



SOCIETY FOR INDUSTRIAL ARCHEOLOGY

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IA IN MAINE FROM BIDDEFORD TO BATH

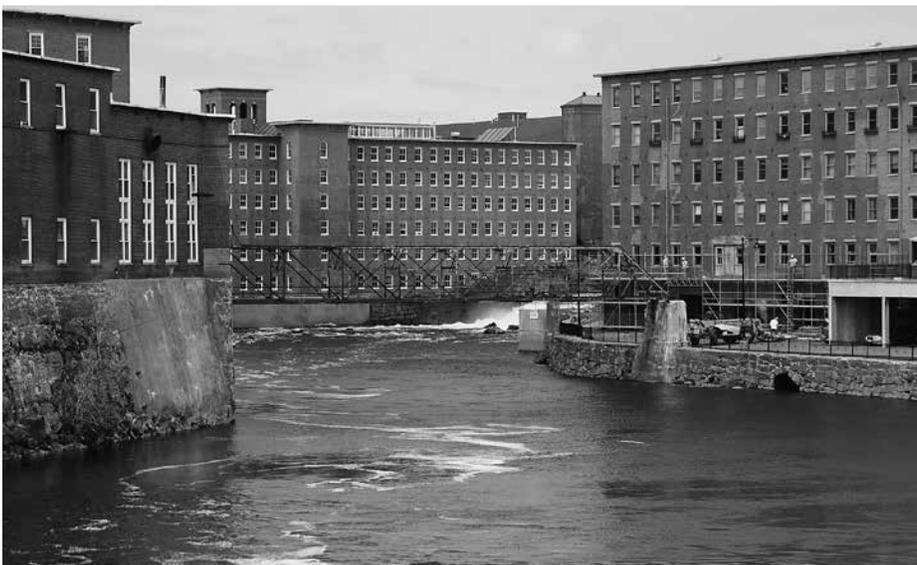
From May 15 to 18, 189 SIA members gathered in Portland, Maine, for the Society's **43rd Annual Conference**. The conference headquarters was the Holiday Inn by the Bay at the edge of the city's Old Port waterfront where members explored chandleries, fish docks, and lobster pounds. In the distance, break-bulk and container piers offered a lively panorama of active shipping. This was a preview for a conference where shipbuilding, shipping, fishing, and other industries that rely on the sea would be a major theme. Other themes included a trio of traditional Maine industries—textiles, shoes, and wood products. The conference schedule followed a typical SIA pattern of optional Thursday pre-conference tours, Friday process tours, Saturday business meeting and presentations (including tracks on “Made in Maine” and on “Maine’s Salt Water Mills”), a Saturday evening banquet aboard a cruise ship, and optional post-conference Sunday tours.

SIAN's volunteer correspondents provided the following tour reports and photographs.

Thursday Tour 1—Downtown and Lighthouse Tour. Early arrivals took a (rubber-tired) trolley tour of Portland and South Portland narrated by tour guide/driver and Portland native John “JJ” Jenkins. Portland, Maine's largest city, has a population of 65,000; South Portland, 30,000, is located across Portland Harbor. JJ explained that Portland's importance as a shipping center derives from its location: it is 300 miles closer to Europe than Boston, and is the northernmost, ice-free port in the U.S. It is also served by railways to the north and south. The trolley cruised the length of Commercial St. with Portland's active commercial docks on one side, opposite rows of warehouses, which have been adapted for retail uses.

Further along the waterfront the trolley passed the right of way of the **Maine Narrow Gauge RR** (2-ft. gauge) that

(continued on page 2)



James Bouchard

Mills on either side of the Saco River.

In This Issue:

- Minutes of the 2014 Annual Business Meeting
- 2014 General Tools Award Recipient—Jet Lowe
- 2014 Vogel Prize Award Recipient—T. Arron Kotlensky
- Portland Detour—Blacksmith Sam Smith
- Deconstructing a C.A.P. Turner Slab Bridge
- Richmond & Chesapeake Bay Ry. Buildings

mostly carried lumber for shipbuilding and export. A small section of the railway is operated as a museum (see Friday Tour 3). The trolley went around the eastern headland of the peninsula, with a view of some of the 300 or more Casco Bay islands (called the Calendar Islands because there is one for every day of the year)—and a glimpse of the famous **B&M baked-bean factory**. The trolley then went inland through the Munjoy Hill neighborhood, a traditional immigrant neighborhood, which is beginning to gentrify. **The 1807 Portland Observatory** rises 88 ft. above the ridge with an observation platform and telescopes 222 ft. above sea level. The shingle-clad, octagonal, wooden tower was built as an “early warning” system to alert owners when their ships were approaching port; on a clear day visibility is 40 miles.

After going through attractive 19th and early 20th century residential neighborhoods north and west of downtown, the trolley crossed the bridge to South Portland. JJ said that this city has a shipbuilding history as well, and constructed numerous Liberty ships during WWII. The final stop on the tour was the **Portland Head Lighthouse** on Cape Elizabeth.

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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It was built in 1791, and reputedly is the most photographed lighthouse in the U.S. (certainly many SIA members on the tour took photos). The lighthouse is located on the grounds of the former Fort Williams (1872/1962), now a park, and as the trolley drove through there were views of the three coastal artillery gun emplacements and other stone and concrete military structures.

Thursday Tour 2—Cruise to Historic Island Fortresses. Portland has had a system of harbor defenses since colonial times, and Thursday's pre-conference tour of fortresses in Casco Bay provided close-up encounters with three of them. Captain Hal Cushing ably piloted our group of 34 by motorboat and historian Joel Eastman led the tours on shore. Our first stop was **Fort Gorges** (pronounced “gorgeous”) on Hog Island Ledge, where we used a ladder to climb the sea wall. Named after Sir Ferdinando Gorges, the colonial proprietor of Maine, the fort was designed by Col. Reuben Staples Smart. It is similar in size and construction to Fort Sumter, but built of granite instead of brick. It was begun in 1858 and completed as the Civil War ended, by which time modern weaponry had made the fort obsolete. Its original armament consisted of thirty-four 10-inch Rodman guns mounted in the fort's casemates. Today only a single Parrott rifle remains—a 10-inch, 300-pounder (the weight of the projectile)—one of the largest surviving examples of Civil War era artillery. In 1897, the Army built a mine storehouse on the parade ground, and during the Spanish-American War the Portland shipping channels were protected by mines controlled from Fort Gorges. The fort was declared surplus in 1946 and acquired by the City of Portland in 1960.

Fort Scammell, named after Alexander Scammell, adjutant general of the Continental Army during the Revolutionary War, was built on House Island in 1808. It was one of three federal forts that defended Portland Harbor during the War of 1812. The semicircular brick fortress mounted eleven 24- and 32-pound cannon with a range of one mile. By 1840, the walls of the fort had been extended to allow the mounting of more and larger cannon, and by 1850, Fort Scammell was fully enclosed, making it less vul-



Pat Madone

SIA on the parade ground inside Fort Gorges.



Bath Iron Works from the Carlton Bridge.



The Carlton and Sagadahoc Bridges.

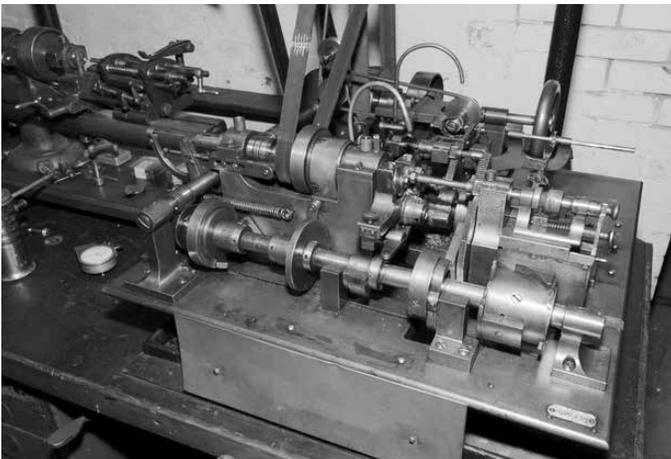
nerable to naval attack or the landing of enemy troops. The fort was manned during the Civil War, following which it was enlarged with granite bastions and a large gunpowder magazine (through which we inched our way in almost complete darkness) needed for the 15-inch Rodman guns. At least four of these were in place during the Spanish-American War. From 1907 to 1937, House Island was the site of an immigration quarantine station, remnants of which are still visible.

Our final stop was Cushing Island, where, in 1894, the federal government acquired land for the construction of **Fort Levett**, a harbor defense fort named after the 17th-century English explorer Cpt. Christopher Levett. Between 1903 and 1946, the Army constructed six batteries to host a variety of guns, together with an array of handsome brick buildings to accommodate a company of men. These included an administration building, hospital, barracks, officers' quarters, and stable, many of which still stand. Fort Levett was garrisoned when the U.S. entered WWI and again during WWII when two concrete, multistory fire

control stations were built to direct the fire of Battery Foote (completed in 1921 and modernized in 1942) and other long-range batteries in the harbor. By 1949, technological advances had made coast artillery obsolete, and in 1958 the Cushing Island Assn. acquired Fort Levett. Today, the fort's remains peacefully co-exist with a colony of upscale summer homes. (Thanks to our guide, Joel W. Eastman, for his excellent tour handout, on which this account is based.)

Thursday Tour 3—Maine Maritime Museum. Bath, on the coast northeast of Portland, has long been a major American shipbuilding center. In 1919, up to a dozen shipyards were building wooden ships along the Long Reach, a stretch of the lower Kennebec River four miles long and a half-mile wide. The museum occupies the site of the former **Percy & Small Shipyard**, which operated from 1897 until 1920. It specialized in schooners (rigged fore-and-aft), which were well suited for the coastal cargo trade because they could sail closer to the wind than square-rigged vessels. A schooner also required only a crew of about 15 instead of 50-60 to operate.

(continued on page 4)



Waltham-Van der Woerd Automatic Screw-Making Machine for making watch screws from brass, steel, or gold wire.



In awe of George Collard's extensive collection of historic machine tools, soon to become a museum.

Several of the former shipyard buildings, including the mould loft, carpentry shop, and the paint and treenails shop, still exist, and most are open to visitors. On what was the main building way, a sculpture of steel ribs indicates the dimensions of the *Wyoming*, the largest schooner built in the yard. At 329.5-ft. long, 50-ft. wide, and 30-ft. high, it would be a respectable-sized ship even now. The keel of the *Wyoming* was laid in 1907, and the ship served in coastal and war transport until 1924, when it was lost in a nor'easter.

Thursday's activities wrapped up with a reception at the conference hotel. Earle G. Shuttleworth, Maine's State Historian and State Historic Preservation Officer, gave an engaging presentation on the history of Maine manufacturing.

Friday Tour 1—Bath. The tour's first stop was **Lowell Brothers boatyard**, also known as Even Keel Marine Specialties, Inc., in Yarmouth. This small, family-owned operation has been in business at this location since 1961, and is believed to be one of only four family-owned boat builders left on the Maine coast. Jamie Lowell said his family goes back six generations as boat builders in Maine and Nova Scotia. He claims his grandfather, William Frost, built the first boat designed specifically for lobster fishing, and their principal line of business still is lobster boats. The facilities include a ship house in which boats up to 50-ft. long can be built and a large yard where boats up to 80 ft. can be built and where the large male and female fiberglass molds are stored. Their smallest standard mold is 22 ft., and they also offer 38 and 43 footers, as well as custom sizes. Depending on orders, the yard employs two to nine workers. One thing the yard can't do is launch their boats into the Cousins River due to a long-running dispute with the Town of Yarmouth over wetlands. Finished boats are taken by trailer to another launch site.

Arrival at the next stop, **Custom Composite Technologies, Inc.**, was delayed due to a bus malfunction that left



Steve Muller

Owner Steve Hassett points to a photo showing a composite structure supplied by Custom Composite Technologies, Inc.

the group stranded in a high school parking lot before a substitute bus arrived. The group was greeted at the factory in Bath by CCTI owner Steve Hassett. The nine-employee plant works a 4-day, 10-hour week, and unfortunately there was no activity during our Friday tour. Hassett said he started CCTI in 1999 after spending 15 years in the custom boat-building world where he worked on high-end racing boats and became familiar with high-performance composite materials such as carbon fiber and Kevlar. He emphasized that composite materials can be engineered to provide the exact strength needed for a part. The firm supplied composite components for the *Oracle* team in the most recent America's

(continued on page 6)



Steve Muller

Woodworking machinery at the Percy & Small Shipyard display, Maine Maritime Museum, Bath.



Pat Malone

SIA at Battery Foote of Fort Levett, Cushing Island.

Cup race, and is also working on parts for the new Zumwalt-class destroyers being built at Bath Iron Works. CCTI also makes tooling such as mandrels and molds for other composite manufacturers, and it has a regular production run of lightweight stocks for hunting rifles.

At the **Maine Maritime Museum** in Bath, John Heppel, a docent who is retired from both the U.S. Navy and **Bath Iron Works (BIW)**, reviewed the history of BIW over lunch. (Due to safety and security issues it was not possible to tour BIW.) American shipbuilding started near Bath in 1607 when members of an unsuccessful colony at Popham built a ship to sail back to England. BIW itself was founded in 1826 and consolidated with several other firms after the Civil War to become the principal builder of iron ships in a region still dominated by builders of wooden ships. BIW is now a subsidiary of defense contractor General Dynamics.

BIW built its first military ship in 1892. During WWII it launched a Liberty ship in only 17 days. For some time the yard has built only military ships, and to date it has delivered 266 to the U.S. Navy. The yard currently is building five Burke- and two larger Zumwalt-class guided-missile destroyers. It is also bidding to build cutters for the U.S. Coast Guard. The yard has 6,000 employees and is looking to expand the work force by ten percent. Besides the ship assembly facility at Bath, it has factories in Brunswick and Hardings for subassemblies. Hassett also showed a BIW video detailing the construction and commissioning of the Burke-class destroyer *USS John Chafee*. He said the first Zumwalt-class destroyer was commissioned in April. Each of these ships costs \$3 billion.

After docents led tours of the Main Maritime Museum's carpentry shop, paint and treenail building (see Thursday Tour 3), the group reassembled for a presentation by historian Bud Warren on **tide mills** in Maine. The strong tides of the Gulf of Maine and a coastline with many inlets made Maine the "Tide Mill Capital of America." Warren has documented 223 tide mill sites in Maine, starting with the first, built at York in 1634. In a tide mill, the rising tide



Richard K. Anderson, Jr.

Inspecting the mash tanks at Geary's Brewery.

flows through a gate into an impoundment pond. The gate is closed at high tide. As the tide recedes, a head is created and water from the pond powers a waterwheel. Although a tide mill seems like an excellent renewable energy proposition, Warren also discussed downsides such as pond sedimentation, and, for current proposals to tap tidal power for electrical generation, potential damage to fish stocks.

The final stop for the day was in Bath at a spot on the Kennebec River that offered views of BIW as well as the **Carlton Lift Bridge** of 1927. The Carlton bridge is a double-deck structure: the lower deck is for the railroad and the upper deck is for motor vehicles. (Maine was able to persuade the railroad to share the cost of construction.) It is a steel truss bridge with a vertical lift section in the middle. The bridge replaced ferry service, but with only one lane in each direction it became a traffic bottleneck as vehicle use increased.



Richard K. Anderson, Jr.

Portland Yacht Services inside the foundry at the Portland Company complex.



Bob Stewart and Nanci Batchelor (right) prepare for a ride on the Maine Narrow Gauge RR in Portland.

T. Arron Kotlensky—2014 Vogel Prize Recipient

The 2014 Vogel Prize is awarded to T. Arron Kotlensky for his paper “From Forest and Mine to Foundry and Cannons: An Archeological Study of the Blast Furnace at the West Point Foundry,” published in *IA*, Vol. 35, Nos. 1&2, pp. 49-72.

This paper was one of several that grew out of collaboration between Michigan Technological University and The Scenic Hudson Land Trust to investigate the site of the West Point Foundry on the Hudson River. The papers were published in a double issue of *IA* devoted entirely to the West Point Foundry.

Arron’s paper examines how West Point Foundry attempted backward integration by adding a charcoal blast furnace to the firm’s Cold Spring, N.Y., casting and machining complex. This was an unusual move as most ante-bellum American foundries bought their pig iron from independent blast furnace operators.

The paper marshals evidence gathered from excavations, maps, business records, technical publications, newspapers, artistic depictions, and modern spectrographic and photo micrographic analysis to paint a picture of the blast furnace’s construction, operation, and demise.

Excavations revealed how West Point Foundry sited the new furnace and its blowing engine to take best advantage of the terrain and to incorporate the furnace into the existing waterpower system that drove the foundry machinery. Metallurgical analysis of surviving pigs of iron demonstrates that the West Point furnace produced grey iron of suitable quality for foundry use.

But business records and other documentary sources reveal that technological success did not translate into economic success. High costs for ore and charcoal, plus the growing supply of iron from more efficient anthracite-fueled hot-blast furnaces resulted in the West Point furnace’s closure after 17 years of operation.

Arron’s paper is industrial archeology at its best, using a broad array of tools and sources to reconstruct an impor-



T. Arron Kotlensky (right) receives the Vogel Prize foundry pattern and plaque from Committee Chair Robert Casey.

tant period in one of ante-bellum America’s most significant industrial enterprises.

Robert Casey, Chair
Vogel Prize Committee

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. ■

Maine eventually approved the construction of a bypass highway bridge, the **Sagadahoc Bridge** (Bath is in Sagadahoc County), sufficiently elevated to avoid the need for a lift section. This bridge, a precast-concrete-segment design just under a mile in length, was completed in August 2000.

Friday Tour 2—Biddeford. The Biddeford process tour began by visiting the 1.1 million square-foot **Pepperell Mill** about 18 miles southwest of Portland. Standing today as a sprawling mix of multi-story red-brick buildings straddling the Saco River, Pepperell Manufacturing produced textiles here from 1840 through 2009. With growing demand for its products, the Pepperell complex expanded to occupy both sides of the Saco and became the largest mill in Maine before the Civil War. Pepperell’s owners profited in cotton

textiles through WWII, but the transition to synthetic fabrics was made by the 1960s—with Vellux blanketing in particular—allowing the mill to operate profitably until very recently. Pepperell Manufacturing merged with Georgia’s West Point Manufacturing Co. in 1965 to become West-point-Pepperell.

The new owners of the Pepperell Mill Campus are working to repurpose the complex into a mix of residential, commercial, and specialty craft shops, with promise for growth in the years to come (such as an upscale hotel). COO Scott Joslin gave an introduction to the complex and future plans before turning the tour over to Don Guillereault, a retired manager of the mill, and Peter Lamontagne, a former employee and past president of the textile workers’ union. To-

(continued on page 8)



John Reap

Biddeford's Lincoln Mill was built in 1853. The central stair was topped with a bell, later replaced by a Howard clock in 1896. The tower was decapitated in 2007, much to the shock of local residents. George Collard has purchased and stabilized the clock shell and repurchased the mechanism with plans to restore it.



Andy Baugnet

Harbor Fish Market front entrance, 9 Customs House Wharf, Portland.



John Reap

The stone "lagoon chamber" that distributed water to turbines deep within the Pepperell Mill in Biddeford. The tailrace arches are to the right.

gether, they showed how various buildings fit together in the textile-making processes.

Building by building, Don and Pete guided tour attendees through the complex, relating tales of their shared time at the Pepperell as well as stories handed down to them from earlier generations of mill workers. They took the time to showcase the deepest interior of the mill complex, where tour attendees could see the vast power canal basins carved out of bedrock that house the mills' horizontal water turbines, now unfortunately missing. Attendees also had a preview of George Collard's machine tool museum housed in a former cotton storehouse (see Sunday Tours 3 and 4). Some also paid brief visits to Banded Horn Brewery and the Saco River Dyehouse, new manufacturers that are utilizing portions of the vast Pepperell complex.

Tour attendees broke for lunch at The Run of the Mill, a close-by restaurant and brew pub located in a former mill in Saco. Following lunch, the next stop was **Precision Manufacturing Solutions, Inc.**, a Biddeford-based maker of high-precision parts for applications in the aerospace, semiconductor, defense, optical, and medical industries. Occupying a modern, single-story, 30,000-sq.-ft. building that contrasts sharply with the rambling Pepperell complex, Precision specializes in using a suite of CNC (computer numerical control) machine tools in its production of alloy parts designed to meet extremely tight tolerances (some to 50 millionths of an inch). Very complicated finished parts can be completely manufactured in under ten minutes from a single blank on CNC systems programmed to choose from over 150 tools in the completion of a single piece.

(continued on page 10)

The last stop was **Yale Cordage** in Saco. Founded at Yarmouth in 1950 by Sherman Yale, the company gained a foothold in the rope-making industry with its early focus on the use of nylon in the manufacture of lines for lobster fishing. Since then, Yale Cordage, under the leadership of Tom Yale, a son of the company's founder, and Skip Yale, his cousin, has greatly diversified production, making cordage for use in marine pleasurecraft, electrical power utilities, heavy-lift slings, arborist rope, shark-bite-resistant oceanographic tethers (for use with hurricane/typhoon buoys), and specialized security applications (such as vehicular gates for use at embassies). Yale even manufactured a specialized sling to suspend equipment in the Sudbury Neutrino Observatory, a neutrino detection experiment located 6,800 ft. underground in Sudbury, Ont. Yale's Saco facility (the company also operates a facility in Salisbury, N.C.) produces cordage using computer-controlled braiding machines. Our visit concluded with a tour of the testing lab where Yale evaluates its products—intentionally overloading a length of rope to gauge how many thousands of pounds it can sustain before breaking. With a warning from Yale's lab manager to cover their ears, attendees watched and listened from behind a protective barrier as lengths of overloaded rope broke with gunshot-like bangs, the broken ends snapping away in opposite directions under high velocity.

Friday Tour 3—Portland. This tour of industries in and around Maine's largest city began with **Barber Foods**, a plant that processes a variety of chicken and beef products for many well-known processed-food distributors. The company was founded in 1955 by Gus Barber, who butchered meat and sold it to grocers from his truck. Today, it is a huge facility producing such items as chicken nuggets and hamburger patties, as well as other products. SIA's tour focused on stuffed chicken breasts. Frozen blocks of skinned parts are robotically sliced into single-serving size, and sent through as pockets, which are quickly shaped by hand along the huge assembly line. Frozen blocks of filling material are then added to the breast material (varieties include broccoli

and cheese, cordon bleu, and asparagus and cheese). Again the mixture is sent along an assembly line to ensure proper shape and size by hand. The mixture is then breaded and very lightly cooked, just enough to hold its shape for shipping. The consumer must cook the final product in an oven.

Next on the itinerary was the **Portland Company**, a 19th-century foundry and machine shop that once built engines, boilers, locomotives, and equipment for Maine's shipbuilding, railroad, sawmill, and papermaking industries. The sprawling brick complex now houses several smaller, mostly marine-related businesses, as well as the **Maine Narrow Gauge Railroad Co. & Museum**. After riding 1.5 miles along Casco Bay on the historic train, we visited the museum and **Portland Yacht Services**, which employs some 50-60 people engaged in the repair and servicing of small craft. Visitors were able to roam freely through the facilities and speak to the various skilled workers there. Some were delighted to discover a blacksmith working away at a forge (see story elsewhere in this issue).

After a delicious lunch at the Saltwater Grille in South Portland with a beautiful view of the bay and the ocean, the tour proceeded to the **Nichols Portland Division of Parker Hannifin**, a manufacturer of fuel-pump components. William Nichols founded the company in 1930, and the present 200,000-sq.-ft. Portland facility dates to 1968. This plant produces the Gerator (Generated Radius Rotor) for auto and motorcycle transmission use. We were able to see and handle an assortment of gears for this purpose.

Next came **Geary's Brewery** and the **New England Distillery**, a stroll across the street from each other. Initial fears that there would not be time for sampling in either place were soon allayed. Production Manager Stephen Spear was a cheerful and charismatic guide at Geary's, and immediately provided a generous serving of cold summer ale. Geary's also produces IPA and winter and autumn ales. Nearly all of the beer produced here is bottled rather than canned, and visitors were able to observe various stages of the process (the beer is fermented for seven days). The New England Distill-

(continued on page 17)



View of Portland's Fore River from the conference hotel.



Portland's working waterfront.

James Bouchard

within one of the city's local historic districts. "I have sought those designations. Unfortunately, you can't go very far unless the current landowner's willing to go with you," Smith explained.

Portland's master plan for its commercial waterfront is heavy on mixed-use redevelopment, transit, and pedestrian connectivity. Permitted uses in the zone include craft shops with onsite production. Smith fears that a blacksmith shop located beneath high-end condominiums might be considered a nuisance. "How many people want a blacksmith shop in their basement? Maybe me or you," Smith said with a chuckle.

"Ultimately the shop is in limbo and I've had some talks with the owners saying that they want to keep it as an artistic studio," Smith said. However, "They never came out and said yes, we're going to keep it as a traditional blacksmith shop."

David S. Rotenstein



Sam Smith tells SIAers Mary Habstritt and Bierce Riley about his shop. He's holding an axe head that he made in one hand and his other hand is on the cart he salvaged from Portland's Etheridge Foundry.

IA IN MAINE (continued from page 10)

ery has been in business more than 150 years, and produces premium rye whiskey, rum, and gin for distribution in New England and New York State. Though the visitors did not have a chance to witness the process, it was carefully described and they were able to sample the end results. Everyone left in a happy mood.

Sunday Tour 1—Longfellow House and Museum. **Wadsworth-Longfellow House** was the boyhood home of Henry Wadsworth Longfellow, America's most widely read 19th-century poet. The first brick dwelling in Portland, it was built by the poet's grandfather, General Peleg Wadsworth, in 1785-1786. The building survived a fire in 1815; a third story was added after the fire, and young Henry moved up to that floor. The second of eight children, Longfellow grew up in a large and close family. Numerous letters by family members survive, and describe in great detail everyday activity in various parts of the house, even regarding where different persons sat in the parlor. Thus it is very easy to paint a vivid picture of life in the Longfellow home. The poet moved away in 1822 to attend Bowdoin College, which led to his becoming a professor of modern languages there. He later became a translator, and, ultimately, a world-renowned poet. Henry's widowed sister, Anne Longfellow Pierce, lived here until her death in 1901, having bequeathed the home to the Maine Historical Society. All furnishings except the replica draperies and rugs are original and were in the house while the family lived there.

Sunday Tour 2—Walking Tour of Downtown Portland. This tour began with a visit to the Wadsworth-Longfellow House (see Sunday Tour 1) and then continued with an architectural walking tour. What is now downtown Portland was settled by Europeans in 1632, but the settlement was repeatedly destroyed by war and fire. The city lost many of its older buildings to an 1866 fire that started near the water-

front. Strict ordinances prohibiting wooden construction were passed, and today wooden buildings are hard to find. The current waterfront sits on fill that was used to extend the city into Casco Bay and create prime commercial land. One street had four old bank buildings visible within one block, so the city's economy was clearly booming. More recently, Portland has passed through a period of rediscovery and renovation as a tourist center and commercial hub, leading to the rehabilitation of many buildings that had been allowed to decline.

Sunday Tours 3 & 4—George's Basement. George Collord graciously opened his home to SIA members for fascinating tours of his basement (and whole home) and an intimate review of a comprehensive collection of machinery, tooling, and artifacts from the **Waltham (Mass.) Watch Co.** By 1893 Waltham employed 3,000 employees and was manufacturing the greatest variety of watches in the U.S. Between 1850 and 1957, the company made over 40-million high-quality watches.

George was born and grew up in New England and in 1981 started working in a 19th-century job shop where he developed a passion for acquiring period machinery and fine antique watches. One of the items showcased was a working automatic, screw-making machine invented by Charles Van der Woerd in 1871. This machine famously attracted crowds during the Philadelphia Centennial Exhibition of 1876. It produces a screw every seven seconds, and a worker operating up to ten machines would produce over 50,000 screws a day. Production prior to the machine was 1,500 per day with two workers. George acquired this machine in 1989 and believes this is the only one operational out of the 11 known remaining (including one in the Smithsonian). For a demonstration of the machine in operation, with narration, go to [youtube.com](https://www.youtube.com) and search on "Charles Van der Woerd." Henry Ford

(continued on page 24)

PUBLICATIONS OF INTEREST *(continued from page 15)*

- 2013). The site contains remnants of Richmond's James River Steam Brewery, established by David G. Yuengling, Jr., son of the found of the well-known Pottsville, Pa. brewery. The James River brewery closed in 1879, then burned in 1891, but four massive vaulted brick tunnels remain.
- ◆ **Gainesville Poultry Equipment Manufacturer Celebrates 70 Years.** *Access North Georgia* (June 17, 2014). Grover S. Harben founded the Gainesville Machine Co. in 1944. Over time, the company became focused on poultry processing equipment. It was acquired by Stork in 1975 but now is owned by Marel USA (bought in 2008). Includes a brief history and timeline.
 - ◆ **Old Mill News**, Vol. 41, No. 3 (Summer 2013) includes Celia Miles, *SPOOM Conference Review* (2013 conference, Jasper, Ind.); Jon and Carol Joyce, *Locke's Mill—Berryville, Clarke County, VA* (restoration project); and David Beaupre, *The Price of History* (history of Fall River (Ala.) Mill).
 - ◆ Maria Recio. **Southern Tobacco Barns Hold Allure for Preservationists.** *Charlotte (N.C.) Observer* (Jan. 29, 2014). Programs to save barns in southeastern states, including a \$100,000 grant from a Japanese tobacco company for barns in Virginia.
 - ◆ Josh Shaffer. **In Pittsboro and Beyond, Pining for Floors from Old Tobacco Barns.** *Raleigh (N.C.) News & Observer* (July 12, 2014). Baba Antique Wood Floors scavenges tobacco barns for highly sought heart pine and then mills and treats the wood for use in high-end architectural applications.
 - ◆ **Sour Sweet.** *The Economist* (May 17, 2014), p. 80. Artist Kara Walker's installation of a mammoth sphinx and other figures carved of sugar in the former Domino Sugar factory (tour site—2002 Annual Conference, Brooklyn, N.Y.) has been garnering international attention. The installation, which is temporary and literally melting away, tells an allegorical story of slavery and greed associated with the history of the sugar industry.
 - ◆ Deborah Jean Warner. **Sweet Stuff: An American History of Sweeteners from Sugar to Sucralose.** Rowman & Littlefield, 2011. 292 pp., \$29.95. Covers cane, beet, corn, molasses, honey, sorghum, and maple sugar production, as well as non-caloric saccharin, cyclamates, aspartame, and sucralose. Rev.: *T&C*, Vol. 54 (Jan. 2013), pp. 205-7.

IRON & STEEL

- ◆ Tony Adams. **Columbus Foundry, Once Down and Out, Is Finding New Life through New Owner Auto-Parts Supplier Chassix.** *Columbus (Ga.) Ledger* (Feb. 2, 2014). Foundry, established in the mid-1960s, has revived its declining fortunes through a \$10 million investment and merger with Chassix, a Michigan-based auto-parts supplier. The 350,000-sq.-ft. facility is now considered state-of-the-art and employs 590 workers in its foundry and machine shop.
- ◆ Joseph E.B. Elliott [SIA]. **Photographing the Steel.** *NRHS Bulletin*, Vol. 78 (Summer 2013), pp. 5-25. Copiously illustrated article discusses Elliott's long-term project to document the Bethlehem (Pa.) Steel Plant from 1989 to 1995 (see *SIAN*, Fall 2012).

TEXTILES

- ◆ Joe DePriest. **Mystery of Iconic 1908 Lincoln Child Labor Photo Solved.** *Charlotte (N.C.) Observer* (Jan. 19, 2014). The identity of the girl textile spinner in a famous Lewis Hine photo

may have been revealed. Historian Joe Manning, who has tracked down descendants of 350 people in Hine's photos, used census records and facial recognition software to match the girl's image with a later photo of an older woman named Lalar Blanton. See also, "Lewis Hine Project" on Manning's website, www.morningsonmaplestreet.com.

ABBREVIATIONS:

CE	= <i>Civil Engineering</i> , published by the American Society of Civil Engineers
CH	= <i>Construction History</i> , Journal of the Construction History Society (U.K.)
CHSA	= Construction History Society of America
MSC	= <i>Modern Steel Construction</i> , published by the American Institute of Steel Construction
NYT	= <i>New York Times</i>
NRHS	= National Ry. Historical Society
T&C	= <i>Technology & Culture</i> , published by the Society for the History of Technology
TICCIH	= <i>The International Committee for the Conservation of the Industrial Heritage</i> , www.mnactec.com/ticcih
Timeline	= published by the Ohio Historical Society, \$40/yr. Info: (614) 297-2315

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IA IN MAINE *(continued from page 17)*

visited Waltham Watch in the 1890s and may have been inspired by the factory's mechanical superintendent, D. H. Church, to develop his own assembly line.

Other artifacts in George's collection include steam engines, gauges, watches, reference material, manuals, and original drawings from several watch-tool builders, as well as the hour and minute hands used in the Howard clock above the Union Station in Portland (demolished 1961). The works of the clock itself is displayed in Portland's Congress Square. George is in the process of establishing a New England Industrial History Museum in Biddeford (see Friday Tour 2). It is planned to open in the not too distant future and will display his impressive collection of historic manufacturing and machine tools.

The SIA extends its thanks to the many companies and individuals who made the Portland tours possible.

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