



SOCIETY FOR INDUSTRIAL ARCHEOLOGY

NEWSLETTER

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ALBANY IA

More than 210 SIA members and guests gathered in Albany May 28-31 for the 44th Annual Conference. This year's conference had a somewhat nostalgic flavor since this region of upstate New York can lay strong claim to being the "Cradle of Industrial Archeology" in North America. The Mohawk-Hudson Survey of 1969 was a pilot study for the Historic American Engineering Record (HAER), establishing standards for documentation of industrial and engineering sites that remain in use today. The SIA had not previously used Albany as a conference headquarters, having stayed in Troy (eight miles upriver from Albany) for both the 2nd Annual Conference in 1973 and the 16th Annual Conference in 1987. The Albany Hilton offered a more urbane environment than the slightly worn hostleries that some members may recall from the past two visits to Troy.

A major theme of the conference was transportation, exploring the region's strong heritage in canals and railroads. We visited some classic historic sites, like the Troy Gasholder House (the inspiration for SIA's logo), but also took in many process tours illustrating both traditional and new manufacturing technologies. The conference followed SIA's customary

format with Thursday pre-tours, Friday process and historic site tours, Saturday paper sessions and annual business meeting, and Sunday post-tour. Saturday's paper sessions were divided into three topical tracks: New York State IA, On the Land and From the Earth, and the 24th Historic Bridge Symposium. The New York State IA track featured several presentations on archival and cultural resources programs supporting industrial heritage research and preservation in the Empire State.

Many thanks go to the volunteers who sent in the following tour reports:

Thursday Tour 1 (Sharon Springs) took 42 participants to a precision investment casting company, a window-sash restoration and manufacturing shop, and a fabric reproduction mill. In each case SIA members outnumbered the workforce but had the equivalent of personal guided tours by owners and skilled workers. Ian Hay ably led the tour and provided relevant commentary on the journey from site to site.

At **AMT castings** (www.amtcastings.com), owners Beth and Lanning Brandell and General Manager Scott Stevens gave a brief introduction to the company, its products, and the lost-wax casting process, and then led four breakout groups on tours. Established on Long Island in 1966, the

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James Bouchard

At the Mechanicville Hydroelectric Plant.

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Brandells purchased the firm in 1988 and relocated it to Sharon Springs two years later at the site of a former metal-working company. AMT supplies an array of high-tolerance castings to aerospace, firearms, and other industries. The parts they make are smaller than a person's fist; some are quite tiny. The tours included the wax room, where wax is molded to shape and multiple wax patterns are joined to form to "trees" with sprues and risers, and the shell room, where layers of a slurry material are built up around the wax trees (and manipulated by a robot named Mi-shell), dried, and made ready for the foundry. Between the slurry room and the foundry, shells are placed in an autoclave where the wax melts away, leaving intricate cavities in the shells. In the foundry, molten metal is poured into the shells. After they solidify, castings are moved to the finishing room where the shell is broken away, parts are cut from the trees, and the castings are finished and inspected.

Contractors' Mill Work is a two-man operation owned and operated by Alden Witham and his son Steve. Housed in an 1868 railroad depot, the company uses 19th- and early 20th-century belt-driven machinery to recondition and

restore historic window sash or to manufacture replacements. The site visit took place in two segments: first, Alden introduced window sash and the techniques for repairing them, demonstrating muntin replacement and glazing while discussing sash components. Then came the *piece de resistance*: immersion in a shop full of vintage wood-working equipment and the freedom to pepper Alden with questions. He demonstrated "flapping belt" operation, engaging the overhead belt drive, and ran a couple of pieces through a sticker and tenoner, but spent most of the time discussing the highly specialized window-making equipment the shop contains. Numerous mortisers, an 1860s belt-driven sash sander, jointers, and table-saws crowd the otherwise spacious facility. Old railroad cars parked on a siding outside contain hundreds more machines, shafts, and pulleys for the drives, and thousands of old windows that provide replacement historic glass for repairing or creating new "period" sash.

The tour of **Thistle Hill Weavers** was led by owner, operator, and textile historian Rabbit Goody and her highly skilled staff of seven (www.thistlehillweavers.com). Thistle Hill produces replica historic fabrics for museums and historic sites and period-accurate textiles for movie sets. Looms and machinery date mostly from the 19th and early 20th centuries. Rabbit and her crew took small groups through the processes that create the diverse types of bespoke cloth. The older weaving equipment is key because it permits almost unlimited flexibility in the design and execution of samples as the weavers recreate historical patterns, color combinations, and fabric textures. The jacquard loom captivated the group, but Rabbit emphasized that, while the jacquard may have emerged as the dominant survivor, weavers created figured designs, particularly in carpets, from the 1790s through the 1860s using a variety of machines, the record of many lost to the popularity and longevity of the jacquard.

Lunch was hosted at historic **Hyde Hall** (www.hydehall.org), where Executive Director Jonathan Maney gave a tour of one of the most technically advanced houses for its era of construction, 1817-1834, with vapor light chandeliers, a watercloset, and a still-mysterious central-heating system with secrets contained in hidden flues and ductwork.

The *SIA Newsletter* is published quarterly by the Society for Industrial Archeology. It is sent to SIA members, who also receive the Society's journal, *IA*, published biannually. The SIA through its publications, conferences, tours, and projects encourages the study, interpretation, and preservation of historically significant industrial sites, structures, artifacts, and technology. By providing a forum for the discussion and exchange of information, the Society advances an awareness and appreciation of the value of preserving our industrial heritage. Annual membership: individual \$50; couple \$55; full-time student \$20; institutional \$50; contributing \$100; sustaining \$150; corporate \$500. For members outside of North America, add \$10 surface-mailing fee. Send check or money order payable in U.S. funds to the Society for Industrial Archeology to SIA-HQ, Dept. of Social Sciences, Michigan Technological University, 1400 Townsend Drive, Houghton, MI 49931-1295; (906) 487-1889; e-mail: SIA@mtu.edu; Website: www.sia-web.org.

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

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Matt Kierstead

Duncan Hay [SIA] (left) explains the Harmony Mills turbines, Cohoes.

Great Expectations for Great Falls, Montana 2015 SIA Fall Tour Oct. 8–10

This year's SIA Fall Tour will explore historic and active manufacturing and engineering sites in and around Great Falls. Process tours will include hydroelectric generating stations, a structural-steel fabricator, a regional airliner re-conditioner, and a Minuteman-missile training facility. Historic sites will include the Fort Benton Bridge (1889), the reconstructed Fort Benton, and the Montana State Agricultural Museum. An early-bird tour on Thursday, Oct. 8, will travel to Montana's capital city, Helena, to tour a cement plant, a plant that makes metal-oxide chemicals, and the Western Clay Manufacturing ruins (featured in *IA*, Vol 37, nos. 1 & 2).

Located along the Missouri River, Great Falls is Montana's

second-largest city. It derives its name from a major series of waterfalls along the river that presented one of the major barriers to the Lewis & Clark Expedition in 1805 and then served as the basis for Paris Gibson's hope that the falls' waterpower potential would provide the foundation for the frontier city to become the "Minneapolis of the West." Although the semi-aridity of the surrounding Great Plains prevented Great Falls from achieving Minneapolis' population, Great Falls did attract important smelters, flour mills, and other industrial operations.

Members received registration materials in late July and early August. For late registration information, check the SIA website at www.sia-web.org.

Thursday Tour 2 (USS Slater). In 1991, a non-profit group acquired the **USS Slater**, a WWII-era destroyer escort, from the Greek navy (www.ussslater.org). Today, she is docked as a floating museum on Albany's waterfront. *Slater* is one of less than a dozen surviving destroyer escorts and the only one remaining in the U.S. in its original wartime configuration. Our tour featured specially arranged below-deck access to the engine room. There we were met by a Navy veteran who had served aboard a similar destroyer escort and then accumulated 33 years at Cummins Diesel (SIA Fall Tour 2014, Madison-Columbus, Ind.). Modern tools lining the workbenches attested to volunteer efforts to return the *Slater's* engines to functionality. The diesel engines, made in Cleveland by General Motors, are ready to be started when the non-profit group's insurance company gives its okay for a sufficient quantity of oil to be brought on-board to fill their sizable crankcases.

Thursday Tour 3 (State Capitol). The **New York State Capitol**, completed in 1899 and a testament to late-Victorian architectural taste, is worth a stroll on any day, but this tour included some fascinating areas generally off-limits. The Romanesque Revival-style design, by five architects who disagreed on almost everything, provides a rich aesthetic experience. Our tour was led by Capitol Architect Bevin Collins and her recently retired predecessor James Jamieson who generously shared their experiences advocating for the use of traditional materials and skills in preserving the building. The attic above the Great Western Staircase revealed various phases of structural systems. As we stood above the laylight and below the skylight, we could see delicate-appearing wrought-iron trusses from the Trenton (N.J.) Iron Works, capping the monumental load-bearing masonry walls. Also evident were some less-than-graceful retrofits, most evident a concrete-encased, structural-steel system installed in 1911 after a damaging fire. The attic is also where the architects hang out, and we admired their collection of artifacts from various restorations. Work in these out-of-the-way spaces, much of it done during Jamieson's tenure, helped restore the building's natu-

ral light and opulence that had been lost or covered due to the WWII blackout and subsequent insensitive accretions.

Thursday Tour 4 (Downtown Albany). Our architectural walking tour of downtown Albany was led by Susan Holland and Tony Opalka of Historic Albany Foundation (www.historic-albany.org). The tour began on State Street, near the hotel, an area formerly the city's financial district, and still home to several bank branches. A number of these grand edifices are now used as event centers, and we observed a steady stream of exquisitely dressed guests (obviously not SIA conferees!) crossing between these and our host hotel. Many buildings have Classical architectural motifs, particularly porticos, but as the sun broke through the overcast sky, a slightly newer example jumped out. This was the Home Savings Bank Building of 1927 with its gleaming Art-Deco emblems reflecting the sun. Among the other highlights of this rambling architectural tour was Albany's Pearl Street, once a major shopping district and now home to restaurants and smaller stores. There we observed many examples of fancy carved granite. This is attributed to the three-decade, stop-and-go construction of the State Capitol, which occasionally left skilled craftsmen available for more modest projects.

Thursday Tour 5 (Albany Beverages). All three stops were in an old industrial section of Albany, located near the terminus of the Erie Canal, which ran along what is now Erie Boulevard to the Hudson River. Our tour began at **Nine Pin Ciderworks** (www.ninepincider.com), which takes its name from the Washington Irving story *Rip Van Winkle*, whose protagonist meets a group of men playing the Dutch bowling game and then falls asleep after enjoying too much apple-jack. Nine Pin is an offspring of New York's Farm Cider Law of 2013 that created a special license for hard-cider makers using only apples and other pome fruits grown in-state and producing under 150,000 gallons annually. Nine Pin was founded by Alejandro del Peral and is a family-run operation. We learned that each batch takes up to seven months to complete. The juice is pressed at the orchards and delivered in 330-gallon plastic containers called totes,

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which are also used to hold the finished cider for aging after fermentation. There is no residual sugar after fermentation, so any sweetness must be added.

Albany Distilling Co. (www.albanydistilling.com) opened only three ago yet is proud to be the oldest operating distillery in Albany by taking advantage of new regulations to promote handcrafted alcoholic beverages. It is only 50 yards away from the recently excavated site of a rum distillery that operated from about 1758 to 1810. John Curtin, the enthusiastic young owner, told the history of distilling in the Hudson Valley and explained today's economic and regulatory climate. As at Nine-Pin, small distillers in New York are allowed to offer tastings and sell liquor on-premises if the product is made with ingredients grown in-state. The company also makes rum, in honor of its 18th-century neighbor. We saw several stills, enjoyed the aroma of whiskey aging in fresh-charred, white-oak barrels, then had a chance to taste the result.

The **C.H. Evans Brewing Co.** (www.evansale.com) is located in the former Albany Pump Station, built in 1850 for pumping water from the Hudson to the Bleeker Reservoir. The station was decommissioned in 1932, but its two overhead cranes remain and were used to install the stainless-steel fermentation and serving tanks before the brewery opened in 1999. The owner of the company, Neil Evans, is descended from a family of brewers who owned a commercial brewery in nearby Hudson, N.Y., from 1786 to 1920. The old family business died with Prohibition so now

Neil is reviving the tradition. There is a good deal of family memorabilia on display in the pub.

Friday Tour 2 (Power & Transportation) visited five sites related to power generation and transportation with lunch at a sixth along a 20-mile stretch of the Hudson between Albany and Mechanicville. Two busloads (100 people) visited these sites in a different sequence, converging with two of the other tours at lunchtime—a choreography reminiscent of old-time SIA tours. One bus was led by Simon Litten and Hank Bankhead, the other by Duncan Hay.

Amtrak's Rensselaer Maintenance Facility is the service hub for all Empire Corridor trains (New York City to Niagara Falls) and is responsible for 28 locomotives, several switch engines, and 60 coaches plus some baggage cars. It is located on the east side of the Hudson, just north of Albany/Rensselaer station. The current maintenance facility was opened in 1976. It has five tracks and inspection pits under roof and a wheel-turning shop in a nearby building. Daily inspection and servicing takes two hours per train. Replacing a locomotive truck (two motors and four wheels) takes five hours. Upgrade and overhaul of engines may take weeks. Our visit included a walk through the yards, the engine shop, several cars, and the cab of locomotive that was being upgraded.

Our next stop was **Empire Generating** (www.empire-gen.com), a natural gas-fired, combined-cycle, electric-generating plant with maximum capacity of 635 mW that began commercial production in 2010, located on a former



Duncan Hay

Amtrak shops in Rensselaer.



Michael Hoyt

Historic bridge tour group at Enlarged Erie Lock 28 (1842) near Fort Hunter.

Eric Nystrom—2015 Vogel Prize Recipient

From its very inception, the SIA has been fascinated with mining history. Industrial processing plants for converting raw materials into mineral products have frequently been the focus of process tours. These tours have, however, always been above ground. Seldom, if ever, have industrial archeologists ventured underground into sites either off limits or simply too dangerous to explore the places and artifacts that gave these mining sites their reason for being.

That is, until Eric Nystrom of Rochester Institute of Technology wrote “Underground Mine Maps and the Development of the Butte System at the Turn of the Century” published in Vol. 37 of *IA*. Eric takes industrial archeology underground as he explores the historical significance and industrial context of mine maps. Framing maps as important artifacts in and of themselves, Eric demonstrates that mine mapping offers vital clues to archeologists about mine company economics, development, and engineering, particularly through the work of David W. Brunton and Horace V. Winchell as they utilized the innovative Brunton pocket transit. While illustrating the close link between geology and industrial enterprise, mine maps also yield important information on company history. Eric describes the increasing role played by geologists at the turn of the 20th century who worked in concert with engineers in developing the Butte mines. Eric combined archeology and industrial and corporate history with artifact analysis to weave a compelling narrative about the individuals who pioneered underground mapping and the artifacts they left behind for future industrial archaeologists.

On behalf of the Vogel Prize Committee, it gives me great pleasure to announce the award of the 2015 prize to Eric Nystrom.

Delivered at the Annual Business Meeting by David A.



Gianfranco Archimede

David A. Simmons presents the 2015 Vogel Prize to Eric Nystrom at the Annual Business Meeting.

Simmons on behalf of the 2015 Vogel Prize Committee: Marco Meniketti, Chair, David A. Simmons, Tim Tumberg, Paul White, and Arron Kotlensky

*Each year the SIA recognizes outstanding scholarship in the field of industrial archeology with the Robert M. Vogel Prize. Named for SIA co-founding and distinguished member Robert Vogel, the award honors the author of an outstanding article to appear in the journal *IA* within the past three years. The prize consists of a cash award and a wooden foundry pattern bearing a plaque engraved with the recipient's name. Articles selected must have a clearly stated thesis and well-constructed narrative. Analysis of material culture and high-quality illustration that support the thesis and conclusion are also important measures of scholarship worthy of the prize. Selection is made by the Vogel Prize Committee consisting of five members appointed by the president, who serve five-year terms. ■*

brownfield site near the Hudson. The plant has both gas and steam turbines. Exhaust gasses from the combustion gas turbines heat the boilers for the steam units. Feed water comes from the City of Albany sewage treatment plant on the opposite bank of the river and is carefully treated before being injected into the boilers. Empire Generating is an independent power producer that sells energy 24 hours in advance, based on anticipated demand and market rates. Only two operators are required to staff the plant.

Albany, located near the head of tide of the Hudson, has served as a port since the colonial period, but the modern **Port of Albany** (www.portofalbany.us) opened in 1932 and spans the Hudson at a point 124 river miles upstream of Manhattan. The channel offers a 31-ft. minimum depth and can accept oceangoing ships up to medium capacity—but no container ships. The port currently has 21 tenants involved in a range of businesses including scrap metal, iron and steel, grain, wood pulp, fertilizer, and some machinery,

including the principal elements of today's large wind turbines. About 500,000 tons of freight move through the port annually, with GE as the largest shipper. We visited warehouses, open store areas, and shipment processing areas. Blades and generator nacelles for dozens of wind turbines had been unloaded shortly before we arrived.

Several SIA buses converged for lunch at **Erie Canal Lock 2** at the base of the Waterford flight of the **New York State (NYS) Barge Canal**. Rising 169 ft. in just over a mile, the five locks of the Waterford flight formed the highest lift in the shortest distance in the world when they opened in May 1915, just 100 years before our visit. We visited the **Canal Maintenance Shops** at Waterford, a short distance upstream, next to Lock 3 (www.canals.ny.gov). The machine shop, in operation since 1921, builds and repairs valves for 57 locks on the canal system and performs various vessel repairs. The wood shop fashions miters and quoins for the lock gates using a nearly century-old sawmill. Also

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in the shops for repairs were Derrick Boat DB-4, nicknamed “The Chief,” and the state’s largest towboat, the *Grand Erie*. The dry dock was being filled at the time of our visit.

The northern point of our tour was the **Mechanicville Hydroelectric Station**, currently owned by Albany Engineering Corp. It began life as the Hudson River Power Transmission Co. and retains much of its original appearance and early horizontal-shaft equipment. A dam across the Hudson creates about a 12 ft. head in summer and 17 ft. in winter. The plant entered operation in 1897 with seven units. It initially sold most of its power to GE with the remainder to local street railways. The plant remains in operation with the generators producing power at 40 Hz that is converted to 60 Hz for sale to the grid. Due to low flows in the river, only three units were operating at the time of our visit. Lock 2 of the Champlain Canal is adjacent to the station and still retains its powerhouse and 1915 DC hydroelectric generating equipment. We had a chance to compare late-19th-century AC machinery and early 20th-century DC equipment side-by-side.

Friday Tour 3 (New Tech) Our tour guide was Chris Hunter, Vice President of Collections at Schenectady’s Museum of Innovation and Science (MiSci), who gave a lively commentary on the bus. First stop was at **Environment One Corp.** (www.eone.com), a subsidiary of Precision Castparts Corp., and like some other enterprises in the Schenectady area, it is a GE spinoff. We saw fabrication of the E/One Sewer System, which grinds wastewater into a slurry that can be pumped through small-diameter pipes to larger sewer mains or directly to wastewater treatment plants. The unit

can operate at low grades and in locations where conventional gravity systems cannot be installed, e.g. very flat, rocky, hilly, or wet terrains. In the same facility, EOne manufactures monitoring and control systems for power plants.

Our second visit was to **Applied Robotics** (www.appliedrobotics.com), established in 1983. Their main service is making industrial robots more cost effective and usable in more applications. They produced the first tool changers for the auto industry, making it possible for one robot to perform several tasks by automatically exchanging one tool at the end of the robotic arm for another. This reduced the number of robots required and the number of positions a car or other product needs to travel during assembly. Applied Robotics also makes collision sensors and “effectors” (grippers for lifting or moving specialized products such as heavy bags of cement). They have even created a robotic bartender for the cruise-ship industry.

We had lunch at the **Empire State Aerosciences Museum** (www.esam.org) where we had a brief tour and heard a presentation on GE’s Cold War rocket-testing facility in nearby Malta. Our third stop was at the **Colleges of Nanoscale Science and Engineering** (CNSE, www.sunycnse.com), a part of the new SUNY Polytechnic Institute. The Albany campus has a partnership with SEMATECH with an emphasis on microchips. SEMATECH was formed in 1987 as a government-industry partnership to strengthen American semiconductor manufacturing. Today, businesses provide new equipment to SUNY for educational purposes and prototype testing. They are currently working on the problem of increasing wafer size from 300 mm to 450 mm. We saw an overhead track system used to move wafers encased in Front Opening Universal Pods or FOUPs from one processing point to another. We also saw a variety of production and test equipment.

Our final destination was **Scarano Boat Building** (www.scaranoboat.com), founded in 1974 as a maker of custom passenger vessels. We visited the design studio where every part



Richard O'Connor

Alden Witham at Contractors Millwork sash shop explains operation of a Baxter planer.



David Ferriter

SIA at Ross Valve.

from the hull to the seat cushions is designed. The boats are built to look like classic styles if that is the customer's preference, but the underlying materials may be entirely modern. We saw how curved structural pieces were made with plywood or balsawood veneers. Similarly, painted wood above the waterline will be paired with an aluminum hull clad with composite material below to make the boat easier to maintain. Scarano also restores older boats. We saw a lifeboat from the *Andrea Doria*, which sank in 1956, in the process of restoration. We visited the launch area that uses a 150-ton hoist from Marine Travelift. The highlight was visiting a new excursion boat, nearing completion, designed for architectural tours around Manhattan Island.

Friday Tour 4 (Hudson-Mohawk Industries), led by Ian Hay, visited four sites in the Hudson and Mohawk river valleys. **Ross Valve Mfg. Co.** (www.rossvalve.com) is a family-owned business in Troy, established in 1879. The company expanded to its current location in 2006, relocating to a factory complex that once produced Gardenway and Troy-Bilt rototillers. The Ross Technology Park, as the complex now is known, is home to Ross Valve, Troy Die Cutting (a subsidiary of Ross Valve), and Ecovative, which makes biodegradable packing materials from mushrooms and agricultural waste products. The tour of Ross Valve included the production floors and warehouse spaces. Manufacturing

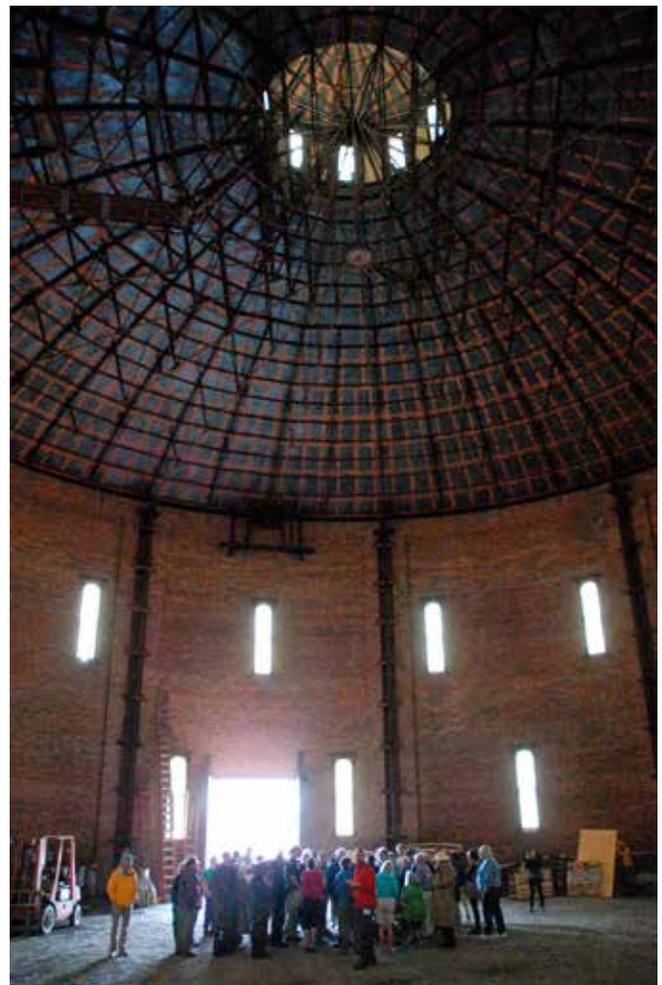
processes, including steel cutting using water jets and CNC machining, were demonstrated. Ross still operates its own bronze and iron foundry in the original plant nearby. At the NYS Canal Maintenance Shops, the tour included the machine shop and saw mill (see Tour 2). Our group met up with three others for a picnic lunch at the Waterford flight before heading south to **Mohawk Paper Co.** (www.mohawkconnects.com), on the old Champlain Canal in Cohoes. There we were shown the entire production process, from bleached paper pulp to the final test printing of the finished product. Mohawk was established in 1931 and is known historically for its fine papers for letterpress printers and today for its premium uncoated printing paper. Our final stop, **Plug Power** (www.plugpower.com) in Latham, offered a behind-the-scenes look at the production of refillable hydrogen fuel cells for forklifts. The innovative product eliminates the time-consuming and costly recharging of traditional lead-acid batteries.

Friday Tour 5 (Historic Bridges). Tour co-leaders Justin M. Spivey and Craig Williams stated early on that “bridges on the move” was this year’s SIA Bridge Tour theme because the bridges had either been moved from other locations, were vertical-lift or swing movable bridges, or bridges crucial to the movement of goods on canals or railroads. The itinerary began at the **Normanskill Farm Bridge**, a Squire

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Port of Albany.



Matt Kierstead

Inside the Troy Gasholder House.

Michael Hoyt



Vischers Ferry Bridge, a Whipple bowstring of 1869, gets some love from the SIA bridge tour group.

Whipple-patented, cast- and wrought-iron, bowstring truss fabricated by Simon DeGraff of Syracuse, shortly before Whipple's patents expired in 1869. This bridge was moved here around 1900, spans a deep ravine, and now is open to pedestrians only. After seeing the famous patentee name and date raised in one of the upper-chord castings, one conferee remarked that the entire state of Texas does not have a single bridge as significant as this. It was documented in 1969 as part of the pioneering HAER Mohawk-Hudson Survey.

The next bridge, a short walk from the first, was the three-span **Normans Kill concrete arch** of 1904, now closed to traffic. We were able to walk across this narrow bridge and appreciate the polished black-aggregate finish of the parapets. Next we drove through the Port of Coeymans, where huge steel beams for the new Tappan Zee Bridge are being stored and assembled before being shipped downstream on the Hudson by barge. Our next stop was the **Livingston Avenue Swing Bridge** that carries CSX and Amtrak over the Hudson in Albany. The existing span is a 1906 replacement to an 1866 swing bridge that replaced ferries and opened the New York Central's first all-rail connection between New



Sharon McCauley

Albany Distilling Co.

York and Chicago. Here, we had a lively discussion about the trusses and the perceived load path assignments of their vertical and diagonal members.

After stopping at the stainless steel-clad **Green Island vertical lift bridge**, constructed in 1981 over the Hudson near the head of tidal navigation in Troy, we had lunch at Peeples Island State Park at the confluence of the Mohawk and Hudson. Here, tour members could walk to four nearby truss bridges, including the 1909 three-span, through-truss Union Bridge over the Hudson. This bridge was designed by Alfred Boller and fabricated by Phoenix Iron Works. It stands on piers from the first crossing over the Hudson—an 1804 covered arch-truss designed by Theodore Burr. Waterford is at the junction of the Erie and Champlain canals and our guides pointed out structures of both the 19th-century “towpath era” and early 20th-century “Barge Canal” iterations of those waterways as we rolled through town.

In the afternoon, the tour headed west, up the Mohawk. The first bridge visited was another Whipple bowstring truss at **Vischer Ferry**. This span was originally erected over the Enlarged Erie Canal in 1869, about 40 miles west of its cur-

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Christine Leggio

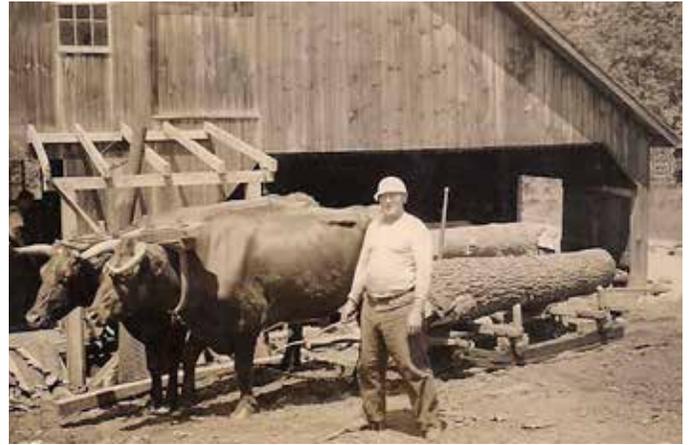
Inside the sawmill at the NYS Canal Maintenance Shops.



Castings at Ross Valve.

Beginning in 2009, the Woodstock Historical Society and Woodstock Historic Properties Commission undertook a study of the mill's potential and completed interim stabilization measures, supported by grants from the Connecticut Trust for Historic Preservation and Society for the Preservation of Old Mills, matched by in-kind donations and local funding. In 2013, Chamberlin Mill, Inc. (CMI) was established as a non-profit corporation to serve as a long-term steward for the site. In early 2014, The Nature Conservancy gave the mill and a small piece of property at the corner of its Still River Preserve to CMI, allowing plans to go forward with revitalization of the mill as a publicly accessible historical and educational asset.

With funding from the SIA, matched by CME Associates of Woodstock, architectural plans and specifications have been completed, paving the way for the first phase of restoration to proceed in 2015. This phase, which comprises repairs to the dry-laid fieldstone foundation, has already been funded by the Summer Hill Foundation. CMI is now focused on raising funds for the second, most challenging phase of the restoration, involving drainage, sills, and other structural elements along the north and east walls. Phase 3 will include replacement of the corrugated metal roof, and Phase 4 will be stabilization of the turbine supports, turbine conservation, and excavation of the tailrace.



Chamberlin Mill, circa 1939.

Though restoration is anticipated to take at least five years, small-scale programming has been initiated. CMI looks forward to welcoming members of SIA and the general public to a fully restored and operational mill within a decade. In the interim, visits of interested parties can be arranged as feasible, and progress can be followed at www.chamberlinmill.org.

Jean McClellan

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rent location. It was moved to carry a farm road during the 1920s, after the Barge Canal opened, and moved again to its present location over a surviving watered portion of the Enlarged Erie Canal in 1997. Although it is some distance from its original site, it was good to see this bridge in something approximating its original context.

After a long bus ride through Schenectady, we stopped at Enlarged Erie Canal lock 28 at Yankee Hill, on the outskirts of Fort Hunter, an especially well preserved example of stone double locks built between 1836 and 1862 to accommodate booming canal traffic. Our next stop was **Schoharie Aqueduct** at Fort Hunter, the remains of a 13 arch stone and timber structure built in the 1840s to carry the Enlarged Erie Canal over Schoharie Creek, supplanting a troublesome slack-water crossing that had plagued canallers since the 1820s. Several of the aqueduct's stone arches have collapsed to erosion, some as recently as 2011. Our team of bridge specialists discussed strategies for stabilizing the inherently unstable National Historic Landmark structure with staff of the NYS Office of Parks, Recreation, and Historic Preservation who manage the site.

Our final stop of the day was at Barge Canal lock E12 in Fort Hunter. The movable dam is suspended from a two-span Pratt through-truss. There are nine of these distinctive structures in the Mohawk Valley section of the Erie Barge Canal, all erected 1915. Although they look like bridges from a distance, only two carry traffic, leaving wags and puzzled travelers to call the others "bridges to nowhere." At the beginning of each navigation season, uprights are

lowered from the trusses, followed by horizontal steel panels that form a dam, raising water levels above each lock. In the fall, the panels and uprights are raised and swung up against the underside of the bridge deck to allow free passage of floods, ice and debris. We studied the complex system of chains and electric "mules" that made it all work and concluded the tour by watching a recreational boater with his dog pass through the lock, speeding off downstream in an effort to reach the next lock before it closed for the evening.

Friday night IA Film Fest. Chris Hunter dug into the archives

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Worker at AMT removing a heated shell for casting.

Richard O'Connor

Abba G. Lichtenstein (1923–2015)

Abba G. Lichtenstein, 92, passed away at his home in Washington, D.C. on Mar. 13. Abba was a national leader in historic bridge preservation, known for his willingness to challenge conventional perceptions that historic bridges were either too expensive or too technically difficult to save. Abba emigrated from Lithuania to the United States as a child and eventually attended the Ohio State University, earning a degree in engineering. He went to work for consulting engineers Goodkind & O’Dea in New Jersey during the 1950s. Morris Goodkind, the former New Jersey State Bridge Engineer, suggested that Abba focus on bridge inspection and rehabilitation at a time when most bridge engineers were intent on new bridge construction for the interstate highway system. Abba recounted it was great business advice since once the interstate program wound down there were thousands of old bridges that needed inspection providing steady work. Abba founded consulting engineers A.G. Lichtenstein & Associates of Fair Lawn, N.J., in 1963. His investigation of the 1967 collapse of the Silver Bridge across the Ohio River and testimony to Congress helped to establish the National Bridge Inspection Standards (NBIS), a regular program of nationwide bridge safety inspections that continues to this day. Abba examined many hundreds of historic

bridges over the course of his career, yet he was perhaps best known for working with the National Park Service to restore the Roebling Aqueduct over the Delaware River at Lackawaxen, Pa., in the late 1980s. The project won numerous awards. He also had a passion for historic canals and contributed to several restoration projects on the C&O Canal and the Delaware & Raritan Canal among others. Abba was active in professional engineering societies, particularly the American Society of Civil Engineers (ASCE) and the American Association of State Highway and Transportation Officials (AASHTO). He understood as well as anyone that the national standards, which he’d help to develop, placed at risk the preservation of historic bridges. He actively sought out methods that could bring old bridges up to acceptable levels and sought to educate engineers that the standards were not absolutes but subject to professional judgment and flexibility. Abba was willing to cross professional lines and work closely with preservationists, which won him a great deal of respect. Even when his answers weren’t favorable to preserving a bridge, those who knew Abba understood that he had considered all of the viable options. Abba assisted former HAER Chief Eric DeLony with organizing many of the SIA’s historic bridge symposiums in the 1980s and 1990s. He also served a term on the SIA Board in the mid-1990s.—Patrick Harshbarger

IA IN ALBANY *(continued from page 17)*

of GE industrial films housed at MiSci to assemble an eclectic yet structured playlist of movies depicting manufacturing in the region from the time of Edison through the 1960s.

Sunday Tour (IA Landmarks). Despite darkening skies, our very enjoyable bus trip started with a detailed tour of the industrial streets of Albany heading north toward Cohoes. Two buses traveled in tandem, one led by Duncan Hay, the other by Michael Barrett, who showed us how the construction of I-787 changed the waterfront, pointing out where several buildings had stood and under which streets the original canal is now buried. Our first stop was the **Harmony Mills** complex in Cohoes, once a significant textile center, now apartments. Impressive in scale and setting, Harmony Mills once ranked as the largest cotton mill complex in the nation. We went into the basement of Mill 3 (1871) to see a pair of massive Boyden turbines that drew power from Cohoes Falls. The basement felt like a Roman grotto or underground aqueduct. Our next stop, after the rain began, was Cohoes Falls, especially sublime in the darkening sky. Our tour guides described the ongoing rehabilitation of Troy as we peered through the window and the pouring rain. The **Troy Gasholder House** was magnificent, like the Pantheon, and with similar acoustics. It was built in 1873 for the Troy Gas Light Co. and originally sheltered a telescoping, water-sealed gas, iron storage tank, since removed. The half-elevation of the beautifully detailed HAER documen-

tation drawing has served as the SIA’s logo since its organization in the early 1970s. Our final stop, the **Hudson-Mohawk Industrial Gateway at the Burden Iron Works Museum** (www.hudsonmohawkgateway.org), was a welcome refuge from the rain as two buses of wet visitors probably caused the humidity control to fail. We explored the museum’s eclectic exhibits on the history of iron working in South Troy and the region, which are housed in the former Burden Iron Works’ Romanesque Revival-style office, constructed in 1881-82.

The SIA owes special thanks to the companies and organizations that opened their facilities to visitors, especially those who agreed to take multiple groups and larger numbers after some tour offerings proved especially popular. In addition to the companies and individuals named above, we received terrific support and assistance from staff of Erie Canalway National Heritage Corridor, New York State Canal Corp., New York State Museum, NYS Office of Parks, Recreation & Historic Preservation, and the Albany Convention and Visitors Bureau.

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