



SOCIETY FOR INDUSTRIAL ARCHEOLOGY

NEWSLETTER

Volume 34

Winter 2005

Number 1

GAMBLING ON BETHLEHEM STEEL'S FUTURE

Will Bethlehem hit the jackpot with slot machines? Will the gambling industry rescue and preserve the Lehigh Valley's steelmaking heritage?

Pennsylvania passed a new gaming law in June, 2004. In October, 124 acres surrounding Bethlehem Steel's iconic blast furnaces (tour site—2002 Fall Tour, Lehigh Valley) were purchased by BethWorks Now, a group of commercial developers based in New York City. By year's end, the partnership had grown to include Las Vegas Sands Inc., owners of the Venetian Resort Hotel Casino in Las Vegas. They are proposing to build a slot-machine parlor in the eastern portion of the site, while retaining the blast furnaces—which would be illuminated at night—and putting some surviving plant buildings to commercial and residential use. An open-air concert arena and a historical museum are also being promised by the developers, who say they are “awestruck” by the industrial scale and history of the site.

State gambling licenses will not be formally awarded until late 2005 or early 2006. In the meantime, BethWorks Now has hired a master planner for the site, Judith Saltzman of New York, and is forecasting that “this project will be a \$700 million to \$1 billion full build-out.” Such figures are tantalizing to city officials. “While I’m not necessarily promoting gaming, the economics are strong,” Mayor John Callahan told the *Morning Call* newspaper, citing thousands of new jobs and an annual “host fee” of \$10 million to be paid by the gambling parlor to the city (along with an annual \$10 million to the county).

For those who care about preserving the history of “The Steel,” as Bethlehem Steel is known around these parts, the years since steelmaking halted in 1995 have been ones of discouragement. Parts of the 1,800-acre plant site have been put to other uses, but the “hot end” is still a desolate, weed-choked collection of empty (but surprisingly intact) stone and brick buildings brooded over by

(continued on page 2)



Bethlehem's Blast Furnace A, 1988. The building to the right is the crucible steel building. HAER PA-48-2.

the five huge blast furnaces. Last April, the National Trust for Historic Preservation added the site to its list of “Eleven Most Endangered Historic Places.”

Plans for an industrial history museum on the site, originally intended by Bethlehem Steel not just as a commemoration of its own achievements but as a celebration of American industrial might, faltered when the company declared bankruptcy in 2001. Despite an affiliation with the Smithsonian Institution, which promised artifacts relevant to industrial history (but no direct financial aid), fundraising goals have been missed and the National Museum of Industrial History can still be glimpsed only in glossy brochures and on its Web site, www.nmih.org.

“Virtually the entire facility has been completely designed,” says Stephen G. Donches, former vice president of Bethlehem Steel who has headed the NMIH since its inception in 1997. Donches describes the goal of Exposition Hall, which is to occupy the plant’s 37,000-sq.-ft. former electrical shop, as “giving visitors a look behind the fences of industrial America.” Architectural renderings show the “factory floor” as divided into various industry groupings—“Food and Agriculture,” for example, with an “exhibit focus” on “Chocolate and Milk Production/Advertising/Sales,” and “Transportation,” with a focus on “Automobile Design.”

NMIH materials are sprinkled with terms like “immersive environments” and “interactive experiences,” and with inspirational prose. The museum’s mission is to present “a story of enormous magnitude—a story of powerful machines turning raw materials into building and consumer products to house, feed and clothe a nation. It is a story about building, transporting and defending a nation and making the world safer for all mankind.” But it is not, primarily, a story about steelmaking. That is to wait for the “second stage” of the NMIH’s evolution, an “Iron and Steel Showcase” that was originally envisioned in the gigantic Number Two machine shop.

BethWorks Now seems to be planning residential lofts and retail stores in the Number Two building, however. The site’s new



Jet Lowe

General view of Bethlehem Steel’s blast-furnace plant in Bethlehem, 1988. Furnace A, built in 1908, to the left; in the foreground is the turbo-blower and blast furnace gas-powered electric generating station, built in 1919. HAER PA-48-1.

owners “have the right to do their own planning,” Donches said in November, adding that although the NMIH “would be interested later on” in helping with “the iron and steel side of things,” for now he is concentrating on raising funds for Exposition Hall. The entry of new owners has been a positive factor, he said, “removing some [donors’] fears that nothing more would happen” on the site.

BethWorks Now, for its part, issued a written statement in December stating that it is “fully supportive of the museum” and that the NMIH “has an important role in our overall plans.”

Another new player is the Delaware & Lehigh National Heritage Corridor, which is using a \$62,000 state grant to “look at the feasibility” of establishing a 17-acre, self-supporting historic park that would include the blast furnaces and some key structures around it, with a visitors’ center. “Telling the story of The Steel is our goal,” said Bill Mineo, the Corridor’s Stewardship and Trails Manager. “The buildings aren’t in great shape, and walking through the site is not an easy or safe thing to do right now. We’re looking at the blast furnaces, the blowing [engine] house, the machine shops, and asking, ‘How close can visitors get to them, and how much can they see?’” The Corridor (which originally had “Canal” in its name) stretches for 150 miles through five counties. It was founded in the mid-1980s with a main focus on “the transportation issues of coal, from mine to market,” Mineo said. “Of course, Bethlehem Steel was still in operation at the time. The histories of iron and coal are so closely intertwined, this is a natural extension.” Corridor officials have been meeting with BethWorks Now, “going along in good faith” that the developers will keep their promise to preserve the most historic parts of the site. Whether the new owners would operate the park themselves, or deed it to a new nonprofit agency (the Corridor is prohibited from owning sites outright), remains to be seen.

Mineo and Lance Metz [SIA], historian at the National Canal Museum and an expert on Bethlehem Steel’s history, envision visitors walking through, or at least around, the most significant structures in the hot end, a series of stone and brick buildings erected by John Fritz between 1860 and 1893. These include the iron foundry, which Metz said is now “the oldest Bessemer building in the world,” the blowing engine house, which Mineo said has lost

(continued on page 10)

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; Web site: www.sia-web.org.

Mailing date for Vol. 34, 1 (Winter 2005), Feb. 2005. If you have not received an issue, apply to SIA-HQ (address above) for a replacement copy.

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.

TO CONTACT THE EDITOR: Patrick Harshbarger, Editor, SIA Newsletter, 305 Rodman Road, Wilmington, DE 19809; (302) 764-7464; e-mail: phsianews@aol.com.

Visit the Machine Shop of the World and the Motor City

2005 Conferences and Tours

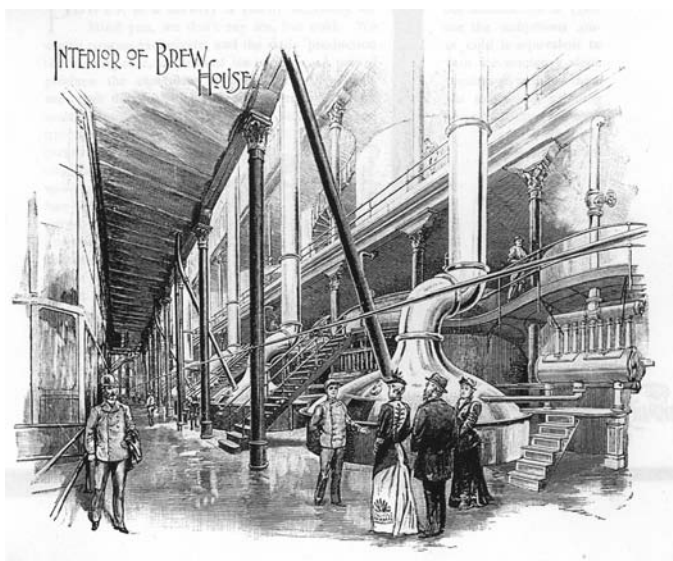
MILWAUKEE

34th Annual Conference, June 2-5

This year's conference is in the Machine Shop of the World—Milwaukee, WI. The conference hotel is the Hilton—Milwaukee City Center. It was Wisconsin's tallest and biggest hotel when built as the Schroeder in 1928. Its Art Deco-style makes it a true grand dame of hotels. Travel discounts have been arranged with Milwaukee-based Midwest Airlines and with Amtrak. Check the registration brochure for details.

The opening-night reception will be at the Milwaukee School of Engineering to see artwork from the Eckhart G. Grohmann Collection. This amazing collection documents the historical evolution of work from manpower to electric power over the past 400 years.

Tour arrangements have been made with Kohler (bath fixtures) and ReGENco (turbine and generator repairs housed in former Allis-Chalmers facilities). Other potential sites include Usinger (sausages), Bucyrus-Erie (excavating equipment), Allen Bradley (industrial controls), and SC Johnson (household cleansers). And we won't forget Milwaukee's bascule bridges and breweries. Be there, or be a cheesehead!



The Pabst brew house from a pamphlet, Pabst Milwaukee (1895). The brew house was built in 1885, originally with three kettles, but had acquired the six shown here by 1891. The building still stands and we'll attempt to visit it during the June 2-5 Annual Conference. Call it Brewtown or Machine Shop of the World, take your pick, Milwaukee has much that will interest the SIA.

Additional Info: Check the SIA Web site (www.sia-web.org) for conference and tour updates, or contact the SIA's Events Coordinator, Mary Habstritt, events@siahq.org; (212) 769-4946. Registration materials will be sent to all members several months before the events.

DETROIT

Fall Tour, Sept. 29-Oct. 2

The Fall Tour will take us back to Detroit, 25 years after the 1980 Annual Conference. The opening-night reception will be at the Ford Motor Co.'s Piquette Ave. plant where the Model T was first developed and manufactured. Several automotive parts suppliers are on the tentative process-tour itinerary, including New Center Stamping that, among other items, is making replacement grills for '62 pickups on original equipment. Also on the list of possible sites are the auto-design studios of the College of Creative Studies, Fairlane Manor, Ford Field, the Rivera Murals, and the Bettermaid Potato Chip factory. We will have a private visit to the new Ford Rouge Factory Tour operated by the Henry Ford Museum.

A highlight of this year's fall tour will be a three-hour, daylight, boat trip from downtown Detroit under the Ambassador Bridge up the Rouge River to the turning basin at Ford Rouge Plant. En route, we will pass under several drawbridges, sail by Historic Fort Wayne, and see no less than two steel plants, six blast furnaces, one salt mine, one wastewater treatment plant, one gypsum plant, remnants of the rail ferry, two cement plants, one power plant, the Dockyard, and the first international power-sharing cable crossing. The river should be active, so it is likely we will see several freighters.



Ford's Piquette Ave. Plant (shown ca. 1906-10) will be the site of the opening reception for the SIA's 2005 Fall Tour, Detroit.

Student Travel Scholarships. The SIA awards travel scholarship to help full-time students and professionals with less than three years of full-time experience to attend annual conferences. Those interested in applying for a travel scholarship to attend the annual conference in Milwaukee, WI, June 2-5, 2005, should submit a concise letter outlining their demonstrated interest in and commitment to industrial archeology or a related field, and one letter of reference. **Deadline for applications is April 1, 2005.** Info: Mary E. McCahon, SIA Scholarships, c/o Lichtenstein Consulting Engineers, One Oxford Valley, Suite 818, Langhorne, PA 19047; (215) 752-2206; fax 752-1539. Notice of awards will be made by May 1.

Wilmington

Review of 2004 Fall Tour

More than 100 SIA members and guests participated in the 2004 Fall Tour in Wilmington, Delaware, and surrounding areas, Oct. 13-17. Wilmington's economic base shifted from flour milling in the colonial period to railroad-car manufacturing, tanning, shipbuilding, and carriage making during the 19th century, and then to being the corporate headquarters of the chemicals giant DuPont in the 20th century. Today, DuPont is no longer the largest employer in Wilmington, that honor having passed to bankcard company MBNA. Despite these significant transitions, the physical evidence of past industries, as found in buildings, machines, and land-use patterns, abounds. The city and its surrounding region have active railroad repair shops (Amtrak and Delaware Car Co.), automobile assembly plants (GM and Chrysler), refineries (Sun Oil and Premcor), chemical plants (DuPont, Ciba), pharmaceuticals (AstraZeneca), poultry processing (Perdue), and even steel mills (CitiSteel, ISG-Lukens). Fall Tour participants took in a sampling of what the Wilmington area has to offer from the preserved powderyards at the Hagley Museum to the Chesapeake & Delaware Canal.

The opening reception was held at the **Historical Society of Delaware's** museum in a former Woolworth's in downtown Wilmington. The museum has an excellent exhibit on the history of Delaware, which participants viewed while sipping drinks and munching appetizers. We are grateful to the Historical Society for donating the space for our event. Museum consultant and former Hagley curator Frank McKelvey spoke to the assembled group on the challenges of preserving large industrial artifacts and passionately encouraged SIA members to champion the preservation of machines in their communities.

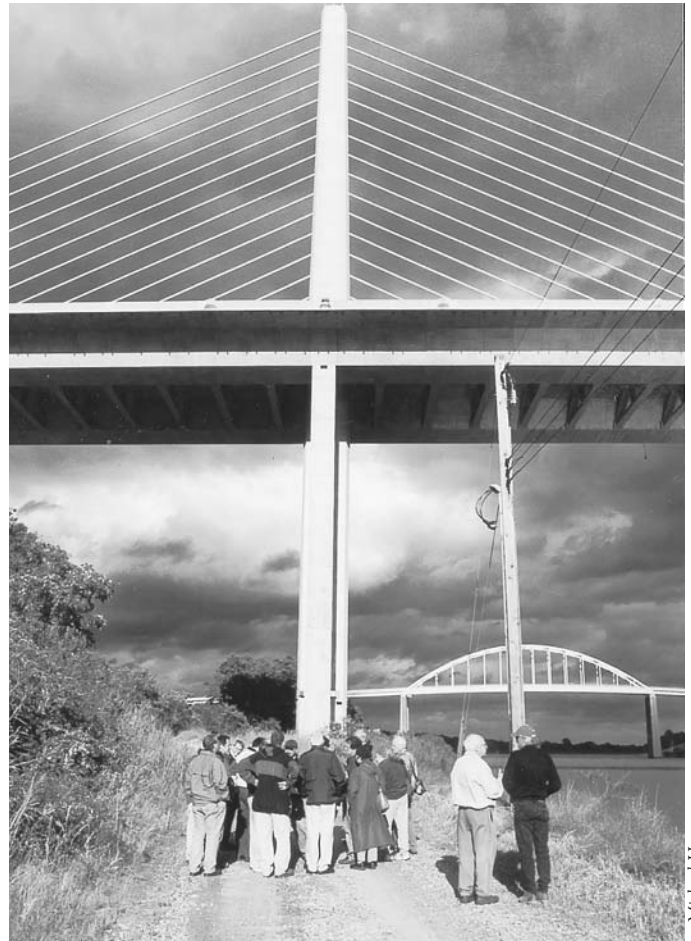
Over the next four days of tours, opportunities were plentiful to inspect preservation successes and challenges, as well as operating industrial sites. Each day offered a choice of two tours with the routes crisscrossing Wilmington and its hinterlands in northern Delaware and southeastern Pennsylvania. Despite the best of planning, bus breakdowns and tardiness wreaked havoc with the schedules on several occasions—a situation for which the bus company apologized and offered a refund. Participants, however, generally stayed in good spirits and made the best of it; one group, stranded in Chester, PA, to its credit used the time for an impromptu walking tour and then enjoyed the sunset from the roof of the **Chester Power Station**, a beautiful Beaux-Art style building (with a largely intact, but non-operational, turbine hall) built in 1916-18 on the Delaware River. Despite the pleasant (or unpleasant) memories of the bus misadventures, a thematic approach gives a better accounting of the Fall Tour than the details of each of the eight tours, especially since several sites were on more than one itinerary. Taken together, the tours provided a good overall picture of Wilmington's industrial archeology.

Although settled in the 1630s by Swedish colonists, Wilmington's industrial development did not begin in earnest until the 1730s when English Quaker merchants recognized the location's geographical advantages. The Brandywine River, tumbling out of the hills on the northeast side of the city, offered waterpower for milling, while the slowly meandering Christina to the south offered a tidewater port, conveniently close to the wheat-growing region of Lancaster and Chester counties, Pennsylvania. By the 1770s, the banks of the Brandywine were



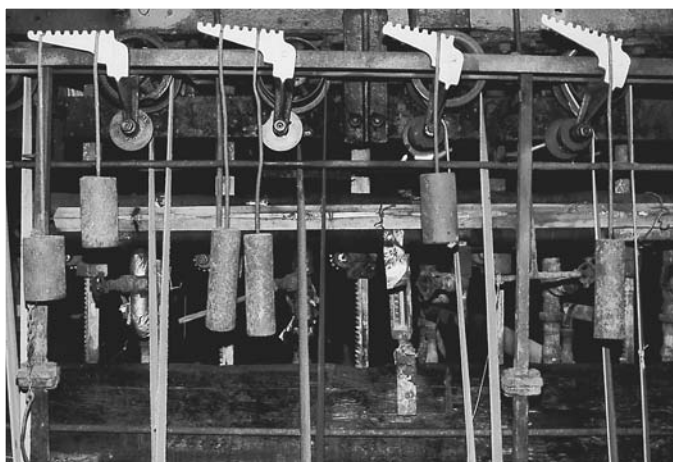
Elliott Hunt

Fall tour participants receive an explanation of the repair and operation of Amtrak locomotives at the Wilmington shops.



Michael Hoyt

Bridge tour participants contemplate the Delaware Route 1 bridge over the Chesapeake & Delaware Canal (a cable-stay bridge completed in 1995). The St. Georges Bridge, a tied-arch built in 1940-42, is in the background.



At NVF, SIA members studied the complex system of weights, pulleys, and belts that operated the c. 1901-09 machine for dipping multi-layered paper in zinc chloride to form vulcanized fiber, an early electric insulating material.

lined with flour mills annually grinding and exporting tens of thousands of barrels of flour. The barrels were branded "Brandywine Superfine," reflecting quality and pride. The Quaker millers' plain stone homes and the power canal still exist in the **Brandywine Village Historic District**, near where the SIA had its Saturday-night banquet at the **Wilmington Waterworks**. The early-20th-century pumping station is notable for its Holly, triple-expansion steam pumping engine, a nearly four-story tall behemoth that SIA members were welcome to climb and explore prior to dinner. The engine has been out of service for years but the city is committed to its preservation and has recently restored the handsome Romanesque building.

There are several remaining historic gristmills in the Wilmington region, including the **Green Bank Mill**, outside Newport, Delaware, within a mile of where Oliver Evans first installed his famous, automated, flour-milling system in the 1790s. The mill features an operating breast waterwheel, a display of flour-milling machinery, and a reconstructed woolen mill with period machinery including a mule-spinning machine. Director Tony Shahan was on hand to describe the indefatigable efforts of volunteers who rebuilt the mill after a devastating fire in the 1960s and repaired it after two major floods in 2003 and 2004. Volunteers are currently replacing an 1890s pin-connected, Pratt, pony-truss bridge that was destroyed in the 2003 flood (SIAN, Fall 2003) with a similar one that they located and salvaged from near Carlisle, PA.

Of course, Wilmington is best known to most SIA members for another waterpowered industry—the gunpowder mills of E. I. du Pont de Nemours. **The Hagley Museum & Library**, established in 1953, preserves and interprets the Du Pont Co.'s original black-powder works on a 233-acre site with operating waterwheel, turbine, steam engine, machine shop, and roll mill. The site is also home to a world-class research library. SIA tour participants were given complimentary all-day admission and a customized tour of the waterpower system led by former curator and SIA member Rob Howard.

French émigré E. I. du Pont established the gunpowder mills on the Brandywine River in 1802, but the impact on Wilmington during the 19th century was modest; the family and its workers lived in the company village well outside the city limits. In 1902 the du Pont family was on the verge of selling the explosives business but three younger cousins—T. Coleman, Alfred I., and Pierre



Mr. Toad's wild ride? No, tour participants fly by in the 1915 Stanley Steam Wagon at the Marshall Museum, 80-yr.-old Tom Marshall at the wheel.

S.—banded together to purchase the company from their elders. They reorganized it as a modern corporation with offices in a new multi-story building in downtown Wilmington, a few blocks from the SIA's hotel, the Wyndham. Over the course of the next decade, the ambitious cousins came to control the U.S. explosives industry and, through their wealth and influence, the very economy and politics of the city and the state. World War I marked a watershed with DuPont reaping huge profits from ammunitions sales to England and France. The company plowed the funds into the development of new products and launched the American synthetic dye industry, helped out by scientists lured away and patents confiscated from defeated Germany.

The 1920s saw DuPont become a diversified chemical company with manufacturing plants across the country. Two of the most successful products were cellophane (a film that could be used to protect and package perishables) and Duco paint (a quick-drying lacquer that was a critical step in mass producing color-styled automobiles). DuPont's main research lab is to this day at the aptly named **Experimental Station**, which treated the SIA to a rare driving tour of the site. The Experimental Station gave birth to the modern polymer industry in the 1930s, a remarkable decade during which DuPont scientists developed neoprene (synthetic rubber), nylon, Teflon, and Lucite.

Agricultural products still make up a large segment of area industry with mushrooms dominating on the Pennsylvania side of the border. **Kaolin Mushroom Farms** in Kennett Square was host to a tour that showed off its state-of-the-art composting facility. The compost operation is housed in a series of tunnel-like bays in a building where the mixture of straw and manure is prepared prior to sending it to growing houses. In the growing houses, the compost is spread out in trays and seeded with mushroom spore. The famous, white, button mushrooms for which the region is famous take about 21 days to grow and then are picked by hand.

In nearby Yorklyn, the **National Vulcanized Fibre (NVF)** mills offer an example of an industry struggling to survive with pressures to develop the property for other uses. The plant was in operation until last September when a flood closed it. Tour participants observed workers cleaning the machinery but a decision was yet to be made whether to go back into operation. NVF was established around 1900 and produces a multi-layered paper treated with zinc chloride to form a leatherlike substance used chiefly for electric insulation. The original c. 1901-09 papermaking machines and

(continued on page 6)

2005 GENERAL TOOLS AWARD

Call for Nominations

The General Tools Award Committee invites SIA members to submit nominations for the **2005 Society for Industrial Archeology General Tools Award for Distinguished Service to Industrial Archeology**. The award, presented at the SIA annual business meeting, recognizes individuals who have given sustained, distinguished service to the cause of industrial archeology.

Criteria for selection are as follows: (1) The recipient must have given noteworthy, beyond-the-call-of-duty service, over an extended period of time, to the cause of industrial archeology. (2) The type of service for which the recipient is recognized is unspecified, but *must be for other than academic publication*. (3) It is desirable but not required that the recipient be, or previously have been, a member of the SIA. (4) The award may be made only to living individuals. Teams, groups, agencies, firms, or any other collective entities are not eligible.

The nomination, which should not exceed three double-spaced typed pages, should address the specific accomplishments that

qualify the nominee for the award. Supplementary material (the candidate's resume, for example) may be appended to the nomination. Nominations must also include the name, address, and telephone number(s) of the nominator. Nominations may be made by any SIA member in good standing.

The General Tools Award was established in 1992 through the generosity of Gerald Weinstein [SIA], chairman of the board of General Tools Manufacturing, Inc. of New York City, and the Abraham and Lillian Rosenberg Foundation. The Rosenbergs founded General Hardware, the predecessor to General Tools. The award consists of a citation, a commissioned sculpture, and a \$1,000 cash award. Previous recipients are Emory Kemp (1993), Robert Vogel (1994), Edward Rutsch (1995), Patrick Malone (1996), Margot Gayle (1997), Helena Wright (1998), Vance Packard (1999), Eric DeLony (2000), Robert Merriam (2001), Charles Parrott (2002), Alex Barbour (2003), and Charles Hyde (2004).

Nominations, *which must be received on or before April 15, 2005*, should be submitted to: Professor Patrick Malone, Dept. of American Civilization, Box 1892, Brown University, Providence, RI, 02912; 401-245-4395; patrick_malone@brown.edu. ■

WILMINGTON (continued from page 5)

machines for soaking the paper in zinc chloride remain. Cypress is used for the vats since the chemical solution would eat through any metal container. The mills pose a significant opportunity and challenge for preservationists when NVF closes, which is not a matter of if but when.

There is already some significant preservation momentum in Yorklyn since it is also the site of the **Marshall Museum** at Auburn Heights, the mansion built by the family that established NVF. Overlooking the mills, the museum houses a world-class collection of 14 Stanley Steamer automobiles, along with a machine shop for keeping them in operating condition, as well as a steam-powered garden railroad. The museum's volunteers, including Tom Marshall, about age 80, were on hand to greet the SIA. Tom's father, Clarence, was a founder of NVF and also had a Stanley dealership, ingraining Tom's love for the old cars. Rain limited afternoon activities, but a break in the showers allowed Marshall to take a select group for a rip-roaring ride in the 1915 Stanley Mountain Wagon.



Michael Hoyt

The non-operating stationary steam engine and boiler operating system (right) on the Pennsylvania RR's swing-span bridge (c. 1888) over the Christina River.



Elliot Hunt

Passenger cars in various states of repair at the Delaware Car Co.

Transportation, from automobiles to railroads, shipbuilding, and bridges, was a theme running throughout the Fall Tour. The **DaimlerChrysler Newark Assembly Plant** offered a two-hr. tour of the Dodge Durango assembly line, which was quite an honor since the SIA was the first outside group to visit the plant since Sept. 11, 2001. The facility was built in 1951 as a tank plant but converted to automobiles in 1957. Today, more than 240 robots and 2,300 employees build up to 600 vehicles per day on two shifts.

In contrast to the mass-production methods at DaimlerChrysler, the **Delaware Car Co.** in Wilmington, specializing in the repair of railroad passenger cars, gave tour participants an idea of the organization of work in the type of traditional shop that Henry Ford designed the assembly line to replace. At Delaware Car about 30 workers move from job to job on damaged or worn-out cars, mostly from mass-transit agencies. Cars in various states of repair are scattered throughout the plant, with workers carrying out tasks like shaping sheet metal, welding, replacing electrical wiring, and painting. Delaware Car repairs approxi-

Bellanca Hangar

One of the sites visited during the SIA's Fall Tour to Wilmington was the Bellanca Hangar in New Castle, DE. The tour group took a genuine interest in the building, especially its unusual, laminated-timber, "fantail" roof trusses.

In May of 1927, the world's conception of aviation was altered dramatically by Charles Lindbergh's flight, the first solo nonstop transatlantic flight in a small monoplane. This daring feat illustrated aviation's potential and persuaded American businessmen to invest in aviation. In Wilmington, aviation enthusiasts and businessmen persuaded Italian airplane designer Giuseppe Bellanca to move his manufacturing plant from New York to Delaware. The new plant and adjacent public airfield were formally dedicated on Dec. 27th, 1928.

For years Bellanca Aviation was on the cutting edge of innovative aircraft design and a significant producer of quality American aircraft that set many aviation records. A classic hangar, built c. 1935, is the last remaining structure of the once bustling airfield and manufacturing complex, and it is being studied for adaptive re-use. The hangar is now owned by the Trustees of the New Castle Common, a group established by William Penn in 1683 to manage public lands for the town of New Castle.

Bellanca Hangar is an impressive structure, with a graceful arched roof that extends the width of the building. This artful and practical system provided about 150-ft. clear span, large enough to accommodate the wingspans of several aircraft with room to service them. Standing empty and receiving minimal maintenance, the hangar is in need of preservation and restoration. A concerned volunteer group, Friends of Bellanca Airfield, Inc. (FoBA), is working in close cooperation with the Trustees. In early January, FoBA received a major boost with a \$300,000 federal grant from the Save America's Treasures Program to be matched by a DelDOT grant. Info: Denis Beaumont, Box 247, New Castle, DE; (302) 323-1271; dbeaumont1@comcast.net. ■



Patrick Harshberger

Bellanca Hangar.



Friends of Bellanca Hangar

A c. 1935 construction photo shows the timber roof trusses of the Bellanca Hangar.

mately twenty cars per year, and its managers were genuinely thrilled to have a tour group so knowledgeable and enthusiastic about the company's work.

Delaware Car is located in downtown Wilmington in buildings from the mid-19th century that originally housed the Lobdell Car Wheel Co., immediately north of the Amtrak mainline, which traverses the area atop a Chinese Wall completed about 1909 by the Pennsylvania RR. The area between the railroad and the Christina River was the location of Sandy Balick's Sunday walking tour. This mile-long strip was once occupied by several distinguished names from Wilmington's industrial past, including Harlan & Hollingsworth and Pusey & Jones, which excelled at building railroad cars, stationary steam engines, and steamships. Participants started at the former **Harlan & Hollingsworth Shipyard**, which, over the years, morphed first to Bethlehem Shipbuilding, then to Dravo, and, finally, into All American Engineering, a maker of catapult and arresting gear for the aviation industry. Today, what is left of the shipyard has been adaptively reused as offices and a shopping center. The latter include the Shipyard Shops, complete with some of the Dravo whirly-type cranes, repainted in bright colors. The group also visited the remains of **Pusey & Jones**, the once renowned manufacturer of papermaking machinery and ships. Wilmington's shipbuilding

history is noteworthy: Harlan & Hollingsworth laid claim to building the country's first iron-hulled sailing vessel, the *Mahlon Betts*, and Pusey & Jones claimed the first all-steel, sailing yacht for the America's Cup competition, securing a U.S. victory in the 1887 race. The walking tour finished in the former **Pennsylvania RR Station**, now serving Amtrak. Together with an adjacent office building and a close-by **Baltimore & Ohio Freight Station**, the complex may constitute the largest grouping of architect Frank Furness's buildings anywhere.

In addition to Delaware Car, the other and much larger facility carrying on Wilmington's railroad traditions is **Amtrak**, which still repairs its locomotives and cars in the Todd's Cut Shops, established by the Pennsylvania RR in 1901. These were the Pennsy's principal electric-locomotive shops, once home to the fleet of Pennsy and Baldwin-built Raymond Lowey-style, GG-1 electrics, none of which, unfortunately, are preserved on site. The good news is that the shops remain very active with primary inspection and overhaul responsibilities for the existing fleet of electric engines and a large and interesting array of maintenance-of-way and track-laying vehicles. The latter operation occupies the former MU electric-car shop, which is still serviced by a transfer table.

(continued on page 8)

The Amtrak shops are virtually in the shadow of the **Connecticut Edge Moor generating station**, formerly Delaware Power & Light. The large, coal-fired steam plant supplies most of northern Delaware's electricity. Following a lecture on the plant's operations, participants toured from the Delaware River intake strainers to the rooftop pollution abatement system, with stops at the turbine hall, railcar dumper, and boiler firing areas.

As if seeing Amtrak locomotives and cars maintained and repaired wasn't enough, the **Wilmington & Western RR** offered SIA members a scenic train ride on its line parallel to the Red Clay Creek in northern Delaware. Locomotive 58 (0-6-0) built by Baldwin in 1907 and Locomotive 98 (4-4-0) built by Alco in 1909 were both under steam for our visit, which included a stop by the locomotive repair and restoration shops.

The Wilmington & Western, as we found out, is currently running an abbreviated route because of the several bridges washed out in recent floods. The local community and state government have rallied behind the railroad to help raise money to rebuild. Northern Delaware, however, has a plentiful share of historic bridges still standing and representing an interesting cross-section of mostly 20th-century bridge types, from the B&O's massive stone arch bridge over the Brandywine River to the Delaware Memorial Twin Span suspension bridges. Bridge historian and Delawarean Patrick Harshbarger led an all-day bridge tour with one of the highlights being a walking tour of the historic bridges in Wilmington's

Brandywine Park. The beautiful fall day ended at the bridges over the Chesapeake & Delaware Canal, with, as on cue, a large freighter passing by on its passage between the two bays. Altogether, the group saw 21 bridges, perhaps an SIA record.

The Delaware Bay and River averages about 30 to 40 large cargo ships and tankers per week, with many stopping at the **Port of Wilmington**, which offered the SIA a guided bus tour. The sprawling port on the Delaware River opened in 1923 in response to the declining fortunes of Wilmington's downtown riverfront, located about one mile inland on the Christina River. The Christina is narrow and shallow and, although it had been a good sheltered location in earlier days, was considered increasingly unfit for the larger vessels of the early 20th century. The new deepwater port on the Delaware was built on reclaimed land but remained a relatively small operation, especially compared to nearby Philadelphia, until the 1970s when it secured contracts to handle imports of DelMonte fruit and Fiat, Volkswagen, Audi, and Porsche automobiles. Today, the port handles weekly shipments of Dole and Chiquita bananas and fruit from South America and the Caribbean making it the largest port-of-entry for fresh fruit on the East Coast. The port even has a giant operation for pumping and blending concentrated juice direct from boat to a packaging facility.

Although little remains of Wilmington's shipbuilding heritage, a small remnant is found in nearby Chester, PA. **Baldt Anchor** makes anchors and anchor chains. The plant is currently facing



Michael Hoyt

Wilmington & Western RR's Locomotive 58 crosses the Red Clay Creek on a recently reconstructed bridge.



Sandy Balick

The SIA Fall Tour group at Baldt Anchor in Chester, PA.



Michael Hoyt

Baldt Anchor chain.



Lenape Forge. A hot blank is about to be lowered into the die (closed-die forging) by a manipulator-equipped forklift, then the table will be rolled back into the press.

very stiff competition from China and a skeleton crew maintains the facility but the SIA was given red-carpet treatment, with souvenir anchor-chain links for everyone. The venerable facility featured oil-based quenching tanks and shelves stocked to capacity with spare chain links weighing up to 90 lbs. each.

Metal working was also featured at the **Lenape Forge** in Lenape, PA, established in the 1920s and once known as the Lenape Hydraulic Pressing Co. It manufactures specialty forgings in a building that was originally used as a trolley barn. The forge still uses some of its original hydraulic presses to manufacture pressure-vessel connections, manways, and a variety of parts for nuclear submarines, warships, and rockets. The SIA saw the forge in operation with workers manning the furnaces, presses, and machine tools.

Another 15 miles or so up the Brandywine from Lenape, the SIA was treated to the sight of operating rolling mills producing 128-in.-wide steel plates, certainly one of the highlights of the Fall Tour. The **International Steel Group (ISG)** plant in Coatesville, PA, is the former Lukens Steel Co., which has been in continuous operations since the 1820s. Following an introduction by David Wirick, the plant's General Manager, and orientation film at the main office, participants were fitted with furnace coats and other safety gear, then boarded buses stopping first at the electric-arc furnaces where steel is refined (mostly from scrap) and poured into ingots. Then it was on to the rolling mills where, from high on catwalks and control pulpit, we observed the ingots removed by crane from the soaking pits, where they are kept hot, and then rolled back-and-forth (each pass accompanied by a magnificent spray) through the roll stand to the customer's specified dimensions.



Greenbank Mill near Newport, DE, is a reconstructed grist and woolen mill from the early 19th c.

The Lukens facility is sprawling, and the SIA saw but a small portion. One corner of the mill complex is currently under historical and archeological investigation for a museum and heritage center, which might also someday coordinate with ISG to offer visitors the opportunity to see the operating mills. Several buildings have already been restored by a local preservation group supported by the Stewart Huston Charitable Trust, named after the last Lukens-descendant president of the steel company. The family's multi-generational involvement in the iron and steel business is a story in and of itself, beginning with Rebecca Lukens, a widow who ran the mills for nearly forty years from the 1820s to 1860s and is today recognized as an important figure in women's history.

(continued on page 10)

New SIA Consultant Directory

The SIA is developing an on-line directory of consultants who offer a variety of services and expertise in the area of industrial archeology. The first on-line directory will be available later this year. The directory will be updated monthly and will be a searchable PDF file that can be displayed, printed, or downloaded by using the free Adobe Acrobat Reader program.

The directory will consist of a listing for each consultant with areas of expertise, a brief description of services, and contact information. Users of the directory will be requested to contact the consultants directly for more information, not the SIA.

The directory is being developed as a service to the SIA's members and others with an understanding that the SIA in no way recommends, endorses, or assumes responsibility for the work of any firm or individual listed.

If you are interested in being listed in the directory, registration information is available on-line at www.sia-web.org. Registration is only open to SIA members and requires completion of a form and a \$25 registration fee, in addition to annual membership dues. The fee is intended to help defray the cost of maintaining the directory. ■

WILMINGTON *(continued from page 9)*

Two of the Lukens-Huston family homes have been restored, and the SIA visited the former company office building, built in 1902, now housing an interesting collection of models depicting Lukens processes and products. There, we heard about plans to preserve and interpret the site from Scott Huston.

While Wilmington's manufacturing base has dwindled in recent years, the SIA discovered many concerns still going strong, even if at somewhat reduced capacity, yet reflecting many of the products and trends that set root early in the city's and region's history—railroad-car manufacture and repair, shipping, iron and steel, and companies, like DuPont, with their roots in early milling operations. Too, one can see successful museums and preservation projects with an emphasis on industrial heritage, and certainly the success of Hagley in particular, but also Greenbank Mill, the Marshall Museum, and the Wilmington & Western, is having an influence on other nearby industrial sites, like NVF and Lukens, that are currently considering historic preservation as a viable option.

Many individuals volunteered to make the Wilmington Fall Tour a reality. Mary Habstritt, the SIA's Events Coordinator, deserves high praise for organizing the details and providing the leadership necessary to make this kind of event possible. Sandy Balick provided the early inspiration for returning the SIA to Wilmington, a city we had not toured since 1977, and then worked to identify and confirm the tour sites. Patrick Harshbarger and Frank McKelvey helped plan tours and, with Sandy, served as tour guides. Many members, including those from the Philadelphia-based Oliver Evans Chapter, pitched in at the registration table and helped with such mundane but necessary tasks as loaning a cooler, counting snacks and sodas, or loading lunches on the buses. Thanks to all!

*Patrick Harshbarger with assistance from
Sandy Balick and Mary Habstritt*

BETHLEHEM STEEL *(continued from page 2)*

its west wall but "is all tiled inside, and still in good shape," and the Number Three machine shop. Much of the equipment that took the nation to victory in two world wars—tanks, armor for battleships, submarine air flasks and ballast tanks, aircraft engine parts—was built of steel manufactured here. "The weldment machine in Number Three bent armor for every US battleship, and it's still functioning," said Metz. "This series of buildings is the birthplace of the modern American defense industry."

The NMIH and the Canal Museum are storing "a sizable collection" of Bethlehem Steel corporate archives and plant equipment, Donches said, ranging from hand tools to electric and treatment furnaces, even a locomotive. "There're armor-bending machines, big crucibles, railroad cars that carried molten iron, gondolas that carried the slag," said Mineo. "Even a piece of a shower area—they've saved virtually a sample of everything that went on at the plant." The blast furnaces, Mineo said, are "structurally sound, but they'll need repainting within the next five years" at a projected cost of \$1 million for each of the five furnaces.

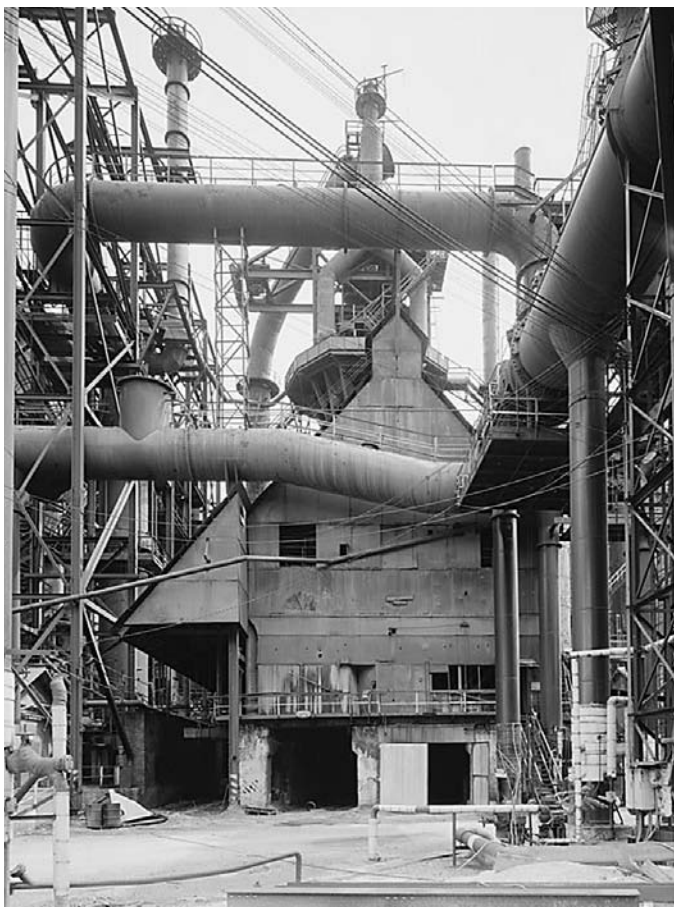
Getting the site into shape for visitors will take "a tremendous exchange of money," Mineo said, which is where gambling comes in. BethWorks Now's partners "gave us an estimate of five years with the revenue from slots, versus twenty years without it." After the initial investment, he continued, "we'd need visitation sufficient to justify the maintenance" and staffing of the park. The gambling parlor would be a draw for visitors from outside the Valley, as would another aspect of the proposal, an amphitheater to accommodate Musikfest, an annual festival that now occupies twenty blocks on Bethlehem's north side for ten days every August.

Both the gambling parlor and the relocation of Musikfest are controversial in Bethlehem, according to Metz. Residents are leery of bringing a casino to town, especially in view of Bethlehem's roots as a Moravian religious community. As for the festival, "local folks call it Arts Pest," Metz said, and aren't enthusiastic about an expanded event. The town is also home to Lehigh University. "Bethlehem isn't just a steel town," said Metz, "and that's the fly in the ointment."

What if the proposed development does, finally, happen? And—another big "if"—what if it's a success? Imagine a bustling, glitzy, post-industrial landscape, with an influx of visitors shopping, dining, gambling, attending concerts, and being transported from one part of the site to another on the "people mover," a refur-

bished overhead trolley and dual-gauge rail system that once carried ore from The Steel's ore yard to the blast furnaces. Maybe the fun-seekers will appreciate "the sense of scale, the smallness of human beings compared to these machines," as Metz puts it. And maybe they'll have a chance to learn something about the history of the steel industry, too.

Nancy Banks



Furnace A and cast house, 1988. HAER PA-48-3.

Jet Lowe

Geophysics in Industrial Archeology: Ground-Penetrating Radar Surveys at the West Point Foundry, Cold Spring, NY

[Editor's Note: This is the first in a series of articles in which the SIAN plans to present recent IA research by students and young professionals. Thanks to Tim Mancl [SIA] for coordinating the effort. If you'd like to propose an article, please contact Tim at tjmancl@activatormail.com.]

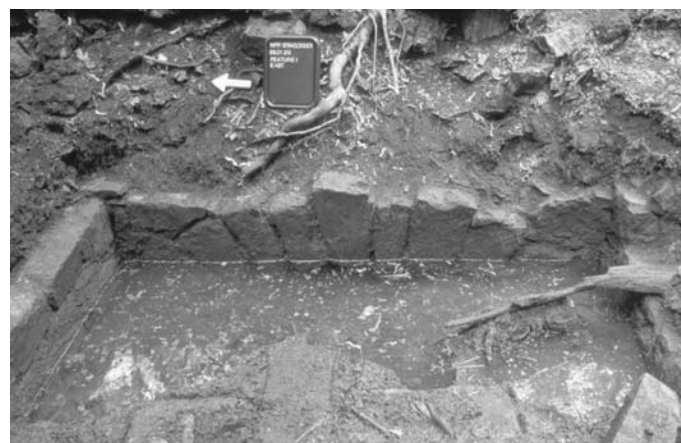
Since the 1940s, geophysical methods such as resistivity, magnetometry, and ground-penetrating radar have aided archeological research, providing means of locating and sometimes identifying subsurface features. These methods offer relatively fast, nondestructive data collection, both of which are endearing qualities in a field stricken with little time or ability to conduct extensive excavation. Their allure, however, often ends with the price tag—the cost of equipment rental and the services of professionals frequently exceeds the modest field budget. The success of each method also depends on site variables such as vegetation, sediment type and moisture levels, and artifact type, depth, and concentration. Archeologists on any project must carefully weigh the possible outcome against the cost.

Industrial sites pose interesting problems not faced on most prehistoric or historic archeological sites. These often large sites contain machinery and large metallic artifacts, as well as remnants of standing and subsurface structures that once supported the vibrations of heavy industry, variables that hinder timely survey and excavation. In the summer of 2003, these variables confronted students and faculty from Michigan Technological University (MTU) during the first season of excavation at the West Point Foundry (SIAN, Fall 2004; also www.westpointfoundry.org). Research centered upon gaining a clearer understanding of the foundry's waterpower system through geophysical survey and excavation. Assessing the applicability of ground-penetrating radar on an industrial site was an integral research question.

With only one week devoted to geophysical survey, whether to apply resistivity, magnetometry, or ground-penetrating radar required careful evaluation of the potential applications and limitations of each technique, as well as evaluation of surface and subsurface conditions at the 89-acre site. The soils and sediments at the foundry, surface and subsurface artifact concentrations, and

the size of the site ruled out the use of magnetics and resistivity. The utility of magnetometry, which measures the strength or amplitude of ferrous objects distorting the earth's magnetic field at a specific location, was immediately diminished due to the large concentration of iron objects at the foundry. And the time-consuming nature of resistivity, which measures the electrical resistance of (and objects buried within) the earth between two electrodes of different potentials, prevented its use.

Ground-penetrating radar (GPR) was the most appropriate choice. GPR is an electromagnetic technique that introduces high frequency radio waves into the subsurface. Surveyors identify buried objects based on comparisons of the strength and velocity of radar waves, which are distorted when there is a change in electric



Mike Deegan

Eastern wall of the flooded boring-mill waterwheel pit. Note the stone arch and central keystone, which marks the inlet to a subsurface tailrace.

properties in the subsurface. Many archeological features and artifacts at the foundry lay between one and two meters below surface, within the range of GPR antenna frequencies. Previous successful surveys of voids and cavities, including grave sites, encouraged its use for detecting former watercourses at the foundry. And little concern existed over the potential for excessive signal attenuation as the sandy-loam matrix drains well even in wet conditions.

The field crew used a Noggin Plus radar unit and Smart Cart manufactured by Sensors and Software of Mississauga, Ontario. The cart contained an integrated battery and digital video logger that permitted direct observation of subsurface images as the cart passed over buried features. To ensure maximum signal penetration, the crew utilized a low-frequency, 250-MHz antenna. Under the direction of MTU geophysics professor Charles Young, the crew completed nine radar projects designed to identify the presence of subsurface features related to the foundry's waterpower system. The selection of areas for radar survey was based on historical map data, visible drains, depressions, and the presence of standing and running water. Radar projects provided data that justified placement of excavation units in three areas: at the boring mill, where students found a possible brick machine base; in an area south of Battery Pond, where excavation revealed a subsurface stone drain; and at the boiler house, where students found a feature possibly related to an underground tailrace.

(continued on page 12)

Ed Rutsch Scholarship to West Point Foundry Field School.

If you recall, after Ed's death a fund was established in his honor (SIAN, Summer 2003), with proceeds to support the ongoing research at West Point Foundry. The fund's organizers, Ed's family, and friends determined to carry forward his legacy of interest in the site and in educating a new generation of IA practitioners. We have created a scholarship and supported one student in 2004. Vanessa McLean, master's student Univ. of Bradford (U.K.), was the first recipient, and has since completed her degree. The Fund has made some modest earnings in the past year, and it has been augmented by some income derived from the SIA Study Tour to Catalonia, so the scholarship will be offered again in 2005. Interested students should contact Patrick Martin at MTU (pemartin@mtu.edu; (906) 487-2070), and donors interested in supporting this effort should contact the Michigan Tech Fund at www.mtf.mtu.edu; (906) 487-2310. ■



Smart Cart and Noggin Plus by Sensors and Software, Inc.

As a consequence of radar surveys, archeologists were able to examine large areas of the West Point Foundry site and objectively place excavation units, thereby preserving subsurface contexts for future investigation. Despite these results, the surveys reinforced the importance of understanding the limitations of GPR. Characteristics of the foundry site necessitate a re-evaluation of radar equipment and methods employed during the 2003 field season. Uneven terrain and numerous surface features such as fallen trees

and brick piles prevented smooth operation of the Smart Cart and rendered the wheel odometer useless as the cart wheels frequently left the ground. These features easily jostled the Noggin Plus, which hung only inches above the ground surface, and the wheels frequently became clogged by wet leaves that covered the valley floor. These conditions slowed surveys and caused false reflections in survey data as the cart bumped into and over surface features.

Future GPR surveys should employ separate antennas or a cart more suited to the West Point Foundry site. Separate antennas provide better maneuverability and stability, as users manually place them along survey lines at predetermined intervals. This method is simple to employ and avoids difficulties associated with pushing a cart through the woods.

Future survey work at the West Point Foundry should experiment with a lower antenna frequency. During a survey of a sugar factory at the Estate Whim Plantation, U.S. Virgin Islands in 1999, for example, archeologists and geophysicists employed 200-MHz antennas. Although this low antenna frequency obscured shallow deposits, it enabled identification of diffractions originating up to 1.2m below the surface. The 250-MHz antenna used at the West Point Foundry provided subsurface visibility to approximately one meter across most areas of the site, but frequently did not see past near-surface material. As discovered during excavation, most features associated with the water system lay between 0.5 and 2m below the surface. Thousands of small objects, such as nails, iron fragments, and slate, also lay close to the ground surface, creating point reflections that blocked larger features underneath. Although computer filtering could remove some of these reflections, a lower frequency antenna could see past these small objects and provide data for greater depths.

The West Point Foundry survey also demonstrated that dense line spacing and data collection intervals are necessary on industrial sites. Line spacing of 2m and use of a step method every 10cm obscured pattern recognition. Due to the high concentration of sur-

face and subsurface objects such as iron fragments, even very prominent near-surface features did not appear on every survey transect. A near-surface iron drain appeared on only three of five survey lines. Increasing the number of transects in a survey area facilitates recognition of patterns indicative of features. Areas in which transect intervals were 1m or less with data collection every 5cm along survey transects provided the clearest indication of features.

GPR is now considered one of the most reliable methods used in archeology, but like other geophysical techniques, knowledge of its limitations is as important as knowledge of its potential applications. Ultimately, archeologists must pose the question, "Is it worth it?" On balance, GPR was a valuable tool at the foundry as it enabled relatively fast evaluation of several areas at the site, and it introduced students to the application of geophysical investigation. This survey demonstrated that on large sites with appropriate soil conditions, GPR is an effective tool that can delineate the location of subsurface features such as drains, pipes, and foundations. Smaller sites and smaller budgets need not despair, however; at the West Point Foundry, archeologists placed four units based upon data in historical documents, historical maps, and features observed during a pedestrian survey. These units yielded an entrance to a subsurface tailrace, a possible waste-water drain, and a possible vertical casting pit. Although the possible machine mount and tailrace feature may not have been found without GPR survey, archeologists could have inferred the location of the subsurface stone drain south of Battery Pond by aligning visible drain holes and a pipe outlet with map data.

GPR is a good research tool provided it is affordable and favorable site conditions are present. Otherwise, traditional research and survey methods provide equally important data.

Kimberly Finch

For more info on GPR:

Bevan, Bruce W. *Geophysical Exploration for Archaeology: An Introduction to Geophysical Exploration*. Midwest Archaeological Center Special Report No.1. Lincoln, NE: National Park Service, 1998.

Clark, Anthony. *Seeing Beneath the Soil: Prospecting Methods in Archaeology*. London: Routledge, 2001.

Finch, Kimberly. "Waterpower: A Geophysical and Archaeological Investigation of the Waterpower System at the West Point Foundry, Cold Spring, New York." Master's Thesis, Michigan Technological University, 2004.

Heimmer, H. M. H., P.G. Heimmer, and Steven L. DeVore. *Near-Surface, High Resolution Geophysical Methods for Cultural Resource Management and Archaeological Investigations*. Revised edition. Denver: National Park Service, 1995.

Herz, Norman, and Ervan G. Garrison. *Geological Methods For Archaeology*. Oxford University Press, 1998.

Archeological Prospection Workshop, May 16-20, Chillicothe, OH. For those wanting to know more about GPR and other prospection techniques, the National Park Service is holding a workshop at the Hopewell Culture National Historical Park. This will be the 15th annual workshop dedicated to the use of geophysical, aerial photography, and other remote sensing methods. This year the focus will be on the theory of operation, methodology, pro-

cessing, interpretation, and hands-on use of equipment in the field. In addition to the workshop, there will be an equipment fair on Friday, May 20th. Tuition charge is \$475. Application forms: www.cr.nps.gov/mwac. Info: Steven L. DeVore, Archeologist, NPS, Midwest Archaeological Center, Federal Building, Rm. 474, 100 Centennial Mall North, Lincoln, NE 68508-3873; (402) 437-5392, ext. 141; steve_de_vore@nps.gov. ■



SOCIETY FOR INDUSTRIAL ARCHEOLOGY NEWSLETTER

PUBLICATIONS OF INTEREST

Vol. 34, No. 1

Winter 2005

COMPILED BY

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

GENERAL INTEREST

- ◆ Michael R. Bailey, ed. **Robert Stephenson—The Eminent Engineer.** Ashgate (www.ashgate.com), 2003. 446 pp., illus. \$99.95. Stephenson's engineering practice was responsible for major railway building programs in Britain and overseas. He oversaw the building of many bridges, including the innovative tubular bridges in North Wales. Considers Stephenson's public roles (MP and Commissioner for the Great Exhibition) and shows how he was perceived by his contemporaries.
- ◆ Paul R. Josephson. **Industrialized Nature: Brute Force Technology and the Transformation of the Natural World.** Island Press, 2002. 311 pp. \$20. The environmental costs of brute-force (large) technologies, like big dams, massive transportation systems, lumbering operations, and deep-sea fisheries around the world. Rev.: *T&C*, v.44, 3 (July 2003), pp. 591-93.
- ◆ Donald W. Linebaugh [SIA]. **The Man Who Found Thoreau: Roland W. Robbins and the Rise of Historical Archaeology in America.** Univ. Press of New England, 2005. 294 pp. \$24.95. Pioneering but controversial archeologist who discovered the remains of Thoreau's cabin at Walden Pond and went on to excavate a number of New England iron works and other sites, including Phillipsburg Manor Upper Mills in NY, Strawberry Banke in NH, and Shadwell, Thomas Jefferson's Virginia birthplace. Robbins developed sophisticated techniques but lacked academic training and was "written-out" of the profession. With the help of previously unpublished information, the book offers a balanced assessment of Robbins. The author has also published an article on Robbins and his work at iron industry sites in the SIA's journal (v.26, 1, 2000).
- ◆ Mark Nowak. **Shut Up, Shut Down.** Minneapolis: Coffee House Press (www.coffeehousepress.org; 612-338-0125), 2004. 161 pp. \$15. Collection of poems inspired by de-industrialization and its impact on workers in rust-belt cities like Buffalo and Pittsburgh. It mixes workers' oral history and photography with poems and poetic plays.
- ◆ David Nye. **America as Second Creation: Technology and Narratives of New Beginnings.** MIT Press, 2003. 371 pp. \$29.95. Essays look at the dual images of the ax, mill, canal, railroad, and dam in American history. On one hand, technologies championed for transforming wilderness and creating prosperity. On the other hand, same technologies reviled for despoiling the environment and increasing economic inequality. Rev.: *NY Times* (May 31, 2003), p. A17.
- ◆ David Rosner and Gerald Markowitz. **Deceit and Denial: The Deadly Politics of Industrial Pollution.** Univ. of Calif. Pr., 2003. 428 pp. \$19.95 pap. Focusing on environmental lead and vinyl chloride, looks at the conflict between industry's need to provide products to consumers and public demand for protection from toxic pollution, which resulted in corporations lying to workers, fooling the public, and keeping regulators at bay. Makes use of documents recently released through litigation.
- ◆ Philip Scranton, ed. **The Second Wave: Southern Industrialization from the 1940s to 1970s.** Univ. of Ga. Pr., 2001. 310 pp. \$50. Case studies of the South's post-WWII industrial boom, including Bell aircraft outside Atlanta, Georgia tufted carpet, Texas petrochemical industry, southern automobile industry, and paper and pulp. Rev.: *T&C*, v.44, 3 (July 2003), pp. 625-26.
- ◆ Peter Stanier. **Somerset in the Age of Steam: A History and Archaeology of Somerset Industry, c. 1750-1950.** Somerset Books (www.halsgrove.com), 2003. 160 pp., illus. £19.95. Copiously illustrated book examines a variety of Somerset (UK) industries including mines (coal, lead, iron, zinc, and copper), textile mills, tanneries, public utilities (water, gas, electricity), quarries, grist mills, foundries, turnpikes, canals, railways, and ports.

MINES & MINING

- ◆ Rod Johnson. **Thomas Edison's "Ogden Baby:" The New Jersey and Pennsylvania Concentrating Works.** Highland Lakes, NJ: author, 2004 (Avail: Rod Johnson, Box 174, Highland Lakes, NJ 07422; rod@map-maker.net). \$29.95 + p&h. 322 pp., photos. In the 1890s, Edison moved to Sparta, NJ and changed forever the way minerals are mined. He used magnetic separation and mechanized material-handling systems at the New Jersey & Pennsylvania Concentrating Co. on a scale never before attempted. Illustrated with period and contemporary photos and intended as a guide to the site.
- ◆ **Saulk County Mining—The Illinois, Iroquis, LaRue and Beyond.** *The Mid-Continent Railway Gazette*, v. 36, 4 (Dec. 2003), pp. 4-37. Comprehensive history of the iron mines of the Baraboo Range of south-central Wisconsin including the Illinois, Iroquis, and LaRue mines and the rail lines that served them and carried the ore to the big smelters in Chicago. Avail.: Mid-Continent Railway Historical Society, Box 358, N. Freedom, WI 53951; (608) 522-4261; inquiries@midcontinent.org. The Society has operated a museum and excursion railroad on the Larue mine spur since 1963.
- ◆ Lee Scamehorn. **High-Altitude Energy: A History of Fossil Fuels in Colorado.** Univ. Pr. of Colorado, 2002. 244 pp. \$27.50. Coal, coke, oil, natural gas, and oil shale industries examined with discussion of the technologies of extracting, processing, and transporting each fuel. Documents the history of many companies, large and small. Rev.: *T&C*, v.44, 3 (July 2003), pp. 622-23.

- ◆ William Schemmel. **Re-created Camp Mines History.** *Atlanta Journal-Constitution* (Apr. 16, 2003). Industrial heritage tourism at the Big South Fork National River & Recreation Area near Stearns, KY. Features two re-created coal camps, a 1937 tippie, and scenic railroad. Info: www.nps.gov/biso/pphtml/facilities.html.
- ◆ Andrew Schneider and David McCumber. **An Air That Kills: How the Asbestos Poisoning of Libby, Montana, Uncovered a National Scandal.** G.P. Putnam's Sons, 2004. 440 pp., \$25.95. Cover-up affected not only vermiculite miners, but their families who breathed the dust they carried home.
- ◆ Paul H. Vigor. **D. K. Parkinson's Coal Yard, Hordle, Hampshire.** *IA News* 126 (Autumn 2003), pp. 5-7. Archeological examination of a local coal merchant's yard in the U.K. Stresses the need to study, "unremarkable, community-based businesses" that played important but often overlooked roles in the supply chain.
- ◆ Ted Williams. **Sludge Slinging.** *Audubon* (May 2004), pp. 22-31. Coal-mining politics of sludge reservoirs and valley fills and one mining engineer who stood up for safety.

RAILROADS

- ◆ **The 100-Year Journey.** Special issue of the City section of *The NY Times* (Sun. Mar. 28, 2004). Collection of history, anecdotes, and trivia celebrating the 100th anniversary of the NYC subway system. Also, Clifton Hood. **The Subway at 100.** *The New-York Journal of American History* (formerly *The New-York Historical Society Quarterly*), v.65, 3 (Spring 2004), pp. 66-92. Summary of the building of the subway and its impact on New Yorkers' lives and city development, along with plans for future expansion. Accompanied by 23 full-page photos drawn from the 50,000 photographs that make up the Subway Construction Photograph Collection at the New-York Historical Society.
- ◆ William H. Brown. **The History of the First Locomotives in America.** Astragal Press (www.astragalpress.com), 2003. 304 pp., illus. \$27.50. Originally published in 1874. First-hand accounts of those who witnessed the struggles, competitions, experiments, and evolution of early locomotives. Written in the 19th-c. style of "portraiture," the narrative tells a story of technological progress.
- ◆ Art Harnack. **The Milwaukee Road's Beer Line.** Milwaukee Road Historical Assn., 2003. 40 pp., illus., maps. Covers the seven-mile branch line in Milwaukee that served breweries and a variety of other industries. Subject has been covered numerous times over the years in the enthusiast press but this book does it up in style with extensive color illustrations. Regrettably not a tour destination for the SIA 2005 Annual Conference because the industries are mostly gone and the branch is but a stub.
- ◆ Herbert Harwood, Jr. [SIA]. **Baltimore Streetcars: The Postwar Years.** Johns Hopkins Univ. Pr., 2003. 173 pp., illus. \$29.95. Well-illustrated history captures the sights, streets, buildings, rolling stock, and people of the city as they traveled on the Baltimore Transit Co.'s lines in the 1940s and 1950s. Rev: *NRB*, v. 68, 5 (2003), p. 46.
- ◆ Don Horn. **The Pullman Photographers.** *Railroad Heritage* 7 (2003), pp. 4-13. For more than a century, the Pullman Palace Car Co. relied on photographers to illustrate sleeping cars and the company's factory. *Railroad Heritage* is the magazine of the Center for Railroad Photography and Art (www.railphoto-art.org).
- ◆ Eugene L. Huddleston. **The Genesis, Design and Performance of C&O Steam Turbine-Electric Class M-1.** *NRB*, v.68, 5 (2003), pp. 20-42. Illustrated article explores the development,

fabrication, and operations of late 1940s locomotive that attempted to combine coal firing with electric traction in an attempt to head off the ascendancy of diesel-electrics.

- ◆ Stephen L. King. **Locomotive Gyrating Warning Lights.** 2nd ed. Privately published by author (6668 E. Lake Rd., Auburn, NY 13021), 2000. As a counter-measure to the increasing frequency of grade-crossing accidents in the late 1930s, some railroads adopted motor-driven, oscillating (figure-eight pattern) auxiliary headlights and brake lights developed by Mars Signal Light Co. of Chicago. The Pyle-National Co. later produced headlights that projected a gyrating beam. By the mid-1960s, most of the railroads that used them began to replace the maintenance-intensive gyrating lights with rotating beacons. Unusually complete treatment of an obscure topic includes catalog and parts sheets, maintenance instructions, patent applications, anecdotes related to their use and operation, and enumeration of railroads that used them.
- ◆ William Middleton [SIA]. **The Last Interurbans.** Bulletin 136 of the Central Electric Railfans' Assn. (Box 503, Chicago, IL 60690). 234 pp., illus. \$55 ppd. A look at the electric interurban railways that managed to outlast the Great Depression, if only briefly.
- ◆ **Railway Museum Quarterly** regularly reports on railway museum activities throughout the U.S. No. 28 (Summer 2003) reviews the collections and operations at the Connecticut Trolley Museum (Branford) and Shore Line Trolley Museum (New Haven). No. 31 (Spring 2004) has in-depth articles on two communities' efforts to save their railroad depots by turning them into museums. The Missouri Pacific Rwy. depot (1896) in Sedalia, MO, and the Illinois Central depot (1876) in Amboy, IL, are both thriving on local support. Avail. with membership to the Assn. of Railway Museums, www.railwaymuseums.org.
- ◆ Herbert V. Trice. **The Gangly Country Cousin.** History Center (www.thehistorycenter.net/gift.html), 2004. 160 pp., illus. \$32.95 ppd. History of the Lehigh Valley RR division that served New York's Finger Lakes region. Includes some great train photos.

CONTRIBUTORS TO THIS ISSUE

Richard K. Anderson, Jr., Sumter, SC; Scott Andrews, MT; Susan Appel, Champaign, IL; Sandy Balick, Brooklyn, NY; Nancy Banks, New York, NY; Denis Beaumont, New Castle, DE; Jim Bissett, Morgantown, WV; Dan Bonenberger, Morgantown, WV; Myron Boyajian, Homewood, IL; Paul Brandenburg, Delphi, IN; Robert Chidester, Jackson, MI; Arlene Collins, Houghton, MI; Jim D'Angelo, Atlanta, GA; Reese Davis, West Chester, PA; Eric DeLony, Santa Fe, NM; Steve DeVore, Lincoln, NE; Jamie Donahoe, Boulder, CO; Don Durfee, Houghton, MI; John Ehrmin, Toledo, OH; Andy Fahrenwald, Sutter Creek, CA; Kimberly Finch, Hancock, MI; Bob Frame, Minneapolis, MN; Denis Gardner, Minneapolis, MN; John Gomez, Jersey City, NJ; David Guise, Georgetown, ME; Mary Habstritt, New York, NY; Neill Herring, Jesup, GA; Michael Hoyt, Silver Spring, MD; Tom Hull, Myrtle Creek, OR; Elliot Hunt, Jersey City, NJ; Jonathan Kranz, Winchester, MA; John Kurth, Wilmington, DE; Chester Liebs, Albuquerque, NM; Carol Lockman, Wilmington, DE; Pat Malone, Providence, RI; Tim Mancl, Camden, DE; Christopher Marston, Washington, DC; Pat Martin, Houghton, MI; Bode Morin, Detroit, MI; Art Peterson, Greenville, NC; Dave Poirier, Hartford, CT; Lynn Rakos, Brooklyn, NY; John Reap, Syracuse, NY; Rick Rowlands, Youngstown, OH; Bruce Seely, Houghton, MI; Justin Spivey, New York, NY; John Staicer, Madison, IN; Robert Vogel, Washington, DC; Suzanne Wray, New York, NY.

With Thanks.

WATER TRANSPORT

- ♦ John O. Anfinson. **The River We Have Wrought: A History of the Upper Mississippi.** Univ. of Minnesota Pr., 2003. 365 pp. \$29.95. Describes how the natural river, from St. Louis to Minneapolis, was transformed by human effort into a transportation waterway. The big picture ranges from steamboat pilots who thought deep water at St. Paul was 3-1/2 ft., to the Grange which hoped to lower railroad rates for farmers by improving river transportation, to the organization that achieved it—the U.S. Army Corps of Engineers.
- ♦ William J. Broad. **Far Beneath the Waves, Salvagers Find History That's Laden with Gold.** *NY Times* (Aug. 17, 2003), p. A12. Underwater archeology at the S. S. *Republic*, which sank off Georgia in 1865. About \$150 million in gold coins is believed to have been aboard, setting off controversy between salvagers and professional archeologists over standards for its recovery.
- ♦ **Canals** is the latest in the Norton/Library of Congress Visual Sourcebooks in Architecture, Design, and Engineering series. Written by the National Park Service's Robert J. Kapsch [SIA], the book features more than 800 images and documents from the collections of HABS/HAER, as well as other collections at the Library of Congress. The book can be ordered from the Library at (888) 682-3557 or www.loc.gov/shop. \$75.
- ♦ Diane Cardwell. **A Look Beneath the Muck: Scientists Are Searching for Ways to Save the Decaying Gowanus Canal in Brooklyn.** *NY Times* (May 19, 2003). Analysis of 200 years of industrial and urban waste at the bottom of the Gowanus Canal [tour site, SIA Annual Conference, 2002].
- ♦ Ewan Corlett. **The Iron Ship—The Story of Brunel's SS *Great Britain*.** Conway Maritime Press, 1975, revised 1990. 224 pp. Excellent history of the first large iron-screw propelled commercial ship with all details. The first voyage was in 1845 and the last was in 1886 to the Falkland Islands where it became a hulk. It was refloated in 1970 and now has been restored in Bristol's Great Western Dock, where it was constructed.
- ♦ Thomas Flagg [SIA]. **The Floating Grain Elevators—The Railroad Navy in the Port of New York, Part VIII.** *Transfer* No. 40 (Jan.-May 2004), covers and pp. 3-18. History and architecture of these bizarre-looking watercraft. Reproductions of drawings of two vessels, antique cuts, and 16 photos including those of John Noble. Info: www.trainweb.org/rmig.
- ♦ John M. Gilonna. **Sailing Back to a Troubled Past.** *LA Times* (Nov. 3, 2003). State and national park officials have reconstructed a Chinese shrimp junk, now on display at the San Francisco Maritime Museum. Used to interpret Chinese shrimping operations and fishing camps (1860s-1901) off the coast of Marin County. State law and prejudice banned the Chinese from shrimping in 1901, driving them out of the business.
- ♦ Dan Guzy. **Bateaux, Mills, and Fish Dams: Opening Navigation on the Monocacy River and the Conococheague and Antietam Creeks.** *Maryland Historical Magazine*, v.98, 3 (Fall 2003), pp. 281-302.
- ♦ John Lang. **Remains of the Bay.** *Preservation* (May/June 2003), pp. 36-41. Preserving skipjacks, boats used by Chesapeake Bay oystermen. The skipjack fleet is the last American fishing fleet under sail.
- ♦ John McCarthy. **Tourism-related Waterfront Development in Historic Cities: Malta's Cottonera Project.** *International Planning Studies*, v.9, 1 (Feb. 2004), pp. 43-64. Emergence of new tourism-related land uses within historic port cities has brought a range of physical, economic, and social benefits. However, there are often tensions between economic development and historic preservation. The case of Malta's Cottonera Project—the waterfront part of the historic 'Grand Harbour'—throws these tensions into sharp relief.
- ♦ James P. Miller. **Ore Boats Feed Steel Boom.** *Chicago Tribune* (Sept. 26, 2004). The resurgence of the steel industry has reinvigorated the Great Lakes ore freighter fleet. Six lake freighters that had been mothballed have returned to active service, bringing the total of U.S.-flagged ships to 60.
- ♦ Hank Rowland. **Group Works to Interview Ex-shipyard Workers.** *Brunswick (GA) News* (Apr. 24, 2003). Old Town Brunswick Preservation Assn. collects oral histories of city's WWII Liberty Ship builders.
- ♦ Crosbie Smith, Ian Higginson, and Phillip Wolstenholme. **"Avoiding Equally Extravagance and Parsimony." The Moral Economy of the Ocean Steamship.** *T&C*, v.44, 3 (July 2003), pp. 443-69. The Ocean Steam Ship Co. of Liverpool (Blue Funnel Line) founders, brothers Alfred and Philip Henry Holt, organized their steamship company to reflect their Unitarian religious beliefs. This resulted in the design and operation of strong, reliable, safe, and simple ships.
- ♦ Roberta M. Styran and Robert R. Taylor. **The Welland Canals Corridor: Then and Now.** Looking Back Press (Vanwell Publishing Ltd., 1 Northrup Crescent, Box 2131, St Catharines, ON L2R 7S2; 1-800-661-6136), 2004. 128 pp., photos. \$24.95 CN. Color photography by Thies Bogner.
- ♦ Mike Toner. **Divers Study Long-Sunken Civil War Ship.** *Atlanta Journal-Constitution* (July 31, 2003). CSS *Georgia*, sunk in the Savannah River about three miles downstream of Savannah by her crew in 1864 to prevent her capture by Sherman's army, has been monitored by underwater archeologists since her rediscovery in 1968. She has been rapidly deteriorating in recent years, prompting the Georgia Port Authority to study the cause.

AGRICULTURE & FOOD PROCESSING

- ♦ Greg A. Brick. **St. Paul Underground: The University Farm Experimental Cave and How St. Paul Became the Blue Cheese Capital of the World.** *Ramsey County History* (Fall 2003), pp. 4-10. Use of limestone caves for ripening of domestic Roquefort cheese, first by the Univ. of Minn., which developed "Minnesota Blue," then by Land O'Lakes and Kraft.
- ♦ Leslie Eaton. **In New York, a Town without Chocolate: The Nestlé Factory in Fulton, Home of the Crunch Bar, Is Closing.** *NY Times* (May 27, 2003). Swiss company Nestlé established its first factory in the U.S. at Fulton (northwest of Syracuse) in 1899. The chocolate works produced Nestlé Quik, the Crunch Bar, and mountains of chocolate morsels. Rather than investing in the aging Fulton plant, Nestlé will close it and move operations to a newer plant in Wisconsin.
- ♦ Sam Sheldon. **The Cork Forest Industry in the United States.** *Maryland Historical Magazine*, v.99, 1 (Spring 2004), pp. 95-110. Raw materials for Crown Cork & Seal.
- ♦ Tricia Vita. **Against the Grain: Can Buffalo, N.Y., Woo Tourists with its Grain Elevators?** *Preservation Online*, July 16, 2004. (www.nationaltrust.org/Magazine/archives/arch_story/071604.htm) Historic grain elevator district (tour site—SIA 1992 Annual Conference, Buffalo) bolsters tourism.
- ♦ Miriam Wright. **A Fishery for Modern Times: The State and the Industrialization of the Newfoundland Fishery, 1938-1965.** Oxford Univ. Pr., 2001. How public policy promoted the use of large vessels and large processing units (particularly freezing plants), mass exports to the U.S., and intensive competition. *Rev.:T&C*, v.44, 3 (July 2003), pp. 595-97.

ELECTRONICS

- ♦ Peter C. Hobart and Michael W. Williams. **The Industrial Hobarts: The First Fifty Years.** *Timeline*, v.21, 6 (Oct.-Dec. 2004), pp. 54-69. Avail: Ohio Historical Society, 1982 Velma Ave., Columbus, OH 43211. \$30/yr. or \$10 ppd./issue. Series of companies based in Troy, OH, manufactured a wide range of electrical equipment including the Hobart Bros. Co. arc welder. Covers the 1880s to 1930s, with a focus on the innovative talents of founder C. C. Hobart and his three sons.
- ♦ Tom McNichol. **Finally, a Public Resting Place for History's Motherboards.** *NY Times* (June 26, 2003). New headquarters of the Computer History Museum in Mountain View, CA. Open-storage exhibit allows visitors to view more than 500 artifacts, including a portion of a 1945 Eniac and the 1976 Apple 1 (www.computerhistory.org).
- ♦ David Owen. **Making Copies.** *Smithsonian*, v.35, 5 (Aug. 2004), pp. 90-97. Invention of the xerographic duplication process and development of the Xerox 914, the first practical office copier and "the most successful product ever marketed in America." For a full-length treatment of the subject by the same author, **Copies In Seconds: How a Lone Inventor and an Unknown Company Created the Biggest Communication Breakthrough Since Gutenberg—Chester Carlson and the Birth of the Xerox Machine.** Simon & Schuster, 2004. 306 pp. illus. \$24. Describes 12-yr. struggle by Haloid and Charles Carlson to fit all of xerography's complex movements and sub-operations into one office machine. Rev.: *NY Times Book Review* (Oct. 3, 2004), p. 35.

MISC. INDUSTRIES

- ♦ Thomas L. Elliott. **A Field Guide to the Makers of American Wooden Planes.** Astragal Press (www.astragalpress.com), 2003. 288 pp., illus. \$24.95. Reprint of 1983 ed. in laminated field-guide format. Considered the definitive guide to American planemakers.
- ♦ Frank Korvemaker. **The Claybank Brick Plant National Historic Site of Canada.** *TICCIH Bulletin*, 25 (Summer 2004), pp. 3-4. Efforts to preserve what is arguably the most complete c.1900 historic brick plant in the world, located near Regina, Saskatchewan.
- ♦ Linda L. Meabon. **Zippo Manufacturing Company.** Arcadia (www.arcadiapublishing.com), 2003. 128 pp. \$19.99. From *Images in America* series. Photos of employees at work in Zippo cigarette-lighter plant. Author worked for Zippo for 36 yrs.
- ♦ Joyce Slayton Mitchell. **Knuckleboom Loaders Load Logs: A Trip to the Sawmill.** Overlook Pr., 2003 (Avail. Bas Bleu, 1-800-433-1155, www.basbleu.com). 40 pp., photos, \$15.95. For ages 4-8, this book shows how trees are turned into lumber, chips, and pulp and describes the huge equipment involved.
- ♦ Jane S. Pollard. **From Industrial District to 'Urban Village'? Manufacturing, Money and Consumption in Birmingham's [U.K.] Jewellery Quarter.** *Urban Studies*, v.41, 1 (Jan. 2004), pp. 173-94. How urban regeneration strategies, promoting cultural production and consumption, are being experienced by one of Birmingham's oldest manufacturing communities. How these strategies may ultimately undermine the economic and social bases of the jewelry manufacturing networks.
- ♦ Walker Rumble. **The Swifts: Printers in the Age of Typesetting Races.** Univ. of Va. Pr., 2003. 232 pp. The social, cultural, and technological history of "swifts," typesetters who were unusually fast. They were famous and their competitions drew large crowds. Tom Hull [SIA] writes that this book is a "narrative jewel."

- ♦ Anthony S. Travis. **Dyes Made In America, 1915-1980: The Calco Chemical Company, American Cyanamid, and the Raritan River.** Hexagon Press, 2004. Story of the rise of the modern American organic chemical industry as seen through a representative facility, New Jersey's Calco Chemical.

ABBREVIATIONS:

IA News	= <i>Industrial Archaeology News, Bulletin of the Assn. for Industrial Archaeology (UK)</i>
NRB	= <i>National Railway Bulletin, Bimonthly of the National Railway Historical Society</i>
T&C	= <i>Technology & Culture, Quarterly of the Society for the History of Technology</i>
TICCIH Bulletin	= <i>Quarterly of The International Committee for the Conservation of the Industrial Heritage</i> (www.mnactec.com/ticcih).

Publications of Interest is compiled from books and articles brought to our attention by you, the reader. SIA members are encouraged to send citations of new and recent books and articles, especially those in their own areas of interest and those obscure titles that may not be known to other SIA members. *Publications of Interest*, c/o SIA Newsletter, 305 Rodman Road, Wilmington, DE 19809; phsianews@aol.com.

Oliver Evans Press—Sales List

The following books are available from the Oliver Evans Press of the Oliver Evans Chapter of the SIA (Greater Philadelphia). Payment made out to the Oliver Evans Press must accompany order. Volume discounts are available. For all information and orders, contact: **Oliver Evans Press, 101 E. Possum Hollow Rd., Wallingford, PA 19086.**

Oliver Evans Chapter—SIA, **Workshop of the World: A Selective Guide to the Industrial Archeology of Philadelphia.** (Guidebook published for the 1990 SIA Annual Conference) \$26.50 ppd.

Oliver Evans, **The Young Mill-Wright and Miller's Guide.** (Facsimile reprint of the 1795 first edition) \$34.00 ppd.

Oliver Evans, **The Abortion of the Young Steam Engineer's Guide.** (Facsimile reprint of the 1805 edition) \$20.00 ppd.

Harry S. Silcox, **A Place to Live and Work.** (Henry Disston Saw Works and the Tacony community of Philadelphia) \$32.00 ppd.

James J. Farley, **Making Arms in the Machine Age.** (Philadelphia's Frankford Arsenal, 1816-1870) \$29.00 ppd.

Eugene S. Ferguson, **Oliver Evans, Inventive Genius of the American Industrial Revolution.** (limited quantities) \$18.00 ppd.

Jane Mork Gibson, **The Fairmount Waterworks.** (limited quantities) \$13.00 ppd.

Harry L. Rinker, **The Schuylkill Navigation, A Photographic History.** (limited quantities) \$19.00 ppd.

Oliver Evans **Letter to Samuel Huntington, Ohio Governor, 1810.** \$6.00 ppd.

Improvements on the Art of Manufacturing Grain into Flour or Meal. (An enlarged 23"x19" poster of the 1791 broadside issued by Oliver Evans) \$12.00 ppd.

Poster—1990 SIA Philadelphia Conference. \$8.00 ppd.

Fairmount Waterworks Belt Buckle. \$24.00 ppd.

WVU Institute Restores Markers on National Road

West Virginia University's Institute for the History of Technology and Industrial Archaeology (IHTIA) has taken on the meticulous job of restoring the 4-ft. tall, cast-iron obelisk, mile markers that line the 16-mile-long segment of the National Road in the state's northern panhandle. The project, under the direction of IHTIA chair Dan Bonenberger [SIA], was the idea of the National Road Alliance of West Virginia, which formed in 1998 to promote and preserve the National Road, and is being funded by WVDOT under the federal transportation enhancement program.

Construction of the National Road began in 1811, and it passes through six states from Maryland to Illinois, parallel to modern-day U.S. Route 40. It was a major route between the Mid-Atlantic and the Upper Midwest, a major engineering achievement in the early 19th century, but also controversial since it involved constitutional issues of the legality of the federal government's involvement in internal improvements.

Mother Nature, vandals, and auto crashes have taken a toll on the 15 cast-iron markers that have ticked off the miles on the West Virginia leg of the road since the 1830s. IHTIA took one of the markers to WVU's Virtual Environments Lab, known for its use of cutting-edge computer technology to aid in historic preservation. After the laser scans were made, IHTIA converted the data to CAD (computer-aided design) drawings. Casting Technologies of Waynesboro, PA, created a mould of the marker based on the drawings, and then poured duplicate castings—using foundry technology that has changed little in 170 years. John Milner Associates of Philadelphia completed a paint-sample analysis that determined the original paint scheme. Carboline, a St. Louis paint company, matched the historic paint color (a shade of white)—then kicked in the paint for free.

Six of the original 15 markers have been restored in their rightful places along the road. Two more duplicate markers were cast, and they'll be exhibited at the Wheeling Convention & Visitors Bureau and the Interstate 70 Welcome Center. Info: Dan Bonenberger, (304) 293-3859; bberger@wvu.edu. ■



Don Bonenberger

A restored mile marker on the National Road in WV.

America's National Park Roads and Parkways

Drawings from the Historic American Engineering Record

This handsome, new book brings together 331 measured and interpretive drawings commissioned by HAER to illustrate the physical characteristics, design strategies, construction practices, and visitor experiences of roads in national parks from Acadia to Zion and parkways from the Blue Ridge to the Natchez Trace. Also included are non-Park Service projects that utilized similar design strategies, including the Bronx River Parkway and the Columbia River Highway. The book documents 31 projects. The large-format book (11×17-in.) was edited by Timothy Davis, Todd A. Croteau, and Christopher H. Marston with an introductory essay by Davis and a foreword by Eric DeLony [all SIA]. Hardcover ISBN 0-8018-7878-0. Regularly \$55, a special 20% discount (\$44) is available by mentioning code NAF when ordering directly from the Johns Hopkins University Press (1-800-537-5487). ■

New Doctoral Program at Michigan Tech: Industrial Heritage and Archeology

In 1991, Michigan Tech launched a Masters program in Industrial Archeology, and in the years since the program has provided a relatively unique educational opportunity and the only IA degree program in the U.S. More than 40 students have graduated since 1993 and moved successfully into professional positions in cultural resource management and engineering firms, as well as local, state, and federal historical agencies, museums, and libraries. Starting in fall 2005, the Department is extending this program to the doctoral level with an interdisciplinary Ph.D. in Industrial Heritage and Archeology.

The MS and Ph.D. programs share certain key features. Above all, both seek the integration of the history of technology with historical archeology to produce a strong emphasis upon the material culture of industry. A field experience is expected of all participants, but, overall, the curriculum is designed to offer flexibility. The doctoral program will give additional attention to industrial heritage, an emerging area of interest that is stronger in Europe at the moment, but gaining strength in the U.S. Among the developing tools of the heritage movement are the analytical concepts of ecology and landscape, which help to show how people and processes interact across a geographic area or region, and then interpreting these interrelationships to the general public. Students will be expected to connect industrial history and archeology in ways that link sites, artifacts, and documents through extended research projects. The goal is to educate stewards for history and heritage in both academic and non-academic careers.

The program draws on MTU's faculty of historians and archeologists with substantial field experience and international reputations in industrial archeology and the history of technology. As well, the university's setting on the Keweenaw Peninsula, a center of the copper mining industry from the 1840s to 1960s, amounts to a natural laboratory for IA and heritage studies. The SIA and IA program at MTU have had a working relationship since the mid-1990s. The SIA's headquarters are in the Department with Pat Martin serving as editor and executive secretary, Don Durfee as administrative assistant, and Terry Reynolds as book review editor for the Society's journal *IA*.

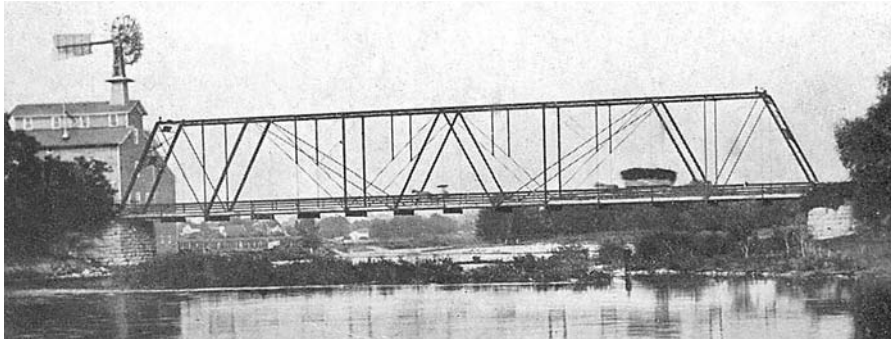
For more information on the program, including the availability of fellowships and assistantships, see www.social.mtu.edu or contact Bruce Seely, Dept. Chair, or Pat Martin, Graduate Program Director, (906) 487-2113; bseely@mtu.edu or pmartin@mtu.edu. ■

Lime Creek's Most Unusual Bridge

The bridge that once crossed Lime Creek (later renamed Winnebago River) as it passed through the town of Rockford in Floyd County, Iowa, was one of the most unusually configured, metal through-truss bridges built in 19th-century America. A few patented proposals may have been more eccentric, but they were never built. Unless heretofore-undiscovered documentation comes to light, only speculations can attempt to explain why and how its designers arrived at the bridge's unique configuration. The Wrought Iron Bridge Co. of Canton, OH, erected it in 1884, and, amazingly, it lasted until 1959. Composed of 14 rectangular panels, its 165-ft. span purportedly made it Iowa's longest-span highway bridge as late as 1930.

The solution is a potpourri of structural components applied simultaneously to a single truss, representing a hybrid of the conventional 19th-century truss patterns known to bridge historians. The first two panels are reminiscent of a Pratt truss. Double and triple intersecting diagonals radiate from the third panel point on each side, recalling elements of early suspension trusses such as Stearns and Kellogg. The central panels have compression diagonals capable of taking stress induced by moving loads. This combination of elements ultimately recalls the patented variations of Thacher's truss design. There is a bit of structural response to practically every conceivable issue. There is even a 'mini' truss that braces the top chord, making it stiff enough to support hangers to carry the bottom chord.

It is highly unlikely that the designers could have solved the



Postcard of the Lime Creek Wagon Road Bridge, Rockford, Iowa, c. 1900. Private collection.

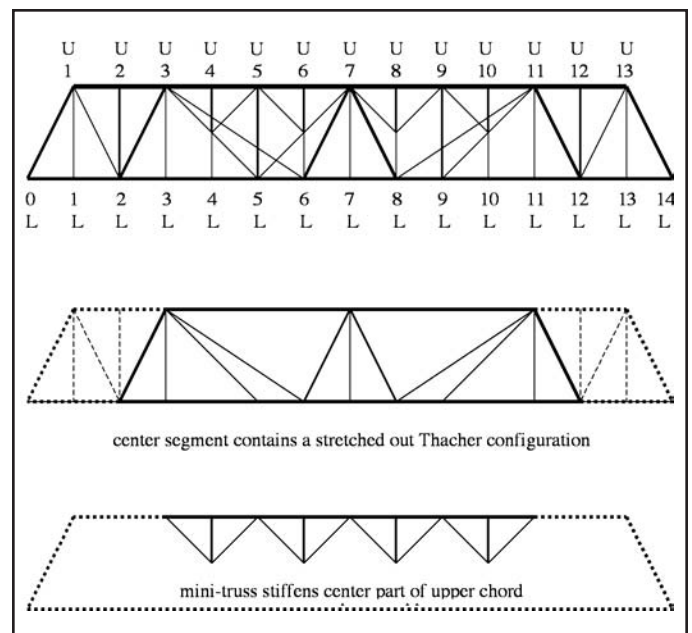
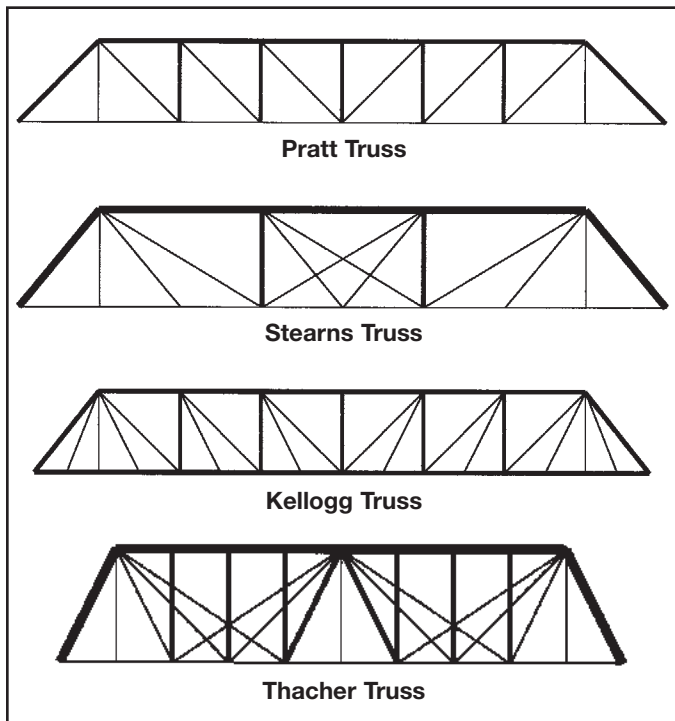
stress distribution pattern in the truss as a whole. They were, however, capable of looking at individual parts and making rational assumptions. Thus, they no doubt realized that panel points along the bottom chord supporting the roadway needed support, and supplied verticals at those

points (L3, L11). They also would have realized that the vertical could not simply hang from the top chord and therefore inserted diagonal struts to help out (L2-U3 and L12-U11). In turn ties (U1-L2 and U13-L12) would be needed to counteract the thrust exerted by the bottom of the strut and carry these stresses back up to U1 and U13 from where the end posts would finally return the loads to the ground.

The span of this bridge was four panels longer than the Wrought Iron Bridge Co.'s standard variation of a Thacher truss, and thus they apparently looked at points U3 and U11, which were braced by diagonal struts, as a logical point from which to launch a pair of far reaching ties to help support the roadway near the center of the span.

Of course, we don't know what the builder's thought process was. Our guesses may very well be wrong. But whatever their process, it must have seemed logical to them. There were many tried-and-true shapes that had been used for similar-length spans. Why they decided to build this overly complicated one is a conundrum. Perhaps they just wanted to be different, and if that was their object, they were eminently successful.

David Guise



David Guise

Wilson Bridge: A Saga in Saving Indiana's Bridges

Editor's Note: In June 2002, Indiana's historic bridges were placed on the National Trust's "11 Most Endangered Historic Places List" (SIAN, Summer-Fall 2002). A year later, Preservation Kentucky similarly designated that state's metal trusses. These dubious distinctions remind us of the challenges to preserving the nation's historic bridges. Paul Brandenburg's update on the Hoosier situation will be of interest to SIA members working to save historic bridges.

Directions are simple: head east on Main Street out of Delphi to the first road; turn right and keep going back in time. Pretty soon you'll find it—Wilson Bridge, built in 1898. The graceful simplicity of this Pratt through truss has captured the hearts of those who passionately believe that Indiana's historic bridges are worth protecting.

The drama started to unfold during the early 1990s when Indiana's highway department delegated the federally mandated historic review process to consulting engineer firms with aggressive marketing emphasis aimed at new construction. With minimal oversight by the Federal Highway Administration, this arrangement evolved into a trend leading to the elimination of bridges dating from the 1880s to the 1910s from Indiana's landscape. In many cases, some of these bridges could be rehabilitated to serve the needs of the community at a fraction of the cost of replacement.

The April 8, 1998, edition of the *Carroll County Comet* stated, "County to Wilson Bridge Supporters—Time's Up." The commissioners had spoken: "Get out of the way—Wilson Bridge is in the way of our idea of progress for the county." To the opposition, the cost was too high—\$1.2 million for a new bridge and the loss of several acres of pristine Indiana countryside. It made little sense to spend four times the rehabilitation cost to construct a new bridge for a narrow road with an average daily traffic count of less than 100—a road used primarily by Old Order German Baptists riding to town in horse-drawn buggies.

Throughout Indiana, preservation advocates were finding that transportation projects involving historic bridges received little independent review as required by Section 4(f) of the National Transportation Act of 1966 for federally funded projects. In addition, the Section 106 historic review process was becoming little more than a paper exercise to justify new construction. "Do we live in a land governed by law or the transient whims of elected officials?" was the question being asked with national implica-

tions. It needed a test case to answer. Hence, Wilson Bridge.

For preservationists, the strategy involved building a strong alliance at the local, state, and national level directed at enforcing the application of federal law. This resulted in listing Indiana's historic bridges to the "Ten Most Endangered" by Historic Landmarks Foundation of Indiana, and to the National Trust's "11 Most Endangered." In their listing the Trust stated that "Indiana needs a bridge preservation plan that takes a comprehensive look at these endangered resources throughout the state and sets clear priorities for preservation, with funding to allow for rehabilitation."

Additionally, the Advisory Council on Historic Preservation took the unusual step of weighing into the discussion. For the better part of five years, coordination of the debate has been championed by dedicated volunteers of the Carroll County Historic Bridge Coalition. In addition to the tedious work of attending numerous meetings and preparing detailed rebuttals, the group engaged in education and community outreach.

Finally, all that could be said was said. In spring of 2002, a brief prepared by legal counsel on behalf of the preservation community responded to the 4(f) findings stating that Federal Highway of Indiana had abdicated responsibilities under federal law. This opinion was echoed by the Department of the Interior a few weeks later.

After months of silence, Federal Highway of Indiana brought representatives of various public agencies together as the Indiana Historic Bridge Task Group. It was an effort to initiate the development of a programmatic agreement addressing Indiana's historic bridges. Meanwhile, the Historic Landmarks Foundation of Indiana announced the formation of the Historic SPANs Task Force. Its goal is "forming an effective alliance with state and federal agencies to develop a comprehensive historic bridge rehabilitation program for Indiana." The Task Force has thus far supported local preservation organizations in over twenty historic bridge reviews statewide.

By maintaining pressure on the system, true change is emerging in Hoosierland as represented in the following quote in spring 2003 from Federal Highway of Indiana to the county commissioners: "Indiana's historic bridges are among the State's most valued treasures. They represent an era when the boundaries of our country were being expanded; when the age of the automobile began to provide personal mobility to all Americans into areas never before imaginable. But many of these treasures have been lost over time, and it is therefore more important now than ever before to look for opportunities to preserve these bridges."

Currently, Indiana is on target to develop and sign a programmatic agreement on historic bridges by mid-2005. Completion of a comprehensive survey of the remaining historic bridges is targeted for 2006, but this is only the beginning. Remaining hurdles include identifying funding sources and continuing the education of county leaders.

As for Wilson Bridge, the preservation community remains committed to completing the work of developing a model program for historic bridge preservation in Indiana. What became of our Carroll County Commissioners who initiated this story? Their vision of progress at the expense of listening to their constituents failed at the ballot box—none remain in office who opposed saving Wilson Bridge. A renovated Wilson Bridge will open once again for vehicular traffic in 2006—make plans now to join us for the party.



Wilson Bridge (1898) has been at the center of a test case on Indiana's historic bridges. HAER Collection, Library of Congress.

*Paul Brandenburg
Chair—Indiana Historic SPANs Task Force*

Ohio Rolling Mill Engine Moves to New Home

Group Works to Save Large Machines of Youngstown's Steel Heritage

In late July 2004, several large parts of the William Tod Co. 34 x 68 x 60-in., cross-compound, steam, rolling-mill engine made the six-mile journey from V&M Star Steel in Girard, OH to the Tod Engine Heritage Park in Youngstown. The Tod Engine Foundation hired Grim's Crane Service of East Palestine to move the low-pressure (LP) bed plate, LP sole plate, and two flywheel halves. Grims brought in a pair of 50-ton Grove hydraulic cranes and four tractor trailers. The total weight of moved parts was 239,000 lbs. The high-pressure (HP) bedplate, HP cylinder, LP cylinder, and crankshaft (315,000 lbs.) remain in storage waiting to be moved. The bill for the rigging for the three days of work came to \$8,650.

The Tod Engine was built in 1913 at William Tod Co.'s foundry and machine shops in downtown Youngstown for the Brier Hill Steel Co., to drive a 24-in., six-stand, merchant mill producing sheet bar. It shared the blooming-mill building with a nearly identical Tod continuous mill engine and a Tod twin-tandem, cross-compound, blooming-mill engine. In 1923 Brier Hill was purchased by Youngstown Sheet & Tube and became the Brier Hill Works. In the mid-1930s YS&T converted the majority of production at Brier Hill to the manufacture of tube rounds for their Campbell Works seamless tube mill. The merchant mill was rebuilt and became the round mill, and continued to operate in this capacity until the closure of the Brier Hill Works in 1979.

The Tod Engine Foundation acquired the Tod Engine in 1996 from North Star Steel Ohio and over a ten month period removed it from the blooming-mill building for storage inside the former Brier Hill plate-mill building. The Tod Engine Heritage Park site was purchased in 2000 and preparations to relocate the engine commenced. In 2003, an 8-in.-thick, reinforced-concrete, display pad was installed for the low pressure side of the engine along with a 5 x 20-ft. flywheel pit. Following the arrival of the LP side of the engine, work has commenced on construction of the display pad for the HP side of the engine, which is scheduled for movement in 2005.

Upon the successful reassembly of the large pieces of the engine, a building will be constructed to enclose and provide a dry place for its restoration. Architect Ronald Cornell Faniro of Youngstown was retained to design the exhibit building and grounds for the Tod Engine Heritage Park. His design is for a 30 x 56-ft., open-sided, display pavilion, resembling a steel industry structure. The building will include a monitor, and will be sheathed with reclaimed corrugated siding from a Youngstown steel plant. The park property will be surrounded by a 6-ft.-high, corrugated-steel wall similar

to the fencing built around industrial plants. The visitor center will be a recreation of a guardhouse placed at the main gate to the park. The park is designed to allow for the display of additional large artifact exhibits as they are acquired.

The Foundation plans to restore the Tod Engine for operation at very low speed, perhaps 5 to 10 rpm, driven either by electric motor or hydraulics. To accommodate low-speed operation, the piston rings will be removed from both cylinders, and the piston rods will only make contact at the crosshead and tail rod supports. Whereas the 23-in. main bearings are still serviceable, the connecting rod bearings are to be rebabbitted. Restoration of the engine to original specifications will be greatly aided by the existence of 90 of the original engineering drawings, acquired with the engine from North Star Steel.

The Tod Engine Foundation also has its eye on other steam-era artifacts from the Youngstown area to exhibit with the Tod Engine. While we were unable to save the incoming steam separator and barometric condenser from the blooming-mill building, a steam regulator and separator that were used with a pair of Nordberg Uniflow rolling-mill engines have been located and may someday be acquired and moved to the park. The Foundation has also found an Ingersoll Rand cross-compound, steam, air compressor at another local factory that may become available. Various duplex steam pumps and other artifacts from the area's historic steel plants will round out the exhibit.

The preservation of the Tod Engine has taken over eight years, and it will certainly be another two to three years before it is completely reassembled and its great 20-ft.-diameter flywheel turns over again. However, this is believed to be one of only two rolling-mill steam engines existing in the U.S., the other being a 50 x 60-in., two-cylinder, simple reversing engine built by Macintosh Hemphill (Pittsburgh) and preserved by Steel Industry Heritage Corp. in Homestead, PA. In 1998 both the American Society of Mechanical Engineers and ASM International chose to recognize the significance of the engine by designating it a Historic Mechanical and Materials Engineering Landmark.

The Tod Engine Heritage Park will open for tours of the work in progress starting in spring of 2005. Private showings of the engine parts at the Heritage Park may be requested. Info: Rick Rowlands (330) 728-2799; rick@todengine.org; www.todengine.org.

[Editor's Note: The SIA plans to visit Youngstown for its 2006 Fall Tour.]



A Grim's Crane Service employee watches as the lowboy truck is pulled out and the low pressure bedplate is lowered into position.



One of the 60,000-lb. flywheel halves being lowered into the flywheel pit by both Grove cranes.



The partially assembled Tod Engine at the Tod Engine Heritage Park.

Tod Engine Foundation

Knight Foundry Update

Plans to Restart Production in 2005

It's been nearly a decade since Ed Arata, struggling to keep Knight Foundry open, informed the SIA membership at its annual meeting in Sacramento that, after 132 years of operation, the foundry was closing due to lack of orders and financial problems (SIAN, Summer 1996). On this ominous note, the National Trust for Historic Preservation placed the foundry on its "11 Most Endangered Historic Places" list and meetings commenced between California State Parks and the foundry's owners to explore preservation options.

Knight Foundry is one of those extraordinary survivors that allow us the opportunity to peek into the past to see how things worked over a century ago. It is a completely intact, operating, water-powered machine shop and foundry dating to 1873. The building and its setting in the former gold-mining town of Sutter Creek miraculously remain intact. Some machinery and equipment need restoration, but most operate. The foundry produced waterwheels, machinery, and equipment for the mining and logging industries in the Mother Lode region of Northern California.

Many individuals have played a role in saving the foundry. Following is the sequence of events since 1996. SIA's Samuel Knight Chapter was established to preserve the foundry as a special project, and soon afterward, the foundry was purchased by Sacramento preservationists Richard and Melissa Lyman. In 2001, the chapter formally transferred preservation of the site to a non-profit Knight Foundry Corp. formed under the leadership of former California State Archivist and past director of the California State Railroad Museum Walter P. Gray III. The owners and corporation were firmly committed to the vision of eventually operating Knight Foundry as a center for preserving historic iron-working skills, as an operating ironworks, and as a living-history experience for the public. A board of directors was established to help shepherd this vision into reality.

Local leaders and the directors have worked closely with the National Trust's western field office in San Francisco. In 1997, the Trust funded a strategic plan and, in 1998, a preliminary preservation plan. In 1999, the Trust helped administer a \$35,000 matching grant from the J. Paul Getty Trust for in-depth preservation planning. That plan recently was completed by preservation architect Mike Garavaglia, detailing the problems that have accumulated over the last 132 years. Under the grant, Robert Johnson [SIA] developed a collections management plan for the vast array of machine tools, equipment, and thousands of wood patterns.

In 2000, Knight Foundry received a highly competitive Save

America's Treasures grant (\$250,000) from the National Park Service to help fund restoration. Once public ownership is secured, the grant will enable Knight Foundry Corp. to complete stabilization and restoration, re-fire the cupola, restart iron production, and allow the public to return.

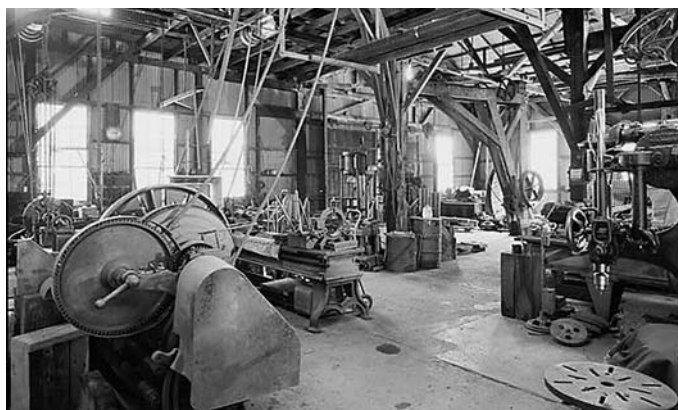
In anticipation of restarting production, the corporation has signed a \$105,000 contract with the City of San Leandro to produce 25 cast-iron lamp posts. These will be replicas of existing street lights that originally were gas lit, later electrified. Cast-iron lamp posts are one of the most technically challenging foundry products. Pattern making and molding $\frac{3}{8}$ -in. thick, 500 lb., decoratively fluted iron columns will prove a challenge to workshop students and foundry masters. The corporation, however, has the services of ironmaster Russell Johnson who learned all the skills required from master molder Wendell Boitano and former foundry owner and ironmaster Carl Borgh.

Johnson, working with other craftsman, has developed a detailed production plan and cost estimate for the San Leandro job. As soon as the non-profit takes possession of the site, a pattern-making workshop will kick off activities that will lead up to pouring iron later this year. Modern foundries have become increasingly automated over the last ten years, but the vision here is to maintain traditional pattern making and foundry practices on a continuing basis to produce traditional cast products competitively. Knight Foundry will fill a viable niche in the specialty market by producing architectural and other custom castings. Prior to pouring iron, however, the corporation must either acquire the foundry or secure a preservation easement and restore the site to working condition. When regular production resumes, pours are tentatively scheduled for the third Saturday of every month and, as in the past, will be open to the public.

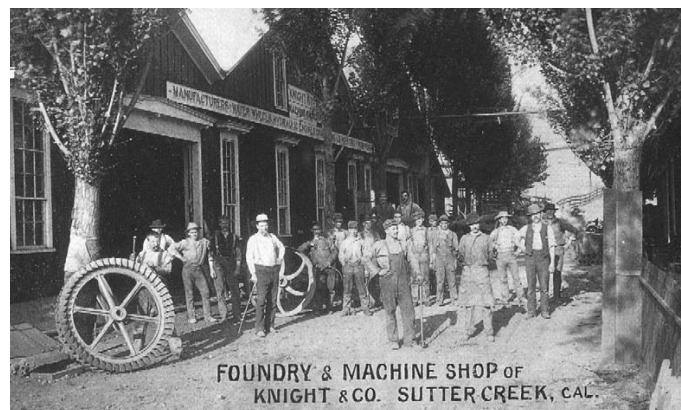
Other recent events include nearly twelve hours of filming for a future History Channel program. The show will air next summer and focus on the preservation of historic sites in the California gold country. Pacific Gas & Electric has donated a 103-yr.-old gate valve that was manufactured at the foundry. It will be displayed next to the state historical marker as visitors enter the foundry.

This magnanimous vision only will be realized if Knight Foundry Corp. is successful in winning and matching a \$1.7 million grant from the state's Cultural and Historic Endowment. To date, over \$100,000 has been raised. For more info, including how to make a pledge: Andy Fahrenwald, andyloira@slip.net.

Eric DeLony and Andy Fahrenwald



Knight Foundry Machine Shop. HAER Collection, Library of Congress.



Workers pose with tools of the trade outside the Knight Foundry, c. 1885. The man with the cane is Samuel Knight.

Documenting a Pre-Fab Fallout Shelter in Georgia

The older I get, the more I find myself recording “antiquities” from my own childhood ... nay, even young adulthood. Such was the case recently with a structure I encountered that was located within an archeological site. In 1961, when Gainesville resident Walter Ladd was installing his prefabricated fallout shelter to protect his family from the nuclear war, I was in college, and I remember Kennedy’s warning that there should be “a fallout shelter for everyone as rapidly as possible” (which I think he said in connection with the Cuban Missile crisis in 1962, but we had been hearing such even during the happy-go-lucky 1950s).

In late 2003, TRC, a cultural resources consulting firm located in Atlanta, documented the shelter including photographs and measured drawings in advance of the structure’s removal as part of the proposed Dawsonville Highway Regional Wastewater Facilities Project. The fallout shelter was located on a tract of land that will be used to construct a pump station.

The “good old days” came rushing back to me as I opened the hatch and climbed down into what may be Georgia’s best preserved—and so far, only recorded—mass-produced, steel, fallout shelter. The shelter is located in Hall County, north of Gainesville. It only took me 41 years to actually see one in person, not just a picture of one in a Sears catalogue or *Look* magazine. The mostly buried structure is constructed of prefabricated, welded-steel components. Visible on the surface of a low mound are two air pipes extending upwards, each about 5.5 ft. in length and 10.5 ft. apart, and the enclosed top portion of a square shaft. Entrance is gained by means of a steel ladder within the shaft. The shaft measures approximately 2.5-ft. square. It looks like a Jules Verne submarine surfacing in the woods.

At the bottom of the shaft is a steel door that opens into one end of the shelter. The shaft’s hatch door can be secured from within. I had a vision of a family who, having wisely heeded warnings and prepared for the Soviet attack, are now safe and secure from marauding bands of holocaust survivors, or worse, communist invaders. The vision was in black-and-white and narrated by Jack Webb.

The interior of the shelter measures 8-ft. wide by 12-ft. long, and 7.3-ft. high as measured from the center of the barrel ceiling, which is 3-ft. below the surface of the earthen mound. Why 3 ft.? Well, back then practically every school child knew that 3 ft. of earth provided a protection factor of 1,000 or 99.9 percent blocking of gamma rays. The shelter features four bunks, electrical wiring, a water faucet, and provision for waste disposal. A rotting privacy curtain still hangs in that corner. A light bulb is still in the overhead fixture.



Interior view.

Before my fortuitous contact with Walter Ladd, I was prepared to date this structure to around 1960, based on the shelter’s polyvinylchloride-wrapped Romex wiring, which, I remembered from personal experience, had replaced older, asphaltic-permeated, cloth-wrapped Romex in the late 1950s or early 1960s. As it turned out, Ladd had placed the shelter in 1961. He also had insights into the shelter’s operation. A hand pump was connected to the rear vent pipe via a length of hose, and brackets at the back of the shelter were for a no longer extant folding seat and shelf for two weeks of groceries—which were never laid in. Why two weeks? Well, the “seven-ten” rule: for every seven times older, the fallout has decayed to one-tenth its previous strength. Thus, assuming a one-megaton bomb, in two weeks or less it would be safe to come out. Thankfully, the Cold War and its artifacts are now a matter of history.

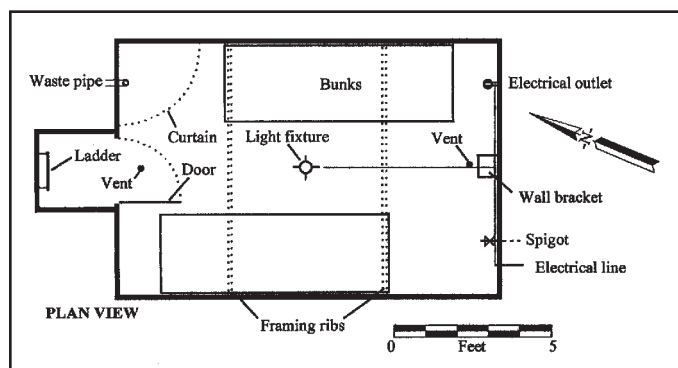
Although TRC recommended the shelter as eligible for the National Register of Historic Places, and staff at the Historic Preservation Office, Georgia Dept. of Natural Resources, supported the recommendation, the Army Corps of Engineers, the lead agency, did not concur. Nevertheless, at the urging of the Hall County Historical Society, the City of Gainesville agreed to pay for the documentation, removal, and transportation of the fallout shelter to avoid destroying it, and successfully did so in June 2004. The historical society has taken possession of the shelter and intends to restore it and use it to educate the public about the Cold War.

Jim D’Angelo

[A version of this article first appeared in *The Profile* (Spring 2003), the newsletter for the Society for Georgia Archaeology. Thanks to the Society and the author for their permission to reprint it.]



Lifting the shelter for relocation to the Hall County Historical Society, June 2004.



Drawings and photos courtesy of TRC

St. Paul Grain Terminal Threatened

Two of the last historic industrial structures remaining on St. Paul, Minnesota's Mississippi riverfront were listed on the National Register recently, but face an uncertain future.

Designed in 1927 and completed in 1930, the St. Paul Municipal Grain Terminal buildings are the sole remnant of the first farmer-owned, cooperative, terminal elevator complex in America. They also are tied to a movement that transformed the upper Mississippi River into a modern commercial marine highway.

In a scenario familiar to SIA members, opponents scorn the tall reinforced-concrete building and its companion "sackhouse" or "flathouse" as industrial eyesores, creating a political and funding obstacle for supporters.

The structures are located within the National Park Service's Mississippi National River and Recreation Area (MNRRA). The NPS has championed their documentation and preservation, along with the St. Paul Riverfront Corp., a private, nonprofit organization promoting riverfront revitalization.

Both agencies, and local preservationists, advocate reusing the sackhouse as a restaurant and the elevator as an interpretive center. The structures have the great commercial advantage of being built literally over the water's edge, a location no longer permitted for new construction. The elevator provides a tall viewing platform to observe the river and the city.

Residential neighbors in the nearby Irving Park Historic District (NR), which overlooks the elevator from the river bluff, favor preservation. The developer of a \$165 million housing complex going up adjacent to the elevator, the Texas-based Centex Multi-Family Communities, L.P., initially was cool to the proposal. Now persuaded of the site's potential amenities for future tenants and buyers, Centex will be supportive if the project is done well and done quickly.

The elevator's origins lie in the classic Midwestern struggle between

rural farmers and business and transportation elites. The farmer-based Equity Cooperative Exchange, founded in Minneapolis in 1908, challenged the Minneapolis Chamber of Commerce, backed by powerful grain trading and milling interests. While the Chamber effectively controlled grain marketing, the railroads dictated shipping rates—all to the economic disadvantage of regional farmers. In the background was the landmark Northern Securities trust-busting Supreme Court case, decided in 1904. Argued over the right of three Midwestern railroads run by J.P. Morgan and St. Paul's James J. Hill to monopolize trade, the case had originated in a federal building within sight of today's elevator.

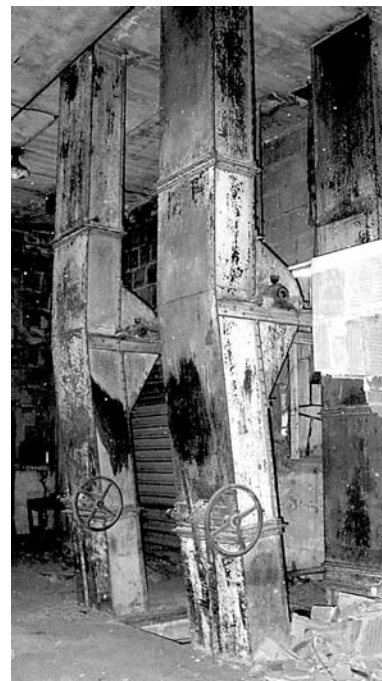
Enticed by St. Paul's offer of free land on the Mississippi riverfront, the Equity built a terminal elevator there in 1917—unfortunately just when river commerce was dwindling in competition to railroads. In the mid-1920s, river navigation interests, in an effort to better compete with the railroads, pressured Congress to authorize a nine-foot navigation channel on the Mississippi, requiring 23 major new locks and dams. Anticipating the nine-foot channel, eventually approved in 1930, the present elevator structures were designed and built by the Minnesota Farmers Union, which had taken over the Equity in 1923.

The elevator, technically a "transfer elevator," was designed for the sole purpose of moving grain among existing riverside elevators, railcars, river barges, and a mill. The sackhouse facilitated movement of sacked flour via overhead conveyor from a nearby flour mill to barges along the same dock.

Locally known as the Head House, the 125-ft. elevator is simply a reinforced-concrete tower around two identical internal elevator legs. The receiving leg handled incoming grain. The transfer leg handled outgoing grain and transfers within the elevator. The equipment for each leg survives and includes a continuous-belt bucket conveyor, electric motor and drive mechanism, scale, garner, and bins, all arranged vertically. Bucket conveyors lifted grain to the top of the structure and gravity carried it down through the scales and distributing spouts, depending on its ultimate destination. Unlike a conventional "head house" at a grain elevator, a transfer elevator has no grain cleaning or sorting equipment.

An exterior marine leg, now gone, scooped grain from dockside barges, sending it to the receiving leg. Barges were loaded by a simple spout extended from the building over the vessel's open hold. Unlike Duluth and Buffalo with their large complexes of lakeside elevators, the St. Paul example was likely the only marine operation in the Twin Cities, which still have significant districts of historic rail-oriented terminal elevators. Restoration architects

(continued on page 24)



Bob Frame

The two elevator legs, near the boot (bottom) of the first floor, interior of the transfer elevator. Inside each metal leg are the elevator cups or buckets on an endless belt. The legs run to the top of the structure.



St. Paul Riverfront Corp.

The St. Paul Municipal Grain Terminal from across the Mississippi River, with downtown St. Paul in the background. The transfer elevator is the tall reinforced-concrete building (left). The sackhouse or flathouse is the one-story, brick structure extending to the right, with its five large overhead doors opening onto the dock. In front of the buildings are several large barges.

ST. PAUL (continued from page 23)

propose reconstructing the exterior housing of the marine leg to conceal a modern passenger elevator, necessary for any public access to the structure's upper levels.

The city of St. Paul acquired the site in 1985 and, following local HAER-level documentation, demolished all of the remaining structures except for the transfer elevator and sack house. New roads, trails, and the huge Centex housing project now isolate these two remaining Grain Terminal buildings. The demise of other industrial sites along the Mississippi in St. Paul gave "sole survivor" status to the structures.

The city granted ADRZ Group in St. Paul tentative developer status to create the restaurant and interpretive center. The architectural firm of Meyer, Scherer & Rockcastle, appropriately housed in the Washburn A Mill (NHL) next to the new Mill City Museum in Minneapolis (SIAN, Winter 2004), has done preliminary architectural design work. If funding and other legal and logistical problems can be resolved, the Riverfront Development Corp. hopes to begin restoration work in 2005, but it is still too soon to declare victory and consider preservation a done deal.

Bob Frame

NOMINATIONS COMMITTEE ANNOUNCES 2005 SLATE

The SIA Nominations Committee is pleased to present the following slate of candidates for the 2005 election:

Director (3-year term) You will vote for three	Jay McCauley William L. McNiece Kevin L. Pegram Bay Stevens
---	--

Nominations Committee (3-year term)	Cydney E. Millstein
---	---------------------

SIA by-laws state that the Nominations Committee shall notify the membership of the proposed slate at least 70 days in advance of the Annual Business Meeting. **This is that notice; it is not a ballot.** Additional nominations may be made in writing over the signatures of no fewer than 12 members in good standing (dues paid for the 2005 calendar year) and delivered to the Nominations Committee chair at the address below no later than April 23, 2005. Candidates must have given their consent to be nominated and must also be members in good standing. Ballots, which will include a biographical sketch and photograph of each candidate, will be mailed in late April. Members must have paid their dues for the 2005 calendar year in order to vote.

The 2005 Nominations Committee is Justin M. Spivey (chair), Martha Mayer, Jet Lowe, and Vance Packard (ex officio). Please direct all nominations and other correspondence to:

SIA Nominations Committee
c/o Justin M. Spivey
P.O. Box 221
New York, NY 10276-0221
(212) 620-7970 ext. 297
justin_spivey@earthlink.net

NEWS OF MEMBERS

Myron Boyajian gave a presentation on the topic of the industrial archeology of Chicago to the South Suburban Archeological Society in Homewood, IL, in Nov. The video-illustrated talk explored Chicago's port facilities and more than 350 miles of navigable waterway, and various industries in operation and decline. Info: ntesla@ieee.org.

Richard Candee, one of the founders of SIA and known for his work on the history of New England's textile industry, is retiring after 30 years of service to the American & New England Studies and Preservation Studies programs at Boston University. BU has granted Dick the status of Emeritus Professor.

Bob Frame, former SIAN editor, has joined the engineering and architectural consulting firm of Mead & Hunt in Minneapolis. Bob is known for his work on the Minneapolis flour-milling industry and is coming off a two-year stint as the Executive Director for the Preservation Alliance of Minnesota.

Chester Liebs has been awarded the James Marston Fitch Preservation Education Lifetime Achievement Award by the National Council for Preservation Education. An early protégé of Professor Fitch—the father of historic preservation education in America—Liebs is the first of Fitch's former graduate students to receive the award. After helping to develop the Vermont Division for Historic Preservation in the early 1970s, Liebs went on to found and direct the highly successful historic preservation program at the University of Vermont. Chester was also a founding member of the SIA and is a past president (1974-75). He was program chair at the SIA's first annual conference and was responsible for arranging the Great Hall at New York's Cooper Union as the venue. As chair of the SIA's preservation committee in the 1970s, Liebs helped gain funding for, and carry out, two of the SIA's first major projects, the book and slidefilm, both titled *Working Places*, which demonstrated the feasibility of reusing industrial buildings in the U.S. During the past decade, Liebs has made contributions to preservation education in East Asia as a Fulbright Scholar, visiting professor to Japan's Tsukuba University and Tokyo National University of Fine Arts and Music, and senior advisor to the Japan National Trust. Today, Chester's work continues as Adjunct Professor and Director of the Southwest Summer Institute in Preservation and Regionalism of the University of New Mexico's School of Architecture and Planning. ■

CHAPTER NEWS

Oliver Evans (Philadelphia) held its annual dinner in Jan. at a restaurant in historic Manayunk. Jane Mork Gibson [SIA], industrial historian and founding member of the Oliver Evans Chapter, gave a slide presentation on the 18th- and 19th-century mills of the Wissahickon Creek including saw, grist, textile, fulling, nail, paper, and tanbark mills.

Roebling (Greater NY-NJ) toured the library and the John M. Mossman Lock Collection at the General Society of Mechanics and Tradesmen in Oct. The collection is an anthology of bank and vault locks from around the world with more than 370 locks, keys, and tools dating from 4,000 B.C. to modern times. The chapter held its annual meeting and show-and-tell at Drew Univ. in Jan. The library contains works on such trades as boilermaking, shipbuilding, and stone cutting. ■

Looking for a Few Good Men—and Women

As a member of SIA, you already know how interesting and just plain cool visiting a steel mill or power plant can be. That visit to the Fort Peck Dam in Montana or the bialy bakery in Brooklyn will be etched in your memory for quite some time. But how about that tour of the Swenson pink granite quarry or the Shell refinery? How about the tour of the Anselma grist mill? “I don’t recall those tours being offered,” you might be saying to yourself. Well, those tours were indeed offered last year by, respectively, the Northern New England Chapter, the Samuel Knight Chapter, and the Oliver Evans Chapter of the SIA. Certainly the annual conference, the fall tour, and the study tours are great opportunities to enhance your knowledge of things industrial, to see—up close—some amazing places or witness fascinating industrial processes. But why not indulge yourself in IA a little closer to home, through membership in a local chapter?

Since its founding in 1971, the SIA has fostered the idea of local chapters as a means of furthering its mission: to promote the study, appreciation, and preservation of the physical survivals of the industrial and technological past. Currently, there are seven active chapters: Klepetko (Montana), Northern New England (Maine, New Hampshire, Vermont, and northern New York State), Southern New England (Massachusetts, Rhode Island, and Connecticut), Roebling (greater New York City and northern New Jersey), Oliver Evans (southeastern Pennsylvania), Samuel Knight (northern California), and Northern Ohio. Sadly, six chapters are dormant or have disbanded: M.C. Meigs Original (Washington, D.C.), Conde B. McCullough (Oregon), Three Rivers (Pittsburgh/West Virginia), Wabash and Ohio (southern Ohio, Indiana, and northern Kentucky), Flagler (Florida), and Southern (Birmingham, Alabama).

As three decades of SIA history demonstrate, chapters often form when an area is host to a conference or fall tour only to have interest fade following the event. Some chapters remain active for years until its core leaders retire, move away, or lose interest. But, with SIA membership now standing at nearly 2,000 strong, we ought to be able to support a few more local chapters.

Chapters organize tours, host lectures, and sponsor dinners and other outings. They often advocate for the preservation of historic resources in their region and document those that cannot be saved. The Roebling Chapter has urged preservation of the High Line (*SIAN* Spring/Summer 2004), an elevated freight line in



Elliot Hunt

Last summer the Roebling Chapter sponsored the Manhattanville Works walking tour, led by Eric K. Washington. Chapter members are seen standing in the shadow of the 125th St. station of the IRT. Other sites included a former Yuengling brewery, a former dairy now used by Columbia’s studio arts school, and the yokes of the former 3rd Ave. (cable) Rwy.

Manhattan, and a graving dock on the Brooklyn waterfront. The Samuel Knight Chapter is working to document the Sunset Line & Twine Co. in Petaluma, CA, and the Northern Ohio Chapter is discussing an inventory of historic industrial and engineering sites in Cleveland. Klepetko and Oliver Evans have both published books of IA interest. The Northern New England and Southern New England Chapters publish an ambitious joint newsletter covering regional IA news.

The requirements are minimal. To start a new chapter, twelve SIA members in good standing must petition the board. (The SIA Chapters Coordinator can help you find members in your area.) Following formation, one business meeting must be held each year (these usually are combined with a chapter activity), and the chapter must file an annual report on its activities and finances.

To join an existing chapter, visit the SIA Web site—www.sia-web.org—and click on “Chapters,” or contact the SIA Chapters Coordinator, who will put you in touch with the right person. If you are interested in reviving a defunct chapter or forming a new one, contact the SIA Chapters Coordinator for a copy of the guidelines (soon to be put on the SIA Web site).

So how about it, Chicago, Pittsburgh, and Detroit? How about it, Ontario? Maybe now is the time to start a new chapter or revive an old one. It can be rewarding and a lot of fun!

Lynn Rakos, SIA Chapters Coordinator
lrakos@hotmail.com
 (212) 264-0229



Scott Andrews

Open pit mine of Apollo Gold, near Jefferson City, MT, site of a Klepetko Chapter tour in the spring of 2004. The mine, called Montana Tunnels, was developed in the 1970s and the ore body is gold/silver/lead and zinc. The mill processes about 5,000 tons of ore daily.



Scott Andrews

Klepetko Chapter members gaze over a series of floatation cells at the Weed Concentrator in Butte, MT, during their spring 2004 tour. The concentrator, built by the Anaconda Copper Co. in 1964 to process low-grade ore, processes approximately 50,000 tons of copper/molybdenum ore daily.

NOTES & QUERIES

For a small history of SIA chapters, I am seeking information or stories about chapters active or dormant. Information about when and why a chapter formed, the names of founding members, highlights of tours or other activities, and chapter "lore" will be welcomed! Please contact Lynn Rakos, SIA Chapters Coordinator; lrakos@hotmail.com; (212) 264-0229.

Industrial Heritage: Reuse of the ATSF Albuquerque Railroad Shops is one of three courses to be offered in the 2005 Southwest Summer Institute for Preservation & Regionalism. The course will focus on the former Atchison, Topeka & Santa Fe RR shops, one of the last great rail maintenance and repair facilities constructed in the U.S. The curriculum will include hands-on recording and demonstrations of state-of-the-art electronic-documentation techniques including photogrammetry, Total Station, and CAD delineation. Class discussions will center on the eligibility of the shops for NHL designation and various proposed schemes for adaptive use, and will bring together lawyers, planners, developers, local citizens, community officials, architects, and engineers. Instructors: Eric DeLony, former Chief, Historic American Engineering Record, National Park Service, and visiting experts. Course dates: June 20-24, 2005. Credits: Three credits (graduate or undergraduate). Completion of an individual summer project is required for credit. Other courses in the 2005 program offered by the University of New Mexico School of Architecture & Planning's Graduate Certificate Program in Preservation & Regionalism include: Heritage Corridors: Learning from Route 66, June 6-10; and Preservation Law: A Practical Tool Kit, June 13-17. Info: hprinst@unm.edu or Candelaria Romero, (505) 277-0071.



ATSF's shops in Albuquerque.

Spring Lecture Series in Easton, PA. The National Canal Museum and the Pennsylvania Canal Society are sponsoring a spring lecture series. Free and open to the public, lectures begin at 7:30 pm in the museum auditorium at Two Rivers Landing, 30 Centre Sq. in Easton. **Mar. 17,** Mitchell Dakelman: a program on his new photographic history of the Pennsylvania Turnpike. **Apr. 21,** Martha Capwell Fox: lecture on the history of the Coplay-Whitehall area (tour site—Fall Tour 2002, Lehigh Valley) and its silk and cement industries. **May 19,** Linda Barth: slide lecture on the history and watercraft of New Jersey's Delaware & Raritan Canal. Info: (610) 699-6613.

Mill Preservation Workshop. The Heritage Conservation Network (HCN) will be returning to the Francis Mill in Waynesville, NC (SIAN, Fall 2004) for two-weeks: July 17-30. The workshop will teach participants about conservation of post-and-beam structures by working on the 117-year-old building. The cost of the workshop is \$950/wk., which includes lodging, breakfasts and lunches, insurance, and workshop materials. Participants may attend one or two weeks, and people with all levels of experience are encouraged to attend. The workshop has been scheduled to

coincide with folk festivals in Waynesville and Asheville. HCN is a non-profit organization dedicated to the conservation of architectural heritage around the world. HCN will also be offering workshops on fresco conservation (Puebla, Mexico, Apr. 17-30) and on horsehair plaster conservation (St. Marys, GA, Oct. 9-22). Info: www.heritageconservation.net; 1557 North St., Boulder, CO 80304; (303) 444-0128; workshops@heritageconservation.net.

Minnesota Bridges. Architectural historian Denis Gardner of Minneapolis is working on a book featuring the state's historic bridges under contract with the University of MN Press. He will highlight examples of many bridge types, including stone, reinforced-concrete, and steel arches, as well as trusses. Tentatively titled *Bridging the North Star*, the book will also feature some discussion of historic bridge preservation. Some SIA members are likely aware of sources covering the subject. Moreover, there are probably well-researched books that have become favorites of members. The author would welcome suggestions from those in the SIA. Info: Denis Gardner, landloper@earthlink.net.

Postdoctoral Position in Industrial Heritage & Archeology

The Dept. of Social Sciences at Michigan Technological University invites applications for a postdoctoral associate in connection with the inauguration of the new doctoral program in Industrial Heritage & Archeology (see p. 17). The appointment will be for the academic year 2005-06, with the possibility of renewal for one additional year. Required qualifications include completion by Aug. 2005 of a doctorate in a related field. Duties include teaching one course per semester, conducting research, and contributing to graduate programs, including the annual summer field school. Courses to be taught will depend upon the successful applicant's field of expertise. Possibilities include the history of American technology; the history of industrialization, industrial archeology or historical archeology, science and technology studies; or introductory courses.

Candidates should submit a graduate transcript and a letter of application that outlines current research and projects relevant to the new doctoral program (www.social.mtu.edu/IHAPhd.htm). Preference will be given to applicants interested in exploring scholarly and intellectual issues related to the material culture of industrial history and technology; the environmental consequences of industrialization; or industrial heritage. Field experience is preferred, but not required. Candidates also should arrange for their doctoral adviser to submit a letter of recommendation that assesses the candidate's academic and research performance and interests, and which evaluates any teaching and classroom experience. The candidate also should provide the names and contact information for two additional references. Salary: \$36,000 with benefits and a travel allowance to support archival research and participation in the annual summer field school in industrial archeology. The Department will begin reviewing applications on Mar. 1 and continue until an appointment is made. A final hiring decision and the date of such a decision is subject to budgetary considerations. **Please submit all materials and questions to:** Bruce Seely, Chair, Dept. of Social Sciences, MTU, 1400 Townsend Dr., Houghton, MI 49931-1295; bseely@mtu.edu; (906) 487-2113; fax 487-2468. MTU is an Equal Opportunity Educational Institution/Equal Opportunity Employer.

IA ON THE WEB

British Fairgrounds (www.fairgroundsociety.co.uk). Articles and photos on the history of fairgrounds and fairground rides, including many steam operated.

Connecticut Soda Bottlers (www.averysoda.com/history.htm and www.threadcity.com/articles/sodapop/index.html). Small-scale, somewhat archaic, soda bottling companies.

East River (www.eastriver.nyc.org). Greater Astoria Historical Society offers history of the river and many of its famous industrial and engineering sites.

Engineering News-Record (enr.construction.com). Many SIA members know ENR as a wonderful historical resource; now you can find out about the history of the journal itself.

National Park Service History Books On-Line (www.cr.nps.gov/history/online_books). More than 500 books, studies, and reports on national park history are available. Recent additions of IA interest include the Civil War defenses of Washington, history of fish and fisheries in the Pictured Rocks National Lakeshore, army engineers in Yellowstone National Park, submerged resources of Florida, the archeology of the atomic bomb, and Pennsylvania RR shops and works.

Punch-Card System (www.history.rochester.edu/steam/hollerith/index.htm). Biography of Herman Hollerith and his innovative punch-card system used to tabulate the U.S. Census beginning in 1900.

Railroad Extra (www.catskillarchive.com/rrextra). Historic documents on how to operate locomotives, examinations for engineers, and design of railroad structures.

Schooner C. A. Thayer (www.cr.nps.gov/safr/local/thayrest.html). Check out the 360-degree virtual view of the 1895 schooner's framing plan from the perspective of the interior of the vessel.

London's Trade & Industry (www.cityoflondon.gov.uk/collage). Various photos and images of London in a searchable database. One of the search categories is "Trade & Industry."

Union Pacific and the Kansas City Bridge (wt.diglib.ku.edu). Describes the building of the first railroad bridge over the Missouri River at Kansas City and first-hand accounts of trips taken aboard the UP and the Kansas Pacific Rwy. from the mid-1860s to the 1880s. Part of the "Western Trails" on-line exhibit of the Kenneth Spencer Research Library at Univ. of Kansas. ■

SITES & STRUCTURES

The National Park Service reports on several items of IA interest in recent issues of *Heritage News*. **Locomotive #27** (Baldwin, 1913) of the Virginia & Truckee Rwy. was listed on the National Register in Oct. 2004. The locomotive served the agricultural communities south of Carson City, NV, until retired in 1950 and then donated to the State Museum. It is undergoing restoration and will go on indoor display at the new Comstock History Center in Virginia City later this year. In its post-election session, Congress designated two new heritage areas of significance to industrial history: the **Oil Region Heritage Area of Pennsylvania** (northwest Pennsylvania) and the **National Aviation Heritage Area of Ohio** (centered on Dayton). The Save America's Treasures grants program recognized several industrial sites in 2004 including the **Schoharie Aqueduct** of the Erie Canal, the battleship **U.S.S. Massachusetts**, and the **Amana Mill Race**, **Dubuque Shot Tower** (1856), and steamboat **William H. Black** (all of Iowa).

GM to Close Baltimore Van Factory. General Motors will close the 70-year-old factory (tour site—1995 Annual Conference, see p. 65 of guidebook) in southeast Baltimore this year. The plant, built by Chevrolet in 1934, has been assembling Chevy Astro and GMC Safari vans since 1984, but sales of these models have been declining for years.

The Friends of the **East Broad Top RR** (*SIAN*, Spring 1996) report that they have expended more than \$120,000 on restoration projects at the National Historic Landmark in Huntington County, PA. The EBT is considered one of the most complete, early-20th-c., narrow-gauge, steam railroads in the U.S, and it is a favorite of SIA members and railroad historians alike with its roundhouse and shops in Orbisonia. Among the recent projects have been the rehabilitation of the Robertsdale post office, replacement windows at the shops and a new boiler-house wall, conversion of the original EBT paint shop into a car restoration workshop, and documentation of the Saltillo station. Info: www.febrt.org. \$30/yr. membership in the Friends includes newsletters and announcement of events and work sessions.

New Warehouse Historic District in Jersey City. The Jersey City Municipal Council unanimously voted in Oct. to designate a 19th- and 20th-century industrial neighborhood on the Jersey City waterfront as an official historic district. The Warehouse HD includes such landmarks as the Hudson & Manhattan RR Powerhouse (*SIAN*, Fall 2000), the Great Atlantic & Pacific Tea Co. warehouse, the Butler Brothers building, Merchants Refrigerating Co. building, and the Lorillard Tobacco Co. complex. The new designation provides considerable protection against exterior alterations and demolition. Info: www.jerseycity-history.net/warehousedistrict.html.

The **Schroeder Saddletree Factory** (tour site—Fall Tour 1995, Southern Indiana; *SIAN*, Summer 2000) received the National Trust for Historic Preservation's prestigious National Preservation Honor Award in Sept. 2004. The award recognizes those who have given new meaning to their communities through preservation of the architectural and cultural heritage. John Staicer [SIA] of Historic Madison, Inc., which owns and operates the museum, has been active at the site for nearly a decade. His important work has included not only overseeing the repair of the buildings, which were in significant need of structural work since all production stopped at the site in 1972, but preservation and interpretation of the machinery, patterns, and thousands of tools and parts that were used to make saddletrees, the internal frames of saddles. This is as complete a small, family-operated, late-19th-c. industrial shop as can be found anywhere in the nation. Also of IA note were two other winners of the National Trust award: the **Hawkeye Center** and the **Mill City Museum**. The Hawkeye Center in Red Lodge, MT, is a 67-ft.-high grain elevator, built in 1908, that has been successfully restored as a local history museum and offices. The Mill City Museum (*SIAN*, Winter 2004) in Minneapolis has brought life back to the Washburn A Mill (General Mills) with exhibits that incorporate the original milling machinery. Info: www.nationaltrust.org. ■

CALENDAR

2005

Mar. 31-Apr. 2: American Natural Cement Conference, Rosendale, NY. Presentations and demonstrations on the use of natural cement in the 19th c.; history, geology, engineering, chemistry, architecture, and restoration practices. Info: M. P. Edison, Edison@edisoncoatings.net; www.rosendalecement.net.

Apr. 13-16: Vernacular Architecture Forum Annual Meeting, Tucson, AZ. Info: www.vernaculararchitectureforum.org.

Apr. 15: Utopian Visions and World's Fairs Symposium, Hagley Museum & Library, Wilmington, DE. Inventors, reformers, manufacturers, and others who participated in North American fairs. Info: HML, Box 3630, Wilmington, DE 19809; (302) 658-2400.

Apr. 15-16: Lincoln and the Railroads Symposium, Indiana History Center, Indianapolis, IN. Paper sessions address Lincoln's ties to America's rail industry and his contributions to railroad history. Sponsored by the Midwest RR Research Center and the Indiana Historical Society. Info: 1-800-447-1830; welcome@indianahistory.org.

Apr. 27-30: Traditional Building Exhibition and Conference, Philadelphia, PA. Resources, skills, and knowledge of general interest to historic preservation efforts. Info: Judy L. Hayward, Box 1777, Windsor, VT 05089; jhayward@restoremedia.com.

May 4-7: Heritage of Technology—Gdansk Outlook 4, Gdansk, Poland. Paper session and tours to Cold War facilities, bridges, wicker weaving, canals, saltworks, and more. Info: Robert Kapsch, (202) 619-6370; robert_kapsch@nps.gov; also <http://hotgo4.mech.pg.gda.pl/hotgo4.html> or Conference Coordinator, Bozena Klawon, Gdansk Univ. of Technology, ul. Narutowicza 11/12, 80-952, Gdansk, Poland; tel. + 48 58 347 2929; hotgo4@mech.pg.gda.pl.

May 5-7: Preserve and Play Conference, Chicago, IL. Sponsored by the National Park Service. Strategies for protecting amusement parks, spas, boathouses, and other recreation and entertainment sites. Info: www.preserveandplay.org.

May 18-21: New Working-Class Studies: Past, Present, and Future, Youngstown State Univ., Youngstown, OH. Co-sponsored by the Center for Working-Class Studies and the Ford Foundation. Paper sessions, exhibits, films, poetry readings, and other events. Info: Patty LaPresta (330) 941-4622; pmlapresta@ysu.edu

May 19-21: Business History Conference, Minneapolis, MN. Info: Roger Horowitz, Business History Conference, Box 3630, Wilmington, DE 19807; (302) 658-2400; rh@udel.edu.

June 2-5: SIA Annual Conference, Milwaukee, WI. Tours of industries and museums, paper sessions. Student scholarships available. See article in this issue. Info: events@siahq.org; www.sia-web.org.

June 10-13: Railroad Station Historical Society Annual Meeting, Altoona, PA. Tours of rail structures and facilities. Info: Richard D. Ballash, RD#7 Box 16, Latrobe, PA 15650; rich.ballash@kennametal.com.

June 16-19: Mining History Assn. Annual Conference, Scranton, PA. Paper sessions and tours of PA coal and NJ zinc mines. Info: Richard Francaviglia, Program Chair, Univ. of Texas at Arlington, Center of Greater Southwestern Studies and the History of Cartography, Box 19497, Arlington, TX 76019.

July 5-9: National Railway Historical Society Annual Convention, Portland, OR. Rail excursions and speakers on restored steam operation. Info: www.nrhs2005.com.

July 6-8: TICCIH Intermediate Conference & International Forum for Industrial Tourism, Nagoya Aichi, Japan. Paper sessions and tours to area museums and industries (canals, water systems, porcelain). Info: www.congre.co.jp/TICCIH.ifitjapan2005.

Sept. 29-Oct. 2: SIA Fall Tour, Detroit, MI. See article in this issue. Info: events@siahq.org; www.sia-web.org.

Oct. 20-22: Annual North American Labor History Conference, Wayne State Univ., Detroit, MI. Topic: Labor, Solidarity, and Organizations. Info: Janine Lanza, Dept. of History, 3094 Faculty Admin. Bldg., WSU, Detroit, MI 48202; (313) 577-2525.

Oct. 27-29: Pioneer America Society Annual Conference, Baton Rouge, LA. Theme: Changing Landscapes of the Lower Mississippi Valley. Tours of French and Arcadian architecture, and of the engineering of the Mississippi R. Paper proposals requested. Info: www.pioneeramerica.org.

Nov. 3-6: Society for the History of Technology Annual Meeting, Minneapolis, MN. Info: www.shot.jhu.edu. ■

Department of Social Sciences
Michigan Technological University
1400 Townsend Drive
Houghton MI 49931-1295

**SOCIETY FOR
INDUSTRIAL
ARCHEOLOGY**

Address Service Requested

Presorted Standard Mail
U.S. POSTAGE
PAID
Permit No. 2431
Minneapolis, MN