

# SOCIETY FOR INDUSTRIAL ARCHEOLOGY

## NEWSLETTER

Volume 32

Summer 2003

Number 3

### RADIO TOWERS

## New Federal Policies Threaten the Legacy of America's Communications Industry

Communications facilities are a significant part of American industrial history. The first aerials to carry wireless signals began appearing at the turn of the 20th century. The proliferation of broadcasting stations had become so great that Congress sought to regulate them by passage of the Radio Act of 1927. A decade later, the new Federal Communications Commission (FCC) began a program of standardized tower lighting and paint schemes to reduce the hazards to another nascent industry—aviation. By 1940, there were more than 1,000 communications towers in the U.S., with heights from 150 ft. to 900 ft. Some of the towers standing in 1940 remain in service today and represent the important contributions of communications technology—radio, television, and radar—to American society and culture. But, recent policy decisions by the FCC make it more difficult to identify historic towers and advocate for their preservation.

The stations of the former Western Union New York-Washington-Pittsburgh Radio Relay Triangle (WURRT) comprise one such historic property. Another is the nation's first FM radio transmission tower, constructed in 1938 by radio pioneer Edwin H. Armstrong in Alpine, NJ. Sites such as the Chollas Heights Naval Radio Transmitting Facility in San Diego are among the growing number of communications facilities documented by the Historic American Engineering Record.

The WURRT may serve as an example of how the FCC's policy changes endanger historic communications facilities. Between 1945 and 1947, Western Union (WU) developed 25 stations in this system with terminals located in New York City, Washington, and Pittsburgh and relay towers constructed at regular intervals between the terminal stations. The experimental system used radio frequencies that previously had been used by the military to beam telegraph signals between radar stations. Unattended stations placed at regular intervals facilitated a line-of-sight radio relay that allowed WU to refine the radio beam telegraphy process to maintain constant signal strength. The relay stations were steel-truss (lattice) forestry observation towers outfitted to support a cabin housing antennas and other equipment.

For its Washington, D.C., terminal, known as the Tenley Site, WU bought property on 41st Street NW and hired Washington architect Leon Chatelain Jr. to design a 90-ft. tower on one of the highest elevations in the city. Chatelain designed an octagonal, brick tower, faced with limestone and capped by a turret to house the antennas. The tower's decoration is minimal. Slight curves

and tapering along the parapet create an entasis (a slight convexity) effect. The only ornamentation is the "Western Union" corporate name in 13-in.-high bronze letters. The tower and its equipment wing were modified several times. In 1963, WU constructed a one-story, reinforced-concrete addition on which it built a four-legged lattice tower to mount additional microwave antennas. The added tower rises 165 ft. above the addition and two microwave reflector horn antennas cap it, along with an observation platform.

*(continued on page 2)*



*Western Union Tenley Site, Washington, D.C., built in 1945-47, is one of the historic radio towers threatened by recent FCC decisions.*

David S. Rotenstein photos



**The Armstrong FM Tower, Alpine, NJ, built in 1938, is the first FM radio transmission tower in the U.S.**

WU sold the Tenley Site in 1996 to Micronet, which in turn sold it to American Tower Corp. Since American Tower acquired the property, it has razed at least one building and started construction of a 756-ft. tall broadcast tower immediately in front of the historic WU tower. The FCC thus far has not responded to complaints that American Tower did not comply with the Section 106 review process for historic properties. In June 2003 the D.C. Preservation League named the Tenley Site to its "Watch List" of endangered sites.

Section 106 of the National Historic Preservation Act requires

federal agencies and entities issued federal licenses, permits, or funds, to take into account the effects of undertakings (such as the construction of towers) on historic properties. The regulation gives preservationists an opportunity to monitor and influence the outcome of federal actions that may impact historic sites. Recent changes in FCC policies regarding Section 106 compliance are threatening not only historic communications facilities, but also other historic industrial sites that may be near them.

In March 2001, the FCC executed a policy that was intended to streamline compliance with Section 106. The programmatic agree-



**Western Union Little Savage Relay Station, Garrett County, Maryland, was one of 21 relay towers in the New York-Washington-Pittsburgh Relay Triangle.**

ment excluded from review the placement of new antennas on existing towers, thus opening the way for historic communication facilities to be altered, such as the WU site. The agreement was executed without consideration of the possibility that existing communications facilities (e.g., towers) may be historic.

Now, the FCC is seeking public comments on a draft programmatic agreement that will exclude from review those new towers proposed to replace existing towers. It is also proposing to exclude from review the construction of new towers less than 400 ft. high on a property that is currently in use solely for industrial, commercial, or government-office purposes where no structure 45 years or older is within 200 ft. of the proposed facility. Also exempted would be new towers within 200 ft. of interstate highways and railways in active use for passenger trains if the facilities are not listed on the National Register with their settings specifically identified as integral to their significance. Most railroads on the National Register do not fulfill this provision since the nominations are often many years, if not decades, old, and this possibility was never considered.

The FCC must make an effort to ensure that federal undertakings do not adversely affect the significant properties that contribute to the history of the communications and transportation industries. Any new programmatic agreement for FCC undertakings should take into account the fact that radio broadcast, radar, microwave, and television facilities may be historic properties subject to consideration in the Section 106 process. The exclusion of these important engineering sites and other industrial sites from the Section 106 process could have long-lasting consequences on the artifacts and landscapes of our industrial heritage.

*David S. Rotenstein*

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

Mailing date for Vol. 32, 3 (Summer 2003), Aug. 2003. 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.

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# IA in Art: Margaret Bourke-White and the Fort Peck Dam

Photograph courtesy of TimePix (photograph # 762358)



Margaret Bourke-White, Fort Peck Dam, 1936

assignments for the publication, including a photo-essay on Grand Coulee in 1937.

Hired by *Life* in August 1936, Bourke-White's first assignment was to take pictures of the dams under construction by the Public Works Administration in the Northwest. She decided to focus on the Fort Peck Dam, located on the upper Missouri River in a remote area of northeastern Montana. Begun in 1933 and completed in 1940, this \$110,000,000 project was situated in a visually severe area where temperatures could range from minus 50°F in the winter to 110°F in the summer. When finished, Fort Peck was the largest earthen dam in the world, and it remains the world's largest hydraulically-filled dam. Its sheer scale was impressive: 21,026 ft. long, with a maximum height of 250.5 ft. She went to Montana in late October 1936, arriving at the site while the dam was in the midst of construction.

When Bourke-White's photograph of the dam's concrete spillway structure (located about a mile from the dam itself), was featured on the cover of the inaugural issue of *Life* on 23 Nov. 1936, it became instantly famous. Her original image was horizontal, showing considerable unfinished construction, but for publication, it was cropped nearly in half to fit the magazine's vertical cover format. Its compression emphasized the monumental qualities of this mammoth engineering marvel. Two tiny figures of workers are dwarfed by the massive bat-

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The tremendous New Deal public works projects exemplified by dams were powerful symbols in the midst of the Great Depression of the 1930s. The big dams were intended to spur regional development by controlling water supplies and generating hydropower. The construction projects drew unemployed workers from great distances, and the modern technology represented by the dams held the promise of a better future. Many of the big dams, like Fort Peck and Hoover, were built at isolated locations, and entire communities had to be established to support the workforces. Painters and photographers, some working for federal agencies, were inspired to record these ambitious enterprises.

Margaret Bourke-White (1904-71) is renowned as one of the leading photo-journalists of the mid-20th century. In 1927, she moved to Cleveland, establishing her reputation with a series of striking photographs commissioned by that city's leading industrialists and financiers. Although done in a soft-focused, pictorialist style, her images made clear that America's business was business, and that its foundation was industry. From the start, the material of IA was a subject for which she had a special affinity, and her camera recorded bridges, quarries, steel mills, turbines, dams, blast furnaces, and mines.

In 1929, she moved to New York City, and went to work for Henry Luce as a photographer for his new magazine, *Fortune*. Bourke-White also pursued a successful career as an advertising free-lancer whose major clients came from business and industry. When Luce founded *Life* in 1936, Bourke-White was once again his first choice as photographer for his highly pictorial news magazine. Until her retirement in 1957, she would undertake 284

## See Fort Peck Dam!

And other IA sites in Northeast Montana on the **2003 SIA Fall Tour, Sept. 25-28**. Among the scheduled site visits are:

- the Snowden vertical-lift bridge, built in 1913
- Williston Basin oil field
- Montola oil-seed processing plant
- Crystal sugar-beet refinery
- USDA Froid Research Station
- Culbertson threshing bee
- Fort Union
- military and automobile component manufacturers

Tour brochures were sent to members over the summer. For additional registration information or to register on-line, check the SIA Web site ([www.sia-web.org](http://www.sia-web.org)), or contact tour coordinator Fred Quivik, [quivik@usfamily.net](mailto:quivik@usfamily.net).

# EDWARD S. RUTSCH, 1936-2003

**E**dward S. Rutsch, the renowned archeologist, died Sunday, July 6, at the age of 66. His many achievements included the identification of the Great Falls National Landmark Historic Industrial District in Paterson, numerous studies of the Morristown National Historic Site, and the excavation of the Negro Burial Ground in New York City.

He was born in Teaneck, NJ on October 6, 1936 to Emil and Helen (Rudin) Rutsch. He was predeceased by his wife, Mary Jane, who was also known to many in the SIA, in 1989. Survivors include his companion, Patricia Condell, and two brothers, Donald and William.

Ed was raised in Teaneck where he was an All-State wrestler and football player. He went on to George Washington University where he was an All-American in his senior year. He obtained his Masters degree in Anthropology at New York University and continued his studies in American Civilization at the University of Pennsylvania. His early training in education and museology influenced his subsequent role as a professional archeologist and cultural resource manager and interpreter. He was proficient in both aboriginal and historic cultural periods, as evidenced in the wide range of subjects covered in his books, articles and professional reports. He used his expertise in industrial archeology to emphasize public education and the preservation of our nation's industrial heritage.

Ed started as a secondary school teacher. While pursuing his graduate degree he worked as a research curator for the Museum of the American Indian in New York. He was a Professor of Anthropology at Fairleigh Dickinson University in Madison, NJ. He founded Historic Conservation & Interpretation where he served as president and primary investigator for three decades. He was a founding member of the SIA, serving on the board for many years, as well as its President. He contributed articles and book



Source: SIAN, May/July 1976.

*Ed Rutsch caught mid-stride over the Croton River as he glides nimbly and without fear from a bottom chord to the rail bed of the 163-ft. double-intersection Pratt-Murphy truss bridge in Goldens Bridge, NY, during Roebling Chapter, July 17, 1976 documentation of the 1904 NY & Mahopac reinstallation of an 1883 West Shore RR span over Roundout Creek. Source: SIAN, May/July 1976.*

reviews for the SIA journal and received the prestigious General Tools Award.

He leaves behind a legacy of many works involving industrial sites in New Jersey. His seminal work in Paterson identifying the Great Falls Industrial District eventually led to its designation as a National Historic Landmark. His interest in the iron industry generated a greater understanding of the Mount Hope and Long Pond sites. He contributed to the development of many of New Jersey's parks such as Liberty State Park, where he identified numerous cultural resources, recorded them and even led to the production of a film, *Pier 19*, that documented one of the final days of the railroad navy yard. His studies went beyond New Jersey's borders. He conducted historical and archeological surveys at the Central Georgia Railroad Repair Yard in Savannah. He was a consulting industrial archeologist to the Conservation Trust of Puerto Rico for the La Esperanza Sugar Hacienda. He performed Salvage Archeology Operations at Cinnamon Bay, St. John, US Virgin Islands.

Ed was a superb archeologist, a scholarly industrial historian, devoted environmentalist, gifted teacher and a proud New Jerseyman. A memorial service was held for Ed on July 26 at the Liberty State Park. Many SIA members were in attendance.

Patricia Condell



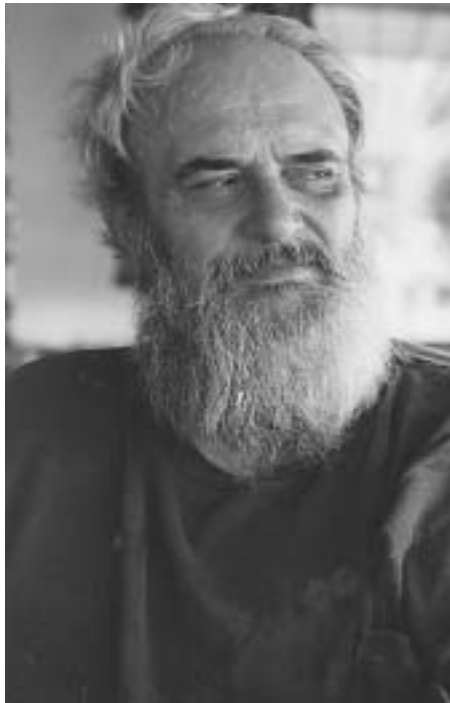
Herb Githens

*Ed Rutsch directing an archeological excavation.*

## **Edward S. Rutsch Memorial Fund**

A fund has been established at Michigan Tech in Ed's memory. This fund will support ongoing research at the West Point Foundry in Cold Spring, New York, a site that was dear to Ed's heart. Funds will go to support students working on the project and studying to be the next generation of Industrial Archaeology professionals. To contribute to this tax-deductible fund, please send a check to Ed Rutsch Memorial Fund, Michigan Tech Fund, 1400 Townsend Dr., Houghton, MI 49931. Contributions will also be accepted on-line from our secure server, [www.sia-web.org](http://www.sia-web.org).

## In Memory of Ed Rutsch



Patricia Condell

**Edward S. Rutsch. A recent photograph taken during explorations of industrial archeology in Jamaica.**

Sweaty from a day of poking around the city's unloved places, still in our dusty jeans and T-shirts, we jostled through the line of well-dressed New Yorkers who had dinner reservations and were waiting for the little restaurant to open. The host planted himself in our path. We told him we were with Big Ed, who was parking the truck around the corner. He promptly ushered us to a table in the back of the empty restaurant, where the waiters sat finishing their own dinners. "Ed's coming," the host announced. The waiters stood up and started setting up their table for us. One of them took my daughter Terry, then 15, back into the kitchen for a snack because he was appalled that someone her age had not eaten yet, with 6 o'clock fast approaching. Throughout our dinner, the people who worked there stopped by to greet Ed, brought us dishes not found on the menu, made sure we had the choicest cuts, the freshest fish, the most pungent gravy. We had to fight to pay, and they sent us off with dessert and good wishes as if we had just spent Christmas with long-lost relatives. Next stop was a nightclub where a friend of Ed's was playing. We had a table in front, Terry's age did not come up, and we spent a few hours with fine music and better company.

In the cab back to our hotel, I tried to explain to Terry that what we had just experienced was not typical. Little Italian restaurants with ex-boxers for waiters do not usually seat you at the staff table, ply you with free food, and treat you like family. In clubs, usually, you don't sit three feet from the band, the singer doesn't call you out by name, and the bartenders don't come out on the floor and dance with you. I summarized: "That was not real life." She had already figured it out: "I know that. We were with Ed."

Ed was not merely a presence. He was an occasion. His special contribution to industrial archeology was the joy he brought to our field. So no goodbyes, just an interval between now and the next time we see the big guy. He will already have scouted out the canals and foundries of our next life, and when the work is done, we will retire to a corner table for a convivial meal, like family.

Matthew W. Roth

## IA IN ART (continued from page 3)

tered piers topped by strongly sculptural supports that tower above them. Bourke-White made dramatic construction shots of the giant pipes that would be installed inside one of four diversion tunnels. She also included portraits of Lt. Col. T.B. Larkin, the chief engineer of construction, as well as his second-in-command, Maj. Clark Kittrell.

While Bourke-White's cover image celebrated the dam itself, her nine-page, photo-essay pictured the human side of life for construction workers in a new kind of Wild West. Her Fort Peck pictures and text set the format for *Life's* photo-essays for decades to come. The Fort Peck townsite was essentially the company town for the U.S. Army Corps of Engineers, but as quarters were provided for workers only, not their families, many had to seek undesirable housing elsewhere. Six shanty towns featuring the ramshackle structures typical of western frontier boom towns grew around the massive work-relief project, including Wheeler (named after a Montana Senator), Delano Heights, Park Grove, Wilson, Square Deal, and New Deal. Appropriately, FDR's picture was a common decorative feature in local bars. Happy Hollow grew notorious as the red-light district, and its saloon "whooperies" were popular on Saturday nights.

These towns were, as she observed, "short on sanitation, long

on bars," and represented a "cowless cow town." Several popular night spots straightforwardly featured the names of the tough women who ran them, as in the case of Ruby Smith's Place. Others, like the Buck Horn Club, were more western-themed. At the dance hall of the Bar X, patrons danced to music supplied by a four-piece band comprised of a piano, a fiddle, an accordion, and a guitar. Taxi dancers charged their patrons a nickel a dance. The four-year-old daughter of one of the waitresses spent her evenings sitting on the bar while her mother worked. Other entertainments were available, including bowling and billiards.

Once the dam was finished, the more than 10,000 workers who had flocked to the area moved on. When Office of War Information (OWI) photographer John Vachon visited Wheeler in March 1942, the town was nearly deserted. *Life* sent two other photographers to Montana to record the dam after completion—Hans Wild in 1945 and Charles E. Steinheimer in 1946.

Betsy Fahlman

Readers are encouraged to suggest essay ideas for the *IA in Art* column, or submit their own, to Betsy Fahlman, School of Art, Box 871505, Arizona St. Univ., Tempe, AZ 85287; [fahlman@asu.edu](mailto:fahlman@asu.edu).

# IA IN CARDSTOCK

Many of us, when we tour historical sites, look for picture postcards. I do too, but I also look for cardstock models of the site, structure, or associated equipment, generally printed on stock about the thickness of a 3"x5" index card. Card models have been published for over 100 years. They started in Europe with models of castles, cathedrals, and other historic buildings, as well, more recently, of airplanes, trains, ships, armor, and many other objects, even birds. Models of IA subjects, however, are not very common. Dover Publishing (US) has some nice models of potential appeal to IA enthusiasts including one of the Brooklyn Bridge, a "generic" New England mill village, and one of the Empire State Building, complete with a replica of King Kong.

Unfortunately, on our 2001 SIA Study Tour to the Ruhr (SIAN, Spring 2001), I noticed only a few card models available in the various museum gift shops. Recently, however, a model of the Zollverein Pit XII in Essen—or at least the colliery headframe, main shaft building, and the north and south hoist houses has become available. The mine, which began operation in 1843, is a UNESCO World Heritage Site. It is now a museum. The model is published by the German firm of Schreiber. It is printed on four roughly 8½" x 12" sheets to the scale of 1:300. The kit is printed in color, nicely depicting the Belgian block courtyard paving as well as the distinctive Bauhaus-style industrial buildings designed by architects Fritz Schupp and Martin Kremmer—that steel frame with brick infill that seemed so strange to most of us accustomed as we were to seeing North American collieries sheathed in corrugated metal. The size of the model's base (Grundplatte) is 11 x 47 cm, and the headframe stands 19 cm high.

One of the nice things about card models is that you can acquire quite a few of them, and a sizeable collection doesn't take up much space—at least not until you build them. Like many of the several hundreds of card models in my collection, I'm not sure when or whether I will build Zollverein XII. But in the meantime, they live compactly on a couple of bookshelves in their flat form. When you do build one, you will want to fabricate a nice acrylic case to protect it. I deal with a local plastics house that fairly economically cuts the parts for me on their table saw, and I polish the edges with sandpaper, weld them together with acrylic solvent and saw and rabbet out a base from a scrap of wood. Another nice thing about card models is that with the use of modern color copiers, you can upsize or downsize them (of course, ethically, only for personal use). This has the additional virtue of preserving the original for future "collectible" value. Indeed, I will very likely shrink Zollverein XII to about half her printed size if I build it.

There is a lot about card modeling on the Internet, including many sites with free downloads. I belong to an organization that publishes a quarterly newsletter listing these sites. An informal group of U.S. modelers has also held six annual get-togethers of kindred spirits, the last two being in Herndon, VA. I attended the 2001 meeting on the faint promise that one or more of the European manufacturers might be in attendance and I could lobby for models of industrial subjects, as well as U.S. flagships, such as the Great Lakes ore carriers *William G. Mather* and *William A. Irvin*. I am encouraged about forthcoming models of IA interest. For instance, the Polish publisher Maly Modelarz has just issued a 1:400 scale model of the ore boat *Edmund Fitzgerald*. But what I



John Teichmoeller

*Zollverein colliery cardstock model kit (center) with photos of the real thing (right) from the SIA's 2001 Study Tour to the Ruhr.*

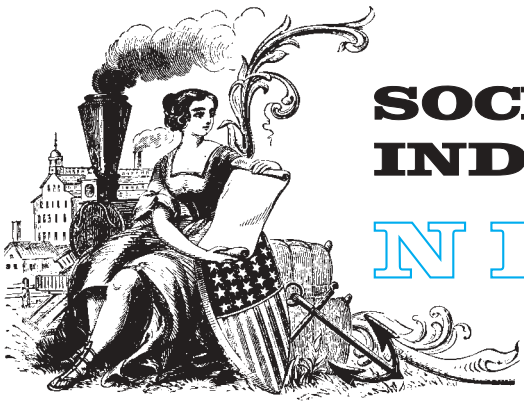
am really trying to get someone to do is a Hulett ore unloader! (SIAN Summer 1999). I have pencilled in the 7th Conference (Nov. 14-16), and I will bring Hulett drawings and some photos.

The "club" I belong to which publishes a newsletter is called "Friends of Wilhelmshaven," c/o H&B Precision Models, Box 8786, Reston, VA 20195; (703) 620-9720; [hbprecisioncard@cs.com](mailto:hbprecisioncard@cs.com). Club membership affords an illustrated annual catalog and discounted prices. H&B now has both Zollverein and the *Edmund Fitzgerald*. Another supplier of the IA card models is Marcle Models, Turnagain, Finch Lane, Amersham, Bucks., HP7 9NE, England; [www.marcle.co.uk](http://www.marcle.co.uk). Further info: John Teichmoeller (SIA), Rail-Marine Info Group, 12107 Mt. Albert Rd., Ellicott City, MD 21042.

John Teichmoeller

*Editor's Note: Members' enthusiasm for IA takes many forms. Not one of the least is modeling, which allows time to study the form and function of IA subjects in the comfort of one's own home or workspace. Models are excellent learning tools. Thanks to John Teichmoeller for sharing his passion for card models. Build on!*





# SOCIETY FOR INDUSTRIAL ARCHEOLOGY NEWSLETTER

## PUBLICATIONS OF INTEREST

A Supplement to Vol. 32, No. 3

Summer 2003

COMPILED BY

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

### GENERAL INTEREST

- ▶ **Comparative Technology Transfer and Society** is a new international journal published three times a year, beginning in Apr. 2003, by the Johns Hopkins Univ. Pr. (1-800-548-1784; [www.press.jhu.edu/press/journals](http://www.press.jhu.edu/press/journals)), \$35/yr. Interdisciplinary with a mix of articles dealing with contemporary and historical issues of how technology is moved from place to place, and why technology that works in one environment or culture may not work in another. First issue included articles on 19th-c. industrial development in Mexico, nuclear reactors in Finland in the 1960s-70s, and plastics in Norway after WW II.
- ▶ Pater Stanier. **Dorset in the Age of Steam**. Halsgrove Direct (Lower Moor Way, Tiverton, Devon, EX16 6SS, U.K.), 2003. 160 pp., photos. £19.95. Industrial past of rural Dorset County, England, photos and descriptions of quarrying; lime, cement, brick, pottery, and tile manufacturers; malting and brewing; corn milling; rope making; textile spinning and weaving.
- ▶ Stephen Van Dulken. **Inventing the 19th Century: 100 Inventions That Shaped the Victorian Age, From Aspirin to the Zeppelin and Inventing the 20th Century: 100 Inventions That Shaped the World from the Airplane to the Zipper**. NYU Press ([www.nyupress.org](http://www.nyupress.org)), c. 2002. 224 pp., illus. \$30 each. Compiled and written by the curator in the Patents Information Service of the British Library, draws on the library's vast collection to recount significant inventions decade by decade.
- ▶ David Weitzman [SIA]. **Model T: How Henry Ford Built a Legend**. Crown Publishers, 2002. 18 pp., illus. \$16.95. Also, **Jenny: The Airplane That Taught America to Fly**. Roaring Book Press, 2002. 18 pp., illus. \$17.95. In the style of the author-illustrator's previous publications, like *Superpower*, *The Making of a Steam Locomotive*, with detailed pen-and-ink drawings depicting manufacturing process and technology. *Model T* illustrates the assembly line that made the economic vehicle that changed the way America traveled. The story is told how Henry Ford adopted interchangeable parts and innovative techniques and follows a Model T from the assembly line to its final delivery. *Jenny* tells about the cloth-covered, wood-frame bi-planes that played a large role in teaching the first airline and military pilots how to fly from the 1910s to 1930s. Once such plane was the Curtiss JN4, "Jenny", known as the "Model T of airplanes." Detailed illustrations show how the airplane was built and how it worked. The story is told from the point of view of an early female pilot. Sure to appeal to children and adults alike.

### RAILROADS

- ▶ William H. Brown. **The History of the First Locomotives in America**. Astragal Press (1-866-543-3045; [www.astragalpress.com](http://www.astragalpress.com)), 2003. 304 pp., illus. \$27.50. Reprint of 1874 edition offers an insightful look at early locomotives from first-hand perspective.
- ▶ Thomas R. Flagg [SIA]. **Brooklyn Waterfront Railroads: Part One—Bush Terminal**. *Transfer* No. 37 (Jan.-Apr. 2003), pp. 3-15, plus front and rear covers. Tour site—2002 Annual Conference. History and evolution of the terminal, illustrated with 18 ground and aerial photos and 4 maps. *Transfer* is a publication of the Rail-Marine Information Group, [www.trainweb.org/rmig](http://www.trainweb.org/rmig).
- ▶ Jim Loudon. **Delaware & Northern**. *NRB* 67,4 (2002), pp. 16-25. History of coal-hauling short line in southern NY's Delaware County.
- ▶ Hank Morris. **Joshua Lionel Cowen: He Fed Our Dreams**. *NRB* 67,3 (2002), pp. 4-17. Biography of the toy-train maker and the history of the company he founded.
- ▶ Hank Morris. **The Phoenix of the Isthmus**. *NRB* 67,3 (2002), pp. 18-42. Panama RR [tour site – SIA Study Tour, Panama, 1996] was totally rebuilt "from the ground up" and reopened in 2001. Background history, map, laying new rail (switch from broad gauge to standard gauge), rehabilitation of the Miraflores tunnel, new traffic control devices, replacement locomotives and rolling stock (purchased used from U.S. suppliers).
- ▶ **Railroaders: Lives and Stories** is a theme issue of *Railroad History*, No. 187 (Fall-Winter 2002). Articles include: John H. White, Jr., *Everyday Life of the Train Captain* (duties of the 19th-c. conductor); J. W. Swanberg, *Conducting Today on Metro-North* (duties of the modern conductor on New York commuter trains); Bill Wilkerson, *Seniority and Enginemen* (how it worked in the Milwaukee Road's Musselshell District, 1907-1982); Linda Niemann, *Railroad Women* (personal stories of cracking the gender barrier since the 1970s); Herbert H. Harwood, Jr., *The Bachelors and the Brass Hat* (M. J. and O. P. Van Sweringen and the Nickel Plate RR in the early 20th c.); Don L. Hofsommer, *What It Takes: Portraits of Three Successful Managers* (Gayle B. Aydelott of the Denver & Rio Grande Western, Robert Downing of the Great Northern/Burlington Northern, and Harold J. McKenzie of the Southern Pacific/Cotton Belt Route). Avail: R&LHS Archives Services, Box 600544, Jacksonville, FL 32260-1544. \$7.50. *Railroad History* is the bi-annual journal of the Railroad & Locomotive Historical Society and a benefit of membership, [www.rlhs.org](http://www.rlhs.org).
- ▶ Tony Reevy. **Eastern Shore Railroad's Car Float Operation**. *NRB* 67,4 (2002), pp. 4-15. Operating between Cape Charles

and Virginia Beach, VA, since 1885. Photos and detailed description of present operation.

- Gene Sansone. **Evolution of New York City Subways: An Illustrated History of New York City's Transit Cars, 1867-1998.** Johns Hopkins Univ Pr., c. 2000. 376 pp., illus. \$49.95. Encyclopedic description of each class of car with over 100 line drawings. Rev: *NRB* 67,4 (2002), pp. 26-27.
- Morgan Simmons. **Old Line Railroad Has New Owners, Plans.** *Knoxville (TN) News-Sentinel* (Nov. 4, 2002), [www.knoxnews.com](http://www.knoxnews.com). A local heritage association has bought the 43-mile line, formerly part of Louisville & Nashville, to operate as a scenic railway. Established in 1890 in southeastern Tennessee's Copper Basin, the line runs through the Hiwassee River gorge between Etowah and Copperhill. It is known for the "Bald Mt. Loop," an 8,000-ft. section of track that rises 426 ft. in elevation around the dome-shaped top of Bald Mt.
- George Rogers Taylor and Irene D. Neu. **The American Railroad Network, 1861-1890.** Univ. of Ill. Pr. (1-800-5375487), reprint ed., 2003. 128 pp., maps. \$18.95 paper. Pioneering work first published in 1956, provides classic framework for understanding how advancements in technology are both impeded and fostered by political processes and commercial pressures. New introduction by Mark Reutter.
- Russell Tedder. **Challenges of Running a Short Line Railroad.** *R&LHS Newsletter* (Winter 2003), pp. 3-6. Former president of the Georgia-Pacific short line railroads discusses operations, from ensuring adequate revenues to selection of rail weights when upgrading the lines.
- Dennis Thompson, Rich Dunn, Steve Hauff, et. al. **The Climax Locomotive.** OSO Publishing ([www.osorail.com](http://www.osorail.com)), 2002. 512 pp., illus. \$67.95 hardbound. Comprehensive history of the reliable and rugged locomotive, used mostly in the lumber and mining industries. About 1,035 Climax locomotives were built from 1888 to 1928.
- Joseph E. Vollmar, Jr. **The Most Gigantic Railroad.** *I&T* (Spring 2003), p. 64. Brief account of James B. Eads's long-forgotten plan to haul ships between the Pacific and Atlantic oceans as an alternative to building the Panama Canal. The plan called for several locomotives on parallel tracks to pull the ships on cradle cars a distance of 134 miles across the Isthmus of Tehuantepec (the narrowest part of Mexico).
- Mark S. Vandercook. **An American Journey: Images of Railroading During the Depression.** Hot Box Press, 2000. 164 pp. \$24.95. Black-and-white photos shot between 1935 and 1941 for the Farm Security Administration capture everyday people interacting with the railroad. Rev: *RH* (Fall-Winter 2002), pp. 120-22.
- John H. White, Jr. **Cincinnati, City of Seven Hills and Five Inclines.** Cincinnati Railroad Club ([www.cincinnaticlub.org](http://www.cincinnaticlub.org)), 2001. 128 pp., illus. \$34.95. Engineering, construction, and operation of inclined planes, 1872-1948. Rev: *RH* (Fall-Winter 2002), pp. 142-43.

## AIR TRANSPORTATION

- Janet R. Daly. **America's Airports: Airfield Development, 1918-1947.** Texas A&M Univ. Pr., 2001. 226 pp. \$39.95. How the pattern of municipal ownership of commercial airports originated in the U.S. Rev: *T&C* (Oct. 2002), pp. 819-20.
- Peter L. Jakab and Rick Young, eds. **The Published Writings of Wilbur and Orville Wright.** Smithsonian Inst. Pr., 2000.

316 pp. \$49.95. The Wright brothers were skilled at telling their own story. Rev: *T&C* (July 2002), pp. 639-40.

- F. Robert Van Der Linden. **Airlines and Air Mail: The Post Office and the Birth of the Commercial Aviation Industry.** Univ. of Kentucky Pr., 2002. 349 pp. \$35. Interaction between Postmaster General Walter Folger Brown and the entrepreneurs who created the aircraft manufacturing firms and the first airlines. Rev: *T&C* (Jan. 2003), pp. 182-83.

## WATER TRANSPORT

- James Barron. **Unlocking the Way West, Shovel by Shovel.** *NY Times* (Nov. 25, 2002), NY Report Sec. Archeologists work to locate and study the first Erie Canal's Lock No. 1 and weighlock at the start of the canal in Albany, about one mile from the capitol.
- Linda Barth. **The Delaware and Raritan Canal.** Arcadia, 2002. \$23 ppd. Nearly 200 historic photos and postcards of the New Jersey canal. (Barth was one of the SIA's guides for the canal tour – 2002 Fall Tour, Lehigh Valley). Avail: Linda Barth, 214 N. Bridge St., Somerville, NJ 08876.
- Arthur P. Chavez. **Rigging for Heavy Weather.** *Transfer* No. 36 (Sept.-Dec. 2002), pp. 10-16. Equipment and procedures used to secure railroad freight cars when they were carried on board the Lake Michigan car ferries. Illustrated with gear from the author's collection. Also some photos showing the consequences of not doing it right. *Transfer* is a publication of the Rail-Marine Information Group, [www.trainweb.org/rmig](http://www.trainweb.org/rmig).
- Ian Clark. **Conservation of the Holland 1 Submarine.** *IA News* 124 (Spring 2003), pp. 5-7. A project to restore the Royal Navy's first submarine, which set sail in 1901 and lay on the seabed for 69 years.
- David Douglas. **The Splinter Fleet.** *I&T* (Spring 2003), pp. 26-30. An unlikely group of little wooden submarine chasers engaged in America's only naval combat in World War I.
- Kirk Johnson. **Nearly Every Hudson River Shipwreck Is Located, but Don't Ask Where.** *NY Times* (Dec. 18, 2002), Region Sec. Scientists mapping the bottom of the Hudson R.

## CONTRIBUTORS TO THIS ISSUE

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*With Thanks.*



with sonar say they have found nearly every single ship that ever foundered from Manhattan to Troy over the last 400 yrs. Data is closely guarded to prevent looting.

- David Kirby. **A Main Artery of the 1800's**. *NY Times* (Aug. 25, 2002), Travel Sec. Lengthy article describes industrial heritage tourism along the Delaware & Hudson Canal (NY-PA) – places to see, stay, and eat.
- Tom Long. **Boleslaw Nickowal: Captained Last of US Coastal Steamers**. *Boston Globe* (Sept. 26, 2002). Recounts life of Nicowal (1914-2002), who captained steamers in New England, including last coastal steamer, *Nobska*, launched in 1925, retired in 1973, and awaiting restoration in Charlestown Navy Yard.
- William H. Roberts. **Civil War Ironclads: The U.S. Navy and Industrial Mobilization**. Johns Hopkins Univ. Pr., 2002. 320 pp., illus. \$46.95. Civil War ironclad construction integrates diverse aspects of industrial development, government-industry relations, naval warfare, and engineering.
- John Selby. **The Fenny Compton Tunnel, Oxford Canal**. *IA Review* 24,2 (2002), pp. 103-17. Tunnel built in 1775-77, collapsed in the mid-19th c. and was removed in favor of a cut. Also archaeology of associated brick kiln, 1840-1917. In Warwickshire, England.
- Robert C. Stewart. **Thames Shipyard Floating Dry Dock. New London, Connecticut**. *SIA New England Chapters Newsletter* 22,2 (2002), pp. 17-20. Description and history of pontoon or “Rennie” dry dock, built in 1936. Originally owned by Sun Shipbuilding of Chester, PA, and towed to Connecticut in the 1970s.
- Cyril J. Wood. **The Duke's Cut: The Bridgewater Canal**. Tempus Pub., 2002. 128 pp., illus. £12. Distinguished as England's first canal, completed in 1765, helped Manchester to develop as a center of trade and industry. Rev: *IA News* 122 (Autumn 2002), p. 14.
- Albright Zimmerman. **Pennsylvania's Delaware Division Canal: Sixty Miles of Euphoria and Frustration**. Canal History & Technology Press (30 Centre Sq., Easton, PA 18042; 610-559-6617; [store@canals.org](mailto:store@canals.org)), 2002. 240 pp., illus. \$32.95. Comprehensive history of the canal between Easton and Bristol, PA. [SIA 2002 Fall Tour]. From the earliest proposals for a state-built canal in 1824 to the canal's modern-day use as a state park.

## AUTOMOBILES & HIGHWAYS

- Frank G. Armao. **Design and Fabrication of Aluminum Automobiles**. *Welding Innovation* 19,2 (2002), pp. 2-6. Brief account of the use of aluminum in the automotive industry, going back to one Pierce Arrow model of the mid-1920s. Historically, automakers have made sparing use of aluminum for auto bodies, but during the last decade use has increased more than 100 percent; aluminum can be easily extruded into desired shapes for automobile frames, and methods have been found to increase the frame's crash safety. *Welding Innovation* is the magazine of the James F. Lincoln Arc Welding Foundation, [www.weldinginnovation.com](http://www.weldinginnovation.com).
- Erik Berg. **Politics, Pavement, and Postcards: Arizona's Superior-Miami Highway**. *SCA Journal* (Spring 2002), pp. 4-13. Building a state highway between Superior and Miami, AZ, in the late 1910s and 1920s. Rugged terrain hampered progress, also resulted in a winding road with bridges and a hard-rock tunnel in spectacular canyon setting. The dangers of the road eventually led to it being bypassed.

- Michael Berger. **The Automobile in American History and Culture: A Reference Guide**. Greenwood Pr, 2001. 487 pp. \$100. Annotated bibliography, introductions to research collections, references to more than 1,400 authors. Rev: *T&C* (July 2002), pp. 637-39.
- Mark S. Foster. **Castles in the Sand: The Life and Times of Carl Graham Fisher**. Univ. of Fla. Press, 2000. 349 pp., illus. \$24.95. Biography of the founder of Presto-O-Lite (compressed acetylene), the first mass-produced headlights casting a strong and reliable beam. A tireless promoter of the automobile, Fisher helped establish the Indianapolis Motor Speedway, was a force behind the Lincoln Highway and Dixie Highway, and developed Miami Beach as a tourist destination. Rev: *SCA Journal* (Spring 2002), pp. 35-36.
- Arthur Krim. **Mohawk Trail Rediscovered**. *SCA Journal* (Spring 2002), pp. 23-25. Automobile tourist route established as a scenic motor road over Hoosac Mountain, Mass., in the 1910s.
- Amy B. Vanderbilt. **On the Road Again: Glacier National Park's Red Buses**. *CRM* 25,5 (2002), pp. 23-26. Oldest touring bus fleet in America, dating from the mid-1930s and manufactured by Ford, is kept in service. NPS foots the bill for mechanical repairs, as well as updating for higher emission standards.
- Mark Woods. **An Appalachian Tale: Restoring Boone's Wilderness Road**. *CRM* 25,5 (2002), pp. 20-22. Restoring the Cumberland Gap and Wilderness Road to how they appeared in 1780-1810. New tunnels carry US 25 under the gap, and NPS is supporting “obliteration” (their word) of 20th-c. highways from the gap. The restoration project was authorized by Congress in 1973 but has had its own winding history.

## ABBREVIATIONS:

CRM	= Cultural Resource Management, Published by the National Park Service ( <a href="http://www.cr.nps.gov/crm">www.cr.nps.gov/crm</a> )
I&T	= American Heritage of Invention & Technology
IA News	= Industrial Archaeology News, Assn. for Industrial Archaeology (UK) ( <a href="http://www.industrial-archaeology.org.uk">www.industrial-archaeology.org.uk</a> )
IA Review	= Industrial Archaeology Review, Assn. for Industrial Archaeology (UK)
NRB	= National Railway Bulletin, National Railway Historical Society ( <a href="http://www.nrhs.com">www.nrhs.com</a> )
R&LHS	= Railroad & Locomotive Historical Society
RH	= Railroad History, Journal of the Railway & Locomotive Historical Society (R&LHS)
SCA	= Society for Commercial Archeology
T&C	= Technology & Culture, Quarterly of the Society for the History of Technology

**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](mailto:phsianews@aol.com).

# SIA Study Tour to Catalonia, Spring 2004

After making two visits to Catalonia in the last three years, I felt that there was more than enough interesting material to justify an SIA group visit in the Spring of 2004. James Douet, an Ironbridge Institute graduate and consultant with the Spanish National Museum of Industry & Technology, has agreed to guide and make local arrangements, with my help. The itinerary is taking shape, and I am happy to make this initial announcement for your consideration.

The logistical concept for the tour is to take advantage of Barcelona's centrality to the transport system of Catalonia and stay based at the same hotel the whole time. Only one of the day tours involves a ride of more than ninety minutes. This will also give us plenty of opportunities to take in the great cultural variety offered by the city.

Two short extensions are suggested for those with more time to stay in Catalonia. An early bird tour will go north into the foothills of the Pyrenees where there are many surviving pre-industrial sites, and a stayover trip will move south for three days to the World Heritage city of Tarragona, with the rich architectural legacy from making the unique Priorat wines nearby.

The main tour reflects the strong influence that the textile industry had on the industrial development of the region, and gives a taste of the remarkable industrial architecture created by Catalonia's famous *Modernista* or Art Nouveau architects at the start of the last century. It presents four models of industrial settlements – Barcelona itself; the mill city of Terrassa; the small medieval paper-making town of Capellades; and the *colònia*, or turbine textile settlement, the special Catalan solution to their debilitating lack of coal resources. And it throws in a number of otherwise completely unclassifiable places, such as the ruins of the Clot del Moro Portland cement works.

The backbone of the visit is the Catalan industrial museum, the mNACTEC, a modern network museum interpreting the region's experience of industrialization and its uniqueness in a southern



*Distinctive Mill Settlement at Sedo.*



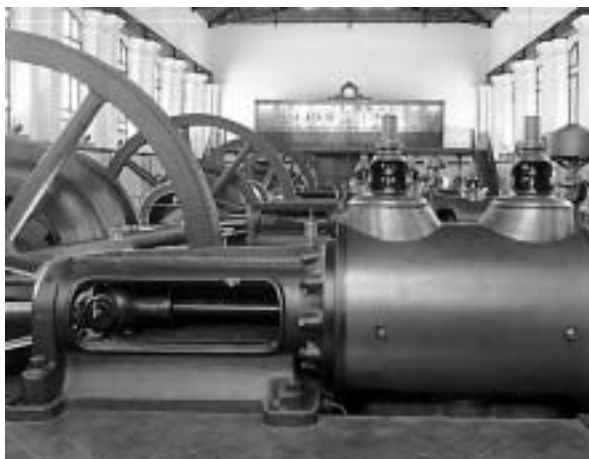
*Barcelona Train Shed.*

European context. As well as conserved, interpreted sites, however, the tour includes a mix of unrestored industrial buildings, modern industrial enterprises, and activities like making hand-made paper. There will be a program of talks and the chance to meet up with Catalan industrial archaeologists and conservationists.

We expect that people will travel to Barcelona on their own. The early bird tour will run from Wednesday February 25 through Friday the 27th. The main tour will convene on Saturday the 28th and conclude on Sunday March 7th. The stayover tour will run March 7-10. We expect that members can choose any or all of these segments, as they wish.

More details will be covered in a brochure to be circulated in early Fall. We estimate that the main tour will cost about \$2000 inclusive, and that the supplementary tours will run about \$500 each. If you are interested and wish to be kept abreast of developments, contact me at SIA Headquarters ([pem-194@mtu.edu](mailto:pem-194@mtu.edu)). There is a short presentation with a schedule and photos of a number of the sites on the SIA web page for your information ([www.siahq.org/tours/catalonia/sld001.html](http://www.siahq.org/tours/catalonia/sld001.html)).

*Patrick Martin*



*Steam Pumps*



*Coal Mining District*



*Cement Plant*

## HISTORIC BRIDGE NEWS

**Bridge Back Home in “Its Dotage.”** The Doty Road Bridge, an 80-ft.-long Pratt pony truss with Phoenix Column compression members, has carried vehicles over the Ramapo River in Bergen County, NJ, for over a century. Recently, the Army Corps of Engineers, NY District found a home for the retired landmark in Phoenixville, PA, where it was fabricated by the Phoenix Bridge Co. and where it will continue to serve the public

In 1891, Bergen County requested a bridge be constructed after winter floods swept away an earlier bridge on Doty Road. The county contracted with Dean & Westbrook, agents for the Phoenix Bridge Co. The bridge was constructed using Phoenix’s patented column, a hollow, circular tube, made up of four, six, or eight wrought-iron segments, flanged and riveted together. Phoenix Column truss bridges were widely used from the 1870s to early 1890s, offering a strong, lightweight, built-up compression member for bridges and buildings. They were one of the first viable alternatives to cast-iron columns and an important transitional step in the evolution of bridge-building technology.

In 1983, Doty Road bridge was condemned because of its poor condition and another bridge was inserted through the middle of the original structure relieving the old bridge from carrying any traffic. In 1989 the structure was determined eligible for listing in the National Register of Historic Places. Lynn Rakos [SIA], a NY District archeologist, took the lead in finding a home for the bridge. She marketed the trusses nationwide. She called historical societies, distributed fliers and materials to state park managers and engineers, and placed an ad in *Preservation Magazine* and the *SIAN* (Spring 2000). Engineering professors, interested in the bridge’s history, wanted a piece of the truss for testing, and another man wanted to place it by a stream on his ranch in North Dakota.

One of Rakos’s more interesting calls came from the Phoenixville Area Economic Development Corporation (PAEDCO), a non-profit organization trying to bring economic life to the city. The NY District, after evaluating all of its offers, decided to work with PAEDCO, which in cooperation with the county and state, had purchased 27-acres in northern Phoenixville to create a park on the former site of the old Phoenix Iron & Steel Co., the parent of Phoenix Bridge. The plans include creating walking and biking trails along French Creek, and the bridge will become part of the trail system. PAEDCO “purchased” the truss for a symbolic dollar. After years of searching for a new home, on a rainy and cold Dec. 11, 2002, the Doty Road Bridge was disassembled and trucked to Phoenixville, where it was created over a century ago.

JoAnne Castagna



*Doty Road Bridge’s Phoenix Column upper chord aboard a flat bed trailer on its way back home to Phoenixville, PA.*

**Perseverance Pays Off for King Bowstring Bridge in Newfield, NY.** Zenas King, a self-taught engineer from Cleveland, OH, came up with one of the most successful bowstring bridges of the mid-19th century. His design, patented in 1861, substituted flat plates and channel iron for the tubular upper chords of others’ designs, thus reducing costs. He was also a skillful salesman and by 1875 claimed to have erected more than 2,700 bridges in the U.S. Despite that number, only a handful survive, including one built circa 1870, in Newfield over the West Branch of Cayuga Inlet, one of five known surviving examples in the state.

The Newfield bridge had its first brush with demolition in 1972, when it was closed to traffic and Tompkins County debated whether to remove it or convert it to pedestrian use. Thanks to community support, the bridge remained in place and served as a local walkway for another 30 years with little upkeep or maintenance. In 2001, a bridge inspection determined that deterioration of one of the abutments and deck system had rendered the bridge unsafe, although most of the wrought-iron truss members were in relatively good condition.

Once again grassroots support for the bridge materialized, led by local residents who have overcome the initial reluctance of county and town officials to undertake a preservation project. For the past three years, they have attended town meetings, writ-

*(continued on page 14)*

Army Corps of Engineers, NY District photos.



*The Doty Road Bridge, fabricated in 1891 by the Phoenix Bridge Co., at its original location over the Ramapo River in Bergen County, NJ.*



*King bowstring truss bridge, Newfield, NY, photo from ca. 1995.*

Patrick Harshbarger.

# The Stonerstown Timber Bridges

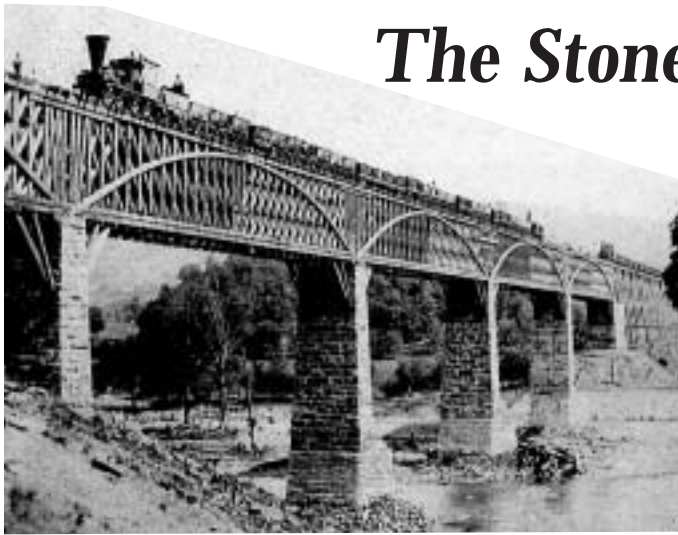


Photo courtesy Robert Vogel

The first bridge at Stonerstown built in 1855. A series of all-timber triple intersecting trusses.

In 1855, the **Huntingdon & Broad Top Mountain RR**, a small, unheralded feeder secreted in the coal-rich mountains of central Pennsylvania, built a multispan all-timber deck-bridge over the Raystown Branch of the Juniata River at Stonerstown. The bridge consisted of five trusses, each sharing its load-carrying capacity with a superimposed timber arch. The trusses rested on a series of 100-ft.-high stone piers, and were bracketed by a string of approach trestles. The combined length of the trusses and trestles totaled 1,816 ft.—an enormous structure by the standards of the time.

The trusses possessed two very unusual, interrelated features. The most notable was the unique configuration of the truss web members. The diagonals in the web of most trusses are contained within a single panel, whereas the diagonals in these trusses crossed *three* panels, creating a configuration known as a triple-intersecting truss. The other unusual aspect was that *all* the truss members were

timber at a time when it was common practice to use iron rods for the tensile members in the web. The use of timber for the tensile member of a truss web creates great difficulties in making connecting joints to other truss members, and it is therefore surprising to see at this point in the evolution of bridge building.

The diagonals in the web of the 1855 truss all sloped downward from the top chord toward the mid span of the truss. This type of configuration, known as a **Pratt truss**, places the diagonals in tension. Bridge builders tended to use iron rods for the tensile members in their truss webs because they could be connected easily to the truss chords. A rod could be inserted through a hole drilled through the chord and then secured with a washer and nut. Further, in order to minimize the length of the relatively more expensive rods and to make the construction process even easier, they tended to select configurations that placed the timber diagonals in compression and the shorter iron verticals in tension. The builders of the bridge at Stonerstown, for reasons that will probably remain a mystery, decided not to use any iron rods. They then compounded their difficulties by selecting a configuration that placed the diagonals, rather than the verticals, in tension. This decision made joining the diagonals to the truss chords a difficult task.

The joints between the various timber members of the truss were most likely made with wood dowels, called treenails, yet the cross-sectional area of the diagonals does not appear to be large enough to permit a sufficient number of dowels to be inserted to fully transfer the stresses between the diagonal and the chord. Apparently it was in response to this problem that the truss was configured so that the diagonals would cross two intermediate verticals, creating a triple-intersecting truss. This solution provided the builders with additional intersections along the length of the diagonals and thus more places to install dowels. It is not possible to ascertain whether wood dowels or iron bolts were used for the connections, but since iron rods were shunned as truss members, an all-wood solution seems more consistent. In either case, the reasoning regarding the amount of material needed to make the joint would

## Hoboken Terminal Ferry Slips to Be Restored

The Port Authority of NY and NJ Transit have signed an agreement that will lead to the restoration of the historic Hoboken Terminal Ferry slips to accommodate the tremendous increase in trans-Hudson ferry service. Restoration of the ferry slips and terminal area is expected to cost approximately \$125 million.

The terminal and its ferry slips were built in 1907 by the Delaware, Lackawanna & Western RR. During the early part of the last century, ferry service was the primary form of transportation for people traveling between Manhattan and New Jersey. With the construction of the George Washington Bridge and Lincoln and Holland tunnels, the use of ferries began to decline, and in 1967, the Hoboken Terminal slips closed. In 1989, NY Waterway resumed ferry service from Hoboken Terminal utilizing a temporary facility. In recent years, the Hoboken shoreline has become an increasingly popular location for offices and residences.

The Hoboken Terminal's electrified sign reading "Erie Lackawanna" (for the combined Erie and DL&W) and its copper-clad entryways have long made it a well-known harbor landmark. Key elements of the ferry terminal project include con-

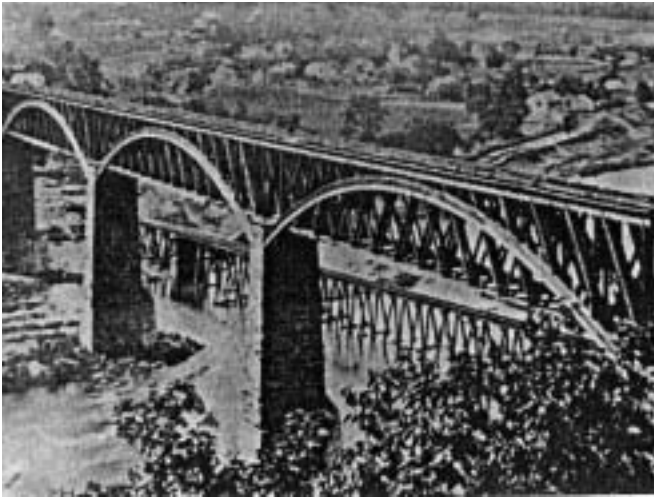
struction of ticket offices and a waiting area, restoration of the exterior copper fascia and lighting, waterproofing and insulating the exterior walls near the ferry slips; restoring the interior finishes, and performing utility and marine work to support expanded ferry operations.—*NJT Press Release/Jersey Central Railway Historical Society.*



Patrick Harshbarger

The Hoboken Terminal Ferry Slips, built in 1907 by the DL&W RR.

Photo courtesy Larry Williams in Jon D. Baughman and Ronald L. Morgan, *Coal to Glory* Vol. 1



**The second Stonerstown bridge, built ca. 1862, a series of Howe deck trusses. This photo was taken after a tornado destroyed the west span in 1872.**

be similar. Calculating the amount of stress the additional dowels absorbed, and thus to what degree the stresses on the dowels at the ends of the diagonals was alleviated, is beyond the ability of most current engineers. In 1855, therefore, the solution could only have been an estimate based on the logic that more dowels are better. The only point that they could have been certain about was that the additional dowels would make the truss stiffer.

Although no verification has come to light, local lore holds that a fire totally destroyed this bridge in 1862. Whether destroyed by fire or other causes, a new arched-braced timber truss was erected to replace it. Interestingly, the new bridge trusses had a different and more easily constructed configuration than the previous trusses. The diagonals in the new truss all sloped downward toward the abutments, the opposite direction from those in the earlier truss. This configuration is known as a **Howe truss**, and was very popular at the time. The change in slope direction placed the diagonals in compression and the verticals in tension. Significantly, the tensile verticals were made of iron rods rather than timber. Since the timber diagonals of the new truss were in compression, they could be secured simply by being wedged in place. No longer needing to have multiple connection points,

they did not need to cross any verticals. It is unknown whether the builders of the second bridge used a different configuration because they realized the flaws and inherent difficulties encountered in building the original crossing, or if they simply selected a design that was a popular and proven configuration at this time. The latter seems more logical, especially as the rods would have cost less than they did years earlier.

The question remains, "Why did the builders of the first crossing do what they did?" They left no explanation, but the bridge and its location may provide some clues. The area was relatively remote and the builders, who were not associated with the major railroads, needed to rely on their own initiative. They may also have been motivated by lack of funds to purchase iron rods, while being surrounded by timber for the taking. Given the decision to use nothing but timber, and the issue of how to make the joints between the various members of the truss, their configuration makes sense.

After a section of trestles was destroyed by a tornado in 1872, the rail approach into Stonerstown from the north was restudied. In 1874, the alignment was altered slightly, the approach elevation lowered, and a new river crossing was erected on a set of shorter piers. Both the original 1855 triple-intersecting trusses and the initial Howe replacement trusses were *deck trusses*. The top chords of their trusses supported the bridge decks, and trains thus ran along the top of the bridge. The new low-set trusses were three, arch-braced, timber Howe *through trusses*, with their bridge decks supported on the bottom chords, and consequently the trains ran between, or through, the trusses. The 1874 bridge stood for fifteen years until it and its piers were washed away in 1889 by the same rainstorm that caused the famous Johnstown flood.

In the aftermath of the flood, the wisdom of the initial 1855 bridge height was reevaluated. New, taller stone piers were raised and metal Pratt configuration deck trusses were erected on them, paradoxically completing the cycle of truss configurations. (It is not known whether the truss members were wrought-iron, steel, or if a combination of both types were used. However given the date, steel seems the most likely choice.) At this point in time steel Pratt trusses had become the most commonly built modest-span truss type in America. The Pratt's tensile diagonals were contained within a single panel, and since they were now made of metal rather than timber, they could be easily secured at their ends. The superimposed arches of the 1855 timber Pratt truss were no longer needed in 1889.

The Stonerstown crossing had joined the mainstream of bridge

*(continued on page 14)*

Photo courtesy Larry Williams in Jon D. Baughman and Ronald L. Morgan, *Coal to Glory* Vol. 2



**The third Stonerstown bridge, built on shorter piers after the 1874 realignment of the railroad. A series of Howe through trusses.**

## NOTES & QUERIES

**German Industrial Architecture.** Miron Mislin of the Technical University of Berlin is seeking U.S. correspondents to exchange views and research on industrial architecture, with attention to the metal and metal tool industries, 1871-1914. He has recently completed a book, *Berliner Industriearchitektur, 1840-1910* (Berlin: Ernst Wasmuth, 2002; 480 pp., 554 photos, [www.wasmuth-verlag.de](http://www.wasmuth-verlag.de)). The book surveys 37 industrial companies and over 150 factories and workshops. Info: Miron Mislin, Charlottebruner Str. 10, 14193 Berlin, Germany; [mimisjdf@mailbox.tu-berlin.de](mailto:mimisjdf@mailbox.tu-berlin.de).

**Fish Ride Free.** The NY Transit Authority has for some years been disposing of its used subway cars in a most unusual way. They are submerged in select offshore areas of the southeastern Atlantic Coast to create artificial reefs. Fifty steel "Redbird" subway cars were delivered in Dec. 2002 to create two new reefs about 20 nautical miles east of Georgia's Ossabaw Island. Cleaned to EPA stan-

dards, the cars measure approximately 50-ft. long and weigh 14 tons. NYTA assumes all costs associated with the cleanup, preparation, and barging of the cars, and marine biologists report the fish appreciate the free rides.

**IA in Philately.** The USPS recently has issued two new commemorative stamps of IA interest. The centennial of flight is celebrated by a 37-cent stamp featuring the 1903 Wright Flyer that made the first controlled, powered, and sustained flight of a heavier-than-air flying machine at Kitty Hawk, NC. Southeastern lighthouses – Old Cape Henry, VA; Cape Lookout, NC; Morris Island, SC; Tybee Island, GA; and Hillsboro Inlet, FL – grace a series of colorful 37-cent stamps meant to bring public attention to the preservation of the beacons that once guided, and in some cases still guide, ships along America's shores. ■

## SITES & STRUCTURES

**Marsellus Casket Co.** [tour site—Fall Tour 2002, Syracuse, NY] precipitously closed in April. The firm, known for its fine-crafted, custom-designed wood caskets had been in business since 1872. The decision was made by parent company Service Corporation International (SCI), based in Houston, TX, which had bought Marsellus in 1997. The closing was unanticipated by workers and local officials who reported that they had not been consulted about how they might help to prevent the closing. More than 300 workers lost their jobs. SCI, which also owns more than 3,000 funeral homes and cemeteries, stated that Marsellus could not remain competitive without a significant investment in a modern plant and distribution network, which it was unwilling to make. This may not be the whole story since Marsellus had a relatively new plant for assembling the caskets, even though the company offices and dry kilns still were at an old downtown Syracuse location. SCI reported large operating losses in 2001 and 2002, and it faces several lawsuits from families that say their relatives' remains have been mishandled in Florida cemeteries. When the firm announced it was closing Marsellus, it reported it had already made a deal with the Batesville Casket Co. of Indiana to purchase Marsellus's patents, copyrights, and name—*NY Times* (Mar. 28, 2003).

**Passenger Car Recalls Days of Segregation.** The Central of Georgia Roundhouse Railroad Museum [tour site, Annual Conference 1999—Savannah] has acquired the only known example of a Central of Georgia wooden "Jim Crow" center-door baggage

and passenger coach. Coach 314 is believed to have been built in 1889 by the Ohio Falls Car Co. It was later converted into a segregated car in which black passengers rode at one end and white passengers at the other, separated by a center baggage section. Since the late 1950s, the car had been parked at a concrete-company site in Columbus, GA. The car was disassembled and parts moved to Savannah in June.—*Columbus Ledger-Enquirer* (June 24, 2003).

**Vulcan Returns and Turns the Other Cheek.** The 56-ft. tall, 71-ton statue of Vulcan, the Roman god of the forge, has been returned to its home atop Birmingham's Red Mountain [tour site, Fall Tour 1999]. It was removed over three years ago for restoration by Robinson Iron of Alexander City, AL. The work included repairing, painting, and reassembling the iron pieces, stabilizing the right arm, and re-attaching the spear. Guiseppi Moretti executed the statue for the St. Louis Exposition of 1904. One aspect of the completed restoration has been to reorient the statue on its pedestal so that the large anvil stands next to Vulcan's hip, as displayed in St. Louis. The statue and anvil were incorrectly reset when Vulcan was relocated to Birmingham in 1936. An unintended consequence of the correction has been to angle Vulcan's buttocks so that they no longer directly face the city of Homewood. The statue's posterior, locally known as the "moon over Homewood," is now less cheeky.—*Birmingham News* (June 11 & June 20, 2003). ■

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## HISTORIC BRIDGE

(continued from page 11)

ten to political representatives, and sought out technical help and money to save the bowstring bridge. The descendants of some of the industrialists first involved with the bridge have come to its aid. Allan King Sloan [SIA], great-great grandson of Zenas King, has offered support from his foundation ([www.kingbridgeco.com](http://www.kingbridgeco.com)), and Lois Williams, whose ancestor was the first millwright in Newfield and set up the first grist mill adjacent to the bridge site, has made a pledge. Historic Ithaca, a local preservation group, has been instrumental in finding grants including federal, state, and foundation funds. They have now raised over \$48,000 toward the estimated \$64,000 needed to repair the abutments, place new I-beams to carry live loads, and clean, paint, and reset the trusses. Info: Karen Van Etten, [dosomethingnow@juno.com](mailto:dosomethingnow@juno.com). ■

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## STONERSTOWN

(continued from page 13)

types, ending an era of rugged individuality and intuitive design. The Huntingdon & Broad Top continued to prosper, connecting this region with the Pennsylvania RR to the north at Huntingdon, and the Baltimore & Ohio across the West Virginia state line to the south. The 1889 trusses, in turn, were eventually replaced by steel girders in 1936. Ultimately, in 1953, over a hundred years after its origin in 1852, the railroad was abandoned, survived by the memory of its unique first bridge at Stonerstown, the men who built it, and those who ran the railroad that crossed it.

David Guise

**Gooderman & Worts Distillery** ([www.thedistillerydistrict.com](http://www.thedistillerydistrict.com)). When the SIA visited the whiskey distillery complex [Annual Conference 1994, Toronto], plans were just underway to adaptively re-use the buildings for galleries, shops, and history programs. Nearly a decade later, the distillery is a preservation success story, brimming with cultural activities.

**National Canal Museum** ([www.canals.org](http://www.canals.org)). Activities and programs in Easton, PA (tour host—Fall Tour 2002, Lehigh Valley). Historian Lance Metz [SIA], answers questions about canals in the “Ask Lance” section.

**New York City’s High Line** ([www.highline.org](http://www.highline.org)). Friends of the High Line advocate preservation of the West Side elevated railroad and adaptive re-use as a pedestrian promenade. NY Central RR built the line in the early 1930s, eliminating 105 grade crossings with city streets. Abandoned 1980.

**Industrial Artwork** ([www.wnyc.org/studio360/archive.html](http://www.wnyc.org/studio360/archive.html)). Check WNYC radio’s Studio 360 program archive for its June 14, 2003, show focused on how modern artists make use of industrial landscapes and processes. Artist-in-residency program at Kohler’s Sheboygan plant; art museum in a former Nabisco package printing plant, Beacon, NY; and music influenced by industrial sounds.

**Mail by Rail Exhibit** ([www.postalmuseum.si.edu/exhibits/2c1\\_railwaymail.htm](http://www.postalmuseum.si.edu/exhibits/2c1_railwaymail.htm)). On-line version of the exhibit currently at the Postal Museum in Washington, D.C. Historical development and process of sorting the mail aboard trains.

**Pennsylvania’s Stone Arch Bridges** ([www.pastonearch.org](http://www.pastonearch.org)). PennDOT is seeking public input on preserving stone-arch highway bridges in Philadelphia and surrounding counties.

**Rails and Phones** ([www.SAMshortline.com](http://www.SAMshortline.com)). Savannah-Americus-Montgomery RR (SAM) began operating an excursion train in central Georgia last year. Line runs west from Cordele to Plains, where passengers disembark to explore the hometown of Jimmy Carter. Another stop, the Georgia Rural Telephone Museum in Leslie, housed in a 1920s cotton warehouse, has a large collection of vintage telephone and communications equipment.

Readers are cordially invited to visit the SIA’s own Web site at [www.sia-web.org](http://www.sia-web.org). On-line membership applications, gift memberships, and renewals now are available through the SIA’s secure Web server.

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

### SIA Election Results

At the Annual Business Meeting, May 31, the following election results were announced. Elected to the Board of Directors were James Bouchard and Lynn Rakos. Re-elected Treasurer and Secretary were Nanci Batchelor and Richard Anderson, Jr. Elected to the nominations committee was Martha Mayer.

A complete review of the 2003 Annual Conference held in Montreal, will appear in the Fall issue of SIAN.

**Knight** (N. California) participated in the Labor History Maritime Tour in July, a part of LaborFest 2003, celebrating work and workers in the San Francisco Bay area. Info: [www.laborfest.net](http://www.laborfest.net).

**Northern New England** held its spring meeting in May. Members toured the Sarah Mildred Long Bridge spanning the Piscataqua River between Portsmouth, NH, and Kittery, ME; the turntable pit and three-bay locomotive house foundation at Jewett, South Berwick, ME; the Burleigh woolen mill at Rocky Gorge, also South Berwick; the iron and steel trestle spanning the Salmon Falls; the last surviving overhead timber boxed pony truss railroad bridge in the U.S. at Rollinsford, NH; and the abandoned Swenson pink-granite quarry at Bald Hills, Wells, ME. The common strand connecting these sites is the Boston & Maine RR. The chapter’s annual meeting and fall tour will be held in Vermont, TBA.

**Oliver Evans** (Philadelphia) held its annual picnic and meeting at the American Swedish Historical Museum in June. Members toured the museum’s current exhibit, *The Man Who Made the Monitor: John Ericsson, Engineer and Visionary*. The exhibit presents many drawings, engravings, lithographs, and patent models from the museum’s extensive Ericsson collection, as well as items borrowed from Mystic Seaport and the U.S. Navy History Center. The exhibit runs through Dec. 28. Info: [www.americanswedish.org](http://www.americanswedish.org).

**Roebling** (Greater NY-NJ) toured Domino Sugar [tour site —Annual Conference 2002, Brooklyn] in May. Members attended an open house at the West Point Foundry site in June. The archeologists from Michigan Tech’s IA program, which is holding summer field school there, led tours. Across the Hudson River from West Point, the foundry was begun in the early 19th century to manufacture munitions, but later built steam locomotives and sugar milling machinery. Only the 1865 office building stands, but many foundations are visible.

**Southern New England** toured the Cranston Print Works (Webster, MA) in July. It is one of the oldest and largest textile printing companies in America, tracing its origin back to 1812 as one of Samuel Slater’s mill complexes. ■



Elliot Hunt

*The centennial of the Williamsburg Bridge [tour site, Annual Conference 2002—Brooklyn] was celebrated in June 2003 with guided tours and a street festival including actors in period costume, shown here posing on the bridge. The Roebling Chapter set up an SIA information table at the event. Info: [www.brooklyn-nartscouncil.org](http://www.brooklyn-nartscouncil.org).*

## 2003

**Sept. 17-21: Assn. of Railway Museums Annual Meeting, St. Louis, MO.** Hosted by the Museum of Transportation. Seminars and local tours. Info: [www.museumoftransport.org](http://www.museumoftransport.org).

**Sept. 25-28: SIA Fall Tour, Northeast Montana.** Info: Fred Quivik, [quivik@usfamily.net](mailto:quivik@usfamily.net); [www.sia-web.org](http://www.sia-web.org).

**Sept. 26-29: 6th International Mining History Congress, Akabira, Hokkaido, Japan.** Paper sessions and tours. Info: [www.imhc2003.com](http://www.imhc2003.com).

**Sept. 30-Oct. 5: New Frontiers in Preservation: National Trust Annual Conference, Denver, CO.** Sessions of IA interest include transit projects (Denver's Union Station), and preserving western landscapes (mining, ranching, etc.). Info: [www.nthpconference.org](http://www.nthpconference.org).

**Oct. 11: The Underground Archeology of Mining: A Hidden Resource, Yorkshire Dales, Grassington, UK.** Organized by the National Assn. of Mining History Organizations. Aimed at raising the awareness of the wealth of archeological resources in underground mines. Info: Martin Roe, NAMHO, 7a Moor Close Parade, Queensbury Bradford, BD13 2JG, UK; [www.nmrs.co.uk/seminar.htm](http://www.nmrs.co.uk/seminar.htm).

**Oct. 12-19: Pioneer America Society Annual Conference, Bridgetown, Barbados.** Caribbean material culture. Of IA interest, tours of sugar plantations and mills. Info: W. Frank Ainsley, ERS Dept., 601 S. College Road, Univ. of NC, Wilmington, NC 28403; (910) 962-3493; fax 962-7077; [ainsleyf@uncw.edu](mailto:ainsleyf@uncw.edu).

**Oct. 16-18: 25th Annual North American Labor History Conference, Wayne State Univ., Detroit, MI.** Conference theme is "Labor, War, and Imperialism." Info: Elizabeth Faue, Dept. of History, 3094 Faculty Admin. Bldg., Wayne State Univ., Detroit, MI 48202; (313) 577-6987; [ad5247@wayne.edu](mailto:ad5247@wayne.edu).

**Oct. 16-19: Society for the History of Technology (SHOT) Annual Conference, Atlanta, GA.** Info: [www.shot.press.jhu.edu/annual.htm](http://www.shot.press.jhu.edu/annual.htm).

## 2004

**Feb. 25-Mar. 10: SIA Study Tour to Catalonia, Spain.** See article elsewhere in this issue.

**Apr. 14-18: Society of Architectural Historians Annual Meeting, Providence, RI.** Theme: The Barn and Beyond: The 19th- and 20th-century Agricultural Landscape in North America. Info: [www.sah.org](http://www.sah.org).

**Apr. 22-25: Preserving the Historic Road in America Conference, Portland, OR.** Sponsored by the National Trust for Historic Preservation. Info: Historic Roads Conference, 1785 Massachusetts Ave., NW, Washington, D.C. 20036; (202) 588-6204; [www.historicroads.org](http://www.historicroads.org).

**May 12-16: Vernacular Architecture Forum Annual Meeting, Harrisburg, PA.** Paper proposals requested. Info: [www.vernaculararchitectureforum.org](http://www.vernaculararchitectureforum.org).

**June 10-13: SIA 33rd Annual Conference, Providence, RI.** Watch future issues of *SIAN* and the SIA Web site ([www.sia-web.org](http://www.sia-web.org)) for updates. Info: Robert Stewart, [robert.stewart13@worldnet.att.net](mailto:robert.stewart13@worldnet.att.net). ■

## Calling All Members in the Baltimore Area!

A group is looking into the possibility of having joint meetings of SIA and SHOT (Society for the History of Technology) members in the Baltimore area on a regular basis. Meetings might take the form of presentations, discussion groups, or tours. They would like to hear from local SIA members who are interested. SIA and SHOT members have a common interest in a wide range of topics. SIA had an active chapter in Baltimore (the Latrobe Chapter) until a few years ago. They would like to get it going again. Info: Mike O'Mara, (410) 944-0868; [romike@crosslink.net](mailto:romike@crosslink.net). John McGrain, (410) 887-3495, [jmcgrain@co.ba.md.us](mailto:jmcgrain@co.ba.md.us). ■

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