

SOCIETY FOR INDUSTRIAL ARCHEOLOGY

NEWSLETTER

Volume 11, Number 4

Fall 1982

CONCORD GASHOLDER HOUSE RECORDED BY SIA NORTHERN NEW ENGLAND CHAPTER

In 1888 the Concord (N.H.) Gas Light Co. faced a serious crisis. Its gas storage capacity had become almost totally depleted because of increasing usage. According to an item in the *Concord Evening Monitor* of Apr. 7, "There were several occasions when at the hour of ten o'clock in the evening the holders in town were entirely empty and the only gas came back from the holder at St. Paul's school or was supplied by the constant make at the gas-works." Recognizing the need for prompt action, company officials decided to increase storage capacity by constructing a new gasholder at a cost of \$30,000. By the time work had been completed in Dec., the figure exceeded \$35,000.

The new gasholder was similar to others being built at the time. Deily & Fowler of Laurel Iron Works in Philadelphia furnished the plans, which were altered by John M. Hill to suit the specific site requirements. The tank (the masonry well within which the movable gasholder operated) and building were constructed by W. C. Whyte of N.Y.C.; according to the *Monitor*, Whyte already had built more than fifty such tanks throughout the country. The gasholder and other iron work were fabricated and installed by Deily & Fowler, a company that had completed "hundreds" of other holders.

As completed, the circular brick building measured 86 ft. in diameter and 28 ft. high. It had a slate roof topped by an octagonal cupola. The holder was of the single-lift type, 80 ft. in diameter and 24 ft. high. ("Single-lift" means that the holder was fabricated in a single piece; larger gasholders were made in two or three sections that expanded and contracted somewhat like a telescope.) It had a capacity of 120,000 cu. ft. and was constructed of riveted boiler plate. The weight of the 80,000-lb. tank furnished the pressure that forced the gas through the distribution system.

The company placed the holder in service in Dec. 1888. Its storage capacity solved the company's problems to such an extent that no additional holder was needed until after World War I. When the adjacent steel gasholder was finished in 1921, the 1888 holder became the repository for manufactured gas before it went to the new holder for city-wide distribution. This was done to allow some of the heavier tars and residue to settle out. It continued to be used this way until



Concord (N.H.) gasholder house, believed to be the only such structure in the U.S. that survives with its iron gasholder intact. It was built in 1888 by the Concord Gas Light Co. In the foreground are the compressor (left) and purifier buildings. Gary Samson photograph.

the company ceased gas manufacture late in the summer of 1952. That year the newly formed Concord Natural Gas Corp. connected with the national pipeline system bringing natural gas from the South and the Southwest. As soon as the city had been completely converted for the use of natural gas, the company discontinued operation of the 1888 gasholder.

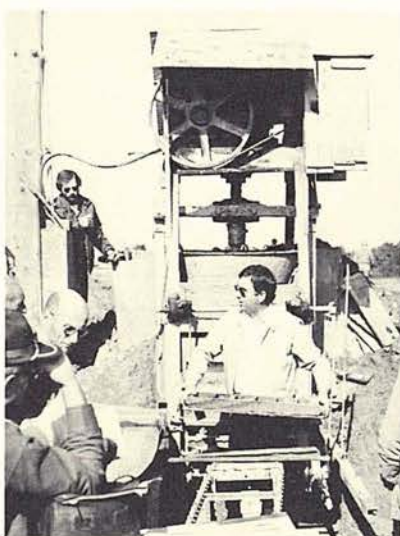
Although out of service for thirty years, the holder was never altered or converted to another use by the gas company. Furthermore, it is believed to be the only surviving gasholder house in the U.S. with its gasholder still intact. As the last survivor of a once-common technology, it was essential to document the structure according to Historic American Engineering Record standards.

Continued on page 5

The *SIA Newsletter* is published with the support of the Program for the History of Science & Technology, Case Western Reserve University, Cleveland, Ohio.

SIA FALL TOUR: COASTAL MAINE, PORTLAND TO BATH

Having gathered on Thurs. evening, Sept. 23, and Fri. morning, Sept. 24, at the Eastland Hotel in Portland, two busloads of participants hailing from thirteen states, Washington, D.C., Ontario, and Nova Scotia left early Fri. morning for the **Royal River Brick Co.** in North Yarmouth. No bricks were being molded, but the young proprietor, Richard Hossman, gave a detailed description of the process of making water-struck brick from clay dug on the premises. A specialty of one of the oldest such businesses in the country is restoration brick in which new brick is made to

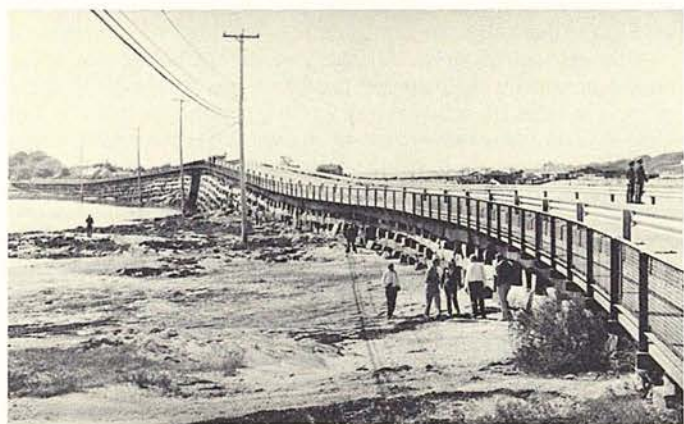


At the Royal River Brick Co., proprietor Richard Hossman explains the operation of a pug mill. *David Engman photographs.*

match closely the appearance of the original material. The group examined a brick kiln being fired by oil burners through arches around the base. At one place the burners had been removed, and workmen were throwing in large quantities of slab wood to carry the heat into the upper part of the kiln where the oil flame would not reach. The range of colors in finished brick varies with distance from the heat source, the darkest having been the hottest. An 1880s pug mill, a product of the New Haven Brick Co., is still used to extrude the clay into molds.

The next stop was **Yale Cordage**, also in North Yarmouth, which occupies the site of the former **Royal River Cotton Mill**, founded in 1847 to produce seamless grain bags. One of the original buildings still stands. Yale, a division of Wall Industries, Inc., of Elkin, N.C., began operations in 1953, braiding synthetic rope and twine from nylon, polyester, and polypropylene for a variety of markets, especially marine applications and electrical transmission line pulling rope. Our guide, Thomas Yale, said that the company plans to produce a cable 16 in. in diameter for use on offshore drilling rigs. Among the machines in operation were Wardell high-speed braiders from the Wardell Braiding Machine Co. [1978 SIA Fall Tour] of Pawtucket, R.I.

In the town of Harpswell, a photo stop allowed examination of a National Register property that is considered the only one of its kind. Built in 1927-28, the **granite crib bridge across Wills Strait** connects Orr's and Bailey islands. Designed by Llewellyn N. Edwards, engineer with the Maine State Highway Commission, it consists of locally quarried granite slabs upwards of 6 ft. long laid in crisscross fashion, the openings between allowing the strong tides here to flow readily



Tour members take a close-up look at the granite crib bridge (1927-28) across Wills Strait at Harpswell.

through. The weight of the stones alone keeps them in place. The bridge deck is of poured concrete, and there is a channel opening at the center of the 1,120-ft.-long structure to permit fishing boats to pass. The use of natural granite was considered most in keeping with the structure's coastal location.

After a box lunch at a roadside rest area, the buses dropped their passengers at the **Apprenticeshop**, one of several properties of the **Maine Maritime Museum**. Here, in an eighteen-month program, students are trained in the half-modeling and building of classic Maine coastal boats. Under a shelter beside the shop a "pinky" was under construction; this is a double-ended fishing boat 40 ft. in length, its lines taken from a half-model carved in the early 1830s. The



Outside the Apprenticeshop, tour members examine construction of a "pinky" of late-18th c. design.

design originated after the Revolutionary War at Essex, Mass. Oak planking, made flexible in a steam box, was being applied to oak frames and fastened with trunnels, or treenails, very dry wooden pegs that swell from moisture and assure a tight joint. The ceiling or inner planking of the vessel was of pine. The project exhibited the extraordinary skill required in constructing wooden vessels of any size.

A short bus ride took the group to the **Stinson Canning Co.** on the Kennebec River in Bath. Here, a fishing boat has only to tie up to the company dock; an oversized vacuum cleaner is lowered into the hold, and the catch is removed through a piping system directly into the plant for processing, eliminating much hand labor. Even though the removal of tails, heads, and bones is done by machines with rotating circular knives, the packing into tins is still a hand operation. Women standing at long tables worked at an almost frantic pace filling sardine tins with cuts of herring, six or seven pieces to each tin. Two conveyor belts, one above the other moving in opposite directions, brought the fish and the containers past the packers who grabbed what was needed and showed remarkable skill in fitting the irregularly shaped pieces to completely fill the tins. These then passed in single file down an endless belt, each automatically receiving a squirt of sauce that ranged from a mild oil to a super-spicy mouth burner (as some on the tour found out). Passing through a machine that applied the tops, the tins next went into steam-heated retorts for cooking. The women's fast, adept work was prompted by their being paid under a piecework system, lost motion meaning less money at the end of the day.

The return trip through Brunswick included a stop at a roadside park fronting the facility of **Harry Crooker & Sons**, contractors. Here the management has placed on exhibit vehicles formerly used in hauling timber out of the woods. An early motor truck had caterpillar treads on its rear wheels, similar to the modern army half-track. There was a train of several heavily built log sleds, and next to it the motive power for such a train, a **Lombard Log Hauler**, used in the late 19th c. and early 20th c. when snow covered the ground. It consists essentially of the boiler, cylinders, and wooden cab of a steam locomotive mounted on treads like those of a modern bulldozer. Above a large pair of runners and in front of the boiler was the open-fronted steersman's cab, with an upright steering column and wheel geared to the runners by which the massive hauler and its train



A brief stop was made at Brunswick to look over equipment once used for winter logging. Here, left to right, are a motor truck with caterpillar treads in place of rear wheels; a steam-powered Lombard Log Hauler, with treads and runners; and a pair of log sleds like those towed by the hauler.

of loaded sleds were guided. This position must have been a perilous one on a downgrade, with no braking system in evidence to hold back the tons of logs following behind.

Another brief stop was made at the Androscoggin River, separating Brunswick from Topsham. At the Pejepscot Falls, first surveyed for water power potential by Loammi Baldwin in 1835, excavation was under way for a hydroelectric plant. Height of the falls at high tide is 41 ft. Returning to the Eastland, the tour group was on its own to sample Portland's restaurant offerings for dinner.

After coffee and danish in the hotel lobby, the tour group boarded the buses at 8:30 on Sat. morning. Our destination was the crest of Munjoy Hill, 160 ft. above sea level, site of the **Portland Observatory** of 1807. This is a shingle-covered octagonal tower, tapering from a base 32 ft. in diameter and rising 83 ft. to the lantern, or cupola, with windows all around. There is a railed balcony with a flagpole. Lighthouse-fashion, access is by a circular stairway lighted by windows at the several landings. The view from the top commands all the waters around Portland and far out to sea.

The structure was built as a post from which, by telescope, vessels in distress and ships returning from sea could be sighted. Shipowners in the city then were notified by flag. This remarkable building is of heavy mortise-and-tenon construction, with posts at each of the eight corners formed from a single timber for the entire height. It is evidence of the size of tree that could at one time be found in the forests of Maine. The group was then given a tour of both the waterfront and the residential areas of Portland, with excellent commentary by the meeting organizers.

The next stop was on the Kennebec River in Bath at another property of the Maine Maritime Museum, the site of the original building slip of the **Percy & Small Shipyard**. Here large wooden vessels were constructed, including five- and six-masted schooners. Currently the auxiliary schooner *Bowdoin*, built in 1921, is undergoing restoration. This is the vessel that carried Admiral Donald B. MacMillan on 26 voyages to the Arctic between 1926 and 1954, sailing some 300,000 mi. Also being restored is the steam tug *Seguin* (1884).

The group next boarded the excursion boat *Sasanoa* for a tour of the river and a look at the **Bath Iron Works**, with Bud Warren, a trustee of the Maine Maritime Museum, offering commentary. The company began in 1826 as a tin shop, which then developed into a foundry, marking the actual start of the iron works. It was incorporated in 1884 as Bath Iron Works, Ltd. The extraordinary process of shipbuilding could here be plainly observed, whole sections of a ship being completed, even to the installation of refrigerators. These were then assembled in proper order and welded together to form the finished vessel. A tanker was being built in this manner, and several



From an excursion boat on the Kennebec River at Bath is seen a portion of the Bath Iron Works. Here, a tanker is under construction.

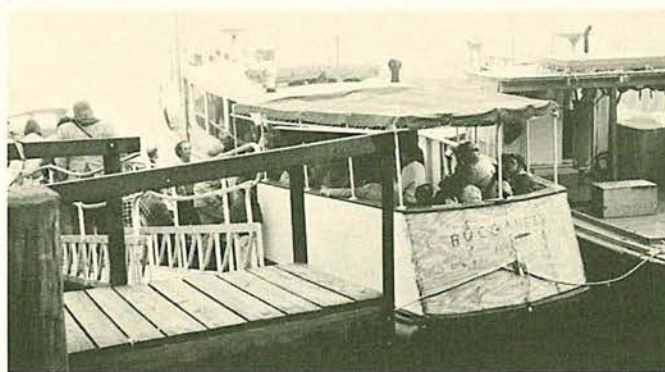
of the Navy's fast frigates equipped with missile launchers already were afloat and receiving their final details.

Back on shore, our next destination was **Sewall House**, headquarters of the **Bath Maritime Museum**, yet another branch of the Maine Maritime Museum. Built in 1844, the mansion houses a fine collection of paintings, ship models, photographs, and artifacts illustrating the seagoing history of the state.

Final stop on the tour was the **waterfront at Wiscasset**, where there was an opportunity to examine and photograph the famous derelict schooners lying immediately offshore where they were abandoned more than half a century ago. Despite their long exposure, both vessels retain their essential form, one even having most of its masts still standing, a tribute to the quality of construction characteristic of the wooden ships that once sailed these waters and beyond.

Toward sundown all participants were unloaded at Long Wharf, Portland. By this time a fog of the true pea-soup variety had settled in, rendering invisible anything beyond a hundred yards. Undaunted, the group boarded the open-cockpit boats *Buccaneer* and *Adventurer* and set off, fog horns blaring, into Casco Bay. Radar and the experience of the captains provided confidence enough; in fact, one of the most engaging parts of the trip out and back was the opportunity to visit the pilot house, where the owner gladly fielded all questions and interpreted the images that could be seen on the radar screen. Our destination was **House Island**, formerly a place of quarantine for immigrants to Portland and now a site for excursions and picnics. Here quantities of lobsters and clams were boiling in metal tubs over open fires, and steaks lay ready for broiling for those bypassing seafood. The less adventurous elected to dine inside the nearby hall, but most chose the outdoor picnic tables overlooking the bay, which became even less visible as darkness fell. Nothing, however, could spoil the satisfaction of that feast. Visibility on the return voyage was even worse, but both vessels were brought precisely to their moorings without incident, bringing the 1982 Fall Tour to an end.

Those who organized and conducted it are to be commended for a very smoothly run operation that treated the participants to a variety of engaging sites and experiences in an area of especial interest. Bob and Winnie Talbot handled registration. Larry Gross and Helena Wright did the lion's share of the work. The Sat. clambake was all



At Portland's Long Wharf, tour members board the *Buccaneer* for the trip across Casco Bay to House Island, site of Sat. night's clambake.

John Jordan's idea and carry-through. Thanks also go to John Carter, Kathy Hudson, and Bud Warren of the Maine Maritime Museum; Lisa Fink of the Maine Historical Society; Arthur Guerrier of Greater Portland Landmarks; P. Andre LeMaistre, Steve

Sochuck, and Thomas Yale of Yale Cordage, Inc.; Mr. and Mrs. Richard Hossman of the Royal River Brick Co.; John L. Jorgensen and Patricia Olds of Stinson Canning Co.; and, finally, Harry Crooker of Crooker's Mobile Homes. *H.C.D.*

TRENDS IN THE ADAPTIVE REUSE OF INDUSTRIAL BUILDINGS

BREWERY HOUSES A CITY'S ART TREASURES

Second in a Series



The Lone Star Brewery, San Antonio, Tex., prior to renovation. *San Antonio Museum Association photographs.*

The Lone Star Brewery in San Antonio, Tex., constructed between 1895 and 1904, is a complex of eight buildings located on approximately five acres of land on the banks of the San Antonio River. It was designed by E. Jungerfeld & Co. of St. Louis, who also had designed most of the Anheuser-Busch breweries then in production. All but one of the Lone Star buildings are of pale yellow brick, featuring arched openings and castellated, Italian-Romanesque towers. The brewery was closed during Prohibition and has since served as a cotton mill, an ice plant, and an army warehouse.

Of all Texas cities, San Antonio is the most active in preservation. One of the city's main attractions is the Paseo del Rio, a W.P.A. project that channelized the San Antonio River into the closest thing in this country to the canals of Venice or Denmark's Tivoli Gardens. Meandering through the heart of the city is a landscaped waterway, accessible by pathways and paddleboats and fronted by shops and restaurants. The directors of the San Antonio Museum Association (SAMA) selected the brewery complex for their art museum, rather than build a new building, because they felt that the use of a historic building might serve as a catalyst for development in that part of the city and could play an important role in the extension of the river corridor. The brewery buildings have long been a distinctive feature of the San Antonio skyline and a prominent visual landmark; more important, the brewery, with its exposed structural system of cast-iron columns, steel beams, and concrete and brick vaults, had interior spaces that easily could be adapted to serve the needs of an art museum.

In 1971, the museum secured an option to purchase five of the buildings and the adjacent parkland. In the spring of 1972, SAMA requested architecture students at the University of Texas at Austin to study the complex's ability to meet the requirements of an art museum. At the same time, the Texas Historical Commission (THC) nominated the property to the National Register. SAMA chose Cambridge Seven Associates of Cambridge, Mass., as project architects, who in turn selected architects Chumney, Jones & Kell, Inc., to document existing conditions, assist with local code-compliance review, and supervise construction.

Brewing is a gravity, heat, and chemical process that dictates the vertical organization of breweries. Towers permit the downward flow

of the wort as it undergoes various processes, as well as the exhaust of steam and heat from the brew kettles. Taking a cue from this functional organization, the architects focused their design on the vertical circulation of people through the twin towers of the brewhouse and storehouse. Visitors ascend the brewhouse tower in a glass-enclosed elevator with exposed working parts. Connecting the brewhouse tower to the storehouse tower at the roof level is a glass-enclosed truss bridge from which the visitor enjoys a panoramic view of the San Antonio skyline. Access to the remaining galleries in the storehouse is by an identical elevator descending the storehouse tower. The grounds of the brewery, featuring two magnificent live oaks, have been landscaped into sculpture courts, fountains, outdoor eating facilities, and a future boat landing.

Time magazine architecture critic Wolf von Eckardt cited the San Antonio Museum of Art as one of the five best architectural designs for 1981. In 1979, the project won a Progressive Architecture Design Award for Cambridge Seven Associates. But despite national recognition, the project has not been without controversy.

Disagreement arose between Cambridge Seven and the Texas Historical Commission, which had tentatively allocated \$100,000 to the project, over the window treatment on the primary street facade. SAMA and Cambridge Seven contended that because this faced south, art work could be damaged if direct sunlight was allowed to penetrate. Their solution was to glaze some of the windows with solar gray insulating glass. To further control light penetration, sliding louvered panels were designed to pull out of pockets on the sides of



Nighttime view of the new San Antonio Museum of Art. A skywalk connects the two towers.



One of the new galleries in the west tower, formerly the brewhouse of the Lone Star Brewing Co.

the windows, thus eliminating daylight and reducing brightness to acceptable levels. Where no natural light was wanted, windows were blocked up and made to appear as dark blue panels on the exterior.

The architects justified this treatment by noting that many of the windows already had been bricked up as the function of the building had changed over time. The Texas Historical Commission contended that blocking up the windows would "adversely affect the historical character" of the building. SAMA resolved the issue by supporting their architects and rejecting the THC grant.

The new San Antonio Museum of Art opened in March 1981. It contains 141,000 sq. ft., of which 66,000 sq. ft. is exhibit space; a 188-seat auditorium; and a 2.5-acre outdoor sculpture garden. The project cost \$7.1 million. By comparison, Dallas is spending \$40 million on its new museum.

Other than the disagreement over window treatment, all the ele-

ments for a successful adaptive reuse project were present here. There was thoughtful planning in the early stages to test the viability of reusing an old, abandoned brewery at the fringes of the downtown area. While the museum directors decided to hire an out-of-town architect, they retained local talent to conduct a feasibility study, document existing conditions, provide liaison with city officials, and supervise construction. National Register listing made possible the leverage of Economic Development Administration funds (\$3.4 million) and a Community Development Block Grant for exterior and public improvements.

The museum directors are to be congratulated on an exemplary project. Housed in one of the best examples of brewery architecture in the Southwest, the new San Antonio Museum of Art eloquently demonstrates the aesthetic and economic potential of the adaptive reuse of industrial buildings. *E.N.D.*

BRIDGE RESCUE A POPULAR CAUSE IN ASHTABULA, O.

Through the cooperative efforts of public officials, engineers, and local citizens, plans are under way for the preservation of the West Fifth Street Bridge across the Ashtabula River in Ashtabula, Ohio. This is the last remaining single-leaf bascule bridge in the state highway system. Erected in 1925 by the Kelly-Atkinson Construction Co. of Chicago, it is an unusual example of the Mystic type of Brown bascule bridge invented by Thomas E. Brown of N.Y.C.



West Fifth Street Bridge (1925) over the Ashtabula River, Ashtabula, Ohio. *David A. Simmons photograph.*

Brown, with his son Thomas E. Jr., together were responsible for more than twelve patents for bascule structures. Brown developed his first bascule bridge in the 1890s, using a counterweight that moved vertically. With his son, he began work in the early 20th c. to devise a simple and effective means for operating small bascule bridges that resulted in the Brown "balance-beam" or "Mystic" type of bridge. Named after the first example built in Mystic, Conn., in 1922, the design featured overhead counterweights connected to trusswork balance beams which, as the bridge opened, rotated through a considerably smaller angle than the span. This permitted a simplified arrangement of the balance-beam structure and reduce the total quantity of steel with a resultant savings in cost. The design was patented in 1910 and 1924.

As the condition of the Ashtabula bridge deteriorated in recent years and the possibility of replacement was discussed, considerable local support grew for its preservation. Merchants in the adjacent Ashtabula Harbour Commercial District [NR] were among the first to recognize the importance of the bridge and its contribution to the historic character of the area. They formed an S.O.B. (Save Our Bridge) committee and actively petitioned city officials for its restoration. The present councilman for the area, David Reece, campaigned and won election on a platform promising to work for preservation of the bridge.

Early this year David Weir, director of the Ohio Dept. of Transportation, called a meeting of federal, state, and local officials to discuss repair of the structure. A highly detailed study prepared by an engineering consultant hired by Ashtabula Co., which maintains the

bridge, identified three alternatives: restoration, rehabilitation, and replacement. Restoration was the treatment recommended by the report since its projected cost was less than the other two alternatives.

Initial skepticism by Federal Highway Administration officials centered on the weight and width limitations that would result from a strict restoration. They finally agreed to a rehabilitation that would bring the weight capacity up to that of a new structure. They were willing to compromise on the width since the structure's tunnel-like qualities promote its use as a single-lane bridge, although technically it is wide enough to accommodate two lanes of traffic. Thus rehabilitation plans will increase the loading capacity of the bridge while preserving its historic appearance. *D.A.S.*

Bridge buffs, especially those who think modern bridges are all of the boring girder type, should look at the American Institute of Steel Construction's "Prize Bridges/1982" section in *Engineering News-Record* of Oct. 14, 1982, for photographs of the eight prize winners and numerous runners-up. Of particular interest is the award to the Augustine Bridge over the Brandywine Creek in Wilmington, Del. This is the third superstructure to rest on the masonry piers originally built by the B&O Railroad in 1885 [SIAN Nov. 75:5]. Also illustrated is a through truss built for the Burlington Northern Railroad at Sioux City, Iowa, which will delight those who thought the heroic age of railroad bridge building had ended forever. *A.R.C.*

CONCORD GASHOLDER

Continued from page 1

On the weekend of July 24 and 25, a team of about twenty-five volunteers, including many members of the SIA Northern New England Chapter, gathered in Concord to measure and record the gasholder. The project was coordinated by the Institute for New Hampshire Studies (INHS) of Plymouth State College and was funded in part by a grant from the New Hampshire Historic Preservation Office. Cedric Dustin, president of the Concord Natural Gas Corp., became an enthusiastic supporter of the project and supplied considerable historical and technical information about the gasholder. (Dustin began to work there when gas still was being made from coal and oil.) Eric N. DeLony of HAER and Robert M. Vogel of the Smithsonian Institution directed the recording work.

The weekend weather proved ideal. The 1888 gasholder was thoroughly measured and photographed. Photographers for the project were Gary Samson and James Whiteside. Associated structures, many still in use as offices, warehouses, and repair shops, also were photographed, mapped, and measured by the volunteers. The measured drawings are being completed by Brian Lombard of Concord. William L. Taylor and Quentin Blaine of INHS will prepare a historical report during the winter, and it is anticipated that the entire project will be ready for submission to HAER next spring.

It must be noted that it was the enthusiasm and dedication of SIA members that made this recording project possible. To those who assembled in Concord that July weekend goes much of the credit for successful documentation of a unique aspect of America's industrial heritage. *W.L.T.*

CONTRIBUTORS TO THIS ISSUE

Alan R. Clarke, No. Va. Community College; Herbert C. Darbee, Woodstock, Conn.; Eric N. DeLony, HAER; Michael B. Folsom, Charles River Museum of Industry; Margot Gayle, Friends of Cast Iron Architecture; David A. Simmons, Ohio Historical Society; and William L. Taylor, Plymouth (N.H.) State College.

MISC. NOTES

"HISTORIC ENGINEERING LANDMARKS," a new brochure by Richard Hartenberg [SIA], is available free from the American Society of Mechanical Engineers. The brochure lists and describes all state, national, and international ME landmarks named by the ASME to 1980, with a state-by-state roster of their locations. Public Information, ASME, 345 E. 47th St., N.Y.C. 10017.

CANAL SYMPOSIUM. The Center for Canal History & Technology and Lafayette College will cosponsor the second annual Canal History and Technology Symposium on Sat., Mar. 26, at Lafayette College. The registration fee of \$25.00 includes lunch and a copy of symposium *Proceedings*. Information: Center for Canal History & Technology, Canal Museum, P. O. Box 877, Easton, Pa. 18042; (215) 258-7155.

DIPLOMA COURSE IN IA. The Institute of Industrial Archaeology, operated jointly by the University of Birmingham and the Ironbridge Gorge Museum Trust, is offering a post-graduate course of study in Industrial Archaeology. The course, which leads to a diploma, encompasses studies in the history of industry and technology, the practice and techniques of IA, and issues in industrial conservation. Fieldwork will take students to many parts of Britain, and teaching takes place both at the museum and at the university. Activities this year, when the course was offered for the first time, ranged from measuring lime kilns on the Montgomeryshire Canal to watching iron being cast at a Stourbridge foundry. The course may be taken full-time over a period of one year or part-time over two years. Information: Institute of Industrial Archaeology, Ironbridge Gorge Museum, The Wharfe, Ironbridge, Telford, Shropshire.

"THE INDUSTRIAL CITY" is the theme of the fourth annual Lowell Conference on Industrial History, to be held at the University of Lowell on Apr. 29-30. Individual sessions will address the teaching of urban history, preservation of urban industrial areas, impact of technology on urban culture, and the urban-industrial community. The conference is sponsored by Lowell National Historical Park, the Lowell Historical Preservation Commission, and the University of Lowell. Information: Robert Weible, Chairman, Lowell Conference on Industrial History, Lowell, Mass. 01852; (617) 459-1000.

HISTORY OF WORK CONFERENCE. "Industrious in Their Habits: Rediscovering the World of Work" is the title of a special conference to be held in Toronto at the Ontario Institute of Studies in Education (OISE), Jan. 26-29. Conference theme is the changing nature and processes of work over the past 150 years. Speakers from both the museum field and the academic community will address topics related to work in the home, on the farm, in industry, and in business and the professions. Special sessions will consider an interdisciplinary approach to researching and interpreting the world of work and communicating labor history to schools. The conference is sponsored by the Ontario Museums Assn. in cooperation with OISE and with assistance from the National Museums of Canada. Registration fee is \$60.00. Information: Ontario Museums Assn., 38 Charles St. E., Toronto M4Y 1T1; (416) 923-3868.

RESEARCH/PUBLICATION GRANTS. The directors of the Early American Industries Assn. announce five annual grants to provide up to \$1,000 to individuals or institutions engaged in research or publication projects relating to the study and better understanding of early American industries in homes, farms, or on the sea. Application deadline for 1983 awards is Mar. 15. (See SIA Spring 82:6 for an announcement of 1982 prize winners and their projects.) Information and application from Charles F. Hummel, Chairman, Grants-in-Aid Committee, c/o Winterthur Museum, Winterthur, Del. 19735.

BROOKLYN BRIDGE CENTENNIAL CALENDAR. Attractive 14 in. x 22 in. wall calendar with four-color cover and 12 two-color reproductions on heavy ivory textured stock illustrating the history of the bridge. Single copy, \$6.50 ppd. Discounts for large orders. Write: American Society of Civil Engineers, 345 E. 47th St., N.Y.C. 10017.

RESEARCH QUERIES

I recently dug up an old windmill, buried in the sands of Owens Valley, Calif. The mill is Aermotor — Chicago, Ill.; patent Mar. 1906; latest patent May 1920. The gearing mechanism is rusted badly and some parts are missing, but most of it is sufficiently well preserved to be worth refurbishing. Mechanical specifications, parts, or even plans for a similar mill would be helpful. Ben F. Randolph, Box 454, Lone Pine, Calif. 93545.

Collector seeks old photographs (1880-1930) depicting men working around or with woodworking machinery. Old receipts, invoices, or other papers from woodworking companies and mills also are sought. Stephen E. Schurman, 8577 Copley Ct., Fair Oaks, Calif. 95628.

NEWS OF MEMBERS

ARTHUR D. DUNN of Ottawa, Ont., has been honored as a Freeman of the City of London in recognition of his research into the origins of the Marmora Ironworks in Ontario.

Producer-filmmaker **JOHN KAROL** of Orford, N.H., has received a CINE Golden Eagle Award for his recent film "Ben's Mill." The film documents the craftsmanship and character of Ben Thresher in his Barnet, Vt., woodworking shop and forge as he makes a sod lifter, water tub, and horse-drawn sled for his local customers. Thresher's waterpowered mill [HAER] has operated continuously on the Stevens River since about 1850. The hour-long documentary was initially telecast last Dec. on PBS as part of the "ODYSSEY" series.

The Regional Economic History Research Center of the Eleutherian Mills-Hagley Foundation, Wilmington, Del., has initiated a four-year historical study of the research and development program of the Du Pont Co. **DAVID A. HOUNSHELL**, curator of technology at the Hagley Museum and asst. prof. of history at the University of Delaware, will direct the study.

OLD STURBRIDGE VILLAGE has received a challenge grant of \$100,000 from The Kresge Foundation toward reconstruction of an early 19th-c. sawmill. The sawmill, to be placed in operation in spring 1984, will become part of the Village's community of period houses, barns, churches, and mills.

POSITIONS AVAILABLE

Curator, new museum of industry. Ph.D. and several years' museum experience preferred. Salary \$14,000-20,000. Position to begin early 1983, funds permitting. Resume to: Michael Folsom, Director, Charles River Museum of Industry, 154 Moody St., Waltham, Mass. 02154.

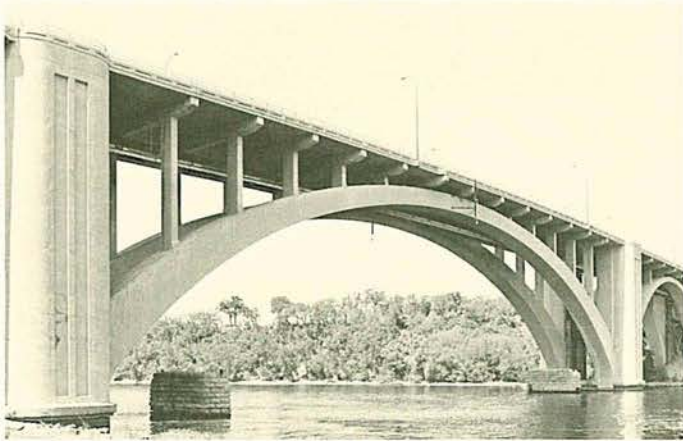
The Department of Social Sciences, one of five departments in Michigan Technological University's College of Sciences & Arts, is seeking a Head to begin Fall 1983. The Head will direct a faculty of nineteen representing anthropology, archeology, geography, history, political science, psychology, and sociology. The department, which has a vital role in the education of MTU's 7,500 undergraduates, most of whom major in engineering or the physical sciences, also houses an interdisciplinary program in Science, Technology & Society (STS). Candidates should have a broad understanding of the social sciences and a strong record of research, publication, and professional involvement in one of the disciplines. Particular consideration will be given to those candidates with an interest in STS, strong managerial skills, and a demonstrated capacity for leadership. Resume, brief description of research interests, and names of three references by Jan. 1. to: Larry D. Lankton, Chair, Search Committee, Office of the Dean of Sciences & Arts, M.T.U., Houghton, Mich. 49931.

POSITION SOUGHT

Industrial archeologist with M.A. in American History seeks responsible position with a museum, historic site, government agency, or private organization. Background includes work with HAER, the Smithsonian, and Ironbridge Gorge. Resume and references upon request. Richard Hellinger, 228 E. 6th St., #19, N.Y.C. 10003; (212) 254-8885.

SIA AFFAIRS

A collection of six major concrete arch bridges will be among the significant engineering structures highlighted during the 1983 SIA Annual Conference in St. Paul-Minneapolis, May 12-15. All six were constructed during the post-World War I automobile era, 1918-29, when the Twin Cities emerged as an experimental laboratory for reinforced-concrete technology.



Cappelen Memorial Bridge (1919-23) over the Mississippi River, Minneapolis. Robert M. Frame III photograph for Minnesota Historical Society.

Engineers such as F. W. Cappelen, C. A. P. Turner, and Walter H. Wheeler struggled to find economical ways to span the Mississippi and Minnesota rivers bluff to bluff, while providing adequate clearance for barge traffic. Their efforts produced a creative variety of two-rib, five-rib, barrel, and bowstring arch designs, each of significant length, including a then world-record-breaking 400-ft. concrete arch in the Cappelen Memorial Bridge. Simultaneously, these Minnesota engineers and builders were erecting an unusually large number of tall reinforced-concrete buildings in the Twin Cities and grappling with advanced concrete water tank designs elsewhere in the state.

Conference-goers will get a dramatic "bargeman's view" of the concrete bridges, along with the rest of the Twin Cities' large bridges and industrial waterfront, during a special Mississippi River stern-wheeler banquet-cruise.

PROGRESS REPORT: SIA TEACHERS' WORKSHOP IN INDUSTRIAL HISTORY. The first teachers' workshop in industrial history, sponsored by the SIA under its \$145,000 grant from the National Endowment for the Humanities, was conducted during July at the Charles River Museum of Industry in Waltham, Mass. Twenty elementary and secondary school teachers from Waltham and five other communities in eastern Mass. participated in two weeks of highly varied activities. Michael Folsom [SIA], project director and executive director of the Charles River Museum, and David Weitzman [SIA], curriculum writer for the project, were joined by Sheri West, Steve Lubar [SIA], and Sandra Norman [SIA] of the Museum staff in conducting the workshop.

The first week was spent in introducing the teachers to a variety of basic IA techniques, with an eye to adapting them to classroom use and to the realities of conducting fieldwork within the constraints of school budgets and schedules. High point of the week for many was a field survey of one of Waltham's most nondescript streets — a thoroughfare lined with body shops, junkyards, and blighted housing. The walk was preceded by an exercise with historic and modern topographical maps and was followed by a day of archival work, including a search of city directories and census records. What had seemed a perfectly contemptible little street turned out, to everyone's amazement and satisfaction, to boast (now or historically) a gristmill, sawmill, weather vane factory, foundry, cork-insulated meat storage facilities, blackboard chalk factory, and several machine shops. A session in oral history with former workers at the Watertown Hood Rubber plant, exercises in field recording, and a trip to Slater Mill in Pawtucket, R.I., completed the week.

The second week was devoted to an experiment in "media archeology." A professional audio-visual producer, Jonathan Barkan of Communications for Learning, Inc., and a television production crew from the Adams-Russell Cable Franchise Co. divided the teachers into teams, drilled them in the rudiments of 35mm and portapaks, and set them loose with rough scripts in three different factories. One television team went to Artisan Industries, a small-lot and prototype metalworking shop where the processes of machining, welding, sandblasting, and pickling were extensively explored. One of the slide-tape crews went to a garment loft where Italian and Hispanic women sweltered over the winter line for Jones New York, the other to the Hubbard Harpsichord factory, which assembles do-it-yourself harpsichord kits.

To be honest, these activities were not a complete success because of the time that had to be spent on media techniques before turning to the historical and technological content. Still, the staff feels encouraged about the application of these techniques to recording industrial archeology under other circumstances.

Weitzman returned to Waltham in Sept. to meet again with workshop teachers and assist them in developing their workshop experience into classroom activities this coming school year. He will spend much of the winter drafting IA curricula for various grade levels for every major period in American history, and at least two more workshops will be conducted next summer.

By the time we are done, IA may not quite have become household initials throughout the land, but at least a few more children will babble of Pratt and Fink, Watt and Corliss, warp and weft, pitch back and flashboard — no small accomplishment.

The workshop received almost too much media coverage for comfort. There were stories on both the local NBC and PBS evening news, interviews with Folsom and Weitzman on two radio stations, and articles in local papers. In addition, Adams-Russell has prepared a 15-min. video documentary on the project, which is available for viewing by SIA chapters and individuals. Write: "World of Work," CRMI, 154 Moody St., Waltham, Mass. 02154. M.B.F.

TERMINAL EAGLES SOUGHT

This past summer saw the opening of a sophisticated exhibit on the history, planning, and construction of New York City's Grand Central Terminal [NHL]. Titled "Grand Central Terminal: City Within the City," the exhibit was presented at the New-York Historical Society. Extensive research for both the exhibit and a book of the same title has not turned up an answer to the origin of the great cast-iron eagles that adorned the domed towers of the station that preceded the present complex. Who was their sculptor and what foundry cast them?

The first Grand Central Depot, built in 1869, within twenty years was found to be too small and plans were made to enlarge it. The great glass and iron trainshed remained unchanged, but the headhouse looked like a different station when completed in 1898. Architect C. P. Gilbert added three more floors, and large domed towers at each corner gave it an altogether new profile. Old photographs show eleven great iron eagles positioned along the roofline. Each had a wingspread of 13 ft. and weighed about a ton.



Grand Central Terminal, rebuilt in 1898, incorporated and greatly enlarged the mansard-roofed station of 1869. The cast-iron eagles can be seen on the balustrade at the base of the tower. Photographer unknown.

Continued on page 8



Grand Central eagle waits at the Southeast Township garage for permanent public display. Suzanne DeChillo photograph.

When this modified station was demolished for the construction of the present Grand Central Terminal, the eagles were not thrown on the scrap heap but instead were claimed by various individuals and institutions. In the 1960s, David McLane, photographer for the *New York Daily News*, observed one of the eagles on a grassy spot alongside the New York Central tracks at the Philipse Manor Station in Tarrytown, N.Y. It whetted his curiosity and in a matter of months he succeeded in tracking down nine of the eagles, a *tour de force* since New York Central's records held no clues to their disposition.

All of the eagles were in New York State, within a 50-mi. radius of the city. McLane himself acquired one and hauled it to his home near Brewster, N.Y., where it presided over his garden for six years. Upon moving to another city in 1980, he presented the eagle to Southeast Township, in which Brewster is located. The eagle now is stored in the municipal garage for protection. In preparation for its permanent public display, the local historical society would like to learn who designed it.

The Friends of Cast Iron Architecture would be pleased to hear from anyone who can shed light on any aspect of the history of the eagles — their present whereabouts or owners and, most especially, their sculptor and the iron foundry that cast them. Contact FCIA, 235 E. 87th St., Rm. 6C, N.Y.C. 10028; (212) 369-6004. *M.G.*

REVIEWS

Bibliography of the Design, Construction and Operation of Railroad Stations, 1875 to Date, by Carl W. Condit. Published as *Railway History Monograph*, Vol. XI, No. 1. J-B Publishing Co. (430 Ivy Ave., Crete, Nebr. 68333), 1982. 37 pp. \$5.00 ppd., paperbound.

Substantive bibliographies on railroad structures are scarce and usually specialized, so one is welcome in almost any form. This one really is more of an "in-process" bibliography put together by Prof. Condit for his own use and as a by-product of his various researches. Hence it doesn't live up to its awesome title, but then it wasn't meant to.

To one extent or another, however, it lists technical articles on stations in 50 major U.S. and Canadian cities, plus a light dusting of English-language references to European terminals. The listings don't pretend to be either wide or deep. First, the sources are limited primarily to railroad and engineering trade magazines of the time, particularly *Railway Age*, *Engineering News-Record*, and their predecessor publications. There are few references to books (not even John Droegge's classic *Passenger Terminals and Trains* is included) or to more recent historical articles. Second, some of the references themselves are incomplete; apparently Condit had made notes from indices, but was not able to look up an article. And finally, of course, the number of cities and stations is limited. You won't find Oshkosh, Peoria, or the hundreds of medium-sized and smaller spots. (But you also won't find Cincinnati and New York; Condit developed separate and more comprehensive bibliographies for these as part of his books on the two cities.)

But such criticism is beside the point. The intent here was not to produce the ultimate reference, but simply to share one scholar's work with others who may be trying to dig into a subject. As such, it's an excellent help — particularly considering that Condit has lessened the tedious job of combing through over 100 years' worth of indices

in difficult-to-find trade magazines. And the price makes it almost a giveaway. *Herbert H. Harwood Jr., Chessie System Railroads*

The Brooklyn Bridge: They Said It Couldn't Be Built, by Judith St. George. G. P. Putnam's Sons (200 Madison Ave., N.Y.C. 10016), 1982. 125 pp. \$10.95. (Ages 11 and up)

This is a handsome addition to the growing number of books on IA subjects written for children. While ostensibly aimed at the audience known as "Young Adults," it is a straightforward narrative suitable for anyone coming to the subject for the first time.

St. George's own curiosity was aroused by a short article on early plans for the 1983 Brooklyn Bridge Centennial. She initially intended to write a brief history of the construction of the bridge. The project inevitably grew, and the result is this strikingly illustrated, well written introduction to a remarkable engineering landmark.

While any author tackling this subject might find David McCullough's *The Great Bridge* (1972) a hard act to follow, St. George has produced a work that is very much her own. Couching the tale within the dramatic lives of John, Washington, and Emily Roebling, she presents all the essentials of the complex construction process, many details of which probably are not available to younger readers in any other book. The 32 black-and-white illustrations, mainly wood engravings made during construction, have been carefully chosen to clarify technical explanations while adding historical flavor. Lacking are the colorful political background of Boss Tweed and his cohorts and such episodes of social history as the rise and fall of Henry Ward Beecher that make McCullough's book so rich. As an introduction to a stunning engineering achievement and to the heroic sacrifices of the Roeblings, however, *They Said It Couldn't Be Built* is highly recommended.

The quality of pictorial reproduction generally is excellent, and the book itself has been designed with care. A bibliography of more than 40 entries lists both primary and secondary works for further reading. In addition, an appendix summarizes such vital statistics as the total length of wire in each cable (approximately 3,600 mi.), the weight of each anchorage (60,000 tons), and the number of suspender cables (1,520).

It is worth adding that neither of this reviewer's two local bookstores had the book on hand, though one is stocking up upon request. In the interest of advancing the cause of IA, SIA members might want to tell bookstores of their interest. *Sarah Gleason, Providence, R.I.*

BRIEFLY NOTED

Strong-Minded Women and Other Lost Voices from Nineteenth-Century England, by Janet Horowitz Murray (New York: Pantheon Books, 1982), is an anthology of documentary first-person narratives from Victorian England. The book is divided into thematic sections, including Woman's Sphere, Woman's Mind, and Woman's Work. The work section is thin, just 50 pages in a book of 450 pages. It includes middle-class and working-class divisions, with the latter consisting of domestic service, factory work, needlework, agricultural, mining, and retail occupations. The accounts are divided between middle-class reformers' writings and the testimony of women workers themselves. The documents and themes are more thoroughly presented in such studies as E. Royston Pike's *Human Documents of the Industrial Revolution in Britain* (1966). There is something here for the dirt archeologist, however, a reminiscence from a dung collector: Dog dung, known as "pure," was once gathered and sold for use in tanning leather. *Helena Wright, Merrimack Valley Textile Museum*

The *SIA Newsletter* is published four times a year (Winter, Spring, Summer, and Fall) by the Society for Industrial Archeology. It is sent to SIA members, who also receive the Society's journal, *IA*, published annually. SIA promotes the identification, interpretation, preservation, and re-use of historic industrial and engineering sites, structures, and equipment. Annual membership: individual \$20; couple, \$25; institutions, \$25; contributing, \$50; sustaining, \$100; student, \$15. Send check payable to SIA to Treasurer, Room 5020, National Museum of American History, Smithsonian Institution, Washington, D.C. 20560; all business correspondence should be sent to that office. Editorial correspondence should be sent to CAROL POH MILLER, Editor, *SIA Newsletter*, Program for the History of Science & Technology, Mather House, Case Western Reserve University, Cleveland, Ohio 44106.



SOCIETY FOR INDUSTRIAL ARCHEOLOGY NEWSLETTER

PUBLICATIONS OF INTEREST

A SUPPLEMENT TO VOL. 11 NO. 4

FALL 1982

Compiled by Robert M. Frame III, James J. Hill Papers, Hill Library, St. Paul, & Robert M. Vogel, National Museum of American History

BOOKS & ARTICLES

Jorma Ahvenainen, *THE FAR EASTERN TELEGRAPHS: THE HISTORY OF TELEGRAPHIC COMMUNICATIONS BETWEEN THE FAR EAST, EUROPE, & AMERICA BEFORE THE FIRST WORLD WAR*. Suomalainen Tiedeakatemia Toimituksia Series B, No. 216. Suomalainen Tiedeakatemia (Helsinki, Finland), 1981. 226 pp. Rev.: *Am. Hist. Rev.*, Oct. 1982.

Richard S. Allen (SIA), *NORTH COUNTRY BRIDGES: UPSTATE N.Y. North Country Books* (Sylvan Beach, N.Y. 13157), 1982. Pp & \$\$ unk, but if it's RSA it's got to be good. Both timber & iron spans.

Robert E. Ankli & Alan L. Olmstead, *THE ADOPTION OF THE GASOLINE TRACTOR IN CALIFORNIA*. In *Agricultural Hist.*, July 1981, pp. 213-30.

Roger Arcara, *CALIFORNIA'S NEW RR MUSEUM*. In *Railroads Illustrated* (40 E. 66th St., N.Y. 10021), Summer 1981, pp. 15-17. State RR Museum, Sacramento, opened 1981.

Eric Arthur & Thomas Ritchie, *IRON: AN INTRODUCTION TO IRON: ITS PREPARATION, FORMING, APPLICATION, AND DECORATIVE PROPERTIES & USES*. Univ. of Toronto Press (Avail: Friends of Cast Iron Architecture, 235 E. 87th St., N.Y. 10028 Apt 6C), 198?. 256 pp., illus. \$29.75 Ppd (Checks to FOCIA). Cast & wrought iron in Canada, 17th C to present, nearly all decorative, architectural & domestic.

Betsy Bahr (SIA), *THE ANTIETAM WOOLEN MANUFACTURING CO.: A CASE STUDY IN AMERICAN INDUSTRIAL BEGINNINGS*. In *Working Papers from the Regional Economic History Research Center 4* (No. 4, 1981) pp. 27-46.

Robert D. Barnett et al, *THE INDUSTRIAL ARCHAEOLOGY OF THE ELECTRICAL DEVELOPMENT COMPANY GENERATING STATION AT NIAGARA FALLS*. The Niagara Soc. for Industrial History (6776 Wilfinger St., Niagara Falls, Ont L2J 2B3, 1982. 63 pp. Account of electricity generation at the Falls in general and at this station in particular, built 1903. Thorough, model study with good drawings and data.

W. Barr & T.E. Appleton, *MIKULA: A CANADIAN ICEBREAKER REPATRIATED*. In *Polar Record*, Jan. 1982, pp. 51-58.

James C. Bogle, *THE WESTERN & ATLANTIC RR--1864*. In *Atlanta Hist. Jnl.*, Summer 1981, pp. 45-72.

Bob Bowman, *LUFKIN MILL PIONEERS SOUTHERN PINE PULP USE*. In *Southern Pulp & Paper*, February 1982, pp. 18-20. Technological breakthrough in 1932 provided basis for developing a pulp industry in east Texas.

R.H. Campbell, *THE RISE & FALL OF SCOTTISH INDUSTRY, 1707-1939*. Humanities Press (Atlantic Highlands, NJ), 1980. 208 pp., \$32.50. Rev.: *Business Hist.* (London), July 1982.

Stephen P. Carlson & Fred W. Schneider III, *PCC: THE CAR THAT FOUGHT BACK*. Interurban Press (Glendale, CA), 1980.

235 pp., illus., charts, appendix, index, \$23. The Electric Rwy Presidents' Conference Committee which designed the Presidents' Conference Car (PCC), & the push for improved rapid transit design. Rev.: *Tech & Cult.*, July 1982.

Valerio Castronovo et al, *ARCHEOLOGIA INDUSTRIALE IN LOMBARDIA: DALL' ADDA AL GARDA*. Medio Credito Regionale Lombardo (Via Droletto 20, 20121 Milano, Italy), 1981. 224 pp, prof. illus. color/b&w. A lavish folio treatment of the IA of Lombardi.

S.D. Chapman & S. Chassagne, *EUROPEAN TEXTILE PRINTERS IN THE 18th CENTURY: A STUDY OF PEEL & OBERKAMPF*. Pasold Studies in Textile Hist. Heinemann Educational Bks (Exeter, NH), 1981. 257 pp., \$45. Rev.: *Business Hist.* (London), July 1982.

T.M. Charlton, *A HISTORY OF THEORY OF STRUCTURES IN THE 19th CENTURY*. Cambridge Univ. Press (New Rochelle, NY), 1982. 194 pp., \$42.50.

Roger Cook & Karl Zimmerman, *WESTERN MARYLAND RY, FIREBALLS & BLACK DIAMONDS: AN ILLUS. HISTORY OF THE RR, WITH PARTICULAR EMPHASIS ON THE QUARTER-CENTURY FROM THE WM'S CENTENNIAL IN 1952 TO THE CHESSIE SYSTEM'S ASSUMPTION OF THE LINE IN THE SEVENTIES*. Howell-North Books (San Diego), 1981. With a title like that, what more to say?

Ronald Corradin, *BACKTRACKING: THE STORY OF ST. PAUL'S STREETCARS & THE MIDWAY STREETCAR SHOP*. In *Encounters* (Science Museum of Minn., St. Paul 55101), Sept.-Oct. 1982, pp. 18-21.

Michael S. Cross & Gregory S. Kealey (eds.), *CANADA'S AGE OF INDUSTRY, 1849-96*. Readings in Canadian Social History, vol. 3. McClelland & Stewart (Toronto), 1982. 229 pp., \$9.

Andrea Oppenheimer Dean, *'HEART OF THE COUNTRY'S GREATEST CITY': THE MANY SIGNIFICANCES OF GRAND CENTRAL*. In *AIA Journal*, Oct. 1982, pp. 51-54. Overview of Grand Central Terminal, NYC.

Bernard M. Feilden, *CONSERVATION OF HISTORIC BUILDINGS*. Butterworths Pub. Inc. (10 Tower Office Park, Woburn, MA 01801), 1982. 472 pp., \$124. Discusses structural elements in detail & appendix assesses historic bldgs as structures.

Andreas Feininger, *INDUSTRIAL AMERICA 1940-1960*. Dover Publ. (NY), 1981. \$9.95 paper. "...something of the beauty, the power and the excitement of the industrial scene." Photographic coverage by one of the masters. Rev.: *American Photographer*, Dec 1982, p. 24 ff.

Stefano Fenoaltea, *GROWTH OF THE UTILITIES INDUSTRIES IN ITALY, 1861-1913*. In *Jnl. of Economic Hist.*, Sept. 1982, pp. 601-27.

Kenton Forrest & Charles Albi, *DENVER'S RRS: THE STORY OF UNION STATION & THE RRS OF DENVER*. Colorado RR Museum (Box 10, Golden 80401), 1981. 244 pp., \$22. Rev.: *RR Hist. Bull.* 146, Spring 1982.

- Lee Friedlander, *FACTORY VALLEYS*. Callaway Editions IV, 1982, \$50. Photodocumentation of the industrial scene. Long rev.: *American Photographer*, Dec. 1982, p. 24 ff.
- William Gove, *THE MIC-A-MAC RR OF BRANDRETH*. In *Northern Logger & Timber Processor*, April 1981, pp. 10-12, 40-41. Logging RR in the Adirondacks, 1912-20.
- A.G. Graham (ed.), *DAD'S MEMORY LOCKER: RECOLLECTIONS OF PORTLAND & WILLAMETTE RIVER STEAMBOATING A CENTURY AGO*. In *Oregon Hist. Qlty.*, Fall 1982, pp. 229-47.
- Roger H. Grant, "CAPTIVE CORPORATION: THE FARMERS' GRAIN & SHIPPING COMPANY, 1896-1945. In *North Dakota History*, Winter 1982, pp. 4-10, illus. The history of this North Dakota-based shortline--an example of the obscure farmers' railroad movement which began during the depression of the 1890s.
- _____, *THE MASON CITY ROAD: FROM IOWA SHORTLINE TO CHICAGO GREAT WESTERN AFFILIATE*. In *Annals of Iowa*, Summer 1982, pp. 323-36. The Mason City & Fort Dodge RR.
- Derek Gregory, *REGIONAL TRANSFORMATION & INDUSTRIAL REVOLUTION: A GEOGRAPHY OF THE YORKSHIRE WOOLLEN INDUSTRY*. Univ. of Minn. Pr. (Minneapolis), 1982. 294 pp., £39.50/16 paper.
- Robert P. Grimes, *THE READING RR AND THE RY MAIL*. In *Historical Review of Berks County*, Fall 1981, pp. 140-145, illus. The history of railway mail delivery beginning in the 1830s.
- Alex Groner, *PACCAR: THE PURSUIT OF QUALITY*. Documentary Book Publishers Co. (Bellevue, WA), c1981. 243 pp., biblio., index. (Limited private distribution. Avail.: interlibrary loan, Washington State Library, Olympia 98504). William Piggott & sequence of firms he began: Seattle Car Mfg., Seattle Car & Foundry, Pacific Car & Foundry, and since 1972, PACCAR, primarily a truck builder.
- Morton Grosser, *DIESEL, THE MAN & THE ENGINE*. Athenium, (597 Fifth Ave., NY 10017), 1980. 166 pp, illus. Not the final word but a not bad general survey of the development, and on his life. Not much in English on the subject.
- Joseph J. Hagwood, *THE CALIFORNIA DEBRIS COMMISSION, A HISTORY*. Dept. of the Army, Sacramento Dist., Corps of Engineers (650 Capitol Mall, Sacramento, CA 95814), 1982. 102 pp.
- Wayne Harding & Joe Donald, *AN INSURER LOOKS AT THE SUGAR INDUSTRY*. In *The Locomotive* (Hartford Steam Boiler Inspection & Insurance Co., Hartford, CT), Fall 1982, pp. 55-59. Succinct, illus. description of processing beet & cane sugar.
- Arthur A. Hart, *STEAM TRAINS IN IDAHO IN THE 19th & 20th CENTURIES*. Idaho State Historical Society (Boise), 1982(?). 24 pp. Album of historic and some recent photos--mostly locomotives but fair number of bridge, RR shop, and lumbering views.
- Nancy G. Hart, *THE PEARL BUTTON COMPANY: THE WORKING PROCESS OF BUTTON MANUFACTURING*. In *Indiana Hist. Bull.*, July 1981, pp. 121-25.
- P.E. Hart & R. Clarke, *CONCENTRATION IN BRITISH INDUSTRY 1935-75. A STUDY OF THE GROWTH, CAUSES & EFFECTS OF CONCENTRATION IN BRITISH MFG. INDUSTRIES*. Nat'l Inst. of Economic & Social Research Occasional Paper 32. Cambridge Univ. Press (NY), 1980. 164 pp., \$29.50. Rev.: *Business Hist.* (London), July 1982.
- C.E. Harvey, *THE RIO TINTO CO.: AN ECONOMIC HISTORY OF A LEADING INT'L MINING CONCERN, 1873-1954*. Alison Hodge (Penzance, Eng.), 1981. 390 pp., £25. Rev.: *Business Hist.* (London), July 1982.
- Bernice Shield Hassinger, *HENDERSON STEEL: BIRMINGHAM'S FIRST STEEL*. Jefferson County Hist. Soc. (Birmingham, AL), 1978. 45 pp., illus., index, \$8. Rev.: *Tech. & Cult.*, July 1982: useful data but without historical synthesis.
- Ray M. Heckman, *THE SAWMILLS OF JENNY & MERRILL*. Merrill Historical Society (Box 64, Merrill, WI), 1981? 38 pp.
- John Heskett, *INDUSTRIAL DESIGN*. Oxford Univ. Press (NY), 1981. 216 pp., \$18/\$10. History of industrial design, US & GB, treated both chronologically & thematically. Rev.: Russell I. Fries (SIA), *Business Hist. Rev.*, Spring 1982.
- D.W. Horsfall, *THE INGENIOUS CONSTRUCTION OF THE DUKE, HIS AGENT & 'SCHEMER' BRINDLEY*. In *Optima* (Anglo American Corp. & De Beers Groups of Cos., Box 28, Toronto-Dominion Centre, Toronto 111, Ontario M5K 1B8), Feb. 26, 1982. Discusses & diagrams 19th cen. underground mining canals from Worsley to Farnworth, England, a 4-level subterranean system with locks, water lift, & inclined plane.
- Freeman Hubbard, *ENCYCLOPEDIA OF NORTH AMERICAN RAILROADING: 150 YEARS OF RAILROADING IN THE US & CANADA*. McGraw-Hill (NY), 1981. 377 pp., \$40. Rev. by John H. White: *RR Hist. Bull.* 146, Spring 1982, finds many errors.
- Paul R. Huey (SIA), *THE ALBANY GLASSWORKS FROM 1790 TO 1800: A STUDY OF AMERICAN INDUSTRY DURING THE FEDERAL PERIOD*. In *Journal of Glass Studies*, Vol. 22, 1980. (Corning, NY 14830), pp. 36-52. Good excavation-archeological examination of an important site.
- P.S. Jarvis, *STABILITY IN WINDMILLS & THE SUNK POST MILL*. Bibliotheca Molinologica (The Int'l Molinological Soc., 2 Eldon Rd., Reading RG1 4DH England), 1981-82. 74 pp., illus., tables, notes.
- Douglas Lamar Jones, *VILLAGE & SEAPORT: MIGRATION & SOCIETY IN 18th C MASSACHUSETTS*. Univ. Press of New England (Hanover, NH), 1981. 167 pp., \$15. Rev.: *Jnl. of Economic Hist.*, Sept. 1982.
- Geoffrey Jones, *THE STATE & THE EMERGENCE OF THE BRITISH OIL INDUSTRY*. Macmillan, in assoc. with Business Hist. Unit (London), 1981. 264 pp., £20. Rev.: *Business Hist.* (London), July 1982.
- Les Levidow & Bob Young, (eds.), *SCIENCE, TECHNOLOGY & THE LABOUR PROCESS*. Marxist Studies, 1. CSE Books (London), 1981. 207 pp., \$37/\$12.50 paper. Avail.: Humanities Pr. (Atlantic Highlands, NJ). Rev.: *Isis*, Sept. 1982: "provides source material for present & future historians of technology, on the social character of contemporary industry."
- James H. Levitt, *FOR WANT OF TRADE: SHIPPING & THE NEW JERSEY PORTS, 1680-1783*. New Jersey Hist. Soc. (Newark), 1981. 224 pp., \$21.45. Rev.: *Jnl. of Economic Hist.*, Sept. 1982.
- Lillian M. Li, *CHINA'S SILK TRADE: TRADITIONAL INDUSTRY IN THE MODERN WORLD, 1842-1937*. Harvard East Asian Monographs 97. Council on East Asian Studies (Harvard Univ. Press, Cambridge, MA), 1981. 288 pp., \$15. Rev.: *Am. Hist. Rev.*, Oct. 1982.
- _____, *SILKS BY SEA: TRADE, TECHNOLOGY, & ENTERPRISE IN CHINA & JAPAN*. In *Business Hist. Rev.*, Summer 1982, pp. 192-217. Pre-synthetic fiber era, 1850s-1930s, catering to Euro-American demand.
- Larry S. Lopez, *THE RIO PUERCO IRRIGATION CO.* In *New Mexico Hist. Rev.*, Jan. 1982.
- William Luening, *CIGAR CITY RISES FROM THE ASHES*. In *Historic Preservation*, July/Aug. 1982, pp. 46-51. The revival of Tampa, FL.
- Don Macgillivray & Brian Tennyson, *CAPE BRETON HISTORICAL ESSAYS*. College of Cape Breton Press (Sydney, Nova Scotia B1P 6L2), 1980. 156 pp., \$6 paper. Includes 3 articles on development of coal & steel industries.
- Karen Magnusson, *ICELANDIC FISHERIES ON LAKE WINNIPEG*. In *Beaver*, Spring 1982, pp. 47-51.
- Robert Mark, *EXPERIMENTS IN GOTHIC STRUCTURE*. MIT Press (Cambridge, MA), 1982. 134 pp., illus., \$15. Uses modern structural analysis to trace engineering developments in Gothic cathedrals, 12th-15th Cs.
- Maureen Fennell Mazzaoui, *THE ITALIAN COTTON INDUSTRY IN THE LATER MIDDLE AGES, 1100-1600*. Cambridge Univ. Press (NY), 1981. 272 pp., \$49.50.
- Norman McCord, *STRIKES*. St. Martin's Press (NY), 1980. 136 pp., \$22.50. British & US strikes as illuminators of historical context, 1790-1970. Rev.: *Tech. & Cult.*, July 1982.
- David McCullough (SIA), *MADE IN AMERICA*. In *American Photographer*, Dec. 1982, pp. 55-69. Fine essay on the philosophy

and photography of David Plowden (SIA), heavy in his coverage of bridges, steam power, and other aspects of IA in the American landscape. (Taken from Plowden's *AN AMERICAN CHRONOLOGY*, Viking Penguin Inc., 1982.)

Dennis K. McDaniel (SIA), *WATER OVER WATER: HOOSIER CANAL CULVERTS, 1832-47*. In *Indiana Mag. of History*, Dec. 1982. With photos, tables, and historic engineering dwgs.

Gage McKinney, *A GIANT HARDWOOD FIRM OF THE PAST*. In *Merchant Magazine*, Oct. 1981, pp. 15-16, 73. The E.J. Stanton & Son Lumber Co., a Los Angeles-based firm specializing in hardwood, since the 1890s.

Georg Meyer-Thurrow, *THE INDUSTRIALIZATION OF INVENTION: A CASE STUDY FROM THE GERMAN CHEMICAL INDUSTRY*. In *Isis*, Sept. 1982, pp. 363-81.

Eugene P. Moehring, *PUBLIC WORKS & URBAN HISTORY: RECENT TRENDS & NEW DIRECTIONS*. Essays in Public Works Hist. 13. Public Works Hist. Soc. (1313 E. 60th St., Chicago, IL 60637), August 1982. 60 pp., notes, \$2.50.

Michael S. Moss & John R. Hume, *THE MAKING OF SCOTCH WHISKY: A HISTORY OF THE SCOTCH WHISKY DISTILLING INDUSTRY*. James & James (Edinburgh), 1981. 303 pp., £15. Rev.: *Business Hist.* (London), July 1982. Avail.: State Mutual Book & Periodical Service (521 5th Ave., NY 10017), \$40.

Akio Okochi & Hoshimi Uchida (eds.), *DEVELOPMENT & DIFFUSION OF TECHNOLOGY: ELECTRICAL & CHEMICAL INDUSTRIES*. Univ. of Tokyo Press (Tokyo), 1980. 236 pp., \$24.50. Limited to British, German, & Japanese industries, late 19th & early 20th Cs. Rev. by Darwin Stapleton (SIA): *Bus. Hist. Rev.* Summer 1982.

Robert D. Parmet, *LABOR & IMMIGRATION IN INDUSTRIAL AMERICA*. Immigrant Heritage of America Series. Twayne (Boston, MA), 1981. 268 pp., \$16. Rev.: *Am. Hist. Rev.*, Oct. 1982.

Walter A. Payne (ed.), *BENJAMIN HOLT: THE STORY OF THE CATERPILLAR TRACTOR*. No. 1 in Monograph Series II, Holt-Atherton Pacific Center for Western Studies. Univ. of the Pacific (Stockton, CA), 1982. 102 pp., illus., biblio., \$11. Tractor history secondary to Stockton story. Rev.: *Nebraska Hist.*, Fall 1982.

Howard Peddle, *LOG RAFTING ON LAKE SUPERIOR*. In *Timber Producer*, Oct. 1981, pp. 20-21. Techniques used and problems encountered rafting sawlogs along the south shore of Lake Superior, 1860s-1920s.

Lawrence J. Pool & Angeline J. Pool, *AMERICA'S VALLEY FORGES & VALLEY FURNACES*. The Author (Box 31, W. Cornwall, CT 06796), 1982. 211 pp. \$15. Maps, diagrams, photos. Interesting account of ironmaking in NW Conn and allied regions in NY and NJ, plus general account of the subject to the present. Good general reference.

Robert C. Post (SIA), *STEEL ROPES INTO THE HOWLING WILDERNESS: FIRST CABLE CARS IN LOS ANGELES*. In *Railroad Hist. Bulletin* 146, Spring 1982, pp. 55-59. Adapted from author's MA thesis, "Street Rlys in Los Angeles: Robt. Widney to Henry Huntington" (UCLA 1967).

James Presley, *NEVER IN DOUBT: A HISTORY OF DELTA DRILLING CO.* Gulf Pub. (Houston, TX), 1981. 543 pp., \$15.

Carroll W. Pursell (SIA) (ed.), *TECHNOLOGY IN AMERICA: A HISTORY OF INDIVIDUALS & IDEAS*. MIT Press (Cambridge, MA), 1981. 264 pp., \$10. Brief essays on engineers, inventors & scientists & what each created, from Jefferson to Goddard.

W.J. Reader, *BOWATER: A HISTORY*. Cambridge Univ. Press (NY), 1981. 426 pp., \$49.50. Rev.: *Business Hist.* (London), July 1982: Eric Bowater's family company became "the world's most powerful producer of newsprint."

Terry S. Reynolds, *SAULT STE. MARIE: A PROJECT REPORT*. Historic American Engineering Record (Avail.: USGPO, Supt. of Documents, Wash., DC 20402, Stock no. 024-005-00839-2), 1982. 132 pp. \$6. One of the very best of HAER's reports, on the great 80-unit hydroelectric plant of 1902 at the Soo. First-rate account of the enterprise's concepts, organization, plant construction, and operating history. Stunning contemporary photos of construction and equipment.

Edward G. Roddy, *MILLS, MANSIONS, & MERGERS: THE LIFE OF WILLIAM M. WOOD*. Merrimack Valley Textile Museum (800 Mass. Ave., N. Andover, MA 01845), 1982. \$15. Biog. of the colorful founder & czar of the American Woolen Co., both giants of more than casual interest. Anecdotal with not overly much IA.

Randall E. Rohe, *AFTER THE GOLD RUSH: CHINESE MINING IN THE FAR WEST, 1850-90*. In *Montana: The Magazine of Western Hist.*, Autumn 1982, pp. 2-19.

Howard Rosen, *THE EARLY FRENCH ENGINEERS: SEBASTIAN LE PRESTRE VAUBAN*. (One of series: People in Public Works.) In *APWA Reporter* (Amer. Public Works Assn.), Nov. 1982, pp. 20-21. Good account of 17th-C hydraulic and civil engineer, father of much current practice.

Walter Rundell, Jr., *OIL IN WEST TEXAS & NEW MEXICO: A PICTORIAL HISTORY OF THE PERMIAN BASIN*. Texas A & M Univ. Press (College Station, TX), for the Permian Basin Petroleum Museum, Library & Hall of Fame, 1982. 183 pp., \$24.50.

J.C. Ryan, *RAILROAD MEN IN THE CAMPS*. In *Timber Bulletin*, Oct.-Nov. 1981, pp. 24-26. Minnesota RR logging.

James H. Schaub & Sheila K. Dickison, *ENGINEERING & HUMANITIES*. Wiley (NY), 1982. 503 pp., \$30 paper. Readings in the humanities for engineers.

Francis Seufert, *WHEELS OF FORTUNE* (with Thomas Vaughan, ed., & a photo portfolio by Gladys Seufert). Oregon Hist. Soc. (Portland 97205), 1980. 304 pp., photos, maps, biblio., index, \$20/13. Life & times of Seufert, leading figure in Columbia River salmon fishing industry.

William A. Sisson, *FROM FARM TO FACTORY: WORK VALUES & DISCIPLINE IN TWO EARLY TEXTILE MILLS*. In *Working Papers from the Regional Economic History research center*, No. 4 (1981), pp. 1-26. The Antietam Woolen mill, Funkstown, Md.

Duane A. Smith, ed., *NATURAL RESOURCES IN COLORADO & WYOMING*. Special issue of *Jnl. of the West*, Oct. 1982. Includes: Smith, "Boom to Bust & Back again: Mining in the Central Rockies, 1920-81"; Steven F. Mehls, "Waiting for the Boom: Colorado Shale-Oil Development"; Michael B. Husband, "'History's Greatest Metal Hunt': the Uranium Boom on the Colorado Plateau"; Bill Bryans, "Coal Mining in 20th C Wyoming: A Brief History"; Frederick J. Athearn, "Black Diamonds: A History of Federal Coal Policy in the Western US, 1862-1981"; & others.

Jack Smith, *REQUIEM FOR A LOCOMOTIVE*. In *Pacific News* (Chatham Pub. Co., Box 283, Burlingame, CA 94010) No. 232, Feb. 1981, pp. 5-11. Documents the 1981 scrapping of Southern Pacific's No. 1294, an O-6-0 at San Francisco's Fleishacker Zoo Children's Playground since 1957. Includes 27 photos.

Edward K. Spann, *THE NEW METROPOLIS: NEW YORK CITY, 1840-1857*. Columbia Univ. Press (NY), 1981. 546 pp., \$20. Among multitude of subjects includes discussion of water supply, sewerage, markets, & surface transportation. Rev.: *Business Hist. Rev.*, Spring 1982.

Jennifer Tann (ed.), *THE SELECTED PAPERS OF BOULTON & WATT*. VOL. 1: *THE ENGINE PARTNERSHIP, 1775-1825*. MIT Press (Cambridge, MA), 1981. 424 pp., illus., \$55. (U.S. edn.)

Martha Moore Trescott, *THE RISE OF THE AMERICAN ELECTRO-CHEMICALS INDUSTRY, 1880-1910: STUDIES IN THE AMERICAN TECHNOLOGICAL ENVIRONMENT*. (Contributions in Economics & Economic History, 38) Greenwood Press (Westport, CT), 1981. 391 pp., illus., appendices, biblio, index, \$45. Rev.: *Isis*, Dec. 1982.

Kathleen Vadnais, *UNDERGROUND STORAGE IS INSIDE CLIFF*. In *Earth Shelter Living* (1701 E. Cope, St. Paul, MN 55109), April 1982, pp. 11-13. 32-ft. arched chambers of old silica sand mine are converted to marina storage.

Fred W. Viehe, *BLACK GOLD SUBURBS: THE INFLUENCE OF THE EXTRACTIVE INDUSTRY ON THE SUBURBANIZATION OF LOS ANGELES, 1890-1930*. In *Jnl of Urban Hist.*, Nov. 1981, pp. 3-26.

Vernon Von Pohle, *ALEXANDRE EIFFEL'S "IRON CHURCH"*. In *AIA Journal*, Nov. 1982, pp. 48-51. Galvanized stamp-plate church designed by Eiffel & erected 1896 in Santa Rosalia, Baja Calif. del Sur, Mexico; extant; measured drawings included.

Wyn Wachhorst, THOMAS ALVA EDISON: AN AMERICAN MYTH. MIT Press (Cambridge, MA), 1982. 328 pp., \$15.

Harold T. Wane, STEEL MAKING & THE ELECTRIC ARC FURNACE. In *The Locomotive* (Hartford Steam Boiler Inspection & Insurance Co., 56 Prospect St., Hartford, CT 06102), Spring 1982, pp 3-12. Fine, detailed account of these with clear illus., describing the very unit SIA saw at Steelton, Annual Conference tour, 1982.

Elliott West, FIVE IDAHO MINING TOWNS. In *Pacific Northwest Qrtly*, July 1982, pp. 108-20. Quantitative study of period 1870-80.

John H. White, AMERICAN LOCOMOTIVE BUILDERS. Bass Books (1435 S St. NW, Wash., DC 20009), 1982. 116 pp. \$11.95 Ppd. Histories of over 100 firms, mainly the obscure ones. The final word. Well illus.

Peter H. Wood, WHETTING, SETTING & LAYING TIMBERS: BLACK BUILDERS IN THE EARLY SOUTH. In *Southern Exposure*, Spring 1980, pp. 3-8. Role of black artisans in various phases of lumbering & construction in the antebellum South.

Mary Yeager, COMPETITION & REGULATION: THE DEVELOPMENT OF OLIGOPOLY IN THE MEAT PACKING INDUSTRY. Industrial Development & the Social Fabric, 2. JAI Press (Greenwich, CT), 1981. 296 pp., \$30. Rev.: *Am. Hist. Rev.*, Oct. 1982.

CONSERVATION OF HISTORIC STONE BUILDINGS & MONUMENTS. Nat'l Research Council, Nat'l Academy Press (2101 Constitution Ave. NW, Wash. D.C. 20418), 1982. 365 pp., \$21.25 paper.

SYRACUSE LANDMARK: A GOLDEN ANNIVERSARY. In *Niagara Mohawk News*, May-June 1982, pp. 4-7. (N.M. Power Corp., 300 Erie Blvd., Syracuse, NY 13202.) Stunning Art Deco HQ of N.M., 50 years young. Wonderful special exterior lighting effects.

SPECIAL PUBLICATIONS

Roland Turner & Steven Goulden (eds.), GREAT ENGINEERS & PIONEERS IN TECHNOLOGY. FROM ANTIQUITY THROUGH THE INDUSTRIAL REVOLUTION. Vol. 1. St. Martin's Press (NY), 1981. 630 pp., illus., chronology, index, \$65. 373 biographical profiles in chronological order + 6 essays on engineering.

BEVERAGE WORLD: 100 YEAR HISTORY, 1882-1982, AND FUTURE PROBE. 100th ANNIVERSARY ISSUE. 1982. (Avail.: Beverage World, Readers' Service Dept., Box 781, Great Neck, NY 11022.) 610 pp., illus., \$25/20 paper, Ppd. Includes 100-year history of soft drink industry and of this publication which began as *National Bottlers' Gazette*. Specific industry topics include biographies, associations, packaging, marketing, production (bottle filling & washing), and distribution.

THE COKE PUSH--A Centennial Portfolio of Industrial Art. Castner, Curran & Bullitt, Inc., NY. 1968. 16 pp. Special publication with color reproductions of seven artistic representations of this 'industrial happening' by artists from seven nations. Avail. to the 1st 15 coke enthusiasts who send \$2. to Rm 5020. Stamps acceptable.

THE LAMP. CENTENNIAL ISSUE. Spring/Summer 1982 (Avail.: Exxon Corp., 1251 Avenue of the Americas, NY 10020). Special issue celebrating Exxon's Centennial Anniversary. Includes variety of illus. & articles on development of petroleum industry and Exxon. See esp. David McCullough (SIA), "Century of Progress," pp. 4-9, and W.L. Copithorne, "The First 100 Years," with a chronological chart of Exxon events.

MANUFACTURING ENGINEERING. Special golden anniv. issue, January 1982. Much historical material, 1930s--present. Soc. of Manufacturing Engineers, P.O. Box 930, Dearborn, MI 48128.

THE MECHANIZATION OF WORK. Special issue of *Scientific American* (Sept 1982) reviewing the history and current status of automation and mechanization of the factory, farm, home, office, mining, and commerce. Interesting.

CONFERENCE PROCEEDINGS

Atack, Jeremy (ed.), BUSINESS & ECONOMIC HISTORY. (2nd Series, Vol. 10) Papers at 27th annual meeting of the Business History Conf, May 5-7, 1981. Univ of Ill. (Urbana-

Champaign), 1981. 136 pp. Mostly non-IA business hist but incl: Martha M. Trescott, WOMEN IN ENGINEERING & MANAGEMENT IN AMERICAN HIST., 1850-1975: Robert E. Ankli & Fred Frederickson, THE INFLUENCE OF AMERICAN MANUFACTURERS ON THE CANADIAN AUTOMOBILE INDUSTRY: and Carl Graves, APPLYING SCIENTIFIC MANAGEMENT PRINCIPLES TO RR REPAIR SHOPS-- THE SANTA FE EXPERIENCE, 1904-18.

David Lowenthal & Marcus Binney (eds), OUR PAST BEFORE US: WHY DO WE SAVE IT? Preservation Resource Group, Inc (5619 Southampton Dr, Springfield, Va. 22151), 1981. 253 pp, biblio, index, \$16. Conclusions of the 1979 London ICOMOS Historic Preservation Symposium.

CONSERVATION & RESTORATION OF METALS. Proceedings of symposium in Edinburgh, Mar. 30-31, 1979. Scottish Society for Conservation & Restoration (c/o Conservation & Research Labs., Nat'l Museum of Antiquities of Scotland, West Granton Rd, Edinburgh, Scotland). £3. Ppd.

BIBLIOGRAPHIES

Suellen M. Hoy & Michael C. Robinson, PUBLIC WORKS HISTORY IN THE U.S.: A GUIDE TO THE LITERATURE. Public Works Historical Soc. & American Assn. for State & Local History (708 Berry Rd., Nashville, TN 37204), 1982. 477 pp. \$49. (\$36.75 to AASLH members; \$32 to PWHS members. Thorough, needed work; 5000 entries arranged by subject: Planning & Engineering; Irrigation; Waterways; Sewers; Roads & Streets; Mass Transit; &c. Full index.

REPRINTS

FACTORY LIFE AS IT IS: FACTORY TRACTS Nos. 1 & 2 (1845). Lowell Publ. Co. (Box 8515, Lowell, MA 01853), 1982. \$3.50 Ppd. Two documents of factory life written by women workers. Intro. by Helena Wright (SIA).

HAND-BOOK FOR THE VISITER (sic) TO LOWELL (1848). Lowell Publ. Co. (Box 8515, Lowell, MA 01853), 1982. \$4.50 Ppd. Contains map of city, description of the mills and the cotton process, table of production statistics, and the corporations' rules & regs for the workers.

SERIALS

THE CHARLES BABBAGE INSTITUTE NEWSLETTER. The Charles Babbage Institute for the History of Information Processing, Univ. of Minn., 104 Walter Library, 117 Pleasant St. SE, Minneapolis, MN 55455. Info. on Institute affairs, events & conferences relating to the history of computing, and computing history bibliography.

THE LOCOMOTIVE. A quarterly for owners & operators of boilers & power equip. by The Hartford Steam Boiler Inspection & Insurance Co. (56 Prospect St, Hartford, CT 06102). Calling itself "the country's oldest co. mag. published continuously under the same name," *The Locomotive* concerns itself with a variety of industrial plants which Hartford insures (not many locomotives). Of IA interest, however, are the wonderfully descriptive & illus. articles about these industries, including in recent issues: Harold T. Wane, STEEL MAKING & THE ELECTRIC ARC FURNACE (see Wane, above and), Tom Lau & Edward Sheehan, AN INSURER LOOKS AT AMMONIA PLANTS (Summer 1982), giving a methodical picture of the systems & associated equip. making up an ammonia plant.

ONTARIO SOCIETY FOR INDUSTRIAL ARCHAEOLOGY BULLETIN. Quarterly. Marilyn Miller, Ed., Archaeology & Heritage Planning Branch, Ministry of Citizenship & Culture, 7th Fl., 77 Bloor St. W., Toronto, Ontario M7A 2R9.

BIBLIOGRAPHIC NOTES

ENGLISH O.P. DEALERS. The August issue of *The Newcomen Bull.* lists 14 of these, with good description of their range, both content & price-wise. Shows also the frequency of their catalogs. Xerox gratis from Rm 5020.

MIT PRESS (28 Carleton St., Cambridge, MA 02142) lists a number of worthy titles in history of technology, incl. some good reprints. Parsons' *Engineers & Engineering in the Renaissance* leaps forth, i.e.