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Study Tour Takes A Close-up Look at Sweden's Industrial Heritage

By Carol Poh Miller

To see all the industrial sites in Sweden, you would have to immigrate!" So declared SIA President Vance Packard midway through our two-week study tour of central Sweden. Sweden's abundant natural resources—iron and copper ore, timber, and waterpower—have contributed to its industrial development over several centuries, and much of that heritage has not only been preserved but is cogently interpreted to visitors today. Our tour was a rich tapestry of industrial sites and processes, both modern and historic, social history, cultural geography, and, not least, the culinary arts.

Forty-seven SIA members made the trip Sept. 3-17, which was admirably planned and led by Dr. Kersti Morger, a professor in the Department of Human Geography at the University of Stockholm. Robert M. Vogel, who conceived the tour, served as co-editor (with Kersti) of the guidebook, with production assistance from Helena E. Wright; Christopher H. Marston handled logistics and

served as bursar. The weather was more than cooperative, with a preponderance of sunny days in the 70s—unusual for Sweden at that time of year. Yet another surprise was the virtual absence of any language barrier; since shortly after World War II, English has been the mandatory second language for Swedes, who begin their study in early elementary school. Yes, there was herring, but the bountiful breakfasts, hearty lunches, and three-course gourmet dinners we enjoyed throughout the trip validated the assertion by *New York Times* reporter R. W. Apple, Jr., within weeks of our return, that Sweden is in the midst of a "culinary revolution." A diary of our trip follows:

TUES., SEPT. 3. From the U.S. and Canada, we made our way to Göteborg, Sweden's second-largest city and Scandinavia's largest seaport. Upon arriving, many hurried over to see the Swedish East

India Co.'s work-in-progress: a full-size replica (with modern systems) of an 18th-century sailing ship. In mid-

afternoon, we convened at a hotel in the harbor area, where we

(continued on page 2)



Study tour participants don their Sunday best for a special dinner at Västerås Slott (Castle). Here, they pause briefly at the 1891 hydroelectric station built by Allmänna Svenska Elektriska AB (ASEA, Sweden's General Electric) adjacent to the castle.

Christopher H. Marston

were met by Kersti and Mats Jacobsson, our affable driver, who would soon demonstrate his keen ability to get our luxury motor coach into—and out of—tight places. Before leaving Göteborg, we toured **Lindholmen**, the former shipyards of Norra Älvstranden, now being redeveloped for office, cultural, and residential uses. Aided by a finely detailed model, architect Mats Karlsson gave a conceptual overview of the project, following which we departed for Trollhättan, where we would spend the night. Our jet-lagged group disembarked at the Scandic, where that evening we enjoyed dinner and a brief slide presentation on the industries of Trollhättan by local historian Henrik Olsson.

WED., SEPT. 4. Our first full day began with a tour of the **Trollhättan Kanal** led by Sonny Johansson, director of the Canal Museum. At Trollhättan it is possible to see, side by side, three generations of the waterway—1800, 1844, and 1916—that connects Göteborg with Lake Vänern. Besides pleasure boats, the canal today carries oil, wood pulp, and chemicals north; and timber, agricultural products, and paper south. Still standing at the edge of the canal is the crane used by Nydqvist & Holm AB (NOHAB) in the 1920s to load a large order of broad-gauge locomotives built for the U.S.S.R.

From the canal it was a short hop to **Olidestationem** (Olidan Hydroelectric Station), built in three stages between 1906 and 1919. The handsome rusticated red-granite station was designed by Erik Josephsson to house 13 Francis turbines. A new, more efficient station upstream has since superseded it, and today just five units remain in service. NOHAB fabricated several of the Olidan turbines, and the crane and turntable the company used to transport them by rail from its former shops near the canal to the power station are still to be seen.

Before Trollhättan's abundant waterfalls were impounded for hydroelectric power, they powered a variety of industries, the foundations and remains of which we inspected from the deck of the **Oscarbron** (Oscar Bridge). The first bridge, completed in 1889, was dedicated to King Oscar II, and its modern replacement



Greg Gader

Tour participants admire the red-granite Olidan Hydroelectric Station of 1906-19 in Trollhättan. In the foreground is a retired turbine built by Nordqvist & Holm AB (NOHAB) in 1910.

bears the decorative cast-iron crowns that graced the original.

When NOHAB outgrew its original quarters next to the canal, it expanded to another location in Trollhättan beginning in 1896, remaining there until the 1970's. This complex of shops, some two km long, is now home to a variety of small businesses and museums. Our first stop was the **Saab Museum**, which occupies a 1916 locomotive shop. Svenska Aeroplan AB (Saab) was founded in Trollhättan in 1937. In 1945, the company decided to venture outside its aeronautical engineering operations and manufacture automobiles. The first production Saab 92 rolled off the assembly line in 1949. The museum neatly presents the chronological development of Saab models. Also on display is the prototype three-cylinder, two-stroke engine for the Saab 92001 of 1946.

From Saab, we walked a few hundred yards to the former **NOHAB forge shop**, in operation from 1935 until 1994 (in its latter years, operated by another firm). The only original NOHAB interior that survives, it is replete with several large steam and air hammers, annealing furnaces, and a pattern shop. Our last stop was **Innovatum**, a museum of local industry and technology, where the 1865 "Trollhättan Nr. 1," the first locomotive built by NOHAB, is on display.

Leaving Trollhättan, we traveled through the countryside southeast toward Granna, stopping for dinner at the **Gyllene Uttern** (Golden Otter), a roadside "castle" overlooking Lake Vättern. Our meal of lake-caught arctic char ended on a sweet note, with a parfait made with *Polkagris* (peppermint candy), a local specialty. Arriving at our hotel on the outskirts of Norrköping, we were pleased to discover—but too full to indulge in—*SIA Glass* (ice cream) available in the lobby; the brand would be a welcoming presence throughout Sweden.

THURS., SEPT. 5. Getting an early start, we drove into **Norrköping**. Here was the promised "Manchester of Sweden"—a handsome, densely built industrial district hugging the Motala River. By the middle of the 19th century, Norrköping was Sweden's second-largest industrial city, home to numerous paper and textile mills. Today those industries are gone and the city is undergoing rebirth as an educational and cultural center. Our first stop was the **Arbetets Museum** (Museum of Work), housed in a seven-story, seven-sided cotton factory erected in 1917. Opened in 1991 in collaboration with the trade unions, the museum interprets work and the daily lives of workers. Following an introduc-

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

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

SWEDEN

tion by curator Torsten Nilsson and other museum staff members, we were free to inspect the current exhibitions, then enjoy the city's distinctive industrial landscape on our own. We reconvened at the **Stadsmuseet** (City Museum) to see a working power loom, braider, narrow-fabric loom, and a set of carding machines before returning to the Arbetets Museum for a hot lunch.

In the afternoon, we visited the steelworks of **SSAB**, located on the Baltic Sea in Oxelösund. There, Arne Sundström, a metallurgical engineer, gave an excellent presentation of the plant's history, products, and markets. The first ironworks here, built in 1914-17, was the first Swedish mill to use coke (made then, as it must be today, from imported coal). The mill was expanded into an integrated steelworks in 1957-61. SSAB (SS = Swedish Steel), formed in 1978 as an initiative of the Swedish state but now privately owned, manufactures high-strength structural steel and abrasive-resistant steel. It is the world leader in quenched heavy plate, with \$200 million in sales annually, mainly to northern Europe. We inspected the coke plant with its battery of 100 ovens, then one of the plant's two blast furnaces, from which molten iron, tapped eight times each day, is transported by torpedo ladle cars to the basic oxygen furnace, then on to a continuous caster. (We were astonished to learn that the blast furnaces shut down during the entire month of July for the summer holiday.) As luck would have it, the plate mill we were also to have seen was down due to a power outage, but our walk-through was livened by the activity of two 12-ton cranes ferrying plates around the mill for further treatment. We spent the night in Trosa, a charming village near the Baltic Sea.

FRI., SEPT. 6. Our destination this morning was the **Tumba Paper Mill and Museum**. Crane, the U.S. currency paper and stationery producer, purchased the paper mill in Jan. 2002; a small museum on the premises, housed in a 1763 malt house, is state-owned. Paper master Gunnar Ståhl led us into the museum where, with the assistance of Rudolf Hinnas and the translation services of tour leader

Kersti, he recounted the history of paper making in Tumba. Except for a brief hiatus in the 1960s, Swedish paper currency has been made at Tumba since 1759, when brothers Johan and Erasmus Mulder, at the behest of the Swedish National Bank, brought paper-making technology from the Netherlands, along with many Dutch workers. The first papermaking machine did not come until 1939; as late as 1955, paper currency was still made by hand using paper molds and old clothes (to supply the rag content). Following a demonstration of making paper by hand, Åke Agebro, an engineer with Crane AB, led us on a walking tour of the village, which is anchored by the 1779 Clock Building and adjacent paper mill. With a capacity of 20 tons of paper a day, Crane uses cotton slasher waste, broken down by hollanders, to make Swedish bank notes, as well as currency paper for other countries.

Departing Tumba, we enjoyed a picnic lunch in a park next to the 14th-century Gripsholms Slott (Castle), then traveled on to **Västerås Ångkraftverk**, built by the Swedish Power Board in 1917 to supplement the nation's hydroelectric power and the first steam



Greg Galer

It was thoughtful of the Swedes to develop a special brand of glass (ice cream) just for us!

(continued on page 4)

SIA Annual Conference Montreal, May 29–June 1

Mark your calendars for the 2003 SIA Annual Conference—Montreal, May 29 to June 1. Organizers are lining up an impressive slate of process tours, including hydroelectric generation, turbine manufacture, jet assembly, copper and zinc refining, electric-motor rewinding, printing, and creosoting. The Saturday banquet will be held at the Canadian Railway Museum, a conference co-host. We will ride the train to the museum. A number of pre- and post-conference tours are planned, including the Lachine Canal by boat and a trip up to Shawinigan and the City of Energy, called the Niagara of the North. Watch the SIA Web site (sia-web.org) for periodic updates. Registration materials will be sent to all members in early spring.

General info: James Bouchard, (514) 251-5148; fax 251-5126; jamesb@aei.ca. Paper session info: Louise Trottier, Canada



Canadian Railway Museum.

No. 2850 will be on hand to greet members attending the 32nd Annual Conference—Montreal.

Science and Technology Museum, 2380 Lancaster Rd., Box. 9724, Station T, Ottawa, ON, Canada K1G 5A3; (613) 991-6705; fax 990-3636; ltrottier@nmstc.ca.

Student Travel Scholarships

The SIA has limited funds to help full-time students and professionals with less than three years of full-time experience attend the annual conference. Those interested 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 submissions is Apr. 1, 2003. Info: Mary E. McCahon or Patrick Harshbarger, 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. ■



The staff of Schenströmska Herrgården welcomes us. The hotel and conference center preserves important features of Ramnäs, an 18th-century iron-making village. At center is the 1762 manor house, the ironworks owner's residence.

power plant to be built in Sweden. Åke von Sydow provided an introduction to the history of the facility and, with the help of several colleagues, led us on an extended tour that included a rooftop visit with spectacular views. Initially equipped with two turbines fed by the steam produced by two coal-burning boilers, the plant was upgraded and enlarged in 1952. But with Sweden's move to nuclear power (today the nation is half nuclear- and half hydro-powered), the Västerås plant was removed from service in 1979. Local preservationists hope to adapt the massive facility for use as a Swedish energy museum.

Leaving Västerås, we traveled to **Ramnäs**, an 18th-century iron-making village anchored by an elegant manor house that has been adapted to use as a hotel and conference center. There, we were grateful to settle in for a four-night stay. Never mind the considerable amenities of this charming hostelry—in the front yard stood, virtually intact, the last wrought-iron works (using the Lancashire process) in the world, operating until 1964! In the days ahead we would be free to explore the forge shop and other industrial buildings on the premises. That night, we were treated to a traditional Swedish meal of *pytt i panna* (a hash of meat, potato, and onion with raw egg on top) served in a candlelit warehouse—one of the longest timber buildings in Sweden—once used to store bar iron. Free-flowing beer, wine, and schnapps made for a festive atmosphere.

We were now in the historic center of Swedish iron making, where abundant iron ore, timber, and waterpower provided the foundation for a dynamic industry. By the Middle Ages, farmers were cooperatively extracting the ore and making small pieces of wrought iron, called *osmund*, for export. Beginning in the early 16th century, the Swedish monarchy took an active interest, granting charters to noblemen and foreign capitalists who organized the industry into larger, carefully planned units, known as *bruks* (manufacturing estates). Anchored by the proprietor's mansion, or manor house, the largest of these had their own church, school, farm, flour and saw mills, shops, and, of course, industrial buildings and workers dwellings. Producing bar iron for export mainly to Sheffield, England, the *bruks* flourished in the 17th and 18th centuries, as we would see in the days ahead.

SAT., SEPT. 7. Sweden (pop. 8,924,529) is roughly the size of California—with 25 million fewer people! Between cities, the two-lane roads are rimmed by pine and birch forest, occasionally interrupted by small farms; "moose crossing" signs are ubiquitous. This morning we drove to **Grängesberg**, an iron mine in Ludvika operated from the 16th century until it was closed in 1989. Örjan



Norrköping's industrial landscape, once a bustling center of textile and paper manufacture, has undergone redevelopment as an educational and cultural center.

Hamrin, a curator at the Dalarnas Museum who helped create the *Ekomuseum Bergslagen*, a cooperative venture to promote tourism in the historic center of Sweden's iron industry, served as our guide. Grängesberg was partially British-owned, Hamrin explained as he led us on a tour of Cassell's Donation, a three-story Greek Revival building erected in 1899 by Sir Ernest Cassell (1852-1921) for the benefit of the *arbetare* (workers). The building houses a handsome concert hall whose hand-painted ceiling depicts Raphaelesque cherubs at work in sundry phases of mining. On the other side of town, we visited a street of well-preserved workers' houses erected in 1896 for Grängesberg's underground miners. Each house contains four two-room flats. One, open to visitation, contains a small museum of the history of mining in Grängesberg, while period furnishings in two of the tiny upstairs flats interpret the domestic life of a miner and his family in 1900 and in 1960.

Following lunch at the Dalarnas Museum in Falun, we headed to the **Falun Copper Mine**, a UNESCO World Heritage Site. Copper was mined here from ca. 1000 A.D. until 1992, although the golden age occurred in the 17th and 18th centuries, when the Falun mine produced two-thirds of the world's copper ore. A tour takes visitors into the Creutz Shaft, opened in 1662 on the fringe of the central ore body, and through drifts and chambers to an ultimate depth of 67 m. The mine was worked by "fire-setting": wood stacked against the face of the area to be mined was burned, following which the embrittled rock was broken off using mallets, wedges, and picks. Following our underground visit, there was time to inspect the Great Pit—product of a massive cave-in on 25 June 1687—and visit the Mine Museum containing models of Christopher Polhem's mechanical inventions and other artifacts related to the one-thousand-year history of the mine. After viewing a 3-D digital videotape recreating the great collapse, Örjan Hamrin rejoined the group to lead a short walking tour of central Falun, where numerous 17th-century square-timbered houses, now covered by board-and-batten siding painted "Falun Red," have been preserved. (Falun Red Paint, which contains a pigment extracted from the Falun copper mine, has been manufactured for over 400 years. It is the classic choice for farmhouses and outbuildings throughout Sweden.) Our day ended with a bountiful smorgasbord served in the dining room of the manor house at Ramnäs.

SUN., SEPT. 8. This was a day made in IA heaven. On a luminous late summer morning, we set out for **Engelsbergbruk**, a UNESCO World Heritage Site located in the Norberg mining district. Our guide there, octogenarian Lars Larsson, was born in an ironmaster's homestead and brimming with knowledge about the workings of the *bruk*. There was an iron furnace here as early as the mid-14th century; farmers operated it a few weeks each year, mak-

SWEDEN

Robert M. Vogel



The ironworks at Ramnäs stand, quite literally, in the front yard of the manor house.

ing osmunds, which were packed in barrels for export. Later, German forge men taught the Swedes how to make bar iron. At the end of the 17th century, a blast furnace, manor house, and other buildings were erected. The present furnace, erected in 1779 and rebuilt in 1878, operated until 1919. Still to be seen are the associated water-powered ore crusher and roasting kiln. According to Larsson, the furnace was tapped three times each day. The resulting slag was cast into building blocks, a common byproduct of Swedish furnaces from the mid-18th century until as late as the 1950s. (Slagstone buildings are a common sight in this part of Sweden.) We next inspected the Lancashire forge of 1845. Pig iron is not malleable; before it can be forged, wrought, or rolled, it must be refined—i.e., most of the carbon must be removed by heating it in charcoal-fueled hearths under continuous air blast. Using a crowbar, the forge men fashioned the heated iron into a ball, then wheeled it to the hammer, where repeated blows made the iron more homogenous and drove out any remaining slag.

At Ängelsberg, we boarded the little ferry *Petrolia* for the short ride to **Oljeön**, the “Island of Oil,” in Lake Ämningingen, where a sumptuous outdoor buffet awaited us. After lunch, Lars Larsson led us on a tour of the small-scale oil refinery that operated here from 1876 until 1901, refining Pennsylvania crude into kerosene, lamp oil, machine oil, and paraffin. Karin Larsson, his wife, showed us a four-flat Victorian house once occupied by refinery workers, now the summer home of the Larssons. The Larssons conduct seasonal tours of the tiny island, which is owned by Preem Petroleum AB, Sweden’s biggest oil company. We left this haven, so reminiscent of the Maine coast, most reluctantly.

Our next destination was **Karmansbobruk**, where volunteers of the Karmansbobruksmiljö Association had prepared an elegant service of strong Swedish coffee and homemade pastries. Following this welcome refreshment, we were treated to a close-up look at an operating 1870s Lancashire forge and rolling mill. We watched in astonishment as the Karmansbo volunteers heated an iron bloom in the charcoal-fueled hearth, then transferred it in a small cart to the anvil of the eight-ton, water-powered “mumblingshammer” (so called because when the “mumblings” of the hammer could be heard, villagers knew that all was well). Repeated blows readied it for the next step: successive passes, by men wielding huge iron tongs, through a rolling mill (also water-powered). The forge operates only a few times a year, and the opportunity to experience the sight, sound, and smell of hot iron worked 19th-century-style was a special treat. Our day ended with dinner at the manor house in Ramnäs and entertainment by a Swedish folk singer.



Christopher H. Marston

Örjan Hamrin of the Dalarnas Museum leads a walking tour of central Falun, whose streets are filled with 17th-century houses once occupied by copper miners and their families.

MON., SEPT. 9. On this, another fine late summer morning, we traveled to **Pershyttan**, site of one of the best-preserved blast furnaces in Sweden. David Damell, director of the nearby Örebro Läns (County) Museum, served as our guide, clearly explaining the factors that gave rise to Sweden’s substantial early iron industry: the presence of iron ore in the mountains, abundant timber for charcoal, and the availability of limestone and waterpower. Iron making at Pershyttan began in the 12th century, when farmers and miners collaborated to build a furnace there. Early transport of raw materials relied on sledges pulled by horses on the frozen waterways, and in the large, slat-walled charcoal-storage house at Pershyttan was one such early sledge—in essence, a sled carrying a large willow basket. The present furnace was erected in 1856 and operated until 1953. We climbed to the top and looked down on the bell, where ore, charcoal, and limestone were once fed by hand. Also on the premises are a reconstructed (and operating) 18th-century waterwheel and the *stånggång* that once transmitted mechanical power to mine pumps up to three kilometers distant by means of reciprocating wooden rods.

Following lunch at the *Nora stadshotell*, we traveled to the **Frövifors Paper Mill Museum** in Frövi. There, in 1889, a mechanical pulp mill was built on the Arboga River. Two years later, the first papermaking machine was installed; three others quickly followed. The mill turned out brown wrapping paper and sack kraft until 1979, when the company decided to invest in new machinery for the production of kaolin-coated packaging for

(continued on page 6)



Christopher H. Marston

The historic copper mining village of Falun lies beyond the rim of the Great Pit (foreground), product of a massive cave-in in 1687. Because it was the midsummer holiday, there were no casualties.

The Mine Museum (at left) documents the one-thousand-year history of Falun copper.



2003 GENERAL TOOLS AWARD

Call for Nominations

The General Tools Award Committee invites SIA members to submit nominations for the 2003 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), and Charles Parrott (2002).

Nominations, *which must be received on or before Mar. 15, 2003*, should be submitted to: Robert Passfield, Chair, SIA General Tools Award Committee, 60 Celebration St., Ottawa, Ontario K2C 3Z9; (819) 997-0523; robert_passfield@pch.gc.ca. ■

SWEDEN *(continued from page 5)*

juices and other liquids. The retired machinery, including two Fourdriniers, is displayed in a small museum.

Returning to Ramnäs, we changed into our finery for a special reception at the 14th-century **Västerås Slott** (Castle). There, Åke Ringbom, deputy to the governor of Västmanland Län (County), together with Birgitta Cedenhag, county antiquarian, and Carl-Magnus Gagge, head of the county museum, cordially welcomed us. Following several toasts and brief remarks, we enjoyed a fine meal of poached salmon in a lovely portrait-lined dining room.

TUES., SEPT. 10. This morning we reached back in time to the earliest known period of iron making in Sweden. Our destination was **Nya (New) Lapphyttan** in the mining district of Norberg. Many early furnaces were constructed in the vicinity of Norberg's hundreds of small open-pit mines. But while the earliest written sources confirmed that ore was being exported from this region by the late 13th century, it was not known when the first furnaces were established. Then, in the late 1970s, an early furnace site was discovered, and archeological excavation soon followed. Carbon dating and pottery shard analysis subsequently placed the site in the middle 12th century. At Nya Lapphyttan, a few kilometers from the excavation site, the medieval furnace complex has been reconstructed based on archeological evidence. Following a tour of the reconstruction led by archeologist and site director Inge-Marie Pettersson, we enjoyed a "medieval" lunch alfresco: reindeer wraps and baked apples with berries and cream.

In the afternoon, the hearty descended on foot deep into the **Sala Silvergruva (Silver Mine)**—so deep, in fact, that it was possible to fathom the horrific conditions endured by those who once labored here. Sala was Sweden's biggest producer of silver and, during some periods, one of Europe's most important producers; the silver was used mainly for minting coins. First opened in the early 16th century, the Sala Mine consists of a vast labyrinth of shafts and galleries; the deepest shaft is 318 m deep. As at the Falun Copper Mine, the Sala mine was worked using the arduous

fire-setting method. When the mine closed following the Great Strike of 1909, it was quickly flooded, preserving in place vast numbers of artifacts from every period. Today, underwater archeology is helping to document the mine's history.

The day ended with our arrival in the charming medieval city of Uppsala, the county seat of Uppland and home to the University of Uppsala. That evening Ulf Herricsson, deputy to the governor of Uppsala County, welcomed us at a reception at the 16th-century **Uppsala Slott**, following which we dined at nearby restaurants. We spent the night at the First Hotel Linné overlooking the gardens of Carl von Linné (Carl Linnaeus, 1707-78), Swedish botanist and founder of the modern classification system for plants and animals.

WED., SEPT. 11. There was time to wander the streets of Uppsala, visit the Linnaeus gardens, Uppsala Cathedral (largest in Scandinavia), or the Internet café before departing in late morning for the Uppland mining district. (En route, Mats stopped the bus and we observed a moment of silence in memory of the Sept.



The blast furnace at Engelsbergbruk, built in 1779 and rebuilt in 1878, is one of the few earth-and-timber furnaces preserved in Sweden.

Christopher H. Marston

SWEDEN



Robert M. Vogel

The ferry Petrolia departs for the short trip to Oljeön, the “Island of Oil,” where a small refinery (top right) operated from 1876 to 1901.

11 terrorist attacks.) Our destination was **Söderforsbruk**, settled between 1620 and 1640 by skilled workers from Wallonia, Belgium, who brought the Walloon method of making bar iron to Sweden. (See Österbybruk, below.) In 1676, Claes Depken established an anchor forge here; for 200 years, Söderfors produced anchors for the Swedish Navy. Although anchor production ceased in 1883, iron making continued and in the 1920s and 1930s production successfully shifted to stainless and specialty steels. Following a quick walk through the bruk and a hearty lunch served in the manor house, we toured the nearby plant of **Erasteel Kloster AB**. Using scrap and alloys melted in an electric-arc furnace, Erasteel forges high-speed steel billets for the production of drills, saws, and cutting tools. The plant has an annual capacity of 30,000 tons. We marveled at the cost of a single billet: 400,000 SEK (\$40,000 US)! Before leaving Söderfors, we paid a visit to **Damasteel AB**, where the making of damascene steel—an ancient blacksmith technique in which two types of steel are stacked, tilted, and forged in multiple layers, creating an artistic pattern—has been revived for the manufacture of knife blades.

Leaving Söderfors, we stopped in **Karlholmsbruk**, where we got a close-up look at an 1880 Lancashire forge. Although silent since 1931, the forge was restarted in 1947 for the purpose of filming the process; a videotape of the film was shown on the bus, to our delight. Then it was on to **Gimo**, yet another iron *bruk* now adapted to use as a hotel and conference center. Gimo Herrgård would be our home for the next three nights.

THURS., SEPT. 12. Mining at Dannemora began in the 15th century with silver but soon shifted to high-quality magnetite ore, according to our guide, Eva Wrede. By the 17th century, the **Dannemora Mines**—the richest and most important in Sweden, and the site of frequent royal visits—were supplying ore to about 30 iron *bruks*. The late 18th-century saw an incredible 33,000 sledge transports annually and marked the height of mining activity here. We inspected the largest of about 50 open-pit mines (with a depth of about 140 m, it was worked through the 19th century), then walked to the underground mine, with a main-shaft

depth of 620 m. A small machine house nearby housed the first steam engine in Sweden, a Newcomen type that powered the mine’s water pumps between 1728 and 1735.

Our next stop was **Österbybruk**, one of many Walloon *bruks* in this region. Here is found the only completely preserved Walloon forge in Sweden, built in 1794 and operated until 1906. By the Walloon method, long pigs of iron were converted into wrought iron in a series of heating and hammering operations in the forge with its two types of hearth, the finery and the chafery, and its water-powered hammer. Österbybruk was so productive that its owners amassed an art collection that would later become the foundation of the Swedish National Museum. When it closed, Österbybruk was quickly recognized as a national treasure and given protected status. After inspecting the forge with its *labbi* (sleeping quarters for forge workers) and a three-room smith’s house with period furnishings, we were free to wander the grounds. The fine 1766 manor house complex includes a church, stable, garden, and orangerie, as well as the onetime studio of noted artist Bruno Liljefors (1860-1930), now a small art gallery.

Following lunch in the manor house, we traveled to **Forsmarkbruk**, another well-preserved Walloon settlement, for a self-guided tour. Then it was on to **Leufstabruk**, established by Belgian entrepreneur Louis de Geer (1587-1652) in the 17th century and considered the most important of the Walloon *bruks* because of its size and onetime importance to the Swedish economy. Although there are no industrial remains here, we enjoyed a guided tour of the handsome manor house, built between 1730 and 1750, followed by a delightful concert on the 1728 Johan Niclas Cahman organ in the Leufstabruk Kyrka (Church). We then adjourned to a cozy tavern, where the buxom “Ma’m’selle,” in period costume, introduced each course of our 18th-century-style dinner with historical flourish and great good humor.

FRI., SEPT. 13. This morning we traveled to **Sandvik Steel** in Sandviken, founded in 1862 by Göran Fredrik Goransson, who was the first to succeed in using the Bessemer method for steel produc-

(continued on page 8)



Christopher H. Marston

Working the Lancashire forge at Karmansbo: The heated iron is lifted from the hearth onto a small cart (left), transferred to the “mumblingshammer” (middle), then to the rolling mill (right).

Robert M. Vogel



Magnificently reconstructed, the waterwheel at Pershyttan drives the stångång (left), which once transmitted power for pumping to nearby mines by means of reciprocating rods.



tion on an industrial scale. Goransson built his steelworks on the model of the *bruk*, providing a school, church, library, and housing. As early as the 1860s, the firm's products included steel bits for rock drilling. Today Sandvik is a multinational giant, with 36,000 employees in 130 countries and annual sales of 50 billion SEK (\$5 billion US). Sandvik focuses on three core areas: tooling, mining and construction, and specialty steels. At Sandvik world headquarters, spokesman Elvert Eriksson gave us an illustrated introduction to the company, then led us through a museum-like display of its products and their applications. Sandvik makes 1 out of 4 razor blades and 20,000 ballpoints per minute—or 2 billion annually; its largest product is virtually invisible electric resistance wire, 15 microns in diameter, manufactured in the U.S. for the electronics industry. Our next stop was the plant's *service butiken*, where the hungry shoppers among us loaded up on knives, wrenches, pruning saws, scissors, drill bits, and other Sandvik products. By the time we recalled the purpose of our visit—a site tour—there was time only for a drive through the central plant. There, using scrap melted in one of three electric-arc furnaces, Sandvik's 5500 employees manufacture 800 grades of stainless steel.

Following a lunch of fresh herring at **Forsbackabruk**, Peter Sundquist, director of the Forsbacka Museum, led us on a walking tour of the 1910-15 blast furnace complex there. We then traveled on to the **Sveriges Järnvägmuseum** (Swedish Railway Museum) in Gävle, housed in a 1927 roundhouse. Sweden was a latecomer to railways (1850s) but, owing to the absence of coal, a pioneer of electrification (based on hydroelectric power). We

toured the collections and interpretive displays on our own. These include a 1907 locomotive with cutaways exposing its inner workings and several evocative exhibits treating the railways' impact on Swedish social life. But the highlight of our visit was a private viewing of the museum's off-site holdings. Erik Sundström, on the board of the museum friends' group, led us through a former railway repair shop where about 100 cars and numerous locomotives are stored. We saw the last Swedish steam locomotive, built by NOHAB-Trollhättan in 1947; an 1886 ore car built by Birmingham Carriage & Wagon; a 1914 electric passenger car; and an 1858 passenger car adapted to use as a summer home in 1885 and now awaiting restoration. Quipped an appreciative Vance Packard, "The collections here are comparable to railway collections in the U.S.—all of them!"

SAT., SEPT. 14. Bidding adieu to the land of the *bruks*, this morning we headed south to **Skokloster Slott**, built on Lake Mälaren between 1654 and 1668 by Carl Gustaf Wrangel. With its four stories and four towers, Skokloster is the largest country house ever built in Sweden. Since 1701, nothing has been removed. We were wide-eyed as curator Bengt Kylberg led us

(continued on page 17)

Christopher H. Marston



At Nya Lapphyttan, in the mining district of Norberg, a 12th-century blast furnace complex has been recreated based on archeological evidence recovered nearby.

Climbing out of the bowels of the Sala Silver Mine.



Greg Galer



SOCIETY FOR INDUSTRIAL ARCHEOLOGY NEWSLETTER

PUBLICATIONS OF INTEREST

A Supplement to Vol. 32, No. 1

Winter 2003

COMPILED BY

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

GENERAL INTEREST

- **American Machinist Memories** is a series of books reprinting selected articles from early issues of *American Machinist Magazine*. The series is organized by theme. To date, it includes *Machine Shop 1900-01* (tools and techniques of the professional machinist); *Foundry 1900-01* (patternmaking and molding, including an article on molding a 9-ton flywheel); *Ordnance 1900-01* (history, design details, and manufacturing techniques of various types of ordnance); and *Engines 1900-02* (design, construction, and repair of engines). Illus., \$11.95 each, paper. Also, *Echoes from Oil Country*, (3 vols., illus., \$7.95 each, paper) the wild stories of W. Osborne, a fictionalized machinist from Pennsylvania's oil district, and his mishaps repairing governors, hiring good men, fixing pumps, working with bad Babbitt metal, running a worn-out lathe, and much more. *American Machinist Memories* is among a wide selection of reprints and technical books available from Lindsay Publications, Box 538, Bradley, IL 60915; (815) 935-5353; www.lindsaybks.com. Catalogue avail. Other recent issues include, Joseph V. Woodworth, **Punches Dies and Tools for Manufacturing Presses**, 4th ed., 1931 (reprint ed. 2002). 538 pp., illus. \$23.95 paper. Encyclopedia of die-making, punch-making, die-sinking, sheet-metal working, and making of special tools for everything from cartridge shells to pens, jewelry, and clockwork. **Making Rifle Barrels**, reprints from *Machinery Magazine* 1916. 61 pp., \$8.95.
- **Pioneer American Society Transactions**, v. 24 (2001) includes several articles of IA interest: Thomas M. Rasmussen, *Transportation Costs, Economies of Scale, and Early Settlement Patterns of Western New York* (pp. 29-41); Martin T. Olliff, *Alabama: Methodism, Capitalism, Utopia, and the Antebellum Mill Village* (pp. 43-55); J. Daniel Pezzoni, *The Architecture of Tobacco Manufacturing in Nineteenth-Century Virginia* (pp. 69-81); Michael C. Reis, 'By the Gasworks Wall': *The Split Image of the Pioneer American Gas Industry and Its Buildings* (pp. 83-95); Jeffrey L. Durbin, *From Shovel and Barrel to Automatic Unloader: The Material Culture of Great Lakes Iron Ore Unloading, 1855-1900* (pp. 97-111).
- Jim Quinn. **Patent Magic: Innovation's Home Turns 200**. *I&T* (Winter 2003), pp. 6-8. The U.S. Patent and Trademark Office celebrates its 200th anniversary.
- Joshua L. Rosenbloom. **Looking for Work, Searching for Workers: American Labor Markets during Industrialization**. Cambridge Univ. Pr., 2002. 216 pp., diagrams, tables. Interplay of market strictures, wage rates, and worker characteristics from the 1860s to 1910s explains the nature of employment patterns in the U.S.
- Sana Siwolop. **Shops Set Where Industries Were Once at Home**. *NY Times* (Oct. 23, 2002, p. C9). Atlas Terminals, built some 80 years ago in Queens, was home to GE, Kraft, and Westinghouse, among others. Developers plan to turn half of it into a retail and office complex.
- Theodore A. Webb. **Seven Sons: Millionaires and Vagabonds**. Trafford Pub. (www.trafford.com/robots/99-0024.html), 1999. 392 pp., bibliog. \$35.25. Story of the remarkable Washburn brothers of Livermore, ME. One of these was Cadwallader C., milling magnate of Minneapolis. Another was William D., who made his fortune in lumber, flour milling, and railroads.
- Howard Zinn, Dana Frank, and Robin D.G. Kelley. **Three Strikes: Miners, Musicians, Salesgirls and the Fighting Spirit of Labor's Last Century**. Beacon Pr., 2001. 174 pp. \$24. Covers the Ludlow Massacre of Colorado coal miners by the National Guard in 1913; the New York movie theater musicians' strike of 1936 in protest of job lost to the new technology of talking pictures; and a sit-in of Woolworth counter girls in Detroit during the Depression that was successful in achieving better pay and benefits.

RAILROADS

- Elinor Barr. **Thunder Bay to Gunflint: The Port Arthur, Duluth & Western Railway**. Thunder Bay Historical Museum Soc. (425 Donald St. E., Thunder Bay, Ontario, P7E 5V1; (807) 623-0801; fax 622-6880), 1999. 151 pp. \$24.95. Begun in the 1880s, the PAD&W ran from Port Arthur to the Paulson Iron Mine in MN. It later became an insignificant branch line of the Canadian Northern Ry. Examines the political intrigue that swirled around the PAD&W and the individuals who guided its destiny.
- Alan R. Clarke. **Broadwater's Art Shop**. *The Log Train*. Mountain State Railroad and Logging Historical Assn. Issue 67 (Summer 2001), v. 17, 3, pp. 4-12. Photographer in Thomas, WV, and the photographs he took of the WV Div. of the Western Maryland Ry. starting ca. 1907. His interests covered mining, railroads, tanneries, logging, and local towns. He took approx. 2,000 pictures, forming a visual story of the region.
- Edward E. Fagen. **The Engine's Moan: American Steam Whistles**. Astragal Press (Box 239, Mendham, NJ 07945; www.astragalpress.com). 288 pp., illus. \$44.45 ppd. A blend of scholarly treatise, antique guide, and shop manual. Covers the invention of the steam whistle, applications, physics of the whistle's operation, and the whistle in popular culture.
- Don Phillips. **Wronged Side of the Tracks? Railfans Complain of Police Scrutiny in Terror Era**. *Washington Post* (Nov. 15, 2002), p. A1. Railroad security is heightened and

railfans—often found around the lines with cameras and notebooks—report greater scrutiny of their activities and, at times, harassment by police. Some argue that railfans could be a real value in spotting a truly suspicious activity and reporting it.

- **Railroad Heritage** is the quarterly magazine of the Center for Railroad Photography and Art (Box 259330, Madison, WI 53725; www.railphoto-art.org). Articles examine the work of railroad photographers and artists. No. 5 (2002) includes *Santa Fe Photos Launch Project* (30 yrs. of Santa Fe photos by company photographer R. Collins); *Interurban Photos Show Style* (Chicago rapid transit publicity photos); *Union Station: A Chicago Landmark*; and *Seeing the Metropolitan Corridor* (interview with American railroad landscape historian John R. Stilgoe).
- Kurt C. Schlichting. **Grand Central Terminal: Railroads, Engineering, and Architecture in New York City.** Johns

Nominations Committee Announces 2003 Slate

The SIA Nominations Committee is pleased to present the following slate of candidates for the 2003 election:

Secretary (3-year term): Elect One	Richard K. Anderson, Jr.
Treasurer (3-year term): Elect One	Nanci K. Batchelor
Director (3-year term): Elect Two	Mark Finlay Duncan Hay Lynn Rakos XXXXX XXXXX
Nominations Committee (3-year term): Elect One	Larry Mishkar XXXXX

Additional nominations may be made in writing over the signatures of no fewer than twelve members in good standing and delivered to the chairwoman of the SIA Nominations Committee at the address below no later than April 15, 2003. Candidates must have given their consent to be nominated and must also be dues-paying members in good standing. Ballots, together with a biographical sketch of each candidate, will be mailed to all members in early May. Only dues-paying members in good standing will receive a ballot. (Dues notices for 2003 were mailed in December.)

For the committee,
Carol Poh Miller, Chairwoman*
Michael Raber
Justin Spivey

Reply to: SIA Nominations Committee, c/o Carol Poh Miller, 17903 Rosecliff Road, Cleveland, OH 44119-1347; 216-692-0747; cpmiller@stratos.net

* Note: Since announcement of the call for nominations in the last issue of SIAN, Nominations Committee Chairman Robert M. Frame III resigned. SIA President Vance Packard appointed Past President Carol Poh Miller, an ex officio member of the committee, to serve as chair.

Hopkins, 2001. \$26.50. Looks behind the architectural beauty of Grand Central to the engineering marvels achieved by combining subways, commuter rail, and long-distance rail lines in one station in 1913.

- Frederic D. Schwarz. **End of the Line?** *I&T* (Summer 2002), pp. 12-13. Uncertain fate of NYC's High Line, the abandoned elevated freight railroad on the city's west side.
- David O. Stowell. **Streets, Railroads, and the Great Strike of 1877.** Univ. of Chicago Pr., 1999. 182 pp., illus., maps. \$31; \$15 pap. The strike as a community uprising. Details the enormous cost in human terms of bringing railroads into urban centers.
- **Timber Transfer** is the newsletter of the Friends of East Broad Top RR. The Spring 2001 issue included Lance Myers, *New Life at the North End*, *The Mt. Union Connecting RR*, and Vagel Keller, *The Reluctant Railroad*, *The EBT's Rocky Ridge Branch*. Newsletter is a source of information on efforts to preserve the EBT, believed by railroad historians and enthusiasts to be the most complete narrow-gauge railroad in the U.S., as well as feature articles on the EBT and related subjects. Quarterly newsletter is avail. with membership in the Friends. \$30/yr. Peter Clarke, 10428 Carlyn Ridge Rd., Damascus, MD 20872.
- Steven W. Usselman. **Regulating Railroad Innovation: Business, Technology, and Politics in America, 1840-1920.** Cambridge Univ. Pr., 2002. 414 pp., illus. \$65; \$25 pap. Innovation in the railroad industry as a jumping off point for an examination of American business, politics, and technology.
- Alan R. Woolworth. **The Genesis and Construction of the Winona and St. Peter Railroad, 1858-1873.** Society for the Study of Local and Regional History (Box 291, Marshall, MN 56258), 2001. 54 pp., illus., \$3 + \$1.50 p&h. Under-financed, struggling land-grant enterprise opened up large tracts of land in western Minnesota and eastern Dakota Territory to settlement.

WATER TRANSPORT

- Frederick E. Allen. **The 'Monitor' Rises.** *I&T* (Winter 2003), pp. 48-58. Bringing up parts of the Civil War ironclad ship from the ocean bottom off Cape Hatteras.
- Bill Beck and C. Patrick Labadie. **A Fabulous Trade: An Illustrated History of the Port of Duluth-Superior.** Afton Historical Society Pr. (Box 100, Afton, MN 55001; 1-800-436-8443; www.aftonpress.com), 2003. 200 pp., photos. \$35. Development of the port from an isolated fur-trading post to a global bulk transshipment facility for iron, coal, and grain. Labadie [SIA] was the opening-night speaker at the 2000 SIA Annual Conference in Duluth. Also: Chris Havens. **Volunteers Toil to Make 'Meteor' Shipshape.** *Duluth News Tribune* (Oct. 6, 2002). www.duluthsuperior.com/mld/duluthtribune/news/local/4224264.htm. Efforts to preserve the only surviving whaleback freighter, built in 1896 (tour site, 2000 SIA Annual Conference).
- Richard Chase. **Tugs Everlasting.** *I&T* (Fall 2002), pp. 24-27. Class of tugboats known as railroad tugs, built to move car floats, have long outlived their original job.
- Mary Louise Clifford and J. Candace Clifford. **Women Who Kept the Lights: An Illustrated History of Female Lighthouse Keepers.** 2nd ed. Cypress Communications, 2001. 242 pp., illus. \$32.95. 141 women who received official keeper appointments in the lighthouse service (more than twice that number received appointments as assistant keepers) and profiles 30 in detail. Most of these women were wives, wid-

ows, or daughters of former keepers, beginning with Hannah Thomas, who took over the Plymouth Light (MA) in 1776 when her husband went off to war.

- Charlie LeDuff. **So It's a Lighthouse: Now Leave Me Alone.** *NY Times* (Apr. 18, 2002). Frank Schubert, 85, is the country's last civilian lighthouse keeper. Living in a cottage at the Coney Island Lighthouse, built in 1890, he doesn't like the recent publicity and isn't taking phone calls or visitors.
- Gene Onchulenko and Skip Gillham. **The Ships of the Paterson Fleet.** Riverbank Traders (St. Catharines, ON), 1996. (Avail: Thunder Bay Historical Museum Soc., 425 Donald St. E., Thunder Bay, ON, P7E 5V1; (807) 623-0801; fax 622-6880; <http://www.tbaytel.net/tbhms/>). Illus. \$24.95. One of a series of shipping company histories by the publisher, this book tells the story of a family-owned Great Lakes firm based in Thunder Bay. Describes each company vessel from 1915-1995. Selections from the book are also online at <http://www.marmus.ca/marmus/PATSRN/shipstoc.htm>.
- Stephen Rowson and Ian L. Wright. **The Glamorganshire and Aberdare Canals.** Black Dwarf Pub. (47-49 High St., Lydney, Glos GL15 5DD, U.K.), 2002. 272 pp., maps, photos. £30. The history and IA of two canals in Wales.
- Kirkpatrick Sale. **The Fire of His Genius: Robert Fulton and the American Dream.** Free Press, 2001. 242 pp. \$24. Biography of the inventor, one of several developers of steam navigation, but the one who gets the most frequent popular history credit, mainly because of sustained commercial success, according to the author. Fulton's other endeavors at submarines and anti-ship torpedoes are also recounted, as well as his work as a painter. For another perspective on Fulton, how about John H. White, Jr., **Robert Fulton's Dream.** *I&T* (Summer 2002), pp. 38-46. Summary: he wanted to become rich and well-connected. Along the way he invented the steamboat.
- Ben Webster. **Canals to Be Revived by a £500m Flow of Cash.** *The [London] Times* (Mar. 23, 2002), News Sec. p. 8.

CONTRIBUTORS TO THIS ISSUE

Lola Bennett, Stow, MA; Varrick Chittenden, Canton, NY; Alan Clarke, Montclair, VA; Arlene Collins, Houghton, MI; Bernard Drew, Great Barrington, MA; Don Durfee, Houghton, MI; Betsy Fahlman, Tempe, AZ; Geoffrey Finton, Somerset, U.K.; Bob Frame, Minneapolis, MN; Greg Galer, North Easton, MA; Dario Gasparini, Cleveland, OH; James Guilbeau, New Orleans, LA; Mary Habstritt, New York, NY; Neill Herring, Jesup, GA; Elliot Hunt, Jersey City, NJ; Greg Lambousy, New Orleans, LA; David Lederman, Los Angeles, CA; Lee Maddex, Morgantown, WV; Christopher H. Marston, Washington, D.C.; Dan McCain, Delphi, IN; Todd Milano, Summerdale, PA; Carol Poh Miller, Cleveland, OH; Robert Passfield, Ottawa, ON; George Rappole, Edmonds, WA; Bierce Riley, Morristown, NJ; Heinz Schwinge, Evanston, IL; Walter Sheppe, Akron, OH; David Simmons, Galena, OH; Allan King Sloan, Lexington, MA; Justin Spivey, New York, NY; Bay Stevens, Tijeras, NM; John Teichmoeller, Ellicott City, MD; Robert Vogel, Washington, DC; Sara Wermiel, Jamaica Plain, MA.

With Thanks.

Britain will spend huge sums to reopen or build anew nearly 300 miles of canal. Boom in small boats and developers' interest in waterfront properties have encouraged the renaissance. Among the projects are restoration of Bow Back Rivers in East London and the Manchester, Bolton & Bury Canal. The 37-mile Cotswolds Canals will include reopening the Sapperton Tunnel, at 2.25-miles the longest canal tunnel in the country. The Anderton Boat Lift, built in 1875 to link the River Weaver and the Mersey Canal, its original machinery restored, has begun raising boats again after being abandoned 20 years ago.

POWER GENERATION

- T. A. Heppenheimer. **Nuclear Power: What Went Wrong?** *I&T* (Fall 2002), pp. 46-56. Engineers made it safe, but they couldn't make it cheap.
- **Pavilion to Provide Shelter for Historic Steam Engine.** *The Tennessean* (Nov. 14, 2002), Local News Section. www.tennessean.com. Steam engine in Dickson, TN, once powered the Cowan Lumber Co. mill. Described as 16-ft. high and 27-ft. long and built by an Iowa foundry, ca. 1920.

BRIDGES

- Mella Rothwell Harmon and Bert Bedeau. **Working to Save Reno's 'Wedding Ring Bridge.'** *SCA News* 10,2 (Summer 2002), p. 1. Virginia St. Bridge over Truckee River in downtown Reno, NV, a reinforced-concrete arch built in 1905, is under threat of demolition. Folklore has it that divorcees cast their wedding rings from the bridge after exiting the nearby courthouse.
- David Plowden. **The Bridges I Love.** *I&T* (Winter 2003), pp. 28-39. One of America's foremost photographers describes why he loves bridges and their history.

BUILDINGS & STRUCTURES

- Elsa Brenner. **New Life for Rundown Site on Yonkers Waterfront.** *NY Times* (Oct. 8, 2002), Real Estate, p. 7. Redevelopment of Hudson River waterfront in Yonkers includes re-use of 19th-c. Otis Elevator Co. complexes.
- James S. Russell. **Coop Himmelb(l)au Challenges Preservation Orthodoxy in the Gasometer B Project by Making Stolid...** *Architectural Record* (Nov. 2001), pp. 109-115. Four-gasholder house complex in central Vienna adaptively re-used for apartments, offices, and shops within and above. Each house was assigned to a different architect. Focus of this article is one redesigned by Wolf Prix with a performance hall at grade, 13 stories cantilevered over the top of the hall, and a 22-story addition.
- Sara Wermiel. **Army Engineers' Contributions to the Development of Iron Construction in the Nineteenth Century.** American Public Works Assn., 2002. Avail: www.apwa.net/bookstore/detail.asp?ProductID=359 or from the Public Works Historical Society, 2345 Grand Blvd., Ste. 500, Kansas City, MO 64108-2641; (816) 472-6100. \$15. Since the late 19th c., the work of the U.S. Army Corps of Engineers has centered on rivers and harbors. But earlier in the 19th c., Army engineers were called on to help with a variety of civil (in contrast to military) engineering projects. They were among the first Americans to build with iron. The first part treats the early history of iron-skeleton lighthouses. Several of the earliest of these lighthouses, dating from the 1850s, are still standing off the south coast of Florida. The second part deals with iron-framed fireproof buildings built by the federal government in the 1850s under the overall direction of Army engi-

neer, Capt. Alexander Bowman. Dozens of fireproof federal buildings went up in this decade and some are still standing, such as the post offices in Windsor, VT, and Georgetown, Washington, DC. This section of the essay treats the origins of rolled I-beams. Questions or comments? Contact the author, 70A South St., Jamaica Plain, MA 02130, fireproof2@att.net.

MISC. INDUSTRIES

- Peter Bartrip. **The Way from Dusty Death: Turner and Newall and the Regulation of the British Asbestos Industry, 1890s-1970.** Athlone Pr., 2001 (Aval.: Continuum Books, 1-800-561-7704). 400 pp., \$99. Emergence of medical, then official, concern about the three diseases related to asbestos (asbestosis, lung cancer, and mesothelioma), the legislative process and impact of the 1931 Asbestos Industry Regulations providing insight into occupational health and its regulation in 20th-c. Britain. Author had unimpeded access to the archive of Turner & Newall, the leading British asbestos mfr.
- Alan R. Clarke. **Jenningson.** *The Log Train.* Mountain State Railroad and Logging Historical Assn. Issue 71 (Summer 2002), v. 18, 3, pp. 8-23. Account of the rise and fall of a logging town in Randolph and Tucker counties, WV.
- John Steele Gordon. **A Thread Across the Ocean: The Heroic Story of the Transatlantic Cable.** Walker & Co., 2002. 240 pp., illus. \$26. The indefatigable spirit of Cyrus Field in getting the first transatlantic cable laid in spite of calamity, misfortune, error, and failure, and how the project reflected our human propensity to push technology beyond its limits. Rev.: *NY Times Book Review* (Aug. 11, 2002), p. 26.
- Michael Lamm. **Feel the Noise: The Art and Science of Making Sound Alarming.** *I&T* (Winter 2003), pp. 22-27. From the earliest fog signal on an American lighthouse (Boston Harbor, 1719) to Chrysler air-raid sirens of the 1950s.
- Seth Shulman. **Unlocking the Sky: Glenn Hammond Curtiss and the Race to Invent the Airplane.** HarperCollins, 2002. \$25.95. Litigious rivalry between the Wright brothers and Curtiss in airplane design and development.

PAPER & PRINTING

- Jack Abbott. **The Harper Establishment.** Oak Knoll Pr., 2001. 182 pp., illus. \$29.95. Reprint of 1855 ed. By examining book manufacturing at Harpers, explains the entire mid-19th-c. book printing process from the arrival of paper at the loading dock to finished bound book. Floor plans, numerous wood engravings of machinery and workers, and detailed descriptions.
- J. P. Bertrand. **Timber Wolves.** Thunder Bay Historical Museum Soc. (Thunder Bay Museum, 425 Donald St. E., Thunder Bay, Ontario, P7E 5V1; (807) 623-0801; fax 622-6880), 1997. 162 pp., illus., maps. \$14.95. Story of the pioneer loggers, pulpwood operators, timber speculators, and mill promoters, many of whom the author knew. Includes details of their political devices and intrigues to obtain exportable pulpwood without having to pay Crown dues, to trespass on Crown Reserves, and to gain favor with political leaders.
- Tom Conroy. **Bookbinder's Finishing Tools Makers, 1780-1965.** Oak Knoll Pr. (310 Delaware St., New Castle, DE 19720; www.oakknoll.com) 2002. 250 pp., illus. \$55. Directory of hundreds of tool-cutters and their firms covering 1780 to 1965. Biographies of each craftsman and many illustrations of original trade marks and advertisements. Opening essays, *What Finishing Tools Are and How They Were Used* and

How Finishing Tools are Made. Co-published with the British Library.

- Eero Niinikoski. **Verla Mill Museum Celebrates 30th Anniversary.** *TICCIH Bulletin* 18 (2002), p. 1. Paper mill, located about 150 km northeast of Helsinki, Finland, operated from 1882 to 1964, became a museum in 1972, and features mill technology tours and childrens' programs.
- Roy Piovesana, Beth Boegh, and Thorold J. Tronrud. **Paper & People.** Thunder Bay Historical Museum Soc. (425 Donald St. E., Thunder Bay, Ontario, P7E 5V1; (807) 623-0801; fax 622-6880; <http://www.tbaytel.net/tbhms/>). \$59.95; \$29.95 pap. Great Lakes Paper Co. grew from a local Thunder Bay operation to an international forest products corporation. Based on photos taken over a 50-year period, every operation of the mill is documented.

AGRICULTURE & FOOD PROCESSING

- Steve Leikin. **The Cooperative Coopers of Minneapolis.** *Minnesota History* 57, 8 (Winter 2001/2002), pp. 386-405. Trade unionism and cooperative shops among the barrel makers that supported the great Minneapolis flour-milling industry.
- René Boretto Ovalle. **Fray Bentos: A Town with the Flavour of a Meat Pie.** *TICCIH Bulletin* 18 (2002), p. 3. Fray Bentos, Uruguay, home of the Leipig Co., achieved wide fame in Europe for its meat-product exports, including the beef cubes with the OXO trademark. Leipig's late-19th-c. industrial complex includes machinery, tools, documents, photos, and even a complete chemical laboratory. A local group is developing a "museum of the industrial revolution." Web site: www.anglo.8m.com.

IRON & STEEL

- John U. Bacon. **If There's a Hole, They Cover It.** *Michigan History*, 86,5 (Sept./Oct. 2002), pp. 8-13. Illustrated article on the history and current manufacturing process of the ubiquitous manhole covers produced by the East Jordon Iron Works, East Jordon, MI.
- James Stacey and Jimmy Santiago Baca, eds. **The Heat: Steelworkers Lives and Legends.** Cedar Hill Pub., 2001. 157 pp. Series of stories written by steelworkers, the outcome of writing workshops offered by the United Steelworkers of America to prepare workers for careers in or out of the industry. *NY Times Book Review* (Oct. 29, 2002) described the stories as 'unadorned and moving.

ABBREVIATIONS:

<i>I&T</i>	= <i>American Heritage of Invention & Technology</i>
<i>SCA News</i>	= <i>Society for Commercial Archeology News</i>
<i>TICCIH Bulletin</i>	= <i>The International Committee for the Conservation of the Industrial Heritage Bulletin.</i>

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.

IA in Art

Anna Held Audette

For the better part of her career, New Haven, CT, painter Anna Held Audette has been fascinated by abandoned machinery and factory ruins, drawing her inspiration from America's industrial past. Mothballed ships, retired planes, rusting machines, decaying buildings, and pieces of scrap metal have provided subject matter for a series of impressive canvases, and the artist describes herself as a "painter of ruins of our time."

"My paintings comment on the melancholy beauty found in relics of our industrial past. Both the literal and evocative meanings of these subjects strike a responsive chord in me and provide variations on a theme that has been central to my paintings for a long time. The relics remind us that, in our rapidly changing world, the triumphs of technology are just a moment away from obsolescence. Yet these remains of collapsed power have a strength, grace, and sadness that is both eloquent and impenetrable. Transfigured by time and light, which render the ordinary extraordinary, they form a visual requiem for the industrial age."

Audette's influences have been wide-ranging, and include architectural prints by Giambattista Piranesi and Hubert Robert's evocative paintings of ruins (both from the 18th c.), and, in the 20th-c., the geometric abstractions of Piet Mondrian, the mysterious mechanisms of Walter Murch, and the Abstract Expressionist canvases of Franz Kline. Works by American Precisionists Charles Sheeler and Charles Demuth also provide significant precedents. Their ability to balance abstrac-



Anna Held Audette, Bigelow Factory, 1999, 40" × 60", oil on canvas, Collection of the New Haven Colony Historical Society

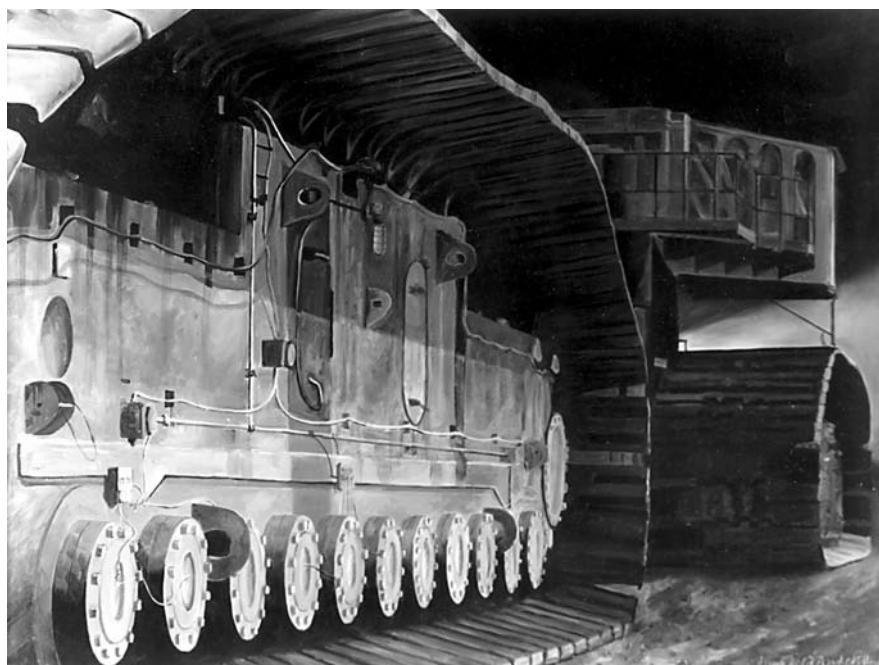
tion and realism in powerful depictions of industry is a fundamental characteristic of Audette's work. She regards herself as a Neo-Precisionist, noting "what was new for them is now rust for me."

Her canvases are carefully organized, strongly composed, and realistically rendered, while retaining a strong sense of abstract structure. In some she takes a close-up, sharply cropped vantage to create an ambiguous image, while others are full views. She renders both mundane and sublime objects with serious attention.

Audette has broad thematic interests. One series was based on the retired Sikorsky helicopters she saw at Davis-Monthan Air Force Base in Tucson, AZ, while a visit to the Naval Reserve Fleet in Suisun Bay near San Francisco enabled her to explore the aesthetic possibilities of ships in storage. She has also depicted farm machinery, quarries, cement mixers, and scrap metal.

While her paintings relate to specific sites, Audette does not intend that they be verbatim records of what she has seen. Factual information is important to her, but she may rearrange some details or colors while capturing the essence of the place. But if they are not sufficient as IA documents, her work speaks eloquently to an ongoing cultural engagement with our industrial heritage.

Buildings have especially intrigued her, and her subjects have included Philadelphia's Eastern State Penitentiary, the Winchester Arms ammunition and gun factory in New Haven, and viaducts spanning highways and railroad tracks. Audette's *Bigelow Factory* depicts a company



Anna Held Audette, Crawler, 1991, oil on canvas, 32" × 44", Collection of the National Aeronautics and Space Administration, Washington, D.C.

(continued on page 15)

HISTORIC BRIDGE NEWS

Back to the Future: New Footbridge Has Historic Form, Modern Materials. During the spring of 2002, undergraduate civil engineering students at Case Western Reserve Univ. in Cleveland, designed, fabricated, and erected an unusual pedestrian bridge at Squire Valleevue Farm, a university research and recreational facility in suburban Hunting Valley. Spanning a small woodland stream, the 14-m.-long Howe truss uses 3-in. diam. steel tubes for the diagonals and 5/8-in. post-tensioning bars made by Dyckerhoff & Widmann AG for the vertical elements and the chords. The truss was pre-stressed by tensioning the vertical elements. The pre-stressing precludes compressive forces in the top chords and tensile forces in the diagonals under a full-gravity live-load condition, making it possible to use the post-tensioning bars for the top chord and simple bearing connections, without bolting or welding, for the diagonals.

The design was chosen for its historic association with Cleveland Amasa Stone, who together with his brother-in-law, inventor William Howe, built the first Howe trusses in 1840-41. In 1842, with financial backing from Azariah Boody, Stone purchased the Howe patent rights for New England. Stone then established Boody, Stone & Co. in Springfield, MA, to design, fabricate, and erect Howe trusses; Boody, Stone was among the first bridge companies in the U.S. Stone later formed a partnership with Stillman Witt and New York bridge builder Frederick Harbach to build the Cleveland, Columbus & Cincinnati RR. With his wealth from building bridges and railroads, Amasa Stone endowed Western Reserve Univ., which federated with Case Institute of Technology in 1967 to form Case Western Reserve Univ. Dario Gasparini [SIA], professor of civil engineering, and department engineer Neil Harnar supervised the project.—

Dario Gasparini



Civil engineering students and faculty recently built this footbridge at Case Western Reserve University's Valleevue Farm. The design was inspired by the mid-19th-c. bridges of William Howe and Amasa Stone.

Henszey's Bridge. Interest in historic bridges has also caught on among faculty and students at Central Pennsylvania College (Summerdale), the new home of a wrought-iron bowstring arch bridge built in 1869 and based on the patent of Joseph G. Henszey of Philadelphia. The bridge was moved from its original location in Wanamakers, restored, and relocated to a pedestrian path on campus during 2002. The bridge quickly has become a focal point

for campus activities and now appears on the college's logo with the motto, "Central Pennsylvania College, Since 1881, Your Bridge to Success." President Todd Milano, who made the decision to purchase and preserve the bridge, sends SIA members "an open invitation to visit anytime." Info: www.centralpenn.edu.

The Digital Bridges Web site (<http://bridges.lib.lehigh.edu>) is an on-line collection of 19th-c. American bridge engineering manuals, reports, and textbooks drawn from the Special Collections of Lehigh Univ. Many of the items are relatively rare and in some cases quite fragile. The source documents have been scanned, converted to text, and partially-edited to make all significant terms and proper names retrievable with a search engine. Among the highlights are Herman Haupt's encyclopedic *General Theory of Bridge Construction* (1888); Alfred C. Barnes's illustrated treatise on *The New York and Brooklyn Bridge* (1883); and a set of construction photographs of the Pecos Viaduct of the Southern Pacific Ry. in Texas. The Web site also includes a glossary of 19th-c. terminology from J. A. L. Waddell's *The Design of Ordinary Iron Highway Bridges* (1884). Info: Philip Metzger, Curator of Special Collections; (610) 758-4506; inspc@lehigh.edu.

Calhoun Historic Bridge Park (see SIAN Summer-Fall 2001 & 2002) received Historic Civil Engineering Landmark status from the Michigan Section of the American Society of Civil Engineers in Oct. The park serves as a site to relocate historic truss bridges and practice preservation techniques, such as riveting and heat-straightening.



Restoration of the 1858 Aldrich Change Bridge in Palmyra, NY, reached a milestone in Oct. when the falsework was removed. Dedicated volunteers have been working on the historic bridge ever since it was rescued in parts from a stream where it had collapsed in Jan. 1997. The bridge, based on a design by Squire Whipple, originally was located over the old Erie Canal just north of the weighlock building in Rochester (see SIAN, Summer 1998).

Allan King Sloan [SIA], a descendant of Zenas King, founder of the **King Iron Bridge Co.** of Cleveland, has been working diligently through the Sloan family's charitable gift fund to identify and preserve King bridges throughout the U.S. To date, grants have been given to the Landmarks Society of Western New York to help save the Hojack Swing Bridge in Rochester, built in 1905

(continued on page 15)

NEWS OF MEMBERS

Brent Glass has been appointed director of the National Museum of American History (NMAH) in Washington, D.C. Brent, a historian of industry and technology and longtime SIA member, had been executive director of the Pennsylvania Historical and Museum Commission for the past 15 years. In a *Washington Post* interview (Oct. 18, 2002), Brent spoke of his fascination as a young child with the machine tools and railroad and mining equipment in the Smithsonian collections, which inspired his college studies of North Carolina's Gold Hill Mining District.

Robert J. Klancko of Woodbridge, CT, has been elected to membership in the Connecticut Academy of Arts and Sciences. Robert is a material engineer and managing partner in the consulting firm Klancko & Klancko and an expert in the manufacturing history of Connecticut. ■

HISTORIC BRIDGES (continued from page 14)

(SIA Board resolution of support, 2002); Historic Ithaca for assistance in preserving the King bowstring arch bridge in Newfield, NY; Grand River Partners to fund a program to provide new bridge plates and historic markers for a number of King bridges in Ashtabula and Lake counties in northeastern Ohio; Friends of Historic Northport (AL) for help in relocating and restoring a King bowstring of impressive length; the Jones County (IA) Historic Preservation Commission to assist in relocation of the 3-span Hale Bridge, built in 1877-79, to a park in the county; and the Grasse River Area Development Corp. of Canton, NY, to restore a King bowstring arch bridge built ca. 1878. Info: www.kingbridgeco.com.



Varrick Chittenden

King bowstring arch bridge in Canton, NY, about 18 miles from the Canadian border. The ca. 1878 bridge was identified by Alan King Sloan [SIA] as a King bowstring arch bridge based on its construction details, and with his encouragement the Grasse River Area Development Corporation has undertaken its restoration. It is believed to be one of only five remaining King bowstring bridges of several hundred that once existed in the state. The Canton group has also received a grant from the state to develop a cultural heritage park, walking trails, and canoe launches on the eight-acre island adjacent to the bridge. The island was once the site of several small waterpowered industries, including grist and saw mills. Info: Varrick Chittenden, Box 735, Canton, NY 13617, vcritten@twcnny.rr.com. ■

IA in Art (continued from page 13)

established on the New Haven waterfront just before the beginning of the Civil War. During that conflict it produced machinery, munitions, and arms, as well as parts of the *Monitor*. Its specialty became boilers for stationary and marine purposes, and its market was international. Bigelow manufactured mining equipment used in the American West and in South Africa, portable power plants for the oil fields of Pennsylvania, and machinery installed in West Indies sugar mills. During World War II, the company was involved in the production of submarines and ocean-going dry docks. Bigelow went out of business in 1975, but its buildings remain. Emptied of equipment, its windows and openings create a lively abstract pattern. Her most recent paintings depict structures at Bethlehem Steel and Sloss Furnaces.

More modern in subject matter is *Crawler*, a painting commissioned by NASA. Audette focused on the undersurface of the massive machine, and the one-ton treads of the giant transporter dominate her canvas. Their purpose was to move Apollo and Saturn orbiters to the launch pad. NASA has a substantial art collection relating to space exploration, including pieces picturing aspects of the Mercury, Gemini, and Apollo missions, as well as the Space Shuttle. Audette is one of the few women whose work is part of this collection. There is also a set of images in a category the agency describes as "Advanced Space Exploration Art," which, while not part of the official NASA Art Program, were commissioned for use in their calendars, posters, and publications. To see more of the artist's work, visit her Web site: www.annaheldaudette.com/index.html, and the NASA Space Art Home Page: www.jsc.nasa.gov/er/seh/spaceart.html.

Betsy Fahlman

Readers are encouraged to suggest essays ideas for the IA in Art column, or submit their own, to Betsy Fahlman, Professor of Art History, School of Art, Box 871505, Arizona St. Univ., Tempe, AZ 85287; fahlman@asu.edu. ■

HABS/HAER Summer Employment

The Historic American Buildings Survey/Historic American Engineering Record/Historic American Landscapes Survey (HABS/HAER/HALS), a division of the National Park Service, seeks applications from architects, historians, engineers, landscape architects, industrial designers, and industrial archeologists for summer employment documenting historic sites and structures of throughout the country. Duties involve on-site fieldwork and preparation of historical reports and measured and interpretive drawings. Projects last approximately 12 weeks beginning in May/June. Salaries range from \$5,400 to approximately \$9,200 for the summer, depending on job responsibility, project locality, and level of experience. Applications due: Feb. 18, 2003. Applications and info: www.cr.nps.gov/habshaer/joco/summer-jobs.htm. Additional info: Summer Jobs Administrator, HABS/HAER/HALS Division, National Park Service, 1849 C. Street NW, 2270, Washington, D.C. 20240; (202) 354-2136/35; robyn_brooks@nps.gov. ■

Webb Cotton Press

In Summer 2000, demolition began at the Port of New Orleans' Napoleon Ave. Wharf to make way for a state-of-the-art shipping-container cargo complex. Among the reinforced-concrete warehouses being razed stood two early 20th-century, steam-powered cotton presses, unused and mostly forgotten since the 1960s. Unfortunately, one of the presses was unwittingly destroyed before local preservationists learned of the machinery and recognized its historic significance.

After meeting with the wrecking company, both parties agreed to work together to save the remaining press. The demolition company focused its attention on other areas of the site, giving the preservationists time to raise the money to purchase the press—an amount equal to the metal's scrap value. With the help of the Louisiana Landmarks Society enough capital was raised through tax-deductible donations to purchase the press and move it to a local storage area (see *SIAN*, Winter 2001).

The Port purchased the two 80-in., 2,000-ton, compound-lever, high-density presses in 1916 from the Webb Press Co.; each cost \$40,000. One replaced an earlier 90-in. press manufactured by the Steers & Morse Compress Co. of New Orleans in the 1880s. To power the presses, the Port installed new boilers, manufactured by the John H. Murphy Iron Works of New Orleans. The boiler face-plates also were saved.

Cotton presses were used throughout the South as the final step before shipping out the cotton. After picking and ginning, cotton was typically pressed into 500-lb. bales and sent to port cities, where the bales were re-pressed (or compressed) for shipment to textile manufacturers throughout the world. Compressing the cotton enabled railroads and steamships to carry a greater number of bales in a given space, thereby reducing freight costs.

The rescued Webb press is a substantial piece of machinery standing three stories tall. It is capable of exerting 4-million lbs. of uniform pressure, but it was by no means the largest ever built; Webb Press designed an 8-million lb. monster for the Port of Chalmette, a few miles down river from New Orleans. In the press, the upper platen is stationary while the lower is movable. Four 11-½ in. diam. lifting rods, approximately 15-ft. long are connected to the movable platen. The steam cylinder located atop the press is 90-in. diam. and 10-ft. 8-in. long. In operation, a bale averaging 4-½-ft. high, 2-½-ft. wide, and 5-ft. long, was loaded on the lower platen. Next, steam was admitted to the underside of the piston forcing it upward,



Greg Lambousy

Webb Cotton Press, Natchitoches.

lifting the lower against the stationary platen, reducing the bale to a thickness of about 6 or 8 ins. After compression, the bale was tied with thin metal bands secured by means of a buckle. Once the steam was exhausted from the cylinder, the movable parts of the press were forced by gravity to their initial position.

Sam J. Webb arrived at the basic design of the press in the 1880s, and advertised it as "the most powerful, simplest, safest, fastest and most durable compress made, the only steam press that gives uniform power, will make money where others fail." Webb spent much of his time in the East supervising the manufacture of the presses, which began initially in York, PA. Later, Webb contracted with the Scott Foundry in Reading, where most of the presses eventually were manufactured, although others were built in Cleveland and Pittsburgh. Chartered in 1902, the Webb Press Co. of Minden, LA, sold presses to cotton growers in all sections of the U.S. and abroad. The Great Depression took a serious financial toll on the company, and it was defunct by the early 1950s.

The press rescued from the port is disassembled and, unfortunately, exposed to the elements. Large portions of it are rusting and in need of cleaning and stabilization. Two wooden platforms, along with controlling rods, damaged during demolition of the surrounding concrete structure, need to be restored to allow for eventual reassembly of the press.

It is hoped that a home for the press can be found in New Orleans close to where it operated, either in a park or a museum. Interpretation of the object's significance might concentrate on cotton agriculture, the factorage system, shipping, the reasons for increased mechanization, and waterfront unionism—perhaps functioning as the focal point of an exhibit on the Mississippi River and the Port of New Orleans.

There is a second surviving Webb Press in Natchitoches, LA. It is located in a dry warehouse space and is in excellent condition. The city owns the warehouse and would like to develop the site for public viewing. City officials have contacted various agencies concerning potential funding sources. Info: Jim Stoyanoff, Historic Cotton Press, 635 Gravier St., Ste. 803, New Orleans, LA 70130; and Courtney Hornsby, Public Relations Coordinator, City of Natchitoches, Box 37, Natchitoches, LA 71457.

Greg Lambousy



Port of New Orleans Archives

Webb Cotton Press, Port of New Orleans, undated photo.



Brewed in the Bergslagen, the historic center of Swedish iron making, Vallon starköl (Walloon strong beer) pays tribute to the ironworkers who came here from Wallonia, Belgium, in the early 17th century.

through the principal rooms, which are filled with the things that Wrangel (who spent a scant two weeks in residence) fancied: stunning furniture, fine and decorative arts, textiles, tools, and scientific instruments. Of special interest were the armory, filled with 2,000 antique and "modern" weapons, and the turnery with its vast array of woodworking tools, including the only surviving 17th-century lathe in Europe.

Following lunch at the castle, it was on to Stockholm, an exceedingly attractive city built on a cluster of islands in Lake Mälaren. Thomas Lundén of the Swedish Institute escorted us first to a handsome gasworks complex built in 1890-93 to the design of Stockholm architect Ferdinand Boberg (1860-1946), then on a general city tour with brief stops at various sites of industrial interest. Our last three nights were spent at Krusenbergs Herrgård, a lovely country estate near Uppsala with a superb kitchen.

SUN., SEPT. 15. The bus deposited us in Stockholm for a day on our own. Armed with a "culture card" providing free admission to the city's many museums and unlimited public transport, many headed first to see the warship *Vasa*. Launched in 1628, the pride of the Swedish fleet sunk just yards into her maiden voyage and was resurrected three centuries later, in 1961. The *Vasa Museum* tells the story of the ship's construction and the cultural context of its time. Other popular choices included Skansen, an open-air museum opened in 1891; the Nordic Museum; Stockholm City Hall, site of the annual Nobel Prize awards dinner; and Gamla Stan (Old Town).

MON., SEPT. 16. We weren't done with industry yet! In the morning we traveled to the *Hallsta Paper Mill* in Hallstavik.



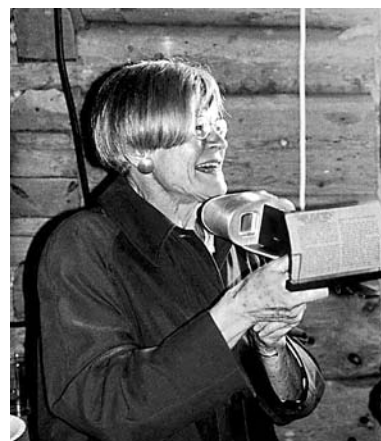
The banquet hall at Skokloster Castle, the largest country house ever built in Sweden, was never completed.

Greg Galer

Established in 1915, Hallsta, part of Holmen Paper AB, is a large producer of newsprint, with a capacity of 800,000 tons annually. Its product is exported by ship, principally to Europe. We viewed the process in sequence, from the arrival of timber at the debarking drum to the Lamb "hiperwrap," which automatically—ingeniously—wraps each roll of newsprint and encloses the ends with a protective round of cardboard and a paper seal. The mill's brand-new Valmet papermaking machine, built in Finland, produces newsprint 8.6 m wide at a rate of 1635 m per minute, or over a mile a minute! King Carl XVI Gustaf would presently arrive to "start" the high-speed machine.

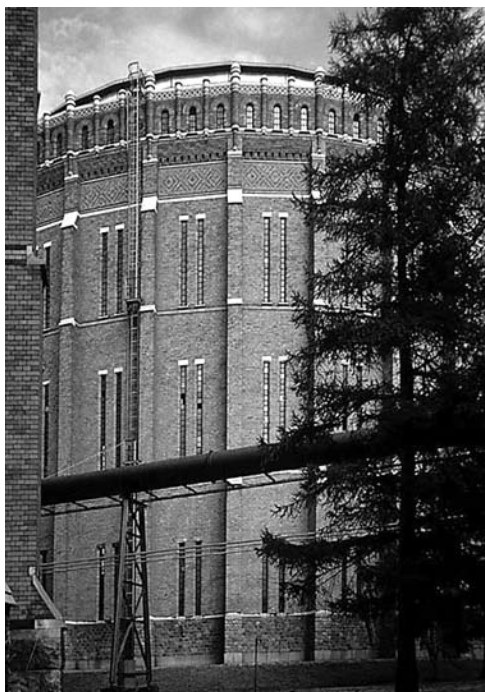
With our visit drawing to a close, there could have been no better finale than a special lunch served at the 19th-century country home of Kersti and Christoph Morger in Rimbo, outside of Stockholm. The Morgers, who describe themselves as "weekend farmers," keep sheep, grow vegetables, and chop wood to fuel their state-of-the-art steam furnace. We enjoyed an elegant buffet lunch in the barn, following which Robert Vogel, on behalf of the group, thanked Kersti for her fine service as our tour leader and presented a special gift: an antique stereoscope together with assorted stereo views of Sweden. We were then invited to tour the Morger home, which is as warm and personable as Kersti herself. Following a few hours' free time back in Uppsala and a last communal dinner, we

prepared to depart the next day. For some, it was on to other Scandinavian adventures. For all, it was time to savor an excellent study tour of a country rich in historic industry. ■



Tour leader Kersti Morger is delighted to receive a special thank-you gift: an antique stereoscope and a collection of stereo views of Sweden.

David Lederman



This gasholder house is part of an architecturally resplendent gasworks complex built in 1890-93 to the design of Stockholm architect Ferdinand Boberg.

David Lederman

NOTES & QUERIES

Kanawha Valley Chemical Heritage Symposium, Charleston, WV. This two-day event, May 2-3, 2003, will feature Friday chemical plant tours, a Kanawha River boat tour, and an evening public lecture on the history of the Kanawha Valley chemical industry. Saturday is dedicated to paper presentations, with speakers presenting a broad range of papers, ranging from the salt industry to modern chemicals. The symposium will be held on the campus of WV State College in Institute. The proceedings are to be published. Info: Lee Maddex (304) 293-3829; lmaddex@wvu.edu or Michael Workman, (304) 293-4633; mworkma2@wvu.edu.

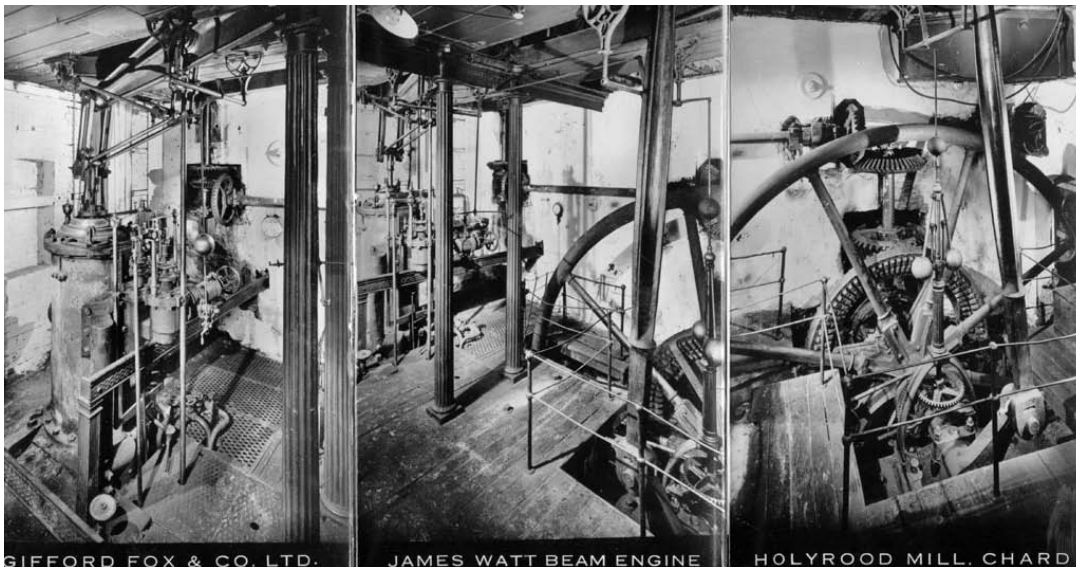
Rail Corridor Redevelopment Workshop. Bay Stevens [SIA], who promotes historic industrial landmarks as travel destinations (www.pieceoftheblock.com), will host a two-day workshop in Albuquerque, NM, Mar. 7-8, 2003. RE Use It! will highlight the redevelopment potential of structures along the historic Santa Fe RR corridor. The workshop will include presentations by experts in preservation and rail corridor development, special exhibits, and case studies. In addition to the workshop, there will be field trips to the 300,000-sq.-ft. Santa Fe Backshops, built in 1919 for steam locomotive repair; and the Sawmill District, site of an award-winning conversion of freight warehousing space to contemporary furniture showrooms and a distribution center. Info: Bay Stevens, Cultural Asset Development, Box 2066, Tijeras, NM 87059; (505) 281-5179; bay.stevens@att.net.

Great Oregon Steam-Up. Looking for something different to do Summer 2003? How about the Great Oregon Steam-Up? The 33rd annual event (July 26-27, Aug., 2-3) will be held at the Antique Powerland Museum in Brooks, OR. Seems they'll have

a little bit of everything—operating steam, gas, and diesel tractors and engines; tractor pulls; a working sawmill; threshing, baling, and plowing; well-drilling rigs; trolley and miniature railroad rides; wheelwright, blacksmithing and flour milling demonstrations; flea market, etc. If you can't make it to the steam-up, the 62-acre museum is open year-round with displays of vintage tractors and trucks. Info: 3995 Brookdale Rd., N.E., Brooks, OR 97303; (503) 393-2424; www.antiquepowerland.com.

IA at Sagamore. In the basement Sagamore, Alfred Vanderbilt's great Adirondack (NY) lodge, has been re-discovered one of the few "isolated" **gas lighting systems** left in place. The Gilbert & Barker plant mixed gasoline and air in a 15 to 85 ratio to produce illuminating gas for estates and buildings away from the mains of the large urban gas works. The Sagamore apparatus was installed in the 1890s. About 40,000 of these systems were installed all over the East Coast from the late-19th c. to the early-20th, but only a handful are known to survive. Info: www.sagamore.com.

A new canal museum is slated to open in Delphi, IN, in July 2003. The **Canal Interpretive Center** will be adjacent to a watered section of the 162-yr.-old Wabash & Erie Canal and will interpret Indiana's canal history. The \$2 million building has been constructed primarily with funds from the Indiana Dept. of Transportation. The exhibits, which will feature a re-creation of a full-size canal-boat cabin, have been funded by the Indiana Dept. of Natural Resources and by donors. The center recently commissioned a full-scale replica lock gate handcrafted by Old Order German Baptist carpenters. Info: Dan McCain, mccain@carl.net.



The trail of this steam engine may be long cold, but sleuths in Great Britain are hoping someone in America will recognize it. This particular beam engine, believed to date from before 1840, originally was used at a woolen mill at Frome in Somerset, then transferred to the lace mill of Giffard-Fox & Co. of Chard where it worked until the 1930s or so. British steam historian George Watkins photographed it in situ at the lace mill sometime before it is believed to have been dismantled and shipped to the U.S., but no record can be found of who bought it or exactly where it might have gone. It reportedly has a 24-in. bore by 4-ft 6-in. stroke. The flywheel, 13-ft. 6-in. dia., was made in 8 sections each comprising an arm and a rim sector. Fluted columns and governor stand were all early features. If you have any clues, please contact: Geoffrey Finton, Secretary, Somerset (UK) Industrial Archaeology Society, geoff@fittong.freemove.co.uk. The Somerset IA group is attempting to inventory early steam engines that left the U.K.

Call for Papers. *Ambiguities of Work: Controlling Knowledge, Controlling Outcomes* is the theme of a conference jointly sponsored by Labor History and the Hagley Museum and Library in Wilmington, DE, Nov. 7-8, 2003. Papers are welcome that use historical, organizational, or ethno-graphic analysis to explore the intersections, struggles, and interrelationships over knowledge of work and control of the workplace. A one page proposal and short cv must be received by Mar. 3, 2003. Info: Hagley Center for the History of Business, Technology and Society, Box 3630, Wilmington, DE 19807; (302) 658-2400, ext. 243; crl@udel.edu. ■

CHAPTER NEWS

Northern Ohio held its annual business meeting in Dec., following which David Simmons [SIA] spoke on the topic "Stone Quarries of Washington County, OH."

Oliver Evans (Philadelphia) members took a ride on the New Hope & Ivyland RR in Oct., then forgot the chill of winter and skipped into spring with the smell of chocolate when they toured the operations of S. Zitner Co. in Nov. Candy-maker Zitner is famous for its individually wrapped Easter eggs. In Dec., the chapter held its annual film fest featuring a selection of industrial films from the archives of the National Canal Museum supplied by host Lance Metz [SIA].

Roebling (Greater NY-NJ) members used canoes to cross the Hudson River and explore Bannerman's Island and Castle in Sept. Francis Bannerman, a dealer in surplus arms and munitions, built a warehouse and arsenal in the form of a castle between 1905 and 1908. A fire destroyed it in 1969. The chapter held its annual corn roast at the house of Gerry Weinstein and Mary Habstritt [SIA] in Croton, NY, in Sept. Chapter members toured Consolidated Edison's Waterside Steam Generating Plant in Oct. The plant is being retired. The 22nd Annual Symposium on IA in the NY/NJ Area was held at Drew Univ. in Nov. A full slate of presentations included canals, railroads, quarrying, and photo highlights of the SIA Annual Conference 2002 in Brooklyn.



Roebling Chapter members set out to explore Bannerman's Castle in Sept. Arms dealer Francis Bannerman built the arsenal on an island in the Hudson River in 1905-08.

Samuel Knight (Northern California) held its annual membership meeting in Oct. at the Knight Foundry. Chapter members toured Richmond in Sept., with stops at the Victory Ship, S.S. Red Oak Victory, the Rosie the Riveter memorial, and the Corps of Engineers Bay Model in Sausalito. ■

IA ON THE WEB

Concrete (www.-concrete-wa.com), a small town in Washington's northern Cascades, is the former home of the Washington Portland Cement Co. and the Superior Portland Cement Co. The town's Web site has info on the Concrete Heritage Museum, Great Northern Rwy., cement- industry sites, and reinforced-concrete arch bridges, dams, and buildings. The town is using industrial heritage to promote tourism.

Implosion World (www.implosionworld.com) is a Web site with photos of demolitions, listed by class (bridges, water towers, chimneys, etc.). Click on "Photo Gallery" or "Blasts from the Past."

Jersey City Industrial Sites (www.jclandmarks.org) are among the many historic places featured on the Jersey City Landmarks Conservancy Web site. Learn about preservation campaigns to save the H&M Powerhouse (see *SIAN*, Fall 2000), Bergen Arches, Morris Canal, Reservoir #3, cobblestone streets, and air shafts of the Hudson River tunnels.

Lincoln Highway (www.nps.gov/mwro/lincolnhighway). The National Park Service's study to identify historic resources and encourage preservation of features of America's first transcontinental automobile tourist highway.

Massachusetts Stone-Arch Bridges (www.state.ma.us/lib/sc/exhibit.htm) is the on-line version of an exhibit at the statehouse in Boston. The exhibit is based on data gathered for Mass. Highways by historian Lola Bennett [SIA] during a survey of more than 200 stone-arch highway bridges.

Microwave Towers (www.dsrotenstein.com/microwave). First-generation microwave towers built by Western Union in Washington, D.C. and Maryland in the late 1940s. David Rotenstein [SIA] has researched their history.

Parisian Industries (www.zone-tour.com/index.htm), including the Seguin Renault factory, the SUDAC compressed-air factory, and the quarries beneath Paris, are among the photo galleries of this "urban exploration" site.

Replogle Steel Co. (<http://uk.geocities.com/cokebreeze/replogle/index.htm>). Short history of Wharton, NJ, steel company includes maps and blast furnace drawing and animation.

Tacoma Narrows Bridge (www.lib.washington.edu/specialcoll/tmb/). On-line exhibit about the famous suspension bridge that collapsed in spectacular fashion in 1940. Includes photos of the bridge's construction and its collapse, plus data collected by Univ. of Washington engineers to analyze the reasons for its failure.

Wright Flyer (www.wrightexperience.com). Web site describes a replica of the original Wright Flyer being built in VA, to be flown at Kitty Hawk in Dec. 2003 on the 100th anniversary.

Readers are cordially reminded to visit the SIA's own Web site at 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. ■

CALENDAR

2003

Mar. 7-8: RE Use It! Albuquerque, NM. Workshop on the redevelopment potential of structures along historic rail corridors (see article elsewhere in this issue). Info: Bay Stevens, Box 2066, Tijeras, NM 87059; (505) 281-5179; bay.stevens@att.net; www.pieceoftheblock.com.

Mar. 8: 21st Annual Ohio Valley and Urban Historic Archaeology Conference, Chillicothe, OH. Info: Al Tonetti, Local Arrangements Chair, ASC Group, Inc., 4620 Indianola Ave., Columbus, OH 43214; (614) 268-2514; atonetti@ascgroup.net; <http://campus.murraystate.edu/org/wmrc/ovha.htm>.

Mar. 15: Canal History and Technology Symposium, Lafayette College, Easton, PA. Sponsored by the National Canal Museum. Info: (610) 559-6616; membership@canal.org.

Mar. 26-30: American Society for Environmental History Annual Meeting, Providence, RI. Info: www2.h-net.msu.edu/~aseh/ or Ravi Rajan, ASEH Program Chair, Dept. of Environ. Studies, Univ. of CA, Santa Cruz, CA 95064; srajan@cats.ucsc.edu.

Mar. 28-29: Reinventing the Factory Conference, Wilmington, DE. Sponsored by the Hagley Museum & Library, Hagley Fellows Program. Exploring the history of factories from a variety of perspectives—technology, architecture, public health, environment, and labor. Info: HML, Box 3630, Wilmington, DE 19807; (302) 658-2400.

Apr. 23-27: Society of Architectural Historians Annual Meeting, Denver, CO. Info: www.sah.org.

May 2-3: Kanawha Valley Chemical Heritage Symposium, Charleston, WV. Sponsored by the WV Univ. Inst. for the History of Technology and IA. (see article elsewhere in this issue). Info: Lee Maddex, IHTIA, 1535 Mileground, Morgantown, WV 26505; (304) 293-3829; lmaddex@wvu.edu.

May 29-Jun. 1: SIA 32nd Annual Conference, Montreal, Quebec. See article in this issue. General info: James Bouchard, (514) 251-5148; fax 251-5126; jamesb@aei.ca. Paper session info: Louise Trottier, Canada Science and Technology Museum, 2380 Lancaster Rd., Box. 9724, Station T, Ottawa, ON, Canada K1G 5A3; (613) 991-6705; fax 990-3636; ltrottier@nmstc.ca.

June 5-8: Vernacular Architecture Forum Annual Conference, St.-Pierre et Miquelon. St.-Pierre and Miquelon are French territorial islands off the coast of Newfoundland. Tours and papers related to maritime and provincial architecture. Info: www.vernaculararchitecture.org.

July 1-6: National Railway Historical Society and the Railway & Locomotive Historical Society, Joint Annual Conference, Baltimore, MD. "Star Spangled Rails." Celebrates 175 years of American railroading on the anniversary of the charter of the B&O RR. Excursion trains and recreation of the 1927 "Fair of the Iron Horse" at the B&O museum. Info: www.starspangledrails.org.

July 10-14: TICCIH 12th International Congress, Moscow, Russia. Theme: Preservation of industrial heritage and rehabilitation of old industrial centers. Post-conference tours to mining and metallurgical sites in the Urals. Info: Eugene Logunov, Inst. of Material Culture, Box 65, Ekaterinburg, B-109, Russia; logunov@online.ural.ru; www.ticcih2003.ur.ru.

Sept. 25-28: SIA Fall Tour, Northeast Montana. Tentatively scheduled are the Fort Peck Dam, Snowden Bridge, oil fields, oil-seed processing plant, sugar-beet refinery, and Fort Union. Registration materials will be sent to members in summer. Watch the SIA Web site (sia-web.org) for updates. Info: Fred Quivik, quivik@usfamily.net.

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 St. Univ., Detroit, MI 48202; (313) 577-6987; ad5247@wayne.edu. ■

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

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