look for the check-off sent with annual dues notices.



Brewery Historic District. In 1987, after standing vacant for more than a decade, the brewery was adaptively reused for mixed-income housing. The Brewery Apartments, which includes a group of adjacent brick row houses built to house brewery workers, has since undergone a second renovation with the aid of historic preservation tax credits.

Other sites of interest (viewed only through the bus windows) included the former **Consumers (later Falstaff) Brewery** of 1896, now abandoned; the sites of half a dozen other breweries since demolished; and several grand residences once home to the city's leading brewmeisters, who, Susan explained, comprised a close and cordial fraternity.

Johann Adam Lemp (1793-1862) was the first brewer to introduce lager and the first to use caves for lagering. By 1874, Lemp was the city's largest brewer, out-distancing rival E. Anheuser & Co. At the former **Lemp Brewery** (closed in 1922, and today occupied by a variety of small businesses), General Manager Charles Henderson led the group underground to inspect a portion of Lemp's extensive network of caves and caverns, used to store beer and lager before the advent of artificial refrigeration in the late 19th century. (Coincidentally, on the day of our visit, the *St. Louis Post-Dispatch* carried a fashion article with photographs of models posed inside the Lemp caverns.)

Our last stop was St. Louis's largest brewer, **Anheuser-Busch**. The company traces its roots to the Bavarian Brewery, established by George Schneider in 1852. After several changes in ownership, Eberhard Anheuser (1805-80) acquired the former Bavarian Brewery in 1860. E. Anheuser & Co. was the first brewer to adopt pasteurization in the early 1870s; it adopted its "A"-and-eagle trademark about the same time. In 1880, Adolphus Busch (1839-1913), who had married into the Anheuser family and joined the firm in 1864, succeeded his father-in-law as president. Anheuser-Busch began construction of the present

Bob Stewart



*Terra-cotta detail, Bevo Building, Anheuser-Busch. "Bevo the Fox" was a character used by Anheuser-Busch in advertising a non-alcohol beverage that helped sustain the company during Prohibition.*

St. Louis brewhouse in 1891; it acquired the "Budweiser" name the same year. The brewer broke the million-barrel mark in 1901. According to our guides, Anheuser-Busch's five U.S. breweries last year produced 122 million barrels (40 percent of that in cans, 50 percent in bottles, and 10 percent draft); today A-B enjoys a domestic market share of 48 percent. The company takes justifiable pride in its rich history and architecturally stunning campus, a designated National Historic Landmark and, like the Columbia Brewery, the work of E. Jungfeld & Co. We toured the 1888 brick stable housing the famous Clydesdales; one of three beechwood aging cellars used to naturally carbonate beer; the 1891 brew house, which uses a staggering 9 million gallons of water each day; and the 1922 Bevo Building, erected to produce the eponymous, non-alcohol beverage (manufactured until 1929) and now housing a beer packaging plant. In the Bevo Building we inspected the canning line and studied the charming terra-cotta reliefs in the lobby: smiling, stein-sipping foxes (the Bevo logo). We

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Jon Bergenthal



*Painting at the village hall in Saugert—four square miles of industry.*

## Pauline Dejardins — 2006 Vogel Prize Winner

Each year the SIA recognizes outstanding scholarship within the field of industrial archeology with its Robert M. Vogel Prize. The award honors the author of the best article to appear in the Society's journal, *IA*, within the past three years. Articles under consideration have a clearly stated thesis, a well-constructed narrative, and an understandable conclusion. The analysis of material culture plays an important role in articles considered for the prize, as does the use of high-quality illustrations. The prize consists of a cash award and a wooden foundry pattern and plaque engraved with the recipient's name.

At the 2006 Annual Business Meeting in St. Louis, this year's award was presented by Rick Greenwood, Vogel Prize Committee Chair, to Pauline Dejardins for her article *Navigation and Waterpower: Adaptation and Technology on Canadian Canals*, published in *IA*, Vol. 29, No. 1 (2003), pp. 21-48.

This year's winner emerged from the 2003 conference in Montreal, which produced the theme issue, *Waterpower: The Lachine Canal & The Industrial Development of Montreal*. From this well-balanced collection of articles, the prize committee found that one stood out for its organization and its scholarly use of documentary, graphic, and material evidence.

In her article, Pauline Dejardins has produced a multifaceted essay that provides a comprehensive look at the development of industrial waterpower on the navigation canals of the St. Lawrence River and Niagara Escarpment. Her study documents the extent of that development, which has been little studied beyond the Lachine Canal, and it illuminates the differences in character of the indus-



Perry Green

Pauline Dejardins (center), 2006 Vogel Prize winner, with Robert M. Vogel (left) and SIA President Chris Andreae (right).

trial effort on the various canals. She also tackles the outstanding questions of power-generating equipment and its evolution, skillfully utilizing data sources that are alternately rich in detail and obviously contradictory or deficient. The analysis that she has produced is one that makes a strong contribution to the history of waterpower, not just in Canada, but in North America and the world.

Rick Greenwood

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ended our visit by sampling a full array of A-B products in the spacious tasting room, returning to our hotel feeling happier than Bevo foxes.—Carol Poh Miller

### Union Station—Early Bird Tour, June 1

Two separate tours were offered to those wishing to explore the magnificent **St. Louis Union Station**. Tour guides from the station's marketing department were supplemented by a representative of the Terminal Railway Association of St. Louis Historical and Technical Society for an in-depth introduction.—Mary Habstritt

### Four Square Miles of Industry—Tour, June 2

The four-square-miles of industry is the town of Sauget next to East St. Louis, IL. The mayor of Sauget, Rich Sauget, the great-grandson of one of the founders, greeted the SIA at the Village Hall. He then led a driving tour while speaking about the old and the new industries, several of which the group later toured. The village was originally incorporated in the early 20th century under the name of Monsanto, after the chemical company, then renamed Sauget in the 1960s. The ability to handle industrial wastewater is the reason the village still exists; the town first built a sewer for Monsanto, and today the municipally owned “P

Chem” wastewater treatment plant is the town's primary asset. The village has only 250 residents; otherwise it's all industrial property.

Our windshield tour provided glimpses of the principal industries in Sauget, including Commercial Acid Co., founded in 1907 to make sulfuric, muriatic, and nitric acids, pur-

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Perry Green

At the St. Louis Museum of Transportation, Lance Metz [SIA] discusses some of the interesting features of the Aerotrains (1955), one of two experimental 'futuristic' locomotives built by GM. The lightweight, low-center-of-gravity concept trains rode poorly and were noisy.



chased by Monsanto in 1917, and spun off as Solutia in 1977; Cerro Flow Products, manufacturer of copper tubing and pipes since the 1920s; Mobil Oil's refinery, established in the 1970s; Midwest Rubber Reclaiming, operated from 1928 to 1997; a former railroad-tie creosoting plant that is now an EPA site to be redeveloped as a business park; a power plant in operation since 1923 burning high-sulphur Illinois coal; Universal Air Filter; Afton Fabricating and Welding; Western Non-Wovens, a maker of seat cushions; Holten Meat, which produces frozen hamburger patties; Helsher Emergency Services, which handles train derailments; a HAZMAT facility; and the St. Louis Downtown Airport, home to MidCoast Aviation, which rehabilitates and customizes airplanes.

The SIA's first site tour in Sauget was to **Big River Zinc**, operating since the 1920s. Unfortunately for us, the refinery is currently between owners and operations have temporarily ceased. Unfortunately for them, metal prices are at an all-time high, due to demand from China, so Big River Zinc is unable to get long-term contracts on ore from the remaining mines. Too small to compete with foreign plants, Big River will need to renovate and seek new products. On June 5 it was announced that ZincOx Resources would acquire Big River Zinc and convert it to a zinc recycling operation, with production resuming at the end of 2007.

Zinc ores arrive via barge, are then ground up, and next passed through roasters that use natural gas to burn off the unwanted sulphur. The gas by-product is turned into industrial-grade sulphuric acid, and later used to leach zinc from the remaining ore. The purified metal is run through the cell room, where a DC current is introduced to plate the zinc onto aluminum cathodes. An induction furnace heats

the zinc, alloyed with other metals if desired, and produces castings of 45 to 4,500 lbs. Zinc may also be left in powder form for use in batteries.

**Afton Chemical** was built in 1942 on property owned by Monsanto for wartime production of a clothing impregnator and ointment that would have protected troops against chemical warfare. In 1947 Monsanto converted the plant to the production of peace-time products, including oil additives for petroleum products, detergents, dispersants for motor oils, anti-wear agents, viscosity improvers, and hydraulic fluids. Interestingly, production now occurs on outdoor cement pads, rather than contained within buildings as in former years.

At this point, the SIA's tour left Sauget for **Cahokia Mounds**, site of a Mississippian mound-building culture. Cahokia Mounds is considered by many the greatest pre-historic site north of Mexico and is a UNESCO World Heritage site. At peak development (900-1300 AD), Cahokia city occupied six square miles with a population estimated at 20,000. Surplus agricultural production fueled a trading network extending from the Great Lakes to the Gulf of Mexico. Approximately 15 million cu. ft. of dirt were moved to make the ceremonial mounds. The State of Illinois preserves the remaining 70-80 mounds; originally there were about 120, but settlers and later development destroyed about a third of them.

Next, we visited the **Physical Chemical Plant (P Chem)**, which removes oil and grease from wastewater before it goes to the municipal treatment plant. The ph of the water is neutralized in a series of three basins, and metals precipitated out. P Chem uses unique rectangular clarifiers (rather than circular) with a traveling bridge. Vacuum filters de-

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Jon Bergerthal

*SIA members tour the P Chem plant in Sauget. The plant specializes in the processing of industrial wastewater and is one of the reasons that Sauget remains a popular location for industrial development.*



Perry Green

*The maintenance pit at the Metrolink shops.*



## Catalan Forge Exhibit Dedicated

La Farga Palau, a Catalan forge in Ripoll, Spain, is the site of a newly opened museum exhibit, dedicated in Apr. 2006. The Catalan forge is a distinctive style of bloomery forge, using charcoal in an open hearth to produce iron blooms from ore and charcoal, and water to power the forge hammer. The critical characteristic of the Catalan forge is an air blast generated by a *trompe*, a device that utilizes air trapped in water falling through a tube. These forges are known in Spain from the Middle Ages onward, and the town of Ripoll was a center of armament production at least by the 15th century. This particular forge was certainly operating during the 17th century. During the 19th century the forge was owned by the Palau family, who shifted production from iron to copper products, and operated until 1975. SIA members visited La Farga Palau during the 2004 Catalan Study Tour.

The forge was recognized in 1986 by the American Society for Metals (now ASM, International) by placement of a plaque declaring the forge a Historical Landmark. Later, the National Museum of Science and Technology ([www.mnactec.com](http://www.mnactec.com)) negotiated with the landowners and managed to gain both access to the site and funding for preservation. The Museum, a system of over twenty sites, recently developed some interpretive signage and made the site accessible to the public. In April, the site was dedicated in a well-attended event, and the ASM plaque was unveiled for the first time in



*Patrick Martin, SIA Executive Secretary and journal editor, attended the dedication of the La Farga Palau museum in Ripoll, Spain, in April. The 17th-c. Catalan forge is an American Society for Metals (now ASM International) historic landmark.*

many years. Patrick Martin, industrial archeologist from Michigan Technological University and the SIA Executive Secretary and journal editor, represented SIA and ASM to unveil the plaque. ■

### **MINUTES** (continued from page 5)

for recognition. All nine active chapters were represented.

**Headquarters Report:** Executive Secretary Pat Martin commended Don Durfee, the SIA's office administrator, for taking wonderful care of the Society. He advised members to check the Website as there are regular updates. A printing problem occurred with the latest membership directory, but Don discovered it, and it was corrected at no cost to us.

The next issue of the journal *IA* (v. 30, 2) is printed and bound. It will be mailed next Monday. One or maybe two more issues will be mailed this year. SIA has entered into an arrangement with the Univ. of Illinois Press to make the journal available on-line. The current issue will be the first issue on-line. Past issues will be made available working backwards chronologically from this issue. The cost to the SIA for this service is very reasonable.

**Awards:** Rick Greenwood presented the Vogel Prize for the outstanding article to appear in the last three years of the *IA Journal* to Pauline Desjardins (see article in this issue). President Andreae asked Lance Metz, last year's General Tools Award winner who was unable to attend the 2005 Annual Conference, to stand for recognition. Lance stated that the award was his favorite and a great honor. President Andreae commented that the General Tools Award would not be presented this year. Bill McNiece, chair of the committee for next year, reminded attendees that the formal

request for nomination will go out at the end of 2006. He invited members to think about potential candidates.

**Tours and Conferences:** April Caruso described some of the highlights of this year's fall tour to Youngstown, OH, Sept. 28-30.

**Elections:** Martha Meyer, chair of the Nominations Committee, thanked Jet Lowe and Cydney Millstein for their assistance as committee members. Elected President was Bob Stewart; elected Vice President was David Starbuck; elected Secretary was Richard Anderson; elected Treasurer was Nanci Batchelor; elected to the Board of Directors were Mark Finlay and Dennis Furbush, elected to the Nominations Committee was Ed Grusheski.

Bob Stewart, the incoming president, thanked the members for his election. He encouraged members to expand their interests, including SIA paper presentations and articles, to include industries from all periods of time, not just the Industrial Revolution, but backwards to antiquities and forwards to the roots of modern electronics and communications.

Upon motion and unanimous vote, the meeting was adjourned.

*Respectfully submitted (with thanks to Director James Bouchard),*  
Richard K. Anderson, Jr.  
Secretary

water the solids, which are shipped to landfills. The future of this plant is uncertain: many industries now recycle their own wastewater or use “dry” processes to lower costs. New industries moving into the area do not produce the same type of wastewater.

Our last stop was with Larry Giles, creator of the **St. Louis Building Arts Foundation**, an organization working to create a Museum of American Architecture, to be located on the St. Louis riverfront opposite the Arch. The foundation acquired the plant of the Sterling Steel Casting Co. (est. 1923), renamed St. Louis Steel Casting in 1993, and is using the site for artifact storage. Among the foundation’s collections are the salvaged pieces of a blacksmith shop, a lightning rod shop, a manual training school, and a stoneworking shop.—*Suzanne Wray*

### **Steel Yourself—Tour, June 2**

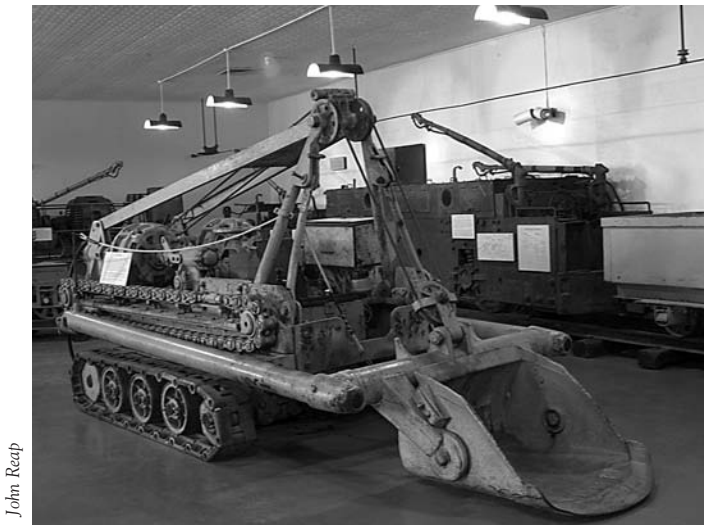
The Steel Yourself tour spent the better part of the day at **US Steel’s Granite City Works**. The massive integrated steel works has humble origins. In 1857 William and Friedrich Niedringhaus established a small tin shop in St. Louis. In 1866, they purchased rights to a patent for coating ironware with enamel, widely regarded as one of the first uses of the enameling process in the U.S. Business for the new product boomed and in 1892 the firm’s management bought 3,500 acres on the Illinois side of the Mississippi River, having outgrown the earlier St. Louis location. By this time, the firm had changed its name to National Enamel & Processing. In 1925, the company evolved into a new corporation named the Granite City Steelworks and expanded its plant to include coke furnaces, blast furnaces,

and open-hearth furnaces. National Steel purchased the works in 1971, Nippon purchased it from National Steel in 1984, and US Steel became the owner in 2003.

The Granite City Works uses mostly ore from Minnesota’s Mesabi Iron Range mixed with scrap in its two 230-ton-batch basic oxygen process furnaces. It also operates two coke batteries of 90 ovens each, two stir stations, a hot-strip rolling mill, a temper mill, and a four-stand cold-reduction mill (installed about 1949). The SIA’s tour consisted of a drive-through of the entire facility, as well as stops along the way to view the operations.

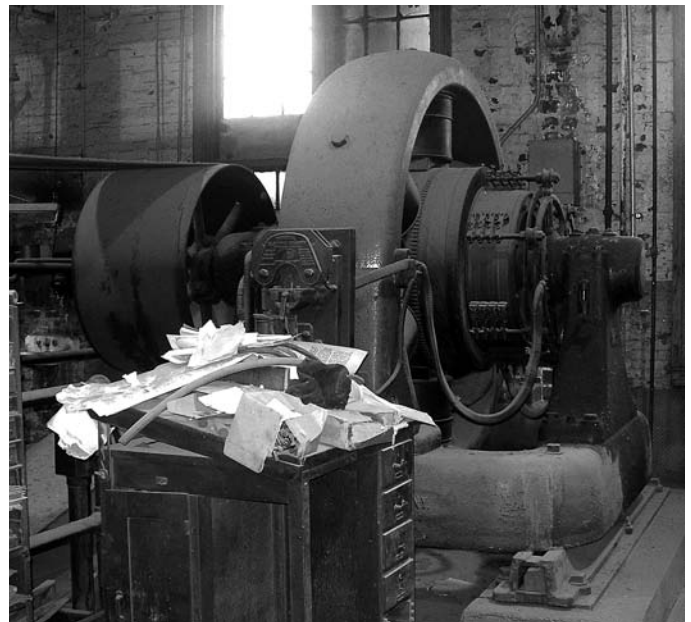
**American Steel Foundries (ASF)**, also in Granite City, was established in 1902 and today makes exclusively the larger components of the undercarriage of railroad cars, including bolsters and side frames. In the past, ASF has produced motor housings for GE’s Electromotive Division and produced armored tank components during WWII. The SIA’s tour was led by Bill Donovan, the retired plant manager, and Jack McPike, the current manager of manufacturing and engineering. The company has about 75 percent of the domestic market. In 1979, ASF made the undercarriages for 97,000 freight cars, and today makes about 67,000 annually. The SIA’s tour began in the powerhouse, where older generators and compressors remain in place, and then passed through the molding area where automated “slingers” throw the sand-clay mixture into the forms to make the molds. ASF makes about 300 bolsters and 400 side frames per day, which are shipped to car builders, its two biggest buyers being Trinity (TX) and American Railcar (WV).

The visit to ASF was followed by a driving tour with views of the National City Stockyards (est. 1873) in East St. Louis and



John Reap

*These crawler-mounted, cable-operated, electric shovels were designed by the St. Joseph Lead Co. A turntable on the chassis allowed the shovel and upper body to revolve completely within a standard-dimension 20-ft.-wide mine passage. Fifty-two were constructed between 1922 and the mid-1950s. This one is on display at the Missouri Mines State Historic Site, Federal Lead No. 3 Mine.*



Bill McNiece

*The dust-covered powerhouse at American Steel Foundries (ASF) in Granite City looked as though the workers had just walked away in 1979 when this Hamilton Corliss engine-generator was taken off line.*





*Federal Mine-Mill complex, built by the Federal Lead Co. in 1907, closed in 1972, and now a state park.*

the Mississippi River lock in Alton. The last stop of the day was St. Louis's **Ashley Street Powerhouse**, now owned by Trigen but built by Union Electric in 1906. None of the original equipment remains with most of the existing gas-fired boilers, turbine-generators, and steam lines built after 1947. The plant also supplies steam through 17 miles of pipe to 117 customers who use the piped-in steam for heat or processing.—*Bill McNiece*

### **All Mining, All the Time—Tour, June 2**

The tour departed at 7:00 a.m. on a long road trip into the **southeast Missouri lead district**. Our guide was Art Hebrank, a former mining industry geologist who now serves as site administrator of the Missouri Mines State Historic Site. Art's knowledge of his subject is encyclopedic, and as we whizzed by various sites (one was the Doe Run Co.'s 500-ft.-high Herculaneum Smelter stack, largest in the U.S. but off limits to us because it is undergoing modifications), he reviewed the mineralogy and history of Missouri's lead belt. Lead mining there dates to 1725, when Philip Francois Renault began at Old Mines. The industry had a steady run, leading U.S. production for nearly a century before ebbing in the 1970s. The so-called Viburnum Trend, where the first mine opened in 1960, is the newest and largest of the lead belt's four subdistricts. Today, the **Doe Run Co.** owns and operates all of the region's mines, mills, and smelters.

Our first stop was the **Doe Run Co.'s Buick lead recycling smelter** in Boss, opened in 1968 to smelt lead ores from the nearby Buick and Magmont Mines. Since 1991, the plant has been used to recover lead from waste storage batteries (it handled 213,700 of these in 2005) and other lead-containing waste products, such as cathode-ray tubes. It is the largest lead recycling smelter in the world. Plant manager Steve Arnold gave an excellent overview of the entire process, noting that 98 percent of all lead used in the U.S. is recycled—more than any other metal. Fully outfitted with safety gear, we then toured the entire operation: the battery storage bunker, hammer mill (where waste batteries are separated into lead carbonate, lead metal, acid, and plastic), reverberatory furnace (the plant's "work-



*SIA members enjoyed the views top deck on Sunday's Mississippi River cruise.*

horse"), primary blast furnace, rotary melter (for odd scrap), and caster. The finished product is impressive: neat stacks of 65-lb., 110-lb., and 1-ton ingots. Following the tour, the company treated us to lunch al fresco, later rounding us up for a group photo and presenting souvenirs of our visit: squeezable chunks of "lead" and miniature ingots.

From the Buick smelter we traveled on to the former **Federal Mine-Mill complex**, built by the Federal Lead Co. and purchased by the St. Joseph Lead Co. in 1923. This was the largest and most important facility of the old lead belt. Now operated as the **Missouri Mines Historic Site**, it includes the Federal Lead Co. Mill No. 3 (1907) and the St. Joseph Lead Co. Shaft No. 17, 500 ft. deep and the hub of a vast network of drifts and room-and-pillar stopes serviced by a 260-mi. underground electric railway. The mine shut down in 1972 and the property was later donated to the Missouri Division of Parks. The former powerhouse is being developed into a museum of the state's mining history. Some excellent exhibits are already in place, including a fine model of the powerhouse. To our delight, Art screened a 1950s-era educational film about lead mining before leading us on a tour through the defunct complex.

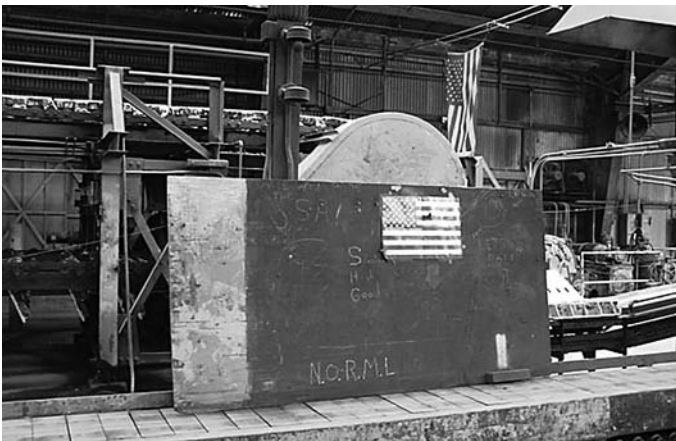
Our last stop of the day was an amalgam of industrial history and tourist kitsch: the **Bonne Terre Mine**, today operated as a tourist attraction. The St. Joseph Lead Co. was

*(continued on page 12)*



*SIA tour participants at the Doe Run Co.'s Buick lead recycling smelter.*

Jon Bergenthal



At Big River Zinc, currently idle, workers had decked out the plant with patriotic symbols and slogans. Ownership is changing from Korean to English and it will re-open in late 2007 as a zinc recycling center.



Carol Poh Miller

Bob Stewart [SIA] checks out the spent grain at the Schlafly Bottleworks brewery.

incorporated in 1864 for the purpose of developing lead mines in the Bonne Terre vicinity. It began with surface mining and in 1870 sunk the first of several shafts. Ultimately, the Bonne Terre Mine reached a depth of 370 ft., producing 34 million tons of lead ore (yielding 1.1 million tons of pig lead) before closing in the 1960s. Neither the ersatz “Western” town aboveground nor our guide’s hokey (canned) talk detracted from the genuine thrill of going underground and wandering through the dimly lit stopes of the first level, experiencing the mine’s scale, imagining the grim working conditions, and peering into the now flooded shafts (whose crystalline waters today are prowled by scuba divers). The long ride back to Union Station ended an exhausting but fascinating day.—Carol Poh Miller

### Let’s Go!—Tour, June 2

This tour began with a visit to **Hammert’s Iron Works**, a steel fabricator in business since 1932. It is now one of several plants in the Stupp Bros. family of companies, which makes steel products from pipe to bridges, and the last one in St. Louis where the company once owned several. Patriarch Bob Stupp [SIA] celebrated the company’s 150th anniversary

Carol Poh Miller



SIA members wander through the dimly lit stopes of the Bonne Terre Mine, a former lead mine, now a tourist attraction.

sary by giving a company profile at Saturday’s paper sessions.

This transportation-themed tour did not include an automobile factory, in part due to continued reduction in the American automobile industry. Ford announced that its St. Louis plant would be idle mere months before the conference. The group instead visited the maintenance facility for St. Louis’s light rail system, **MetroLink**. The popular system of mass transportation is heavily used during Cardinals’ home baseball games to avoid the parking crunch at Busch Stadium, and SIA members too made use of it with special conference passes.

After lunch at **Forest Park**, site of the 1904 World’s Fair, the tour ended with a behind-the-scenes look at the **Museum of Transportation**, thanks to the dedicated friends group. The museum collection was begun in 1944 by a band of historically minded citizens whose first purchase was the 1870s mule-drawn streetcar *Bellefontaine*. The non-profit National Museum of Transport was soon organized to preserve the growing collection, and land was purchased for what some call “one of the largest and best collections of transportation vehicles in the world.” Renowned for its rail collection, the museum also possesses early automobiles as well as an airplane or two. St. Louis County Parks took over operation in 1979 and eventually accepted the museum as a gift in 1984.—Mary Habstritt

Thanks to Michael Allen, Susan Appel, Colin Batchelor, Jon Bergenthal, Diana Bouchard, April Caruso, Sharon Clarke, Grant Day, Ann Dichter, Larry Giles, Perry Green, Art Hebrank, Nellie Lannin, William Lannin, David Meyer, Cydney Millstein, David Neubauer, Kevin Pegram, Lynn Rakos, Bob Schultz, Joe Seely, Robert Stewart, Larry Thomas, Helena Wright, Andy White, and Paul White, for their advice and help leading tours, staffing registration, and doing all those myriad little tasks that have to be done to carry off four days of activities. Special thanks to paper session co-chairs, Robert Newbery and Katy Holmer for handling the many arrangements for Saturday. ■





# SOCIETY FOR INDUSTRIAL ARCHEOLOGY

## NEWSLETTER

### PUBLICATIONS OF INTEREST

Vol. 35, No. 3

Summer 2006

COMPILED BY

Mary Habstritt, New York, NY; and Patrick Harshbarger, SIAN editor.

#### GENERAL INTEREST

- ◆ **Europa Nostra: European Cultural Heritage.** A new journal with its first issue (No. 1/2006) dedicated to a summary of the best practices of preservation at historic industrial sites in Denmark, England, and Belgium. English and French. Info: [www.europanostra.org](http://www.europanostra.org).
- ◆ Maija Karki, Visa Immonen, and Jussi-Pekka Taavitsainen. **Welding Theory with Tourism: Past and Present of Industrial Archaeology in Finland.** *IA Review*, vol. 28, 1 (2006), pp. 47-58. Discipline of IA in Finland, which is described as occasional and machine-centered. Addresses heritage tourism as a new challenge, with examples of 17th-c. ironworks, 18th-c. glassworks, and the remains of a 15th-c. bog bridge.
- ◆ Michael Nevell. **The 2005 Rolt Memorial Lecture. Industrial Archaeology or the Archaeology of the Industrial Period? Models, Methodology and the Future of Industrial Archaeology.** *IA Review*, vol. 28, 1 (2006), pp. 3-16. Outlines the development of IA in Britain over the last 50 years. Makes the case that the radical changes to the production, consumption, and urban nature of industrial society is best studied archeologically through the medium that emphasizes landscape and social change, coupled with the study of technological change.
- ◆ **Society for Industrial Archeology, New England Chapters Newsletter**, Vol. 27, 1 (2006) includes Luc Litwinionek and Cece Saunders [SIA], *The Depot Street Bridge in Beacon Falls, CT* (Parker through-truss bridge, 1935); Ed Galvin, *The Catchance Water Tower* (timber-frame water tower with hydraulic ram pump, 1906, in Topsham, ME); James L. Garvin [SIA], *The Cheshire Railroad Stone Arch Bridge* (Keene, NH, 1847); Faline Schneiderman-Fox, *The Gilbert & Bennett Manufacturing Co., Georgetown, CT* (maker of wire cloth, 1840s to 1980s). Newsletter available with membership in one of the New England Chapters. Chapter membership includes access to chapter events and tours: Northern New England (ME, NH, VT, Northeastern NY), \$10/yr. (Carolyn Weatherwax, Treasurer, 35 Heritage Way, Gansevoort, NY 12831) or Southern New England (MA, RI, CT), \$15/yr. (Bill Goodwin, Treasurer, 8 Wolcott Terrace, Winchester, MA 01890).
- ◆ **TICCIH Bulletin** No. 32 (Spring 2006) includes Que Weimin, *The Protection of Industrial Heritage in China*; Tim Mansfield, *Unearthing Heritage in Shimane, Japan* (the Ginzan silver mine); and a round-up of industrial heritage notes from around the world. Quarterly with membership. Info: [www.mnactec.com/ticcih](http://www.mnactec.com/ticcih).

#### BUILDINGS & STRUCTURES

- ◆ Kate Ascher. **The Works: Anatomy of a City.** Penguin Press, 2005. \$35. It's not a new idea to catalog urban infrastructure, but what makes this attempt so successful is that it shows and explains in detail virtually all of New York City's infrastructure, not just the obvious water and subway systems, but rail and maritime freight, garbage movement, telecommunications, and air systems. The section on subways, for example, has a cut-away view of the Times Square Station with a chart showing the various signals used along tracks and the different kinds of support cars used to remove garbage, vacuum dust, and collect revenue.
- ◆ Stefano S. Coledan. **Slowly Crumbling, NASA Landmarks Face the Bulldozer.** *NY Times* (Feb. 28, 2006). NASA is not prepared to preserve landmark sites at Cape Canaveral, including the Mercury Control Center and the Apollo rocket launch sites.
- ◆ David W. Dunlap. **Landmark Ferry Building Could Become a Food Market Center.** *NY Times* (Mar. 7, 2006). The Battery Maritime Building, built in 1909, is an architectural feast for the eyes, with terra-cotta dolphins perched atop 30-ft.-tall columns. The building, which once served the 39th St. ferry and still serves as a gateway to Governors Island, has been renovated with plans to install a food market.
- ◆ Petula Dvorak. **Historians Bemoan Observatory's Loss: Despite Panel's Recommendation, 1890 Telescope Buildings Razed.** *Washington Post* (Jan. 16, 2006), p. B1. Two telescope buildings, built in 1890 and designed by Richard Morris Hunt, were torn down despite the U.S. Commission of Fine Arts recommendation that they be preserved. The U.S. Naval Observatory at 34th St. and Massachusetts Ave. NW is on the campus that became the Vice President's residence in 1974.

- ◆ Sergej G. Fedorov. **Carl Friedrich von Wiebeking**. Deutscher Kunstverlag München Berlin ([www.deutscherkunstverlag.de](http://www.deutscherkunstverlag.de)), 2006. 224 pp., illus. Text in German and Russian. First detailed study of the work of the prominent German engineer and General Director of Bavarian Hydraulic, Bridge, and Road Construction, Carl Friedrich von Wiebeking (1762-1842). Previously unpublished Russian and German archive sources and planning materials provide insight into Wiebeking's two most important fields of work: as the builder of laminated wooden arch bridges and hydrotechnical structures in Bavaria and as the author of a multi-volume encyclopedia of early 19th-c. construction practices.
- ◆ **The Future as Relic: Houston's Space Age Icon in an Uncertain Orbit**. CG (Winter 2005), pp. 6-11. History of the Houston Astrodome, built in 1964 and for a short time considered the epitome of the modern sports arena.
- ◆ **Illuminating a Landmark**. CG (Winter 2005), pp. 12-13. Grants fund the HAER documentation and NR nomination of the Bodie Island Light Station, Outer Banks, NC.
- ◆ Judy A. Juracek. **Architectural Surfaces**. W. W. Norton, 2005. 352 pp., photos, CD. \$76. Catalogs hundreds of different architectural elements and materials.
- ◆ Marci L. Riskin. **The Train Stops Here**. Univ. of New Mexico Pr., 2005. 156 pp., illus. \$24.95. Guide to NM's railroad stations, hotels, and maintenance and service facilities, many of which have been preserved and adaptively re-used. Rev.: RH (Fall-Summer 2005), pp. 94-5.
- ◆ Ivan M. Viest. **An Immigrant's Story**. Xlibris ([www.xlibris.com](http://www.xlibris.com)), 2005. \$23. Autobiography of structural engineer known for his research on composite materials that led to design rules for bridges adopted by the American Assn. of State Highway Officials in 1956 and for buildings adopted by the American Institute of Steel Construction in 1961. Author was variously employed by the Univ. of Illinois at Champaign-Urbana, the Transportation Research Board, and Bethlehem Steel Corp. prior to entering private practice. Covers his childhood and early adulthood in Slovakia, emigration to U.S., and experience revisiting Slovakia after a 47-yr. absence.
- ◆ Ian Wouters and Michael de Bouw. **Development of Fireproof Construction in Brussels between 1840 - 1870**. *IA Review*, vol. 28, 1 (2006), pp. 17-32. The first large fireproof building—a warehouse at the inner harbor—was built in 1844-47. It launched a period of experimentation with new techniques and materials.
- ◆ **Landscape Architecture** (Nov. 2005), pp. 40-51. Designing new bridges to look like old ones in parks and on canals. Includes the recreated Tohickon Aqueduct (Delaware Canal—tour site, 2002 SIA Fall Tour, Lehigh Valley) and a variety of short-span, timber-truss bridges for pedestrian trails.
- ◆ Eric DeLony [SIA]. **How Can Engineers Help Save Historic Bridges?** *Pittsburgh Engineer* (Summer 2006). 13 pp. Review of some recent conferences and activities that bring engineers and historians together to discuss the successes and challenges of historic bridge preservation.
- ◆ Sergej G. Fedorov. **Wilhelm von Traitteur**. Ernst & Sohn, 2000. Text in German. 331 pp., illus. Traitteur (1788-1859) is best known for his five iron suspension bridges, erected 1823-26. Apart from the biography, the book also covers little known aspects of the architectural and engineering history of Russia, where Traitteur spent 18 years in the Russian Dept. of Transportation. Avail. from the author, [sfedorov@t-online.de](mailto:sfedorov@t-online.de).
- ◆ Emory Kemp [SIA], ed. **American Bridge Patents: The First Century, 1790-1890**. West Va. Univ. Pr., 2005. 186 pp., illus. \$40. Includes photographs, scale drawings, and a list of more than 600 bridge patents with analysis of patents as a documentary record of engineering innovation. Using the archival records and photographs of HAER, it compares the actual bridges against the drawings that accompanied the patent applications. Essays by Shelley Birdsong [SIA], Eric DeLony [SIA], and Larry N. Sypolt provide background and context.
- ◆ **Lt. Col. Stephen H. Long's 1836 Pamphlet**. CBT (Winter 2006), pp. 5-11, and (Spring 2006), pp. 9-12. Reprints in full a pamphlet describing Long's patented timber-truss bridge.
- ◆ Greg Livadas. **Effort to Revive Hojack Bridge Quietly Persists**. *Rochester Democrat & Chronicle* (Jan. 23, 2006), p. 1. The 1906 swing-span RR bridge has been under threat of demolition several times, but local preservationists, including several SIA members, continue to advocate for preservation as part of a rails-to-trails project.
- ◆ Bob Regan. **The Bridges of Pittsburgh**. The Local History Company (Pittsburgh), 2006. 182 pp., illus. \$22.95. Pittsburgh claims to have more bridges than any other city, including Venice. This book sets out to be the definitive catalog of Pittsburgh bridges, listing 446 bridges. Includes photos, tour maps, and historical background.
- ◆ William S. Young. **Starrucca, the Bridge of Stone**. New Century Editions, 2005. 42 pp. \$6 ppd. Superb and likely final word on one of the nation's most spectacular stone viaducts. Built by the Erie RR near Susquehanna, PA, in 1848 and still in full mainline service. Revision and expansion of the 1973 original edition. Also, **Tunkhannock, The Great White Bridge at Nicholson, Pennsylvania, and the Lackawanna Railroad's Clark**

## BRIDGES

- ◆ Gary W. Cramer. **Bridging Truths: Landscape Architects Can Help Span the Ages with Timber Bridges**.



**Summit.** 2005. 76 pp. \$12 ppd. Still the largest reinforced-concrete viaduct in the world, built by the DL&W RR, 1912-15; 2,375 ft. in length; 240 ft. above Tunkhannock Creek; ten 180-ft. spans plus two of 100 ft. Splendid account of the rationale for the bridge, its design, and erection; heavily illustrated. As with Starrucca above, surely the last word on this magnificent and important structure. Avail. from author: RR 3, Box 191, Susquehanna, PA 18447-8901.

## TOOLS

- ◆ Donald B. Ball [SIA]. **Source Materials on the Evolution, Applications, and Production of Nails in the 19th Century.** *OHVA*, Vol. 20 (2005), pp. 108-23.
- ◆ Jonathan Coad. **The Portsmouth Block Mills, Bentham, [Marc] Brunel, and the Start of the Royal Navy's Industrial Revolution.** English Heritage, 2005. 127 pp., illus. £25. An architectural and photographic survey of the block mills building at Portsmouth. In addition, much new material has been uncovered about the operation of the machines, including some rare photographs showing them in operation at the end of the 19th c.
- ◆ Andrew W. Jacobs. **There Goes the Neighborhood: The Last of the Machinery District is Packing Up.** *NY Times* (Feb. 7, 2006). The Grand Machinery Exchange, the last of the machinery dealers in Lower Manhattan, has packed up and moved to Long Island. There were once 40 such dealers in the Canal St. area.

## CONTRIBUTORS TO THIS ISSUE

Richard K. Anderson, Jr., Sumter, SC; Donald Ball, Louisville, KY; Jim Bennett, Montgomery, AL; Jon Bergenthal, St. Louis, MO; Mike Bernstein, Chalfont, PA; Joe Brendt, Versailles, KY; Beverly Brooks, Charleston, WV; George Bulow, New York, NY; Robert Chidester, Ann Arbor, MI; Arlene Collins, Houghton, MI; Nathan S. Clark, Greenville, PA; Eric DeLony, Santa Fe, NM; David Disney, Kansas City, MO; Tom Dowling, Tallahassee, FL; Don Durfee, Houghton, MI; Bob Frame, St. Paul, MN; Perry Green, Myrtle Beach, SC; Rick Greenwood, Providence, RI; Matthew Grove, Martinsburg, WV; Mary Habstritt, New York, NY; Neill Herring, Jesup, GA; Charles K. Hyde, Detroit, MI; John Jacobus, Silver Spring, MD; Carol Lockman, Wilmington, DE; Pat Martin, Houghton, MI; Dan McCain, Delphi, IN; Bill McNiece, Indianapolis, IN; Vern Mesler, E. Lansing, MI; Carol Poh Miller, Cleveland, OH; Jim Miller, Greensburg, PA; Damian Nance, Athens, OH; Angela Nations, Boss, MO; David Poirier, East Granby, CT; John Reap, Syracuse, NY; Bierce Riley, Morristown, NJ; Leah Rosenhow, N. Freedom, WI; Fred Schaeffer, Poughkeepsie, NY; Myra Snook, Newton, NJ; Bob Stewart, W. Suffield, CT; John Teichmoeller, Ellicott City, MD; Ivan Viest, Bethlehem, PA; Robert Vogel, Washington, DC; Steven A. Walton, University Park, PA; Jodie Wells, Tyrone, KY; Suzanne Wray, New York, NY; Helena Wright, Washington, DC.

*With Thanks.*

- ◆ South Bend Lathe Works. **How to Make an 8-inch Bench Lathe in the School Shop.** Lindsay Publications (Box 538, Bradley, IL 60901; 815-935-5353; [www.lindsaybks.com](http://www.lindsaybks.com)), 1920; reprint ed., 2005. 64 pp., illus. \$7.95. Dimension drawings and instructions show students how to make a wood lathe.

## POWER GENERATION

- ◆ Kenneth L. Cope. **American Steam Engine Builders, 1800-1900.** Astragal Press ([www.astragalpress.com](http://www.astragalpress.com)), 2006. 280 pp., illus. \$29.95. Nearly 1,000 illustrations show the development of the steam engine. Brief history of the individual makers, chronicling the various engines that each made.
- ◆ Diana Sproat. **The History of Granton Gasworks.** *IA Review*, vol. 28, 1 (2006), pp. 33-46. Detailed survey of gasworks, with most buildings dating from 1899 to 1910, located north of Granton Harbor in Edinburgh, Scotland.
- ◆ Gwyn Tilley. **The Surviving Engines of Glyn Pits, Pontypool: Early Steam and Water Power in Local Industry.** Landmark Publishing (U.K.), 2005. 160 pp., illus. £15.99. Glyn Pits is renowned for its surviving Victorian steam engines. Author was one of the last engineers to work on them before the works shut down.

## WATER CONTROL & RECLAMATION

- ◆ Dan Barry. **Remnants of an All-Water Route to Manhattan.** *NY Times* (Mar. 29, 2006), p. A24. Intrepid New Yorkers are using spelunking techniques to explore abandoned sections of the Old Croton Aqueduct.
- ◆ K. S. G. Hinde. **Fenland Pumping Engines.** Landmark Publishing (U.K.), 2005. 224 pp., illus. £24.99. Covers over 200 steam and diesel-powered pumping stations located around the Fens and Trent Valley from the early 19th c. Rev.: *IA News* 137 (Summer 2006), p. 16.

## AGRICULTURE & FOOD PROCESSING

- ◆ Danny Hakim. **Plant That Brewed Beer Shifts Attention to Ethanol.** *NY Times* (Apr. 23, 2006). Describes the old Miller Brewery in Fulton, NY, and a project aiming to turn the now-abandoned 420-acre site into the Northeast's first ethanol production plant.
- ◆ Danny Hakim. **Want Pork? In New York, Just Say Cheese.** *NY Times* (Apr. 10, 2006). The NY State Cheese Museum is at the center of a political controversy over pork-barrel spending. NY State helped preserve a remarkably complete 19th-c. cheese factory at the Erie Canal Village in Rome, NY, about 20 years ago, and continues to support the museum with operating grants. A second cheese museum in Cuba, NY, has just received funding from a pool of cash controlled by the governor.
- ◆ Richard Perren. **Taste, Trade and Technology: The Development of the International Meat Industry since 1840.** Ashgate (1-800-535-9544), 2006. 302 pp., \$99.95.

Focus on the interactions of producers, sellers, and consumers of meat provides a comprehensive analysis from the 19th c. onwards, based on government reports and papers issued by countries involved in the trade.

## **MINES & MINING**

- ◆ Kirk Johnson. **Out of Old Mines' Muck Rises New Reclamation Model for West.** *NY Times* (Mar. 4, 2006), p. A8. The Town of Breckenridge and Summit County, CO, have bought the Breckenridge gold field from a private mining company and agreed with the EPA to take on the responsibility for cleaning up pollution associated with drainage from the mines. The effort is the first time in U.S. history that a mine purchaser has willingly entered into an agreement with regulators for a comprehensive reclamation program.
- ◆ Jack Kelly. **Big Bang.** *I&T* (Summer 2006), pp. 40-51. High explosives, much more powerful than gunpowder, promised to transform mining from the 1840s to 1880s. Explores the safety issues of storage and handling.

## **AIR TRANSPORT**

- ◆ Christopher Maag. **Akron Residents See Their Past and Future Soaring Above the City.** *NY Times* (Feb. 20, 2006), p. A8. Lockheed Martin has won a \$149 million contract from the federal government to build a high-altitude airship 25 times larger than the Goodyear blimp. It is being assembled at the Akron Airdock (tour site—1986 Annual Conference, Cleveland). Other individuals in Akron, inspired by the city's lighter-than-air history, are also building airships.
- ◆ Nicholas Nirgiotis. **Blimps at War.** *I&T* (Summer 2006), pp. 12-19. The evolution and use of blimps to protect ships from attack by enemy submarines during WWI. Also, Charles W. Ebeling, **The Blimp Barns**, pp. 20-25. Wooden hangars built by the U.S. Navy to store the blimps.
- ◆ A. H. Verrill. **Harper's Aircraft Book, 1913.** Lindsay Publications (Box 538, Bradley, IL 60901; 815-935-5353; [www.lindsaybks.com](http://www.lindsaybks.com)), 2005. 245 pp., illus. \$12.95. Reprint of early text aimed at explaining aircraft technology to a general audience includes chapters on why airplanes fly; building model airplanes, flyers, and gliders; and descriptions of early classic planes, including the Wright Flyer and the Neuport Monoplane.

## **AUTOMOBILES & HIGHWAYS**

- ◆ Kelly A. Giblin. **The Jersey Barrier.** *I&T* (Summer 2006), pp. 26-33. Engineering and history behind this ubiquitous feature of America's highways.
- ◆ **The History of the Construction of the Road System in Yellowstone National Park, 1872-1966: Historic Resource Study.** Vol. 1 (1994). Now available on-line: [www.cr.nps.gov/history/online\\_books/yell\\_roads/index.htm](http://www.cr.nps.gov/history/online_books/yell_roads/index.htm).

- ◆ Charles K. Hyde [SIA]. **The Dodge Brothers: The Men, the Motor Car, and the Legacy.** Wayne St. Univ. Pr., 2005. 251 pp. \$34.95. John and Horace Dodge had their big break manufacturing engines for Olds's curved-dash automobile. A biography of the two brothers, their personal and business relationships, and the events that made them rich. Rev.: *T&C* (Apr. 2006), pp. 435-6.
- ◆ John L. Jacobus. **The Fisher Body Craftsman's Guild.** McFarland ([www.mcfarlandpub.com](http://www.mcfarlandpub.com)), 2004. 336 pp., illus. \$49.95. Illustrated history of GM's youth outreach activity and corporate talent search (1930-1968). More than 8 million teenagers took part in the program to promote original auto styling and design ideas, with the winners converging on Detroit for the annual guild meeting. Many winners became top auto, product, architectural, and graphic designers. The author was a guild member and had a career as a design engineer at GM's Fisher Body. He's collected 62 autobiographical essays from guildsmen and 171 vintage photos.
- ◆ Steven Watts. **The People's Tycoon: Henry Ford and the American Century.** Knopf, 2005. 614 pp. \$30. A reworking of the Ford biography, looking at the man and his discomfort in the role of a celebrity. Rev.: *T&C* (Apr. 2006), pp. 433-5.

## **RAILROADS**

- ◆ Charles Conway. **Vulcan's 60-ton Center Cab.** *Railroad Model Craftsman* (July 2006), pp. 58-65. History and scale drawings of one-of-a-kind locomotive built for the U.S. Army but which subsequently served on the Jay St. Connecting Ry. and in a quarry. Includes info about the builder (Vulcan).
- ◆ Thomas R. Flagg [SIA]. **The New York Naval Shipyard and its Brooklyn Railroad.** *Transfer* No. 43 (July-Dec. 2005), pp. 4-21 + front and back cover. Modern history of the shipyard and description of rail operations through and beyond its closure in 1966 [tour site—SIA Annual Conference, Brooklyn 2002]. 34 photos (5 in color), 4 maps.
- ◆ John Frank. **Robber Baron: The Life of Charles Tyson Yerkes.** Univ. of Ill. Pr., 2006. 374 pp. \$45. Definitive biography of the late-19th-c. streetcar magnate who was the force behind Chicago's Loop Elevated and the London Underground. Yerkes (1837-1905) made millions from questionable financial dealings while at the same time forging some of the world's finest mass transit systems. He was one of the most vilified of the robber barons, but paradoxically, like many of his peers (Rockefeller, Carnegie), in later life he turned to philanthropy.
- ◆ John Lubetkin. **Jay Cooke's Gamble: The Northern Pacific Railroad, the Sioux, and the Panic of 1873.** Univ. of Okla. Pr., 2006. 400 pp. \$29.95. Explores the threads that link Jay Cooke and his gamble to build the Northern Pacific with Indian fighting, Canadian politics,



the rise of rival robber barons J. P. Morgan and James J. Hill, and the economic panic of 1873.

- ◆ **Mid-Continent Railway Gazette**, vol. 39, 1 (June 2006) focuses on restoration of Western Coal & Coke #1, a 4-6-0 locomotive built in 1913. Includes detailed description of hot riveting the boiler, a comprehensive restoration plan, and cost estimates. Info: [www.midcontinent.org](http://www.midcontinent.org).
- ◆ David Pearce [SIA]. **New York Lighterage and Transportation Co.** *Transfer* No. 43 (July-Dec. 2005), pp. 22-23+26. History of the company that provided carfloating and lighterage for the Lehigh Valley RR. Tug roster, photo, company letterhead.
- ◆ **Railway & Locomotive Historical Society Newsletter**, vol. 26, 2 (Spring 2006) includes John Gruber [SIA], *Visual Interpretation* (review of eight exhibits featuring railroad work and art); John Teichmoeller [SIA], *The Rail-Marine Information Group* (group formed in 1993 to publish info on the transportation of railroad equipment over water); and *The Rock Island Railroad Bridge* (excerpts from primary sources in 1856). Quarterly. Avail. with membership. [www.rlhs.org](http://www.rlhs.org).
- ◆ Thomas Rubarth and William Rubarth. **Docking the Solano.** *Transfer* No. 43 (July-Dec. 2005), pp. 24-26. Mechanisms and procedures used to secure the floatbridge apron to the mammoth Carquinez Strait (California) train ferries *Solano* and sister *Contra Costa*, based on interpretation of archival photos and cryptic technical journal descriptions. 3 annotated photos, 3 diagrams.
- ◆ **Timber Transfer** is the magazine of the Friends of the East Broad Top RR. Vol. 22, No. 3 (Winter 2006) includes updates on the restoration of the paint shop, boiler house, coal bin, machine shop, and cars at Rock Hill (PA). Available with membership, \$30/yr. (Pete Clarke, Membership Coordinator, 10428 Carlyn Ridge Rd., Damascus, MD 20872; [febt@aol.com](mailto:febt@aol.com).)

## WATER TRANSPORT

- ◆ Katherine Archibald. **Wartime Shipyard: A Study in Social Disunity.** Univ. of Ill. Pr., 2006. 328 pp., illus. Reprint of 1947 memoir of work in an Oakland (CA) shipyard. Archibald was a graduate student who left school to work in the yard for two years. Her experience was that women were seen as intruders; Okies and black migrants from the South were regarded with barely disguised hatred; and trade unionists were more interested in protecting their unions than defending workers' rights.
- ◆ Ronald R. Dukarm. **Erie's Union Dry Dock Company.** *The Diamond* (Erie-Lackawanna Historical Society, [www.erielackhs.org](http://www.erielackhs.org)), vol. 20, 2 (Spring 2006), pp. 4-13. History of shipyard on the Buffalo River in downtown Buffalo, which was purchased by the Erie RR in 1870 and sold to American Shipbuilding in 1900.

## MISC. INDUSTRIES

- ◆ Mark Aldrich. **From Forest Conservation to Market Preservation: Invention and Diffusion of Wood-Preserving Technology, 1880-1939.** *T&C*, vol. 47, 2 (Apr. 2006), pp. 311-340. Story begins with a variety of methods for preserving wooden railroad ties and ends with a loose public-private alliance of wood-preservation institutions establishing industry standards.
- ◆ Wayne Curtis. **The Brilliance of the Barrel.** *I&T* (Spring 2006), pp. 36-43. History of the wood-staved barrel, the mainstay container of American commerce for most of the 18th and 19th c. Coopering is on the come back due to demand for wine and whiskey aged in oak barrels.
- ◆ Ken Fones-Wolf. **Glass Towns: Industry, Labor, and Political Economy in Appalachia, 1890-1930s.** Univ. of Ill. Pr., 2006. 256 pp., illus. \$25. Case studies of glass works in Clarksburg, Moundsville, and Fairmont, WV. Emphasis is on the impact of the glass industry on local populations and immigrant craftsmen.

## ABBREVIATIONS:

CBT	= <i>Covered Bridge Topics</i> , published by the National Society for the Preservation of Covered Bridges
CG	= <i>Common Ground: Preserving Our Nation's Heritage</i> , published by the National Park Service ( <a href="http://www.cr.nps.gov/commonground">www.cr.nps.gov/commonground</a> )
I&T	= <i>American Heritage of Invention &amp; Technology</i>
IA News	= Newsletter of the Assn. for Industrial Archaeology, U.K.
IA Review	= <i>Industrial Archaeology Review</i> , Journal of the Assn. for Industrial Archaeology, U.K.
OHVA	= <i>Ohio Valley Historical Archaeology</i> (Back issues: Kit W. Wesler, Dept. of Geosciences, 104 Wilson Hall, Murray State Univ., Murray, KY 42071)
T&C	= <i>Technology &amp; Culture</i> , Journal of the Society for the History of Technology
TICCIH	= The International Committee for the Conservation of the Industrial Heritage
Transfer	= publication of the Rail-Marine Information Group ( <a href="http://www.trainweb.org/rmig">www.trainweb.org/rmig</a> )

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# Update on B&O's Martinsburg Roundhouse

The B&O RR's Martinsburg (WV) Shops complex (tour site—2001 SIA Annual Conference, Washington, DC) was recorded by HAER in 1970. At the time, the buildings still were in service. They rank as one of America's outstanding engineering and industrial monuments and have finally obtained official recognition and the attention of preservationists. The ongoing rehabilitation is described in detail below by architect-of-record Matthew Grove, AIA. Few sites anywhere in the world compare with the Martinsburg complex and its extraordinary cast-iron-framed roundhouse and ancillary backshops.

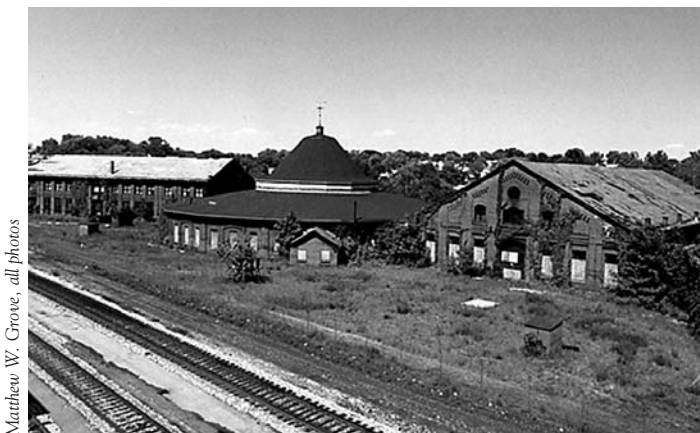
While many of America's abandoned industrial sites continue to decay and fade away, some are quietly being restored to their original condition or close to it. The old Baltimore & Ohio RR Shops in Martinsburg, presently known as the Roundhouse Center, has made great strides in reversing the effects of 134 years of weather, wear, and neglect in just six years. Having secured status as a National Historic Landmark from the Secretary of the Interior and a National Civil Engineering Landmark from the American Society of Civil Engineers (ASCE) in 2004, all corrective and reconstructed work was completed in accordance with the Secretary of the Interior's Standards for Rehabilitation. This article provides an overview of the principal body of work completed, a description of related projects, and a preview of the future work planned by the governing entity, the Berkeley County Roundhouse Authority.

The extant structures on the 12-acre site include three principal buildings: the Bridge & Machine Shop (c. 1866), West Roundhouse (c. 1866), and the Frog & Switch Shop (c. 1866). Other structures include the East Roundhouse Ruins (c. 1871), the Saw Shop (c. 1910), Car Shop (c. 1948), and a handful of smaller metal sheds and structures. The West Roundhouse is the crown jewel of the campus, with two independent decorative cast-iron internal frames supporting a steep conical "witch's hat"-shaped roof with a row of clerestories dividing the steep portion from the flat. At about 175 ft. across, with track in place and a function-

ing 50-ft.-dia. turntable, this building is a museum piece for its building technology, the functions it housed, and its design by noted American civil engineer Albert Fink.

**Roof Restoration.** While "green roofs" were showing up in commercial and even industrial sites in the U.S. in 1999 as an eco-friendly design strategy, it was clear to the newly formed Roundhouse Authority that the trees growing in the gutters of the old shop buildings had to go. The two buildings in the greatest need of repair were the Frog & Switch Shop and the Bridge & Machine Shop. After initial replacement of the rotten rafters, beams and decking, and reconstruction of the decorative eaves, a new insulated roof panel was installed on top of the decking with the thought of air conditioning in the future. After testing the strength of the 3x6-in. rafters, it was determined that they would not support (by current engineering standards) what was originally a slate roof. Instead, a simulated plastic slate of about the same size as the original slate was chosen and approved. Many of the roof trusses in the two shop buildings needed new ends spliced on to preserve their structural integrity. Repairs were made in essentially the same way the B&O had done them in the past, using steel plates and thru bolts. Consideration was given to adjusting some of the sagging trusses by drawing up on the wrought-iron rods, but in the end the recommendation by all engineers who were consulted was to leave them alone. Upon inspection, gaps can be seen between some of the square washers and the bottom chords that normally would be tight. With the roof work completed on the two shop buildings, a replica of the original cupola was designed and built for the Bridge & Machine Shop based on extant information and early photographs. It is presumed that this large cupola housed the bell which was rung to summon the workers at given intervals, to function as a hoistway for the internal freight elevator (hoist beams are still there), and for ventilation. Colors were selected for the cupola and eaves based on lab testing of extant paint.

**Walls.** Even the heavy 26-in.-thick masonry walls of the Frog & Switch Shop were no match for opportunistic trees



Matthew W. Grove, all photos

Overview of the B&O RR's Martinsburg Shop complex as it appeared in 1998 prior to rehabilitation.



A recent view of the B&O RR's Martinsburg Shop complex shows the extensive rehabilitation work.



which rooted in deep and pushed, heaved, and spalled the brick. They were excavated and removed, the walls realigned, and missing or broken bricks replaced with fallen brick from the East Roundhouse ruin, mortared into place using a soft hydrated hydraulic lime and sand mix. Some damaged bricks were strategically reused, showing their best side, and new bricks were handmade by a nearby brickyard for specialty shapes necessary to restore the West Roundhouse walls. A 20th-century widening of a locomotive entrance into the West House was deconstructed and rebuilt in its original configuration. Many other imperfections in the brick and fenestration were retained so as not to erase the memory of the building's life. After the brick and mortar were back in place all surfaces were given a light cleaning to remove harmful agents which had built up over time.

**Windows & Doors.** The majority of extant windows and doors were original to the shop complex, although there was evidence that some were altered, moved, or removed. After evaluating the wide range of deterioration, it was determined that the best approach to specifying the corrective work would be to define the end condition of the doors and windows and develop a performance set of drawings and specifications for restoration. In the process of surveying, we recorded many mullion profiles and design variations that helped us understand the sequence of changes that took place. Paint color analysis revealed a progression of color schemes used at the plant. We chose to use the sequence of color schemes as a tool to identify when a door or window was built, moved, or added to the plant. Detailed drawings of all window and door types were prepared to show joinery, finish, and hardware. Fortunately, enough original hardware remained to piece together a complete schedule of replicas. Surface bolts, lock boxes, tension rods, and doorknobs were all hand-forged by blacksmiths of the region. Some original hardware did not withstand the test of time and required a new solution. For example, new bronze ball bearing hinges

replaced the old two-knuckle hinges, supporting each leaf of the large wagon doors on the Bridge & Machine Shop to prevent them from sagging.

**Interior Cleaning.** Having secured the buildings' exteriors, the work moved inside. Interior surfaces, including brick walls, cast iron, concrete slab, wood rafters, trusses, and decking, required cleaning and refinishing. Years of paint were removed using dry media, including baking soda and a soft aggregate. Paint that could not be removed from some wood surfaces without doing damage was left and the surface was or will be repainted. Lead-based paints that were identified were contained, collected, and removed. Masonry surfaces were pointed using a natural lime mortar. A lime-based whitewash was specified for interior masonry surfaces. However, soon after beginning the application of the whitewash on the Bridge & Machine Shop, it was determined that the masonry wall was still wicking water which caused some of the white wash to discolor. After completing a new stormwater removal system and allowing time for the walls to thoroughly dry out, the remaining whitewashing will be completed.

**Tandem Projects.** Since the roundhouse project began, other tandem projects have developed. A local blacksmith had saved the old steam hammer from the scrapper back in the 1980s, hoping that one day the plant would be restored. That day happened and the hammer was returned to its place in the Blacksmith Shop many volunteer hours later. A group of volunteers again worked many days and weeks to save a switching tower from the wrecking ball. Miller Tower was deconstructed into three large pieces and trucked 20 miles to the roundhouse site and recently was reassembled. The "Armstrong" (manual, mechanical) lever frame was carefully tagged, taken apart, and stored for future restoration when track is in place to demonstrate the switching mechanism. Owners of the Fruit Exchange, a freight depot from about 1920, decided to donate the struc-

*(continued on page 24)*



*Restored roof trusses of the Bridge & Machine Shop.*



*Restored brickwork at the Martinsburg Shops.*



*Steam hammer, returned to its original location at the Martinsburg Shops.*

# Great Northern No. A-22 Restoration Project

## *SIA Preservation Grant Report*

For many years, the Great Northern Railway business car No. A-22 has resided quietly among the rolling stock of the Mid-Continent Railway Historical Society's collections in North Freedom, WI. Hiding among railroad cars that are better known and better documented, the A-22 has flirted with railroad fans and foamers alike, as little bits of information would surface, spark interest, and then slowly fade. Myths developed about the car and speculations were passed along, but the few pieces of the puzzle would not fit together.

In Dec. 2004, Mid-Continent was the recipient of a generous Industrial Heritage Preservation Grant from the SIA. With these funds, Mid-Continent was able to photo-document the existing structure and details of the A-22. Hundreds of 35-mm film and digital photographs were captured, allowing Mid-Continent to document and preserve the remaining original 1905 characteristics of the car. As caretakers of this piece of railroad history, this documentation was Mid-Continent's responsibility before any further changes took place—primarily any further deterioration, but also before any major restoration. These images will serve as evidence for one portion of the history of this car, aid the restoration process, and serve as a resource for research.

Mid-Continent acquired the A-22 in 1972 and since then has been able to compile a small mountain of documentary material. It was built in 1905 at the GN's St. Paul car shops for use by Louis W. Hill, who succeeded his father James J. Hill to the GN throne, after James retired from active management in 1907. The car, built of wood and consisting of secondhand materials right down to the trucks, hardly seemed fit for a king. But the A-22 wasn't initially built for Louis Hill.

The car, billed as a 69-ft. wood business car, lacking luxuries and of no special interest, originally was intended to be used by GN superintendents for business travel. Wasting nothing, the proposed car was to be built mostly of materi-

als on hand in the shops and storehouses at Jackson, the total cost not to exceed \$5,000.

But in early 1905, when the car's construction had already begun, it appears that the need for Louis Hill to have a business car was greater than that of the railway's superintendents. Louis was literally his father's right-hand man and traveled extensively across the country promoting the GN and keeping an eye on the family business. In this way he earned his title as the nation's "greatest promoter."

However, even with Louis Hill's direct association with the car, surprisingly little changed in the secondhand plans, though Louis did make one request that consequently made the car unique in railroad history: he requested that room be made for his personal automobile.

And so it was that history was quietly made. With the addition of the 18-ft. automobile room, there was hardly room for anything else. Automobiles, in addition to railroads, were among Louis' passions. Squeezed into the A-22 after the automobile room were a full-service kitchen and dining area, master bedroom, and an observation room, with additional sleeping berths in the automobile room.

For Louis, the interior veneer was upgraded from oak to Cuban mahogany. Carpet was installed instead of secondhand linoleum. A leather sofa was ordered for the observation room. But the luxuries ended there. Elaborate decoration did not adorn the mahogany veneer. Intricate stained glass was noticeably absent from the windows. The light fixtures, potentially lit by acetylene rather than Pintsch gas, were among the most plain car lamps made at the time. The car was painted "standard Pullman color" green and lettered plainly "G. N. A-22." Austere, yet elegant, the A-22 and Louis Hill were a perfect match. While a man of taste, Louis Hill had inherited his father's prudence and this is reflected in the absence of extravagance in the car.

A-22 was used for more than four decades by Louis Hill and his wife Maud van Cortlandt Taylor, from 1905 until his



*Great Northern A-22 at Mid-Continent Railway Museum, North Freedom, WI. 2004.*



death in 1948. Louis and Maud's children—Maudie, Jerome, Louis Jr., and Cortlandt—also used the A-22 to travel, bringing a new meaning to the phrase “Dad, can I borrow your car?” Louis's father James was also known to use the A-22 for personal hunting and fishing trips. After Louis had passed the GN presidency on to Ralph Budd, Budd also used the A-22 for business and pleasure.

In 1950, the A-22 officially lost its business car status and was converted to a work car and renumbered GN 03132. It remained in GN service until at least 1962, when it was being used in the St. Paul rail yards at Dale St. as a “test car.”

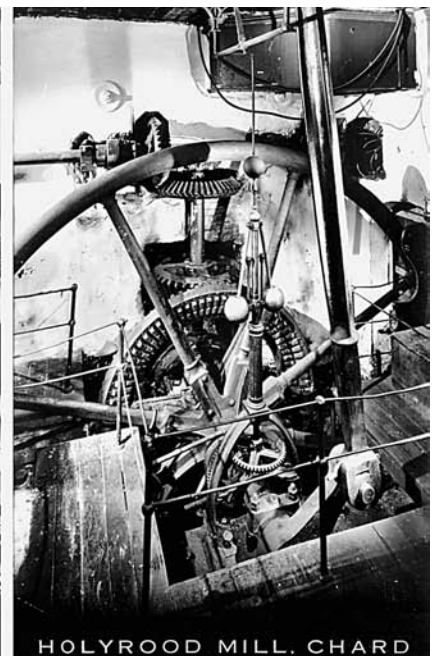
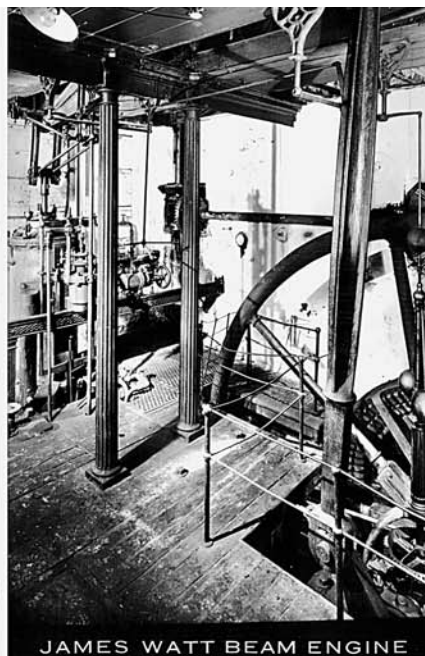
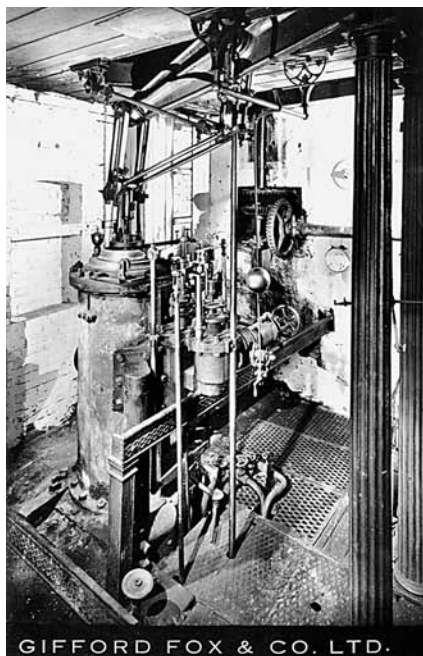
A-22's story is far from over however. Currently, Mid-Continent is developing a strategy for the restoration of the A-22 and is looking forward to preserving the car for future generations.

*Leah Rosenow*



*Original 1905 window-shade handle onboard the Great Northern A-22, 2004. The SIA Industrial Heritage Preservation Grant enabled the Mid-Continent Railway Museum to comprehensively photo-document the car.*

## **WATT STEAM ENGINE** *(continued from page 3)*



*Watt engine at Holyrood Mill, photo sent to Leighton Wilkie by Gifford, Fox & Co. in 1957, but likely taken between 1936 and 1945.*

engine. They would have had several from which to choose since Boulton & Watt records show at least three 20 hp engines in the neighboring counties of Wiltshire and Gloucestershire, and several more in London. According to Procter, after Watt's patent expired in 1800, Boulton & Watt took little notice of the secondhand trade unless they were specifically asked to supply spares or technical assistance. Hence, the Sheppards' and Gifford & Fox's purchases would not necessarily appear in the firm's correspondence or their main order books. On the basis of this information, it would seem that the engine can at least be dated to 1814 or before.

Hence, the engine could indeed be of the date claimed by

Gifford Fox, and while its manufacture by Boulton & Watt cannot yet be substantiated (engines of this size and date having a rather generic appearance), the engine is of great interest and antiquity, and its continued preservation is of paramount importance. The engine now is in the hands of the Cedar Valley Engine Club in Charles City, IA, to whom ownership of the engine has been transferred.

*R. Damian Nance*

*\*Robert Vogel [SIA] believes this is surely the engine that was offered for sale, and turned down by, the Smithsonian's Museum of History & Technology in mid-1957.*

## Two of the World's Oldest Cantilever Bridges Are in the U.S.

If you hold your arm straight out from your shoulder, it's acting as a cantilever. The equivalent engineering definition of the extended-arm analogy is that a cantilever is a continuous girder pinned where the moments of the uniform load are zero (the extended-arm theory is much easier to understand). The cantilever is one of the world's earliest bridge forms, originating in China, Tibet, and Japan. Shogun's Bridge (300 AD) still spans 84-ft. over the Daiyagawa River in Nikko, Japan. The idea was re-introduced to Western bridge builders by British engineer John Fowler around 1846. Today, two of the world's oldest long-span, metal-truss, cantilever bridges, New York's Poughkeepsie-Highland Bridge (1888) and Kentucky's Young's High Bridge (1889), are struggling to survive in America.

In Britain and the U.S. the form is known as a cantilever, in France as *portes-a-faux*, and in Germany as a Gerber Bridge, named after the engineer who popularized the form. Although British engineers suggested using the cantilever form as early as 1846, the first modern cantilever actually built was Heinrich Gerber's Hassfurt Bridge over the River Main in Germany (1867), with a central span of 124 ft. The form had some important attributes, including that it was statically determinant, which meant that it was easier to calculate the stresses and size the parts of the structure. Members did not have the inherent deficiency of the continuous beam or girder, a statically indeterminate structural form, developing unknown, possibly large internal stresses leading to failure should one of the piers or abutments subside. Unstable soil conditions plagued foundation, pier, and abutment design, so the ability of a bridge's superstructure to adjust should one of the piers or abutments sink was a significant design breakthrough.

The next important cantilever bridge was built by American engineer C. Shaler Smith, ten years later in 1877. It provided the first practical test of the application of the cantilever principal to long-span bridge design. He built what was then the world's longest cantilever for the Cincinnati Southern RR over a 1,200-ft. wide and 275-ft. deep gorge of the Kentucky River near Dixville. The bridge resolved the difficulty and expense of erecting a forest of falsework in a deep, wide river gorge because the cantilever form did not require extensive falsework. The bridge was selected by the American Society of Civil Engineers for the 1878 Paris Exposition as one of the prime examples of American bridge ingenuity.

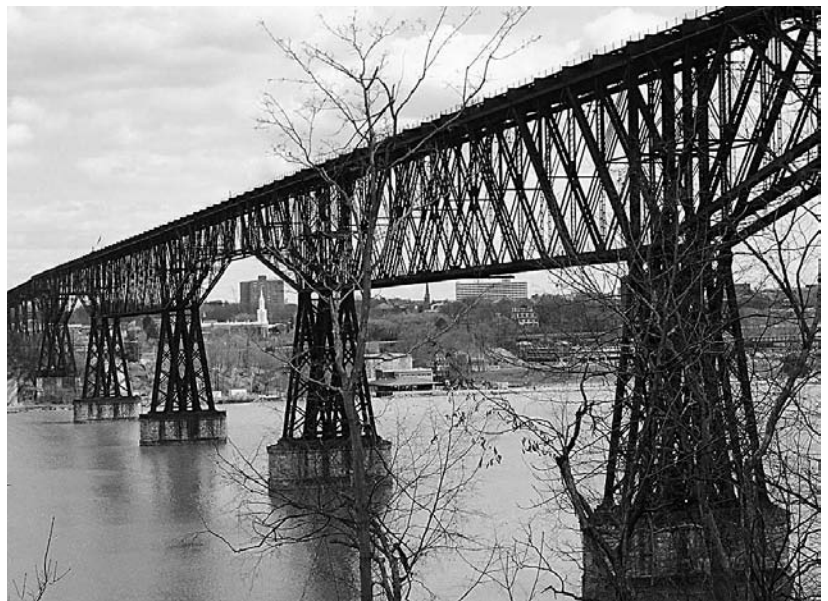
After the success of these bridges, the cantilever technique became more widely employed in the 1880s, especially in North America. Another important span was the Michigan Central RR bridge over the Niagara Gorge, designed by Charles Conrad Schneider in 1883. With cantilever arms supporting a simple suspended truss, this 495-ft. span and the nearly identical Fraser River Bridge in British Columbia, directed the

attention of the engineering world to this new bridge form. These two were the prototypes for subsequent cantilever bridges, including the Poughkeepsie-Highland Bridge over the Hudson River (1888), Young's High Bridge over the Kentucky River (1889), and the Firth of Forth Bridge (1890) in Scotland.

The Firth of Forth Bridge remains in rail service, but the two earlier American spans have been threatened since they went out of rail service. The Poughkeepsie-Highland Bridge was decommissioned in 1974 when a fire burned a 1,000-ft.-long section of wooden walkway and ties over the land portion on the Poughkeepsie side. While most historic bridge enthusiasts are familiar with the Poughkeepsie-Highland Bridge, many are unfamiliar with Young's High Bridge, located just 15 miles west of Lexington. Young's High Bridge is named after the Kentucky lawyer and Civil War hero William Bennett Henderson Young, president of the Louisville Southern RR for which the bridge was built. It went out of service in 1985. The only reason these bridges survive is their robust size and the cost of dismantling such large structures.

**Poughkeepsie-Highland Railroad Bridge.** The Poughkeepsie-Highland cantilever bridge was the first rail crossing of the Hudson River below Albany, 80 miles north of New York City. Built by the Union Bridge Co. of Athens, PA, to designs by Charles McDonald and A. B. Paine, the overall length is 6,768 ft., including three cantilever spans of 548 ft. long connected by two fixed spans. The bridge was strengthened by Ralph Modjeski in 1906 by adding a third line of trusses down the middle.

Since the mid-1970s, there have been several efforts to convert the bridge to a rails-to-trails project. "Walkway Over the Hudson," formerly headed by Bill Sepe, has struggled for the last eleven years along with citizens on both



**Poughkeepsie-Highland Bridge (1888).**

Fred Schaeffer

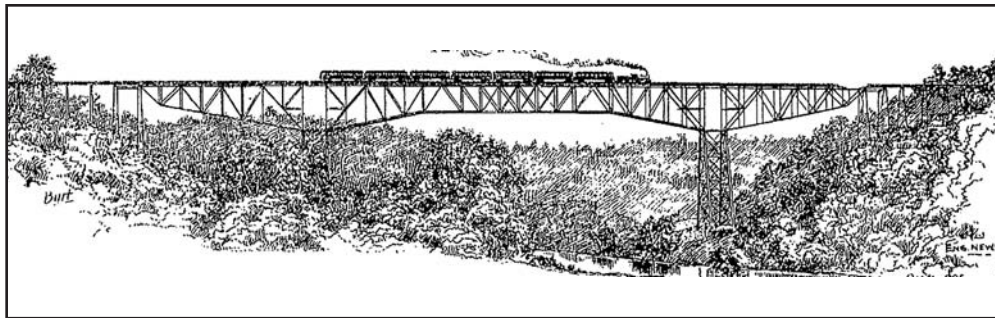


sides of the Hudson to save the magnificent, but abandoned bridge. Their vision for the bridge is to provide a critical link connecting more than 30 miles of trails as part of the Hudson Greenway trail system.

Under the recent leadership of Fred Schaeffer, Walkway Over the Hudson hopes visitors soon will be able to experience the magnificent Hudson valley from 212-ft. above the river. Thanks to the support of Congressman Maurice Hinchey (D-NY), Walkway Over the Hudson recently received an \$874,000 federal transportation equity grant to assess and stabilize the Poughkeepsie bridge for pedestrian and bike use by 2009. Completing the walkway from shore to shore is expected to cost \$5-10 million. Info: [www.walkway.org](http://www.walkway.org).

**Young's High Bridge.** In Kentucky, the Tyrone Bridge & Rail Company and the Blue Grass Rail Museum, under the leadership of Jodie Wells, have worked for a similar period to make Young's High Bridge part of Kentucky's rail-trail system linking Lawrenceburg and Versailles. The group has struggled to find support and funding from the state, the local community, and the bridge's owner, Norfolk Southern Corp. The vision is a new state park centered on Young's High Bridge, which would bring tourists' dollars into Anderson County, more jobs to the community, and maybe even make Tyrone a tourist destination as part of Kentucky's world famous race-horse-breeding Bluegrass area.

Young's High Bridge was completed in 1889 in the amazing time of 31 weeks by the same company that built the Poughkeepsie-Highland Bridge, the Union Bridge Co. of Pennsylvania. It is 1,659-ft. long, including a 551-ft.-long cantilever span that rises 283 ft. above the gorge. When built it was one of the highest of its kind, and had the



*Young's High Bridge. From Engineering News & American Railway Journal (Apr. 5, 1890).*



Joseph Brent

*Young's High Bridge (1889).*

longest cantilever span. The bridge is unique for never having been rebuilt, modified, or strengthened. Young's High Bridge has not been condemned but is listed by Norfolk Southern as out of service. The bridge is structurally sound, still able to carry locomotives and certainly capable of supporting pedestrian loads.

The dream, however, is on hold. Like the Poughkeepsie-Highland Bridge, Wells figures it will cost approximately \$10 million to repair 10 miles of track between Lawrenceburg and Versailles and rehabilitate the 116-year-old structure. She and her group have struggled. Perhaps Poughkeepsie can serve as a model. Info: [www.kyrailtrail.org/tyronerailtrail](http://www.kyrailtrail.org/tyronerailtrail).

*Eric DeLony*

## IA EXHIBITS

Philadelphia's International Airport is featuring an exhibit of photographs based on the work of Mike Bernstein [SIA] documenting the **Hog Island Shipyard** that occupied the site of the airport during WWI. The exhibit is an outgrowth of Mike's article, *Fame, Failure, and the Disappearance of the Hog Island Shipyard*, which appeared in the *Nautical Research Journal* (Spring 2006). If you happen to be traveling through the airport, the exhibit is located in Terminal E at the entrance to the airport's executive offices.

## SIA INDUSTRIAL HERITAGE PRESERVATION GRANTS

The SIA Industrial Heritage Preservation Grants support the research, documentation, and preservation of industrial sites and practices. Grant guidelines are available at [www.sia-web.org](http://www.sia-web.org). Grants are awarded annually. Deadline for applications is March 31. Info: Rick Greenwood, SIA Grants Committee, [rgreenwood@preservation.ri.gov](mailto:rgreenwood@preservation.ri.gov); 401-222-4134.

## HISTORIC BRIDGE NEWS

**Quaker Bridge, near Greenville, PA.** A local group, led by Nate Clark, has formed the Historic Quaker Bridge Preservation Society. Their goal is to preserve the late-19th-century, 126-ft.-long, Pratt, through-truss bridge, believed to have been built in either 1884 or 1898 by the Cleveland Bridge Co. (Curiously, and unexplained as yet, the bridge has two builder's plaques, one listing 1884 and the other 1898). The bridge was listed in the National Register in 1988, but had been scheduled to be razed when a replacement bridge was built alongside it this year. The local community mobilized and the preservation society will accept ownership from PennDOT. Quaker Bridge will become the centerpiece of a new park.—*Nathan S. Clark [SIA]*.

**Calhoun County Historic Bridge Park Honored.** The historic bridge park, which serves as a center for the preservation and rehabilitation of historic metal-truss bridges in Michigan, was selected as a Public Works Project of the Year from the American Public Works Association (APWA) in July. APWA officials noted the living history demonstrations at the park (e.g., riveting) and praised the educational opportunities offered to engineers and contractors. The park's most recent project is the preservation of the Charlotte Highway Bridge, a wrought-iron, Pratt, through-truss bridge designed by the Buckeye Bridge Works in 1886. It is the fifth metal-truss bridge to be re-erected at the park. Vern Mesler [SIA] has played a leading role in the park's development. Congratulations!—*Battle Creek Enquirer (July 5, 2006)*

**Alaskan Way Viaduct.** The more than two-mile-long elevated highway was built in 1953 and dramatically altered the character of Seattle's waterfront. Preservationists and city officials are squaring off to debate whether the viaduct, which has been determined eligible for the National Register, deserves to be rehabilitated or should be replaced.

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### **B&O'S MARTINSBURG ROUNDHOUSE**

ture to the Roundhouse Authority for use as a model rail museum and for storage of artifacts. To date, the depot doors, windows, and roof have been restored. A pedestrian bridge is under construction between the Martinsburg train station and the roundhouse. This joint project between the City of Martinsburg and the Roundhouse Authority will greatly improve access to the site and also track safety.

**Future.** The Roundhouse Authority has many future phases planned, including landscaping work; an addition to the Bridge & Machine Shop housing an elevator, stairs and restrooms; new wood block floors with concealed building utilities; restoration of the West Roundhouse roof and cupola; more restrooms between the West Roundhouse and the Frog & Switch Shop; and all new lighting, power, heating, and cooling systems. While much remains to be done, the

In an informal poll taken by the newspaper, respondents voted almost 9 to 1 against preservation.—*Seattle Post-Intelligencer (June 5, 2006)*

**New Documentary Showcases West Virginia's Bridges.** *CROSSINGS—Bridge Building in West Virginia* chronicles the history of bridge building in the Mountain State. It was funded through a federal transportation enhancement grant, has been shown on WV public television, and has been distributed to all state schools and libraries. A Website offers photos and information on featured bridges: [www.wvdot.com/crossings](http://www.wvdot.com/crossings).

**Connecticut's Open-Spandrel-Arch Bridges.** The State of Connecticut has listed six open-spandrel, reinforced-concrete arch bridges in the National Register. The Conn. Highway Dept. built the bridges between 1915 and 1935, and in many ways they represent the aesthetic highpoint of reinforced-concrete arch bridge construction in the state. The six bridges are the Arrawanna Bridge (1918) over the Coginchaug River in Middletown; Washington Bridge (1921) over the Housatonic River between Stafford and Milford; Reynolds Bridge (1928) over the Naugatuck River in Thomaston; Bridge No. 455 (1929) on Route 159 over Stony Brook in Suffield; Bridge No. 560 (c. 1930) on Routes 4/7 over the Housatonic River at Cornwall Bridge; and Bridge No. 1132 (1934) on Route 80 over the Hammonasset River in Killingworth. Bruce Clouette [SIA] prepared the nominations.—*Connecticut Preservation News (Sept./Oct. 2005)*

**Pulaski County Bridge #31,** located east of Medaryville, IN, is a rare example of a Stearns through-truss bridge (*SIAN*, Winter 2000). Built in 1905 by the Winamac Bridge Co., the bridge has been dismantled and relocated for re-erection as part of a pedestrian trail at Delphi's Wabash & Erie Canal Park.—*Dan McCain* ■

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(continued from page 19)

Roundhouse Authority has accomplished the largest task by securing and stabilizing the buildings. These fine industrial buildings of the mid-19th century have been overhauled and tuned up for another hundred-plus years. Presently, they are being used as great industrial pavilions for community use and trade shows. We hope that tomorrow they will assume a larger and more significant role of interpreting industrial architecture and engineering, labor history (as the site where the great strike of 1877 began), Civil War history (featuring numerous attacks and Stonewall Jackson's great train heist), railroading history, and local social history.

Tours may be arranged by calling the Roundhouse Authority office, (304) 260-4141.

*Matthew W. Grove*



## SITES & STRUCTURES

The **Madison (IN) Historic District** (tour site—1994 Fall Tour) was named a National Historic Landmark by Acting Secretary of the Interior Lynn Scarlett on Apr. 11. The district includes the Schroeder Saddletree Factory (SIAN, Spring 2000). In total, it encompasses 2,000 acres and 1,600 historic buildings, making it one of the largest districts in the nation—*NPS Heritage News* (May 2006)

**Peachstate Aerodrome** in Williamston, about 40 miles south of Atlanta, is a new project to recreate a complex that will look like a 1930s airfield. Patterned after Candler Field—Atlanta's original municipal airport—there will be vintage aircraft, hangars, a grass runway, old cars, and tractors. The first of the recreated buildings—a wooden hangar replicating the Eastern Airlines hangar at Candler Field—is scheduled to open this year. About 30 vintage planes are currently based at the aerodrome, many of them in the personal collection of retired Delta pilot Ron Alexander, the driving force behind the project. Info: [www.peachstateaero.com](http://www.peachstateaero.com).

**Ford's St. Paul Assembly Closes.** The Ford Motor Co. has announced that it will close the St. Paul assembly plant in 2008 (tour site—1983 Annual Conference, Twin Cities). The 122-acre plant, which makes the Ranger pickup truck, employs over 1,800. It opened in 1925 after Henry Ford reportedly chose the location based on its access to cheap hydropower generated from the Mississippi River.—*Star Tribune* (Apr. 13, 2006)

**First Cloverleaf in U.S. Replaced.** Work began in May to replace the nation's first cloverleaf interchange (1929) at the junction of US routes 1 & 9 in Woodbridge, NJ. The cloverleaf, which allows traffic to change directions safely without having to make turns crossing lanes of opposing traffic, was a significant advance in highway design. It would go on to become a common feature of major, and then interstate, highways. The Woodbridge cloverleaf was designed by engineers of the NJ State Highway Dept., one of the first organizations in the U.S. to make serious study of the problems associated with traffic congestion.—*News Tribune* (May 5, 2006)

**ThyssenKrupp**, the German steelmaker, has announced that it will close its historic **Budd Co. stamping plant** in Detroit (tour site—2005 Fall Tour) at the end of 2006. About 350 employees will be affected, but most of these will retire. TK cited the lack of orders for this plant as the reason for the closure. The remaining work will go to a plant in Ohio. The plant's office building is a replica of Independence Hall. The Liberty Motor Car Co. built the plant in 1919, but went bankrupt in 1923. Budd bought the 86-acre property in 1925 and produced steel bodies, body panels, and steel wheels. Another historic Detroit auto plant bites the dust!—*Charles K. Hyde*

**Historic Lighthouses Available.** The federal government has issued notice that it will sell or transfer 18 historic lighthouses in Maine, Maryland, and Rhode Island. The General Services Administration (GSA) works with the U.S. Coast Guard and the National Park Service to transfer excess historic lighthouses

at no cost to qualified federal agencies, state, and local governments, or nonprofit organizations under the authority of the National Historic Lighthouse Preservation Act of 2000. If no steward is identified through the notification process, GSA sells the lighthouses through a competitive public auction. Info: [www.cr.nps.gov/maritime/nhlpa/nhlpa.htm](http://www.cr.nps.gov/maritime/nhlpa/nhlpa.htm).

**Save the Silver Spade.** Efforts are fully underway to raise the funds necessary to save the 1964 Silver Spade, a Bucyrus-Erie 1950B, one of the largest surface-mining stripping shovels ever built. The shovel has a 105-cubic-yard capacity and weighs 7,000 tons. She worked the Ohio Valley coalfields until April 9 of this year when a roller-bearing failure brought her career to an end. She sits three miles west of New Athens, OH, awaiting a decision from Consol Energy as to whether she will be scrapped or will be given to the Harrison Coal & Reclamation Historical Park in Cadiz, OH. Consol Energy is working with the park and Harrison County officials to see if some arrangement can be made. The park already features an impressive collection of surface mining equipment, but the Silver Spade is one of only two of its size and kind left in the U.S. The other is the slightly smaller Big Brutus, which has been the centerpiece of a park in West Mineral, KS, since 1985. To learn more or make a donation: [www.hcrhp.org](http://www.hcrhp.org).

**Pabst Blue Ribbon Bottle Stubbornly Refuses to Budge.** SIAN (Fall 2004) reported on the demolition of the Pabst Brewery complex in Newark, NJ. The iconic, 60-ft.-tall steel bottle (actually a 55,000 gallon watertank) that topped the building was to be removed and preserved somewhere in the city, but as of June 2006, the bottle had resisted all efforts to move it, even breaking the crane that made the first attempt to lift it. The bottle is much heavier than anticipated and special cables will have to be made. The effort was to resume later this summer.—*The Star-Ledger* (June 13, 2006). ■



**Sibley Mill Closes.** *Augusta, GA's famous Sibley Mill, built in 1882 atop the ruins of the Confederate Powderworks, closed in June. The cotton mill is widely considered one of the South's most architecturally distinguished. It was also one of the few water-powered mills still in operation, buying water from the Augusta Canal Authority to power its turbines. The future of the mill, which was operated by Ohio-based Standard Textile, is uncertain but the canal authority is committed to preservation, including finding another textile mill operator or adaptive re-use.*—*Augusta Chronicle* (May 3, 2006)/HABS GA-123

## IA ON THE WEB

**Alabama Iron Sites** ([www.alaironworks.com](http://www.alaironworks.com)). The Alabama Historic Ironworks Commission and the Iron & Steel Museum of Alabama (see *SIAN*, Winter 2006) have completed a new Website, developed by Jim Bennett [SIA] and Tom Perrymon, on the history of Alabama's iron industry, documenting 17 iron furnaces in operation through the Civil War and the growth of the Birmingham steel district in the late 19th and 20th c.

**Automobile in American Life** ([www.autolife.umd.umich.edu](http://www.autolife.umd.umich.edu)) is a new on-line archive developed by the University of Michigan-Dearborn and The Henry Ford, funded by the NEH and the DaimlerChrysler Corp. Fund. The site is copiously illustrated with archival photos and features scholarly essays and case studies on the automobile's relationship to labor, gender, race, design, and the environment. Also included are more than a dozen oral histories of major automobile designers. Supplemented by a variety of materials for teachers and students.

**Burlington Northern-Santa Fe RR Historic Photos** (<http://photos.bnsf.com>). BNSF Corp. has made available some its collection of historic images dating as far back as the 1870s. The photos are organized by predecessor railroad, date, and topic. Prints may be ordered.

**California Interstate Highways** ([www.dot.ca.gov/interstate](http://www.dot.ca.gov/interstate)). CalTrans celebrates the 50th anniversary of the Federal Highway Act of 1956, establishing federal funding for interstate highways, with a brief history, timeline, and photos of expressway and interstate highway construction. Many California freeways pre-date the landmark 1956 act and represented innovative designs.

**Interactive Mapping of Railroad Attractions** (<http://find.mapmuse.com>). The idea is for railroad enthusiasts to build upon a nationwide map of railroad attractions by editing and enhancing the existing data. Through community effort, the hope is to have a comprehensive, descriptive, and up-to-date map to help people find the attractions.

**Lighthouse Postcards** (<http://americanhistory.si.edu/collections/lighthouses>). Digital collection of over 270 lighthouse postcards from the collection of the Smithsonian's National Museum of American History.

**Mississippi River Field Guide** ([www.fmr.org/fieldguide/index.php](http://www.fmr.org/fieldguide/index.php)). Includes industry and infrastructure in the Minneapolis-St. Paul vicinity.

**Modern-day Sandhogs** ([www.amny.com/news/local/am-tunnel-story,0,1627108.story](http://www.amny.com/news/local/am-tunnel-story,0,1627108.story)). Local NYC newspaper offers an interactive video, slide show, and story about the sandhogs digging City Water Tunnel No. 3. Also some background on the city's historic water tunnels.

**New Haven Railroad Collection** (<http://railroads.uconn.edu>). Accesses the Railroad History Collections of the Thomas J. Dodd Research Center at the Univ. of Conn., which includes the bulk of the New Haven RR's corporate records.

**New Jersey Labor Statistics, 1878-1916** ([www.danj.org](http://www.danj.org)). Documents Assn. of NJ has completed digitization of the *Bureau of Statistics of Labor and Industries of New Jersey, Annual Reports, 1878-1916*, and the *Annual Report of the Inspector of Factories and Workshops of the State of New Jersey, 1883-1904*. The reports help tell the story of the rise and decline of a variety of industries, often comparing working conditions and legislation in NJ with other states and countries.

**Nipper and His Master's Voice** ([www2.danbbs.dk/~erikoest/nipper.htm](http://www2.danbbs.dk/~erikoest/nipper.htm)). Yes, there was a real dog named Nipper that listened to a gramophone, and he was painted by his master, Mark Barraud, in 1898. The Gramophone Co. purchased the painting in 1899 and eventually it became the famous RCA Victor trademark. Nipper's history and more about the trademark at this Website.

**North Carolina Mills** ([www.presnc.org/mill\\_reuse\\_website/home.htm](http://www.presnc.org/mill_reuse_website/home.htm)). As the textile and tobacco industries have declined, communities have found themselves finding adaptive re-uses for mills in their commercial core. Preservation North Carolina has put together this Website as a series of case studies.

**Panama Canal Murals** ([www.pancanal.com/eng/history/murals/index.html](http://www.pancanal.com/eng/history/murals/index.html)). History and views of the beautiful murals of building the canal in the Administration Building (tour site—1996 SIA Study Tour).

**Scottish Cast Ironwork** ([www.scottishironwork.org](http://www.scottishironwork.org)) is a site maintained by the Scottish Ironwork Foundation, dedicated to the preservation of ornamental cast ironwork. It includes a database of historic buildings and foundries. Also of interest: **Glasgow Digital Library** (<http://gdl.cldr.strath.ac.uk>), an indexed collection of historic photos of Glasgow, including shipping, railroads, and industries. Some sites will be familiar to those who were on SIA's 1998 Study Tour.

**Tin Cans 101** ([www.allstatecan.com](http://www.allstatecan.com)). The Allstate Can Corp. features the anatomy of a can and a useful glossary of can manufacturing.

**Tin Tabernacles** ([www.tintabernacles.com](http://www.tintabernacles.com)) were humble prefabricated churches made of corrugated iron, intended for temporary use. Most were fabricated in the U.K. and sent to missions in other countries.

**The Way We Worked** ([www.archives.gov/press/press-kits/way-we-worked](http://www.archives.gov/press/press-kits/way-we-worked)) is an exhibit of about 80 exceptional historic workplace photos that ran at the National Archives in Washington, DC, through May 2006. A selection of the photos are on-line, and there is an accompanying book. ■

"IA on the Web" is compiled from sites brought to the editor's attention by members, who are encouraged to submit their IA Web finds by e-mail: [phsianews@aol.com](mailto:phsianews@aol.com).



## NOTES & QUERIES

**Paper Proposals: North American Labor History Conference** invites proposals for sessions and papers on “Global Connections and Unfree Labor” for the 29th annual meeting, Oct. 18-20, 2007, at Wayne State University, Detroit. Papers dealing with such topics as slaves, indentured servants, impressed sailors, and serfs are welcome. The conference will explore the issue of unfree labor in the global economic system both as a historical phenomenon and as an element of today’s international economic environment. A 1-2 page abstract and brief vitas are requested by Mar. 1, 2007. Info: Janine Lanza, Coordinator, Dept. of History, 3094 Faculty Administration Bldg., Wayne State Univ., Detroit, MI 48202; (313) 577-2525; [jmlanza@wayne.edu](mailto:jmlanza@wayne.edu).

**Wanted: Kansas City Architect & Builder, 1886-1907.** The Kansas City Public Library is seeking to complete its run of the journal that was the official organ of the Master Builders’ Exchange. The library currently has microfilm of issues starting in 1899 through 1907, but is missing 1886-1898 and has some gaps in later volumes. Anyone with information about this publication is encouraged to contact: David Disney, (816) 391-2952; [david.disney@jedumn.com](mailto:david.disney@jedumn.com).

Info is sought for an illustrated book about the **Pennsylvania RR’s Greensburg Route**. This was one of the routes under discussion in the late 1840s by J. Edgar Thomson and his engineers and the route that they finally chose to take for the section of main line from Blairsville, through Greensburg, to Turtle Creek at Pittsburgh. The author is also looking for visual material illustrating PRR equipment from the 1840s to 1850s. Contact: Jim Miller [SIA], 621 Grove St., Greensburg, PA 15601; (724) 837-9329.

**Paper Proposals: Technological Innovation and the Cold War** is a conference to be held at the Hagley Museum & Library in Wilmington, DE, Mar. 9-10. The principal question is the impact of Cold War-era military innovations on American economic growth. Papers could consider the transition from military to commercial applications in, for example, aerospace, communications, material science, propulsion, instrumentation, or computing. Failure or long delays in transferring technologies are of special interest. Papers must consider the relationships among corporations, research institutes, and state agencies in the design and development of new technologies. Proposals are due Oct. 30. Travel support is available for presenters. Info: Carol Lockman, HM&L, Box 3630, Wilmington, DE 19807; (302) 658-2400, ext. 243; [clockman@hagley.org](mailto:clockman@hagley.org).

The **Burndy Library** at the Dibner Institute for the History of Science and Technology at MIT has closed in preparation for relocation to the Huntington Library, San Marino, CA. The Burndy Library houses several major historical collections, including the Cyril Stanley Smith Collection (mining and metallurgy), the Victor Darnell Collection (bridge engineering), and the Richard & Mary Fagan Collection (electric lighting).

**Michigan Tech’s IA and Industrial Heritage Programs** were featured in the most recent issue of *Michigan Tech Magazine*. The three-page story describes the work of the IA department and the new PhD program. Congratulations to Professor Pat Martin [SIA Executive Secretary & IA Journal Editor] and all of the faculty at MTU.

The **Associated Research Centers for Urban Underground Space (ACUUS)** is an international non-governmental association actively promoting partnerships among engineers, architects, planners, and decision makers in pursuit of underground development. The main purpose is to shift undesirable, impractical, less profitable activities from ground-level to subsurface environments to improve the livability of cities. The 11th ACUUS Conference will be held in Athens, Greece, Sept. 10-13, 2007. Many of the ACUUS activities have intersections with historic mining and underground industrial activities as illustrated by the conference host site, the **Lavrion Technological & Cultural Park**, which bears a mining tradition dating back to 2000 BC. Info: [www.acuus2007.ntua.gr](http://www.acuus2007.ntua.gr).

**Temporarily Closed:** The Smithsonian’s **National Museum of American History** has announced plans for a two-year major rehabilitation of its building with architectural enhancements to the interior, construction of a new gallery for the Star-Spangled Banner, and update of the 42-yr.-old building’s mechanical, electrical, plumbing, and security systems. The museum will close on Sept. 5 and will reopen by summer 2008.

**Hagley Museum & Library, New Collections.** Hagley in Wilmington, DE (tour site—1977 Annual Conference; 2004 Fall Tour) has recently added a number of IA-related collections including: photographs of the **Charles Blasius & Sons Piano Factory** in Woodbury, NJ, c. 1893-1913; published works of architectural and engineering firms collected by the Commonwealth of Massachusetts, Dept. of Conservation and Recreation (firms represented include **Storch Associates, J. E. Greiner Co., Perry Dean & Stewart, Eggers & Higgins, and Daniel Mann Johnson & Mendenhall**, among others. Publications date from c. 1960-80 and cover a range of projects, including Colonial Williamsburg, the Jefferson Memorial, the Delaware Memorial Bridge, and Saugus Iron Works, as well as other transportation, commercial, industrial, and institutional contracts); a small collection of records documenting **DuPont China, Inc.** and its dyestuffs business in East Asia from c. 1920-1949, including photos showing traditional Chinese dying and DuPont agents traveling by pack animals, boats, and sedan chairs; and the **Gerald A. & Arlene L. Fingerman Fabric Care Memorabilia Collection**, numbering in excess of 2,400 items illustrating the history of laundry soap, including soapboxes, bleach, bluing, starch, advertising premiums, models, and laundry equipment dating from 1875 to the 1970s. Info: [www.hagley.org](http://www.hagley.org). ■

# CALENDAR

## 2006

**Sept. 28-Oct. 1: SIA FALL TOUR, YOUNGSTOWN, OH.** Info: [events@siahq.org](mailto:events@siahq.org); [www.sia-web.org](http://www.sia-web.org).

**Sept. 30: Yankee Steam-Up, The New England Museum of Wireless & Steam, East Greenwich, RI.** Info: [news@ids.net](mailto:news@ids.net).

**Oct. 5-7: Pioneer America Society Annual Conference, Springfield, OH.** Theme: On the Rebound: Landscape Revitalization in a Historic, Industrial Midwestern Town. Info: [www.pioneeramerica.org](http://www.pioneeramerica.org).

**Oct. 12-16: Society for the History of Technology (SHOT) Annual Meeting, Las Vegas, NV.** Info: [www.shot.jhu.edu](http://www.shot.jhu.edu).

**Oct. 19-21: 28th Annual North American Labor History Conference, Wayne State Univ., Detroit, MI.** Theme: Technology, Environment & Work. Info: Janine Lanza, Dept. of History, 3094 Faculty Admin. Bldg., WSU, Detroit, MI 48202; (313) 577-2525; [jmlanza@wayne.edu](mailto:jmlanza@wayne.edu).

**Oct. 29: Roebling SIA Chapter Annual Symposium, Drew University, Madison, NJ.** Info: [rcsiaprez@aol.com](mailto:rcsiaprez@aol.com).

**Oct. 31-Nov. 5: National Trust for Historic Preservation Annual Conference, Pittsburgh, PA.** Theme: Making Preservation Work! Info: [www.nthpconference.org](http://www.nthpconference.org).

**Nov. 3-4: Food Chains: Provisioning, Technology, and Science Conference, Hagley Museum & Library, Wilmington, DE.** Info: Carol Lockman, (302) 658-2400; [clockman@hagley.org](mailto:clockman@hagley.org).

**Nov. 8-12: Assn. of Railway Museums & Tourist Railway Assn. Joint Conference, Sacramento, CA.** Info: [www.californiastaterailroadmuseum.org](http://www.californiastaterailroadmuseum.org)

## 2007

**Jan. 9-14: Society for Historical Archaeology Annual Conference, Williamsburg, VA.** Info: [www.sha.org](http://www.sha.org).

**Mar. 28-31: Vernacular Architecture Forum Annual Meeting, Savannah, GA.** Info: [www.vernaculararchitectureforum.org](http://www.vernaculararchitectureforum.org).

**June 1-2: Business History Conference Annual Meeting, Case Western Reserve University, Cleveland, OH.** Theme: Entrepreneurial Communities. Info: Carol Lockman, Box 3630, Wilmington, DE 19807; (302) 658-2400; [clockman@hagley.org](mailto:clockman@hagley.org).

**Oct. 18-20: Labor and Freedom in Global Perspective: 29th Annual North American Labor History Conference, Wayne State University, Detroit, MI.** See article in this issue. Info: Janine Lanza, Coordinator; (313) 577-2525; [jmlanza@wayne.edu](mailto:jmlanza@wayne.edu).

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**SOCIETY FOR  
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