

# SOCIETY FOR INDUSTRIAL ARCHEOLOGY

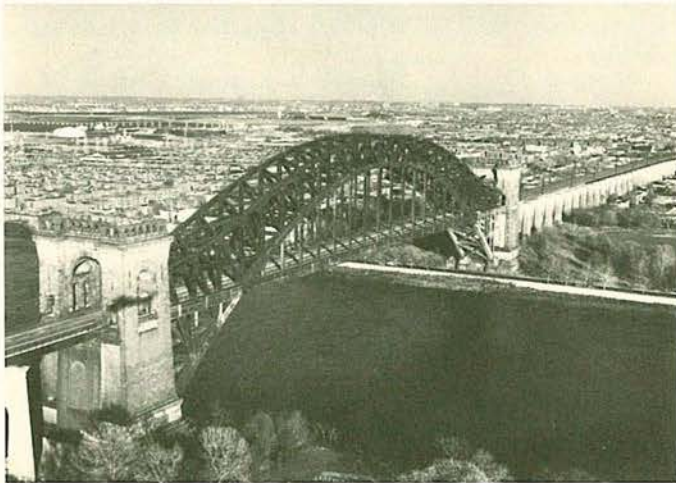
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## NEWSLETTER

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### ***SURVEYING THE NORTHEAST CORRIDOR***



Landmarks of the Northeast Corridor: Hell Gate Crossing and the superannuated Cos Cob Generating Station with the New Haven's Mianus River Bridge. Jack E. Boucher photographs for HAER.

Evidence that the U.S. government is taking seriously the logic of attempting to reverse a forty-year trend by diverting passenger travel from automobiles—not to say airplanes—back to railroads is the Northeast Corridor Improvement Program. The simple goal of the NECIP is to upgrade the permanent way, structures, equipment, and operation of the 456 miles of railroad between Washington and Boston to the extent that by 1981 travel time between the two cities routinely and dependably will be 6.3 hours. (Wash.-NY, 2:40; NY-Boston, 3:40.) The time for through trains presently is about nine hours, or, via the high-speed Metroliner for the Washington-NY leg and with an ideal, non-wait connection to the NY-Boston leg, the run now theoretically can be made in about eight.

The project, to cost \$1.75 billion, results from The RR Revitalization & Regulatory Reform Act of 1976, being administered by DOT's Federal RR Admn. FRA has retained DeLeuw Cather/Parsons & Assoc. (DCP), Washington, as project managers. The bulk of the cost will, naturally, be expended on the improvement of the physical plant required to permit operating speeds of 120 mph for much of the route. The most visible element of the work will be electrification of the only stretch of the corridor still without catenary—New Haven to Boston.

The route is a historic one, comprised of many small lines that ultimately were absorbed into the Pennsylvania RR (Wash.-N.Y.C.) and the N.Y., New Haven & Hartford, (N.Y.C. to Boston). The line today is Conrail end to end. The principal elements of the route had been laid down by the 1870s, although the New England section was in operation by the 50s. Not until 1917, however, was there steel solidly between the terminal cities.

The importance of the line from the outset has dictated the fastest possible schedules between all points, resulting in some extraordinarily fancy civil, mechanical, and electrical engineering

over the years. Overlooking the host of notable terminals and stations along the way (Washington Union, Baltimore Union, Philadelphia 30th St., Newark, N.Y.'s late, lamented Pennsylvania, Richardson's New London, and Boston's South stations, to name a few gems), the major water crossings have given rise to a number of impressive bridges in a variety of types and materials; and traffic density and other factors led to two of the most important mainline electrifications in the world. The PRR's desire for a Manhattan terminal launched one of the most ambitious RR improvement projects in the nation's history (1903-10), which included tunneling of the Hudson and East rivers, construction of Penn Station with extensive underground trackage, and a major yard—Sunnyside—in Long Island City. The last major work of RR civil engineering was the connection between the PRR and the New Haven at N.Y., that closed the final gap in through service. The link took the form of the jointly-built N.Y. Connecting RR, running some 16 miles from Sunnyside Yard to the New Haven mainline (which terminated by lease with the N.Y. Central at Grand Central) at New Rochelle. The outstanding feature of this line, which opened in 1917, was Gustav Lindenthal's heroic Hell Gate Bridge—until 1931 the longest RR arch in the world—carrying four tracks over the Hell Gate in the East River at the western end of Long Island Sound.

As notable were the New Haven and PRR electrification projects. The former was the first in N. America for a mainline RR and the pioneer in the use of single-phase, high-voltage (11,000) alternating current for generation, transmission, and on the trolley wire, thus (initially) avoiding the need for substations. The first leg, between Woodlawn, N.Y.—N. of N.Y. City—and Stamford, Conn., went into operation in 1907; the remainder of the line—to New Haven—in 1914. The electrification of the PRR between N.Y.C. and Washington, the initial segments of which were



undertaken around Philadelphia for suburban service c1910, was completed in 1935. The Washington-New Haven stretch remains today the only electrified line of any length in N. America.

The impact of the NECIP on the route's historical structures will, naturally, be enormous, resulting largely from the two principal modifications in the line: increased operating speed and modified power characteristics. The former will necessitate increased horizontal clearance between tracks to reduce aerodynamic effects; while the desirability of having the line's electrical system fully compatible with the national power net will mean conversion of every scrap of electrical equipment from 25 to 60 Hz (cycles/sec.), and probable raising of trolley potential.

Increased horizontal clearance will mean changes to many bridges and stations, while higher trolley voltage will necessitate greater clearance between the wire and its supporting structures, affecting tunnels, highway and RR bridges over the line, certain of the line's movable bridges, and elements of the trolley-support structures. The historic steam generating station at Cos Cob, Conn., built by the New Haven in 1907 to power the first electrified section—long obsolete but still in service—will be abandoned.

As many of these structures either are on or are eligible for the National Register, and federal funds are involved in the project, it has been legally necessary to evaluate the historical significance of the jeopardized structures as part of the examination of overall environmental impact, in compliance with a variety of preservation statutes, particularly those under Executive Order 11593. The responsibility for assessment of the NEC's IA fell largely to DCP. In view of the number of historical resources involved, the distance along which they were scattered, and the short time available, it was apparent that the only efficient means of conducting a comprehensive initial survey was by helicopter. In that way both rapid sight evaluation and formal photography

could be carried out simultaneously, providing a solid basis—in conjunction with evaluations by the historical agencies of the seven states (and the District of Columbia) through which the Corridor passes—for a comprehensive plan of preservation and recording. An aerial survey was conducted by E.N. DeLony, L.D. Lankton, and J.E. Boucher from HAER, and R.M. Vogel, Smithsonian [all SIA], flying the route between 13 and 15 April, S. to N., under ideal conditions of light and weather. A helicopter, unlike even a light fixed-wing plane, in effect is the long-sought anti-gravity machine, providing an observation platform able to move in any direction, at any speed up to its maximum, turn on its own axis, or stop in mid-air, providing the ideal medium for traversing a linear system like a RR, viewing at low angles, circling, and photographing everything seen. Everything was, in fact seen, the minor along with the major. Everything construable as having historical worth was noted and photographed, resulting in some 1500 low-level, oblique views in both color and b/w, that form an unparalleled graphic inventory of the early structures along this important line of railroad.

Although DCP has prepared a tentative schedule of the bridges—both over and under the line—to be replaced or strengthened, and has a tentative program for the removal or modification of stations, interlocking towers, electrification elements, tunnels, and other components of the Corridor's physical plant, it is too early to know with any precision what historic resources will remain, be modified, or be dismantled, and of those in the latter two categories, which are to be recorded, and to what extent. One certainty, however, is that all signalling and communications systems will be replaced. The decisions and priorities affecting the Corridor's IA, which will be observed with keen interest, will evolve slowly, participated in by a myriad of federal and state agencies.

## MT CLARE SHOPS—FINIS

*A hundred different machines, performing every conceivable office, with unerring regularity and expedition, are thus kept in motion, or suspended at pleasure. Every wheel, and cog, and shaft, and revolving strap or gearing, gives out its peculiar sound, which, mingling with the ever varying clinks of the hammer or gong-like mummings of sheet-iron, the measured puffs of the steam engine, and the continual rur-rur of its working parts, added to the half-suppressed uzz-uzz of the immense driving wheel, as it revolves with lightning-like velocity, produce a chorus, both loud and deep, and upon the whole, not devoid of harmony.*

Ely Bowen, 1855.

The slow tide of destruction that over the years nibbled away at the Baltimore & Ohio's 19thC shop complex in Baltimore claimed seven structures with one blow last August, leaving scant that would evoke in Mr. Bowen the memory of the happy commotion that excited him so. After many experiences with arson, owner Chessie System decided last year to raze the buildings after receiving Fire Dept. notice to empty them of all debris.

Gone are the pattern shop (1862), iron and brass foundries (c1882), blacksmith shop (c1882), wheel & axle shop, power plant, stables (c1855), and maintenance-of-way office (c1805), the latter formerly a carpentry shop and part of the original estate given to the B&O by James Carroll in 1832. Most of the buildings had not been in use since the early 1960s; however, the maintenance-of-way office was in use until 1975, and the stables were used as a storage facility by the B&O RR Museum until the very end.

The loss of the buildings was surprisingly swift but not entirely unexpected. Lacking any plan for adaptive reuse and falling outside the jurisdiction of the Museum, the structures survived only through the blessed circumstance of bureaucratic neglect. Though their destruction was slated for some time in 1976, rumor became reality only with the first swing of the wrecker's ball. A two-week reprieve resulting from a coal strike allowed time to secure professional photographers to record each building scheduled for demolition. With a grant from the Maryland

Historical Trust, Wm. Edmund Barrett [SIA], was hired by HAER to photograph interiors, while Chessie System donated the services of professional photographer Willis Cook, their Dir. of Public Affairs (Baltimore), to cover the exteriors.

Remaining on the Baltimore site are a paint shop (formerly a car shop and still being used for light repairs); stationery stores warehouse (c1870)—the only Mt Clare building still functioning in its original use—; a bridge shop (1882)—later a sheet metal shop and now a private storage facilities—; two machine shops; a substation dating from WW-I; and the buildings comprising the Museum.

The shops produced locomotives for the B&O from 1832 to 1948 and in the 1920s employed over 3,000 men. Heavy repairs continued until the demise of steam power in 1957. *R.B.W.*



Blacksmith & Forge Shop, Mt. Clare. R.I.P.

## CONTRIBUTORS TO THIS ISSUE

Edwin A. Battison, Natl. Museum of Hist. & Tech.; Jeffrey L. Brown, Univ. of Tenn., Chattanooga; Mary Rae Cantwell, Catocin Furnace Hist. Soc.; Field Curry, Pittsburgh; Robert M. Frame III & Liza Nagle, Minn. Hist. Soc.; Tom Rick, Manitou Machine Works; Michael W. Robbins, Jos. A. Wetzel Assoc.; Theodore A. Sande, Natl. Trust; David M. Sherman, Georgia Hist. Pres. Sectn.; Peter H. Stott, N.Y.S. Divn. for Hist. Pres.; James D. Van Trump, Pittsburgh Hist. & Landmarks Fndn.; Roger B. White, Hagley Museum.



## THE STATION SQUARE PROJECT

### New Life For Old Depots . . .

What to do with old RR stations has been one of the perennial questions facing preservationists. Particularly endangered have been the great terminal stations whose very size and grandeur make it difficult to find a new use for them in an age no longer compatible with their palatial presence. When it comes to the preservation of auxiliary buildings in a large station complex, the task becomes almost impossible.

The Pittsburgh History & Landmarks Fndn. (PH&LF) was willing to tackle the impossible and believes it has the answer in its Station Square project—the rehabilitation and re-use of a 40-acre tract containing the Pittsburgh & Lake Erie's terminal with its platform and yards, as well as a freight station and a warehouse. The site lies on the S. bank of the Monongahela River near its juncture with the Ohio and directly opposite downtown Pittsburgh.

The P&LE—a small line running between the coal fields of SW Penna. and Lake Erie—is not bankrupt or obsolescent, but fully solvent and viable. Coal freight and boxcar leasing have always been its financial mainstay. Its headquarters station, midway along the line, has been well maintained, but when its passenger traffic sank almost to nothing, it became a polished ghost of its former busy self.

By agreement, the P&LE will continue its activities in and beyond the Station Square property, but the non-profit PH&LF will develop the acreage as a cultural, recreational, and commercial area, a grand essay in urban rehabilitation and betterment.

The project was announced last June after two years of study—this was no planner's "Castle-in-Spain"—at the same time that PH&LF revealed a \$5-million grant from the Allegheny Fndn. to begin work on certain portion of the general plan. According to Arthur P. Ziegler, Jr., PH&LF pres., "This is the largest grant ever given to support urban historic preservation in the U.S." The grant will provide equity funding for the project's initial phase, estimated

at \$30 million. Future planning envisions an eventual investment of \$120 million.

The station building—one of two remaining railway "palace stations" in Pittsburgh—is, of course, the core of the project. Designed by architect William George Burns and constructed 1899-1901, it is a large brown-brick and terra cotta structure of seven stories executed in a simple Classical style. The Grand Concourse with its Baroque staircase is the most spectacular Edwardian interior space surviving in the city. It will be preserved intact for public functions. [Seen SIA 1974 Conf.] Next to the River, the old dining rooms will become a fine new restaurant. The P&LE will maintain its offices in the five upper floors.

The Freight House, an extensive, one-story, building contemporary with the Station, will lose its original function and be adapted as a "themed" shopping center in the style of Salt Lake City's Trolley Square. The steel roof truss system with its central clerestories will be preserved as will the interior tracks; on these old freight cars and a caboose will serve as shops. There will be 60 shops in almost 85,000 ft. of retail space; 27,000 ft. have already been spoken for. Construction on this part of the project began last December.

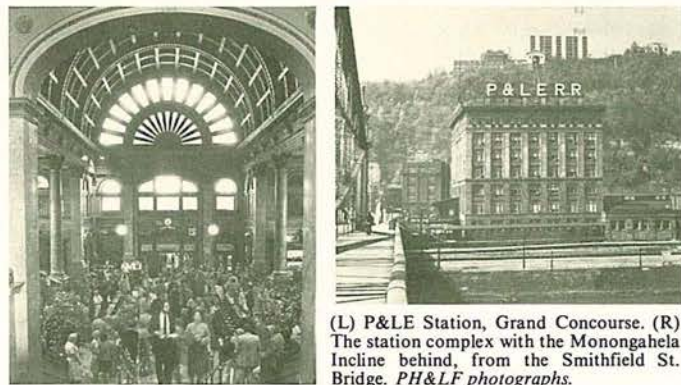
Beyond the Freight House, a huge seven-story concrete and brick Warehouse—to be known as the Great Landmarks Office Building—will be converted into six floors of office space (360,000 ft.), and on the first floor more shops.

Within a few steps of the office building a 250-room resort-conference type hotel is proposed, to complete the first phase of development. Beyond the main line of the RR, will be a marina along the river bank. There are plans for a complex of small cinemas—of the type so popular nowadays. At the corner of Smithfield and Carson sts. is the small former Railway Express Building, now in process of being converted to offices and shops.

Adjacent to the Station itself is the historic Smithfield St. Bridge of 1883-89, probably the oldest large steel truss bridge in America, and, climbing the steep slope of Mt. Washington near the Express Building, is one of Pittsburgh's two remaining funiculars—the Monongahela Incline. Neither is part of Station Square, but historically and visually they are intimately connected with it.

There probably will be changes in the over-all plan according to emergent necessity—no long-term project has ever been executed exactly as originally conceived—but it is off to a good start and the augurs are good.

It is eminently fitting that this area, a prime document of the city's industrial past, should become useful, viable, and *pleasurable* part of a revitalized Pittsburgh. And unlike most development projects, profits will not accrue to a private developer but rather will be expended by PH&LF in restoring inner-city neighborhoods. J. V. T.



(L) P&LE Station, Grand Concourse. (R) The station complex with the Monongahela Incline behind, from the Smithfield St. Bridge. PH&LF photographs.

### UPSTAIRS & DOWNSTAIRS WITH THE JOURNALS

#### WHATEVER HAPPENED TO IA?

The Board of Directors is pleased to announce that beginning with the third issue, *IA* will be published under a different, more rational plan, on a *regular* basis. The format will remain essentially the same. Copy for the second issue was submitted to the West Virginia Univ. Office of Publications in October 1976. The publication date first was set for December, then late January, the end of March, and now May. The situation clearly has become intolerable for both editor and readers. Thus we have decided to discontinue our relationship with WVUOP. Papers and book reviews for the *third* issue have been collected but there still is need for short, interesting material for the *Omnibus* section: Emory L. Kemp, Editor, *IA*, History of Sci. & Tech., W.V.U., Morgantown, WV 26506.

#### THE IA REVIEW

In the Sept/Nov 76 *SIAN* we noted the appearance of the first issue of *IA Review*, the new journal of the Assn. for *IA*. The (London) *Times Literary Suppl.* of 7 Jan. carried a critical but provocative review of the *Review*. There ensued in subsequent *TLSS* an exchange of letters among critics of the critic, critics of the critics, the critic, and the *IA*R Editor himself, which, taken together form an illuminating vignette on how *IA* currently is viewed, at least in Britain, by a diverse group. It makes interesting reading. The entire collection has been transcribed by Kenneth Hudson [*SIA*], and will appear in Vol. 3 of *IA*. Copies are available in the meantime from the *SIAN* office for a stamped return envelope.



## NEW LIFE FOR THE OLD RED MILL

Plans are underway to convert this historic wood-frame mill of 1826 into specialty shops and a craft center. The mill, last of nine water-powered industrial sites along the Mad River just south of Campton Upper Village in central N.H., is a picturesque collection of additions, broad gable roofs, and dormers that rambles along the stream's east bank. Several residential buildings associated with the mill also survive and may be included in the overall scheme. Woolens were made here as far back as 1826 (the oldest portion of the structure dates from this time) and the factory continued to produce high-quality woolen goods until 1965. When operations stopped that year, this was the third-oldest woolen mill in the U.S. in continuous operation, and the oldest continuous family-owned woolen enterprise.

The shops and craft center will be called "Coffee Connection." The Old Red Mill once was known as the Erastus Dole Mill. Erastus was one of three brothers encouraged into the textile business by their uncle, Moses Cook, a N.H. militia general who had no children of his own. He had started the enterprise as the Mad River Mill in 1826. In 1840 the firm was reorganized as the Dole Bros. Co. and seven years later it became E. Dole & Co. Power machinery was in use for practically all the spinning and weaving processes by 1860. The factory manufactured clothing as well, so that the company did everything right on the site from cleaning and carding the raw wool to making ready-made clothing. The mill was passed down through succeeding generations of



Erastus Dole Mill, before (1946). *Moody C. Dole photograph.*

Doles to the present owner, Moody C., who is undertaking the building's rehabilitation.

Dole has in mind a thorough adaptation of the approximately 30,000 sq. ft. of space. Total cost is estimated at \$400,000 with completion scheduled for August. There will be room for ten specialty shops and five artisans' studios. The hope is that these will represent a wide range of commodities, from textiles and leather to jewelry and paintings. Space may be set aside for traveling museum loan exhibits and there will be refreshments available so that visitors can spend the entire day browsing and shopping. (On the fringe of the White Mtn. Nat'l. Forest, the mill is easily reached from exit 28 E. off I-93). *T.A.S.*

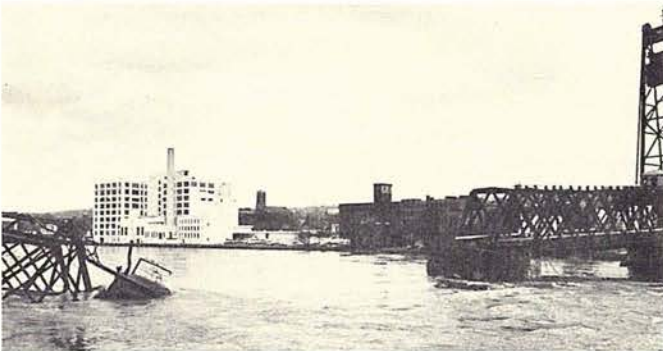
## SWOLLEN N.Y.S. RIVERS AFFECT TWO BRIDGES

### Troy's Green Island Bridge

The Green Island Bridge, one of the major routes across the Hudson between Green Island and Troy, N.Y., collapsed on the afternoon of 15 March. Unusually high flood waters are credited with weakening the lift bridge's central piers, bringing down two spans and one of the two towers. No one was on the bridge at the time.

The bridge was constructed by the Delaware & Hudson in 1884 for use as a RR and highway toll bridge, replacing an earlier covered RR bridge believed to have used the same piers. Modified c1920 with construction of the lift span, it served rail traffic until 1958, when converted for highway traffic alone.

The bridge is considered vital to downtown Troy's commercial life, and construction is expected to begin on a replacement, probably at the close of navigation on the river this fall. In the meantime, to call attention to Troy's need for a new bridge, the First International Fallen Bridge Bash was held 30 April, with skateboarding, body-painting, and "getting across" contests. Climax of the day was a "beauty" contest with awards for Ms Fallen Bridge, Ms Twisted Girder, and Ms Counterweight.



*Capital Newspapers photograph.*

### Schoharie Creek Aqueduct, Fort Hunter

One of the principal remaining features of the 1841 enlargement of the Erie Canal, the Schoharie Creek Aqueduct—already in poor condition—lost its end pier and part of an arch on the evening of 31 March, the result of high water in the creek.

Construction of the aqueduct was begun in 1839 and completed

two years later. The aqueduct eliminated the difficult slackwater crossing of Schoharie Creek. It consisted of 14 spans of timber trunk and 14 masonry arch spans carrying the towpath, over a total length of 630 ft. According to the report prepared for HAER's Mohawk-Hudson Area Survey in 1969, John B. Jervis was responsible for at least part of the design. The builder was Otis Eddy, whose name is incised on a parapet stone.

When this section of the canal was made redundant on completion of the Barge Canal c1915, the eastern five arches were demolished to improve the flow of the creek. Since then, the lack of counter-thrust against the end arches had cracked the two easternmost. The recent collapse of the ninth arch has placed further stresses on the eighth and caused new cracks in the seventh.

The aqueduct is part of Schoharie Crossing, a historic site operated since 1966 by the State and now under the auspices of the Saratoga-Capital District Park Commn. The aqueduct was made a Nat'l Historic Landmark in 1966 and in 1969 was one of the sites chosen for the pilot survey of the HAER.

According to Park officials, stabilization of the aqueduct has been planned since the site was acquired. The most recent proposal, last year, recommended using cables in the bed of the towpath to tie the outer arches to the western shore. The cost, before the recent collapse, was estimated at \$350,000. Until now NYS budgetary restraints have prevented any action from being taken. New appeals now are being made and it is hoped that the urgency of the situation will inspire swift action. *P.H.S.*



*N.Y. State Office of Parks & Recreation, Divn. for Historic Pres.*





### **Catoctin Furnace**

**Preservation progress . . . under highway shadow.**

Catoctin Furnace, about 10 miles north of Frederick, Md., began c1770 as an iron plantation and was the site of charcoal iron operations until into the 20thC. Now on the Nat'l Register, the industrial area includes a nearby village that once housed ironworks owners and workers. The remaining stone stack has been preserved and a casting shed reconstructed in accordance with its appearance in photographs from the late 19thC. Historical research, including some archeological excavation, has been conducted and the Md. Highway Admn. (MHA) soon will contract for additional archeological study. Catoctin Furnace Historical Soc. recently leased an old company store in the village. It had been in continuous use by the same family until recent years, and the Society is using it as an information center and crafts shop to raise funds for purchase and restoration of a nearby 200-year old log cottage. Despite this progress, work has been held to a minimum due to the threat of expansion of a federal highway adjacent to the furnace site. "Dualization" of US-15 would result in a 6-lane thoroughfare that could swing clear of the historic area—or pass within 100 ft. of the furnace stack. The MHA favors the latter route and has prepared a draft environmental impact statement for the approval of the Federal Highway Admn. *M.R.C. & M.W.R.*

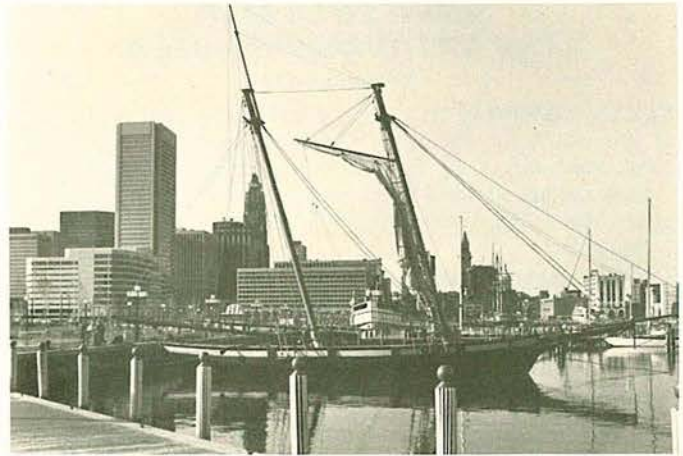
Since 70% of the funding for this highway dualization will come from federal sources, Mary Rae Cantwell [SIA], V.P. of Catoctin Furnace Historical Soc., is urging those concerned to write expressing their views to Brock Adams, Secy. of Trans., 400 7th St., S.W., Wash, DC 20590. For further information: *M.R.C., 5010 Ft. Sumner Drive, Washington, DC 20016.*

### **BLUFF FURNACE THREATENED**

The first coke-fired blast furnace in the southern Appalachian region was located in Chattanooga, Tenn. This industrial landmark, known as the "Bluff Furnace," was constructed in 1854 for use with charcoal; in 1860 was converted to coke. An initial blast with the new fuel produced 500 tons of pig iron and quickly exhausted the available supply of coke. A second blow-in was scheduled for 6 Nov. 1860 (election day), but this effort failed due to political complications arising from the election of Lincoln. The abandoned furnace stack was used by Union Army occupation troops during the Civil War.

Several well-preserved portions of the Bluff Furnace ruin currently are visible on the bank of the Tennessee in downtown Chattanooga. Most of the site, however, appears to be covered by a deep level of fill. Plans for a new bridge across the river directly threaten the site. A National Register application for the site has been temporarily blocked by the Tenn. Dept. of Transp. pending exploratory work to determine site boundaries. Exploratory archeological work under the Inst. of Archaeology, Univ. of Tenn. at Chattanooga should begin by 1 May.

Though the site was identified early in the bridge project's planning stages, preservation of this important ruin is not assured. Limited alternatives for bridge location and pending condemnation of a nearby existing bridge are factors that could lead to the loss of significant portions of the site. *J.B.*



### **THE PRIDE OF BALTIMORE**

In the first half-century following the Revolutionary War, the ease with which American ships could escape the clutches of pirates and foreign vessels was an important consideration in a ship's design. Perhaps the most successful vessel in this regard, for light cargoes, was the Baltimore Clipper, built in that city and other Chesapeake Bay ports. Generally rigged as square-topsail schooners or brigs, they had large sail areas for their hull, making them very effective in light winds. These vessels, usually 70-100 ft. long, also were characterized by a light displacement/length ratio, sharp water entry, raking masts, and flush decks. With the advent of larger cargoes, the usefulness of the design diminished, and, though they formed the basis for the design of the larger China Trade Clipper Ships, the Baltimore Clipper largely had disappeared by the 1850s.

In September 1975 the Baltimore City Council commissioned the International Historical Watercraft Soc. to design and construct an authentic Baltimore Clipper for promoting the City and Port of Baltimore. *The Pride of Baltimore*, launched 27 Feb., is the first (and probably will be the last) Baltimore Clipper to be constructed since the mid-19thC. She is not a replica or reconstruction, her architect Thomas Gillmer is careful to point out, but is an authentic 90-ft Baltimore Clipper topsail schooner.

Constructed in Baltimore's Inner Harbor under the direction of IHWS Pres. Melbourne Smith (also the instigator of the project), the *Pride* was handbuilt by a team of expert craftsmen using 19thC tools. Tropical hardwoods from C. America were used for the hull, wrought-iron for the fittings, and cotton duck, Egyptian cotton, and flax for the sails. Ballast is made up of 45 long-tons of lead, iron, and cobblestones. The *Pride* also has been equipped with a 100 HP diesel and modern navigation and communication equipment. Construction cost: \$476,000.

*The Pride of Baltimore* will be commissioned 1 May after completing her trials. Immediately afterwards she sails for Bermuda on her maiden voyage. *P.H.S.*

### **REGISTRATION FOR N.H. COVERED BRIDGES**

A timber of seven Granite-State wood spans has been entered in the Natl. Register *en masse*, which is as nice a thing as can happen to covered bridges in this time of burnings and vandalizing. They are:

**Bement Bridge**, Bradford: Long truss, 1854.

**Waterloo Bridge**, Warner: Town lattice truss, 1860.

**Dalton Bridge**, Warner: Long truss, 1853.

**Rowell's Bridge**, W. Hopkinton: Long truss + arch, 1853.

**Coombs Bridge**, Winchester: Town lattice truss, 1837.

**Swiftwater Bridge**, Bath: Paddleford truss, 1949.

**Cornish-Windsor Bridge**, between Cornish, and Windsor, Vt: modified Town lattice, 1866. (Longest covered bridge in the U.S. at 460 ft.)



## MINNESOTA IA IN THE NATIONAL REGISTER

### Recent Entries

**STEAM TOWBOAT JAMES P. PEARSON**, at Winona. Built 1898 by Kahlke Bros. Boat Yard, Rock Island, Ill. Believed to have been the last unclad, all-wood hull steamboat on the upper Mississippi. The 62-ton, 96-ft. boat now is drydocked.

**LITTLE AMERICAN MINE**, near International Falls. Minnesota's only profit-making gold mine, it operated 1893-1898. Some shafts and an open pit remain.

**GOODSELL OBSERVATORY** (1887), Carleton College, Northfield. Totally intact and functioning, it includes a 16-in. Brasher visual refractor telescope, 5-in. Meridian circle, and sidereal- and mean-time clocks with telegraph equipment, constituting the official regional Time Station, 1887-1930s, which coordinated RR traffic in the northwest.

**GELDNER SAWMILL** (c1860), Cleveland. A rotary sawmill with intact stationary steam engine.

**STEAM TUGBOAT EDNA G.** (1896), Two Harbors. Still in service for Duluth, Missabe & Iron Range Ry. 154 tons, 102 ft., powered by a 100-hp. steam engine with hand-coal-fired boiler.

**KASSON WATER TOWER** (1895), Kasson. With a 50,000 gal. steel tank on an 86-ft. ornamental limestone tower, it is unaltered and in use.

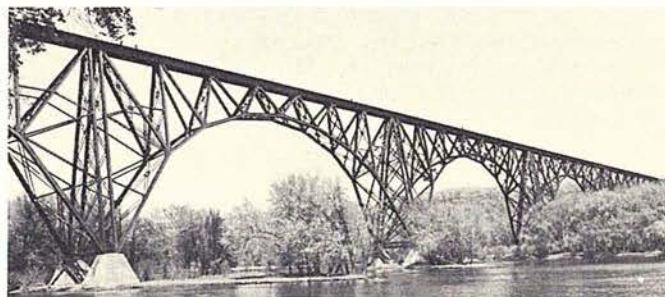
**AUGUST SCHELL BREWING CO.**, New Ulm. A five-building complex still in use, including the original brew house (1860) and present brew and barrel houses (1880s).

### Recent Nominations

**CHICAGO, MILWAUKEE & ST. PAUL FREIGHT HOUSE AND DEPOT** (1883), Stillwater. A 1½ story brick and limestone building with a timber and iron Howe roof truss. In use until 1955.

**ZUMBROTA COVERED BRIDGE**, Zumbrota. Built 1869-71. Town lattice truss of 120-ft. span, replaced in 1932 and moved to a park. Last of the state's three covered bridges.

**CARLSON LIME KILN** (1882), Red Wing. Typical of some 30 kilns in the area, it operated until early 20thC. Much stonework remains.



C.A.P. Turner's St. Croix River Bridge near Stillwater.

**WISCONSIN CENTRAL—MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE RY: HIGH BRIDGE** (1910-11). Spans St. Croix River, Wisc. to Minn., near Stillwater. Designed by C.A.P. Turner, it is a 2600-ft. multi-span steel structure containing five 350-ft. arch spans, 184 ft. high. Still in use.

**CHICAGO & NORTHWESTERN RR BRANCH LINE: MANUAL TURNTABLE** (1901), at Currie. Built by the American Bridge Co., Chicago, the 70-ft. steel and timber turntable rests in a limestone-lined pit. Operable but no longer in use.



**TWIN CITIES RAPID TRANSIT CO.: COMO-HARRIET STREETCAR No. 1300** (1908), Minneapolis. Built in local shops and termed a "fast car." Powered by four 600-volt 50-hp GE203G motors. Restored and operated by local museum.

**JASPER STONE CO. AND QUARRY** (c1888), Jasper. Here Sioux Quartzite (98.68% silicon dioxide) still is quarried and cut to produce grinding media and mill liner blocks. *R.M.F./L.N.*



Stone tumbler for rounding off rough edges of Jasper quartzite, for their use as "grinding cubes." The mill itself is lined with Jasper quartzite to resist wear. Jasper Stone Co. quarry. All photographs Minnesota Historical Society.

### LETTER FROM A BRIDGEMAN

Wish I could make the Delaware conference, but other plans were made first. The "Bridge Preservation Workshop" could be the launching point for a "Bridge Museum"—i.e., a central depot, as it were, of preserved iron bridges. Truss designs, insofar as the arrangement of members is concerned, are fairly well recorded. The parts that are hard to record (and even harder to visualize or reconstruct) are the patented members and most particularly the joints where the members come together. There were a variety of compression shapes—the Phoenix column being the best known. These show not only the inventors' approaches to efficient use of iron but also the manufacturing capability of the iron industry. It is the joints that are so interesting and so difficult. I spent hours studying a Phoenix through truss at Clintonville, N.Y. because the bottom chord connections were so obscure—and they still are.

Small bridges—generally pony trusses—could be preserved completely. Longer spans would be through trusses. Here the entire structure would not be preserved. If one end were salvaged (that is, both end posts and the portal frame, and several truss panels with top-chord bracing and floor beams with their bracing) the engineering features would be intact. There is no point in saving all of a 200-ft span when three panels will tell the story . . . *Victor Darnell, V.P. Emeritus, Berlin Iron Bridge Co.*

### Real IA Puzzle Picture.

Real, in the sense that we really don't know what it is, although the discoverer, Michael W. Robbins [SIA Bd.], says he does. "It" is about 12 ft. across x 20 ft deep, filled solid with heavy stones, on a mountaintop in SE Penna., about 90 years old, and an authentic remnant of an industrial process. He advises that that's tar, not blood. What could it be? Write in, and if you guess it, you will be rewarded with a firm handshake and an encouraging word.



Michael W. Robbins [SIA] photograph.



## IA IN ART

Some excellent examples of IA in art are to be found on 19thC Staffordshire china. Some of the IA scenes featured on these plates, bowls, &c. are: **The Baltimore & Ohio RR** (showing an incline, 1828?); **The B&O RR** (locomotive on level, 1828?); **Erie Canal—View of the Aqueduct Bridge at Rochester** (2 versions, 1825?); **Entrance of the Erie Canal into the Hudson at Albany** (1825?); **View of the Canal, Little Falls, Mohawk River; Erie Canal at Buffalo** (1829?); **Trenton Falls; Columbia Bridge on the Susquehanna** (1838?); **Harpers Ferry from the Potomac Side** (1838?); **The Dam & Water Works, Philadelphia** (2 versions, one with side wheel steamboat in foreground); **Upper Ferry Bridge Over the River Schuylkill** (1824?); **Fairmount Water Works on the Schuylkill** (1828?); **Philadelphia, Race St. Bridge; Iron Works at Saugerties** (1831) [SIAN Mar/May 75:11; Jul/Sep 75:9]; **Brooklyn Ferry** (1814?); **Saw Mill at Centre Harbor (N.H.)** (1839?); **Mendenhall Ferry** (1808?).

Most of these scenes were taken from early prints that found their way to England, and were applied to this china in hopes that it would be popular with the American trade. Some scenes, such as the incline on the B&O, obviously were adaptations of English scenes to which the artist applied his imagination in transforming them to American views. *D.M.S.*



Staffordshire ware in the Larsen Collection, National Museum of History & Technology. The View of the [Erie Canal] Aqueduct Bridge at Rochester is realistically rendered—apparently based on an American print—but the views of the B&O train and inclined plane (at Mt. Airy, Md.) are straight out of the potter's fantasy life, based on his English environment.



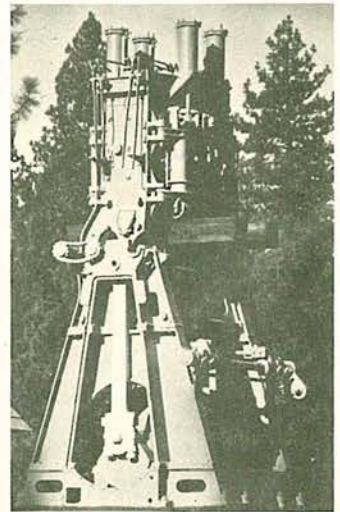
## THE MUSEUMS

**NEW INDUSTRIAL MUSEUM.** It suddenly has dawned on a number of people in Baltimore—one of the most fully industrialized of American cities—that there is literally no place in the city where its industrial history is brought to the people, with the sole exception of the B&O Railroad Museum, the Baltimore Streetcar Museum, and a few isolated objects shown at the Municipal (Peale) Museum. Of these people, the principal is Mayor Donald Schaeffer, decidedly a man of action (responsible for the total restoration of the City Hall's cast-iron dome). He has taken on as a personal cause the establishment of a Baltimore Industrial Museum, to celebrate both the city's industrial past—including the many departed industries—and today's firms. The precise proportion between the two areas is a long way from being established, and a delicate balance no doubt will have to be observed in order to sustain the sympathy of present-day industrialists whose support clearly is a vital element in the undertaking. No matter, for things still are tentative and no money

has yet been appropriated.

But there have been a number of positive steps taken: Schaeffer has detailed to the project Neil Curran, chief of the city's Dept. of Planning, who since last fall has been running hard with it. He has established several ad hoc committees of representatives from local museums and industrial firms to assist with planning and identifying important elements in the city's industrial history. Exploration has begun into locating both funding, and within the city and elsewhere, objects appropriate for collection. A search also has started for an appropriate building, which must be 1) not too far from the Inner Harbor area—rapidly becoming a focus for new museums, 2) an industrial building of some historical and architectural worth, 3) sufficiently spacious, and 4) available. A contender is a recently vacated Baltimore Gas & Electric Co. substation, with its rotary converters intact, some of which might remain as exhibits. Perhaps the most telling sign of the seriousness with which the project is being taken in the Monumental City is a Mayoral Proclamation that "No more Historic Machinery is to Leave the City for Other Museums."

**HEAVY TIMBER.** An unusual acquisition by the Collier State Park Logging Museum, Klamath Falls, Oregon, is a 1928 gang-saw, used for reducing squared timbers of up to 20" x 48" section to multiple planks in one pass through the machine. Built by the Sumner Iron Works, Everett, Wash., for the Weyerhaeuser Co., the 36-ton monster could produce up to 40 boards at one time. The saw operates on the principle of a "sash" saw, in which multiple blades are held rigidly in a rapidly reciprocating frame, actuated by a crank and connecting rod powered by an external source. The thin saw blades used in this type of saw produce a narrow kerf, resulting in a great saving of wood as compared with a conventional circular mill. The saw cut on the down stroke, at the rate of 450 cuts/minute, with a maximum feed rate of 14 in. per stroke. Cutting at maximum capacity, the saw could produce 2,500 board-ft. of lumber per minute! *T.R.*



Sumner Iron Works gang-saw "Shimmying Sam." Leon E. Stumpff photo.



**SWISS CHEESE.** What is happening here? The Lifter: the *Century*, built early 1960s, all steam powered, believed to be the largest floating crane in N.Y. Harbor, capacity—500 tons. The Liftee: the steam tug *Mathilda*, built at Sorel, Que., by Sincennes in 1899, 72-ft. long, 114 gross tons. Originally fitted with a single-cylinder engine, now a fore-&-aft compound; oil-fired Scotch boiler. Donated to South St. Seaport Museum, N.Y.C., by her last owner, McAllister Towing Co. In Nov. 1969 she made the trip from Montreal to SSSM under her own power. Last Jan. sank at her pier, was gently raised by the *Century* and carried in slings to drydock, where it was discovered that her hull was hopelessly perforated. Nothing to do but put her up on the end of a pier, in a cradle. SSSM hasn't the funds to replace her, and management is in a quandary: one faction wants to exhibit her in the dry, ashore; another wants to restore her; and the bad boys want to junk her! *Conrad Milster [SIA] photograph.*



**CRAWLERS.** An important event in the Bicentennial year was the opening in June, in Stockton, Calif., of the Holt Memorial Hall. The Memorial is in recognition of Benjamin Holt and other Stockton mechanics who made major contributions to the mechanization of agricultural equipment. Of particular significance are the inventions of Holt, who is credited with development of the "crawler-type" tractor. One of his machines, a 12½-ton vehicle, c1918, is preserved in operating condition. Portions of the original Holt experimental shop also are preserved, including operational machine tools. Another important machine displayed is a Haines-Houser combined harvester built in Stockton in 1904, and reputedly one of the oldest such machines on public view in this country. Victory Park, Pershing Ave. at Rose St. 1:30-5:00, Tues.-Sat. Free. *T.R.*

## MISC NOTES

**JACK E. BOUCHER [SIA]**, whose outstanding photography of historical structures for HAER and other Park Service agencies has made a major contribution to IA recording, has been enrolled as a Fellow of the Royal Photographic Society of Great Britain in honor of his documentary photography. (An original Boucher is to be seen on page 1.)

**BARBARA FERRIS VAN LIEW [SIA]**, St. James, N.Y., has received the Garden Club of America's Historic Preservation Award for Zone III, N.Y. State, for her work in creating the St. James Historic District and in having State Route 25A preserved as a historic road.

**THE MIGHTY HUDSON.** Many of you will recall that great locomotive classic, the N.Y. Central's Hudson (4-6-4), of which 275 were built between 1927 and 1938 for high speed passenger service on the Water Level Route's mainline. Tragically, not a single example was preserved. An article on the breed by Louis F. Champlin is in the Feb. *Newsletter* of the Nat'l Ry. Historical Soc's. Mohawk & Hudson Chapter. Copies avail. from its Editor, Joseph D. Thompson [SIA], 2512 McGovern Dr., Schenectady, NY 12309. \$.50.

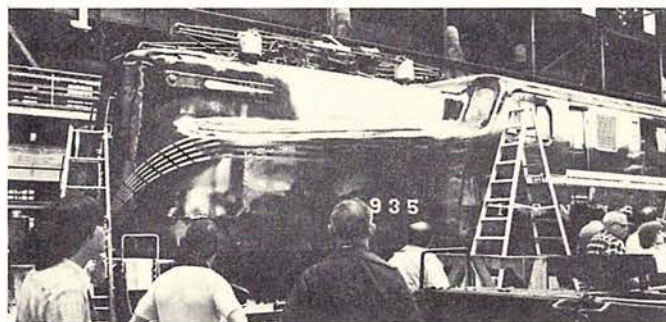
**AWARD.** The Philadelphia District of the Corps of Engineers has been presented by the Engineering Societies in the Delaware Valley Area, an award for the "Engineering Achievement of the Year with Historical Significance" for the project to relocate the Gruber Wagon Works [SIAN Jan. 77:2].

**CP BYGONES.** 1977 collectors' catalog of transportation items now available: 68 pp., over 1600 items, many illustrated: silverware, china/crockery/glassware, uniforms, buttons/badges, car/locomotive hdw., new/used printed material, artwork, books and color/b&w photos. \$1, refundable against purchase, to: CP Bygones, Room 117 Windsor Station, Montreal, Quebec H3C 3E4.

**CORRECTION.** Field Curry [SIA], reports that his identification of the Ashtabula Bridge collapse as America's worst bridge disaster [SIAN Mar 77:3] is incorrect. Although that failure received great attention from the engineering and popular press, what seems really to be the worst, occurred the next year (1877) on the Toledo, Peoria & Western near Chatsworth, Ill. Here a normally insignificant, short-span timber bridge had been weakened by grass fires underneath and collapsed under a double-headed, 15-car, Peoria-to-Niagara Falls excursion, crammed with sightseers. The lead engine got across, but the remainder of the train piled up one car on another with over twice Ashtabula's loss of life. (Ref: Stewart Holbrook, *Story of the American RR*, Crown, 1947.)

**INQUIRY: STONE STRUCTURES.** Information sought on stone structures known to have been used as root cellars or as temporary dwellings, Conn. or Mass., 17th-19thC. Giovanna Neudorfer, State Archeologist, Develop. & Community Affairs, Montpelier, VT 05602. (802) 828-3211.

**FOGG SUCCESSFUL:** Friends of the GG-1 [SIAN Jan 77:5] successfully raised the funds necessary to restore GG-1 locomotive No. 4935 (not 4835 as stated) to its original livery of Brunswick



No. 4935 under restoration at PRR/Conrail Shops, Wilmington, Delaware. Seen at SIA Annual Conference field trip, 1 May.

green with PRR lettering, gold pinstripes, and keystone heralds. A dedication ceremony at Washington Union Station on 15 May will feature Paul H. Reistrup, Pres. of Amtrak, and Raymond Loewy, creator of the GG-1 styling, a landmark in establishing the importance of industrial design. Following the ceremony, on an "inaugural run" 4935 will handle "The Murray Hill," leaving Washington 3:05 p.m. and arriving New York 7:00 p.m. 4935 was chosen for refurbishing as it is the last to carry its original PRR number, has unmodified air-intake grills, and is in excellent mechanical condition (being one of the last built, in 1943). *F.C.*

## TOURISM

**SOFT-CORE IA:** Traipsing the Ruhrgebiet. There has been widespread reporting in U.S. travel sections of a new phenomenon in W. Germany: the industrial tour. Not for the enthusiasts, mind you, but the *volk*. The concept was originated by an organization of local Ruhr-region residents anxious to dispel the commonly-held view of the nation's industrial heartland as a mephitic, smokey, uninviting area of coal mines, steel mills, and chemical plants. The four-day tours (\$110., all in) indeed feature those symbols of industrialism, with visits down mines and into Krupp's great works, but interspersed with side trips to parks and ancient castles for the sake of romantic relief. What's more, the industrial "adventure" (as it's billed) has proven *sehr populär*: over 5000 have signed up in the first season. Next thing you know they'll be wanting to visit queer places like Troy, Pittsburgh, Baltimore, and Lowell.

And before we leave the subject, send in your \$2.80 to the Supt. of Docs., USGPO, Wash., DC 20402 for a copy of **U.S.A. Plant Visits 1977-78** (Stock No. 003-012-000-41-7), published by the Dept. of Commerce. It lists 1500+ firms offering free tours, covering the 50 states + D.C. + 3 territories. The main listing is geographical but it is cross-indexed by industry. This really is U.S. Gov't publishing at its best!

**IA IN BRITAIN.** A study tour planned by English Cousins for Sept.: 15 days covering significant sites and artifacts of the Industrial Revolution. Peter Adams, English Cousins, 29 Priory St., Ware, Herts, England. (0920-5161).

**CANAL CRUISES** on the St. Lawrence Seaway, N.Y.S. Barge Canal, Hudson, and Atlantic Intercoastal Waterway. Schedules & itineraries: American-Canadian Line, Box 368, Warren, RI 02883.

**CAST-IRON TOURS.** Friends of Cast-Iron Architecture will run its last Spring Walking Tour on 5 June, covering the famed "Ladies Shopping Mile," a stunning array of cast-iron-front former dept. stores (Lord & Taylor, Altmans, *et al*), ranged along Broadway from 11th to 23rd Sts. 2 PM rain/shine at Grace Church, B'way & 11th. \$2.50. A bargain & a treat.

**MERRIMACK VALLEY TOURS.** The Merrimack Valley Textile Museum, N. Andover, Mass., has inaugurated a series of tours of the IA of the MV patterned on the SIA Conference tour of April 1976 [SIAN May/July 76] as a means of increasing local awareness of the richness and worth of the area's industrial heritage, and its effect on the physical and social development of industrial New England. Lowell, Lawrence, Manchester, and the lesser towns between were visited, under the guidance of the Museum's Curator, Laurence Gross, and Assoc. Curator of



Education, Betsy Bahr. The tours are run on an irregular schedule, depending largely on demand.

Such events, run regularly in Troy, N.Y. by the Hudson-Mohawk Industrial Gateway, and less regularly in Baltimore and other industrial centers, are one of the best devices for obtaining the community support for preservation and the other objectives of IA, that is so essential.

#### COURSES, EVENTS, &c.

**IA SUMMER INSTITUTE.** 17-22 July, Univ. of Vermont. For professionals and all others. Recognizing & evaluating the tangible history of America's engineering & industrial enterprise using sites & structures of Vermont's technological heritage. Techniques of documentation & recording under HAER's Eric N. DeLony [SIA] and a team of N. America's leading IAists. Site visits, field recording, lectures, and discussions in an intensive week-long experience. Inquiries: Summer Session, Grasse Mount, Univ. of Vt., Burlington 05401.

**WIND ENERGY CONVERSION SYSTEMS CONFERENCE,** 3rd Biennial. U.S. Energy Research & Development Admin. Washington, 19-21 Sept. Announcement: T.R. Kornreich, JFB Scientific Corp., 1701 K St., NW (Suite 905), Wash., DC 20006. (202) 659-5181.

**HISTORY OF MINING & METALLURGY.** The Int'l Cooperation in History of Technology Comm. is sponsoring a 5-day int'l symposium in Sept., 1978 at the Mining Academy of Freiberg, focusing on developments from feudal times to the present. Those interested in presenting papers should contact Prof. Dr. E. Wächtler, MAoF, G.D.R., 92 Freiberg, Akademiestr. 6.

**BRIDGES: THE SPANS OF NORTH AMERICA** (a Smithsonian Inst. Traveling Exhibition) with 68 photographs by David Plowden [SIA], and 16 text and archival panels will be on exhibit at:

Lexington, MA: Museum of Our Nat'l Heritage. 3 June—20 Aug.

Worcester, MA: Gordon Library, Worcester Poly. 9 Sept.—8 Oct.

University Park, PA: Penn State Univ. 28 Oct.—26 Nov.

St. Louis, MO: Museum of Science 16 Dec.—14 Jan.

Los Angeles, CA: School of Architecture, U.S.C. 3 Feb.—3 March.

**HISTORY OF TECHNOLOGY SYMPOSIA.** Biennial, starting in 1977, at the Tekniska Museet, Stockholm. The first: *Technology & Its Impact on Society*, will take place 22-25 Aug. Information; tentative program: S. Strandh, Dir., T.M., S-115 27, Stockholm, Sweden.

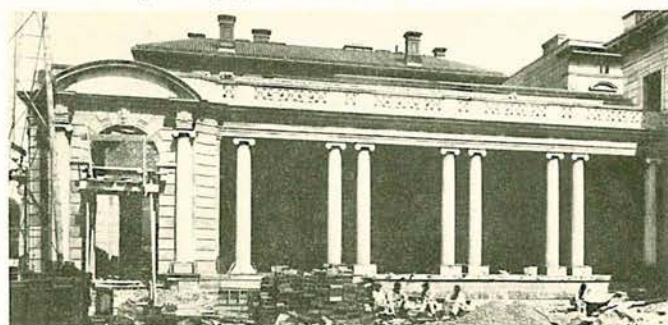
**MOLINOLOGY SEMINAR HELD AT PHILIPSBURG MANOR.** At a weeklong *practicum* in late March, Sleepy Hollow Restorations in N. Tarrytown, N.Y. was host to a small group of mill owners and operators. The conference was led by Charles Howell [SIA], miller at Philipsburg Manor, initiated in response to numerous inquiries concerning the problems of mill restoration, operation, and maintenance.

#### ARCHIVAL MATTERS

**READING DRAWINGS.** By an unfortunate series of inadvertencies, a major holding of Reading (RR) Co. engineering drawings, related notebooks, and other material, covering virtually all of the company's history from its origin in 1838, was discarded within the past several months, largely, apparently, as a result of Reading's ingestion into the Conrail system. The grapevine reports that some of this invaluable historical material, however, was snatched literally from the bulldozers by a few individuals within the organization who had gotten wind of the outrage and managed to reach the sanitary landfill before interment was total. We would like to appeal to those people who had the wit and enterprise to save these few documents to consider depositing them in a public repository where their permanent safekeeping and accessibility to scholars will be assured. The Editor will be pleased to hear from anyone with knowledge of this material.



Top: Blackwells Island (Queensboro) Bridge, under construction, August, 1907. (If this doesn't explain "Cantilever," nothing can.) N.Y.C. Highway Dept. Colln. Bottom: Wurts Colln. view of H.C. Frick residence under construction, Sept. 1913. Both, Museum of the City of New York.



**N.Y.C. PHOTOGRAPHS.** The Museum of the City of New York recently has acquired from the Highway Dept. of the City of New York a fine collection of photographs of the period c1900-1930 depicting construction of (apparently) all bridges built in the city, from the three major East River spans—Manhattan, Williamsburg, & Queensboro—down to small one-laners in the outer reaches of the commuter boroughs. Numbering some 11,000, all are mounted in original albums and captioned. These are the official construction-progress views, which together form a priceless resource. The collection now is being cataloged.

MOCNY also has received a \$10,000 matching grant from NEA for conservation of a previously acquired collection of 15,000 negatives taken c1900-20 by Wurts Bros.—a firm specializing in architectural and industrial photography. Much of the collection consists of views of notable buildings under construction. The collection, which heretofore has been largely inaccessible, should be in order and available by year's end. Inquiries: Steven Miller [SIA], Asst. Curator, Print Dept. MOCNY, 5th Ave. @ 103rd St., NYC 10029. (202) 534-1672.

**NEWARK PHOTOGRAPHS.** Two important collections have been placed in the Newark (N.J.) Public Library. The Berg Industrial Collection contains 500 8x10 negatives taken in the 1930s by photographer Will Cone, of industrial interiors in the city. The City of Newark recently donated its collection of 12,000 negatives taken by city official photographer Edward C. Minthorn between 1921 and 1969. Many of the views cover public works construction such as the City Subway and Newark Airport. The negatives are being indexed. N.J. Ref. Divn., NPL, 5 Washington St. 07101. (201) 733-7775/76.

**PATERSON PHOTOGRAPHS.** Meanwhile, the Paterson (N.J.) Free Public Library also has acquired an important collection, that of the Heinrichs family, whose studio flourished from the 1890s to the 1960s. Many of the negatives are by Alben Heinrichs who specialized in industrial photography in the area. The Library also has a collection of photographs by the noted Paterson "photographer" John Reid, known for his high quality formal views of such local products as locomotives by the various builders and Post's truss bridges. Inquiries: Michael R. Spozarsky, Archivist, FPL, 250 Broadway, 07501. (201) 345-1931.

**THE UTILITIES.** Late last year the Eleutherian Mills-Hagley Library received the corporate records of the 1400(!) companies that early in the 1920s merged to form the Penna. Power & Light Co. The collection, dealing with gas and electricity production in eastern Penna. 1853-1954, consists of about 3,000,000 MS pages, now stored pending processing.



## AUDIOVISUALS

**SPLendor OF THE SLOCAN SUB.** History of railroading in the Slocan Mtns. & Kootenay Country of Western Canada, 1895-1975, featuring 3-ft. gauge Kaslo & Slocan Ry., stern-wheelers, Canada's remote total train-ferry system, the Shipwrecked Hogger, a ride through the mountains on a cowcatcher. Color/sound film, 16mm, 30 mins; also avail. as 30-min. (148) slide-film with cassette. Flyer; WAVES Prodn., Box 165, Montrose, B.C. VOG IPO.

**C & O CANAL FILM:** *When the Past Dries Up.* Color, sound, 16mm. Purchase/rental: \$250/25. G.L. Productions, Box 6204 N.W. Station, Washington, DC 20015.

## PUBLICATIONS OF INTEREST

\* = Reviewed in *Business History Review*, Spring 1977.

# = Reviewed in *Technology & Culture*, January 1977.

High J.G. Aitken, **Syntony & Spark: the Origins of Radio**, John Wiley & Sons, 1976. 347 pp. \$16. \* (Jas. E. Brittain [SIA]).

Ken & Kate Baynes, **The Railway Cartoon Book**. N. Pomfret, VT: David & Charles. 96 pp. \$7.

Suzanne Beedell, **Windmills**. N.Y.: Scribners, 1976. 140 pp. \$12. Mostly English, but a little Continental and U.S. #

Geoffrey Body, **Clifton Suspension Bridge**. Moonraker Press, 26 St. Margaret's St., Bradford-on-Avon, Wilts, England. 1976. 76 pp. \$7.30 surface/\$9.25 air. Complete story of this important span, designed by Brunel, completed posthumously.

Gary S. Brierley, **Construction of the Hoosac Tunnel, 1855 to 1876**. In *Journal of the Boston Society of Civil Engineers Section, ASCE*, Oct. 1976, pp. 175-208. (230 Boylston St., 02116, \$2.50.)

Billie Sherrill Britz [SIA], **The Greenhouse at Lyndhurst: Construction & Development of the Gould Greenhouse, 1881**. *Research on Historic Properties Occasional Papers No. 1*. Wash: Preservation Press (address below). 48 pp. \$5.50.

R.A. Buchanan [SIA] & George Watkins, **The Industrial Archaeology of the Steam Engine**. London: Allen Lane, 1976. 199 pp; 23 pls.; 24 diags. \$17.50. In the Longmans IA Series. In three parts: introduction and spread; the technological development and evolution, with emphasis on form and details; and the (British) builders, under headings by type. Includes comment on the importance of preserving the few surviving examples.

Robert D.B. Carlisle, **A Beginning Forgotten**. Montclair, NJ: NORBY Ventures. \$5. A poem, recounting the author's great-grandfather's construction of Penna's. first oil pipeline.

Carl W. Condit [SIA], **The Railroad & the City: a Technological and Urbanistic History of Cincinnati**. Columbus: Ohio State Univ. press. \$15. Technology—especially the RR—as the chief determinant in the growth of a major city.

Cecil Cook, **Marquette: The Biography of an Iowa RR Town**. Des Moines: Waukon & Mississippi Press, 1975. 240 pp.

Lyle Cummins, **Internal Fire: the Internal Combustion Engine, 1673-1900**. Lake Oswego, Ore: Carnot Press, 1976. 351 pp., illus.

Leonard K. Eaton, **Oscar Eckerman: Architect to Deere & Co., 1897-1942**. In *RACAR* (Dept of Art, Soc. for the Promotion of Art History Publs. in Canada, Saskatoon, Sask. S7N 0W0). Vol 3 #2, pp. 89-99. Designer of a great series of innovative Mid-west warehouses in reinforced concrete.

M.S. Fagan (Ed.), **A History of Engineering & Science in the Bell System: The Early Years (1875-1925)**. Murray Hill, NJ: Bell Telephone Laboratories, 1975. 1073 pp. \$15.#

## IA BIBLIOGRAPHY

In response to many requests, the Society has prepared an "introductory" bibliography, principally for the use of those wishing a basic working knowledge of the field. Copies are available for \$.50 (stamps acceptable).

William H. Form, **Blue Collar Stratification: Autoworkers in Four Countries**. Princeton: Princeton Univ. Press, 1976. 333 pp. \$17.50.#

Justin Fuller, **Boom Towns & Blast Furnaces: Town Promotion in Alabama**. In *Alabama Review*, Jan. 1976.

Erik F. Haites, James Mak, Gary M. Walton, **Western River Transportation: the Era of Early Internal Development, 1810-1860**. Baltimore: Johns Hopkins Univ. Press, 1975. 209 pp. \$12.50.\*

Harry Hanson, **The Canal Boatmen, 1760-1914**. Totowa, N.J.: Rowman & Littlefield, 1976. 244 pp. \$24.50.\* In G.B.; highly regarded by reviewer.

William J. Hawkins III, **The Grand Era of Cast Iron in Portland [Ore.]**. N.Y.: Friends of Cast-Iron Architecture (44 W. 9th St., 10011). \$25/18.

Frank Horner, **HiRise in Wood**. Reprint 2798. N.Y.: American Soc. of Civil Engineers (345 E. 47th St., 10017). 8 pp. \$1. Brief description of conversion of timber framed warehouse in Minneapolis to office space. Plan, section, photos.

Robert A. Howard [SIA], **A Primer on Water Turbines**. In *APT Bulletin*, Vol VIII No. 4, 1976, pp. 44-67.

John R. Hume, **Industrial Archaeology of Glasgow**. London: Blackie & Sons Ltd., 1976. 346 pp., illus. \$15.

David J. Jeremy, **Damming the Flood: British Government Efforts to Check the Outflow of Technicians & Machinery, 1780-1843**. In *Business Hist. Rev.*, Spring, pp. 1-34.

—, **The Textile Machinery Collection**, Science Museum. [Museum review] In *Technology & Culture*, Jan., pp. 70-79.

Omer S.A. Lavalée [SIA], **Narrow Gauge Railroads of Canada**. Montreal: Railfare Enterprises, Ltd., 1972. 112 pp. \$14.95. An elegant general description of the NG in the North; with brief accounts of the 26 lines that operated (two still).

Robert F. Legget, **Railways of Canada**. Newton Abbot: David & Charles, 1976. 255 pp. \$11.

Edward J. Lenik [SIA], **Weekends in the Soil: A Guide to Historical Archaeology**. S. Orange, N.J.: The Archaeological Soc. of N.J. (Humanities Bldg., Seton Hall Univ., 07079.) 56 pp. \$3.50. (\$4.50 after summer.)

Ernest Marquez, **Port Los Angeles: A Phenomenon of the RR Era**. San Marion, Calif.: Golden West Books, 1975. 143 pp.

David R. Meyer, **From Farm to Factory to Urban Pastoralism: Urban Change in Central Connecticut**. Cambridge, Mass.: Ballinger, 1976.

Don C. Miller, **Ghost Towns of Montana**. Boulder, Colo.: Pruett Publ. Co., 1975. 192 pp., 232 photos. \$17.50.

Raymond A. Mohl, **The Industrial City**. In *Environment*, June 1976, pp. 28-38.

Michael S. Moss & John R. Hume, **Workshop of the British Empire: Engineering and Shipbuilding in the West of Scotland**. London: Heinemann Educational Books (48 Charles St., W1X 8AH). 192 pp., 150 photos. \$26.

John P. McKay, **Tramways & Trolleys: The Rise of Urban Mass Transport in Europe**. Princeton: Princeton Univ. Press, 1976. 280 pp.

George A. Nader, **Cities of Canada, Vol. II: Profiles of 15 Metropolitan Areas**. Toronto: Macmillan of Canada, 1975. 462 pp.

O.S. Nock, **The Algoma Central Railway**. London: Adam & Charles Black, 1975. 190 pp. \$18. The authoritative work on one of Canada's most important independents.

A.A. Den Otter, **Coal Town in Wheat Country: Lethbridge, Alberta, 1885-1905**. In *Urban History Review*, June 1976, pp. 3-6.

C. Rivals, **Le Moulin à Vent & le Meunier dans la Société Française Traditionnelle**. Paris: Éditions Serg, 35, Rue St.-Lazare 75009. 304 pp., 405 dwgs. & photos. 180 F.



Keith L. Bryant, Jr., **The Ry. Station as a Symbol of Urbanization in the South, 1890-1920.** In *The South Atlantic Quarterly*, Autumn, pp 499-509.

—. **Cathedrals, Castles, & Roman Baths: Ry. Station Architecture in the Urban South.** In *Journal of Urban History*, Feb. (Sage Publs., 275 S. Beverly Dr., Beverly Hills, CA 90212.)

—. **Ry. Stations of Texas: A Disappearing Architectural Heritage.** In *Southwestern Historical Quarterly*, April. (Texas State Hist. Assn., 21306 Richardson Hall, Univ. Station, Austin 78712.)

Lynwood Bryant, **The Development of the Diesel Engine.** In *Technology & Culture*, July pp. 432-46. Another in the series of essays by the most penetrating and perceptive scholar of the complex history of the I.C. engine.

Sherban Cantacuzino (Ed.), **New Uses for Old Buildings.** London: Architectural Press, 1975. 280 pp, illus. \$25. An expansion of the article in *Architectural Review*, May 1972. Some 70 examples in Europe & the U.S.

Lynwood Carranco & John T. Labbe, **Logging the Redwoods.** Caldwell, ID: Caxton Printers (83605), 1975. 145 pp. \$15. Mostly from the standpoint of the RRs. Well illus.

Mark Stevens, **Unearthing Roots of Industrial Age.** In *Christian Science Monitor*, 14 Dec. 1976, pp. 14-15.

Daniel D. Strite, **Harrah for Garibaldi! (Pt. 2),** In *Oregon Hist. Quarterly*, Dec. 1976, pp. 341-68. The lumber mill, not the Italian hero. Fine account of operations in large mill, shipping, 1920s & 30s.

Michael E. Ware, **A Canalside Camera.** \$11.50. Collection of historical photographs of British canal construction, operation, boats, & people. (Avail: ACTC, Box 842, Shepherdstown WV 25443.)

**Energy for Rural Development: Renewable Resources & Alternative Technologies for Developing Countries.** Full discussion of all the possibilities, the available & potential technology, economics; appendices on availability of hardware. 306 pp. Excellent. Gratis: Board of Science & Technology for Intl. Develop., Natl. Acad. of Sciences, 2101 Constitution Ave. NW, Wash., DC 20418.

**The Landscape of Industry: Region du Nord, Wallonie, Ruhr.** Forward by Carlo Scarascia Mugnozza; intro. by Michel Carpentier; essays by Robert L. Delevoy, Franco Borsi, H. Wieser-Benedetti. (In French, Dutch, Engl.) Ecole Nationale Supérieure d'Architecture & des Arts Visuels, Hotel van de Velde, Brussels. 198 pp., 124 illus. (8 color). \$15.50 paper. To accompany a travelling exhibition (1975) that investigated the vestiges of man-made landscapes in NW Europe resulting from the Industrial Revolution. Discusses the recognition of these remains as an element in future planning. Borsi discusses various theoretical ways of viewing them. Reproduces 120 of the show's photos, prints & maps. Excellent environmental planning study.

**Rome, N.Y.: America's Copper City.** In *Wire Technology* (Box 480, Stamford, CT 06904), Vol 7/8 1976, pp. 23-36. Important copper and wire center from the 1870s. (Did you know that that's why the cable is called "Romex"?)

**Sources of Preservation Funding.** In 11593, Feb. Numerous sources described, some applicable to IA structures.\*

**Success at Oil Creek.** Dept. of the Interior "Bicentennial Historical Vignette." Supt. of Documents, USGPO, Wash., DC 20402. Stock No. 024-000-00823-1. 24 pp. \$.65. Events at Titusville, Pa., 1859.

**Train Shed Cyclopedia No. 54: Bridges & Trestles.** Novato, Calif.: Newton K. Gregg. 64 pp. \$4.50. Reprinted from various issues of *Ry. Engineering & Maintenance Cyclopedia*. A quite good selection of text, photos, & drawings of all principal types of RR bridges, early to mid-20thC, incl. foundations and erection, making in all a first-rate primer. (Also in the TS series are 5 monographs taken from Berg's classic *RR Building & Structures* [1893.]: Nos. 13, 19, 24, 33, 38—\$4.95 each except no. 19 @ \$4.50)

## REPRINTS

**American Locomotive Co.** Facsimile of book describing and illustrating ALCO's 13 locomotives exhibited at the Louisiana Purchase Expos., St. Louis, 1904. 44 pp. \$3.50. Alco Historic Photos, Box 655, Schenectady, N.Y. 12301.

George Dodd, **Days at the Factories: Or, The Manufacturing Industry of G.B. Described, & Illustrated by Numerous Engravings of Machines & Processes.** (1843). Totawa, N.J.: Rowman & Littlefield, 1975. 408 pp. \$14.50.

Samuel Eliot Morison, **The Ropemakers of Plymouth: A History of the Plymouth Cordage Co., 1824-1949.** (1950). N.Y.: Arno Press, 1976.

William Barclay Parsons, **Engineers & Engineering in the Renaissance.** (1931). Cambridge, Mass.: MIT Press, 1968. Introduction by Robert S. Woodbury. 661 pp., illus. \$16.65/8.05. One of the great classics, by the engineer of the first (real) N.Y. subway.

**Street & Electric Railways.** From the 12th U.S. Census, 1900. (1903). N.Y.: Arno Press, 1976.

Lowell S. Stewart, **Public Land Surveys: History, Instructions, Methods.** (1935). 185 pp. \$8.95. F. Hodgman, **Land Surveying.** (1913). 472 pp. \$11.50. A. C. Mulford, **Boundaries & Landmarks.** (1912). 90 pp. (paper). J.H. Hawes, **Manual of U.S. Surveying.** (1871). 240 pp. Facsimiles of important early works, selected by two surveyors to fill a perceived need for practical treatises in the area. High-quality paper & binding. Landmark Enterprises, Ft. Sutter Stn. 160502, Sacramento, CA 95816.

**History of Broadcasting—Radio to TV.** 32 titles (1901-1958), \$682 for the set; and Telecommunications, 34 titles (1875-1974), \$805 the set. Aimed at libraries. All on acid-free paper. Titles avail. individually. Also available: **Historical Studies in Telecommunications:** 5 books in 6 vols., each a compilation of significant articles reprinted from the technical press: *The Electric Telegraph; The Telephone; The Development of Wireless to 1920; Technical Development of TV; Documents in American Telecommunications Policy* (2 vols.). \$260. the set; avail. individually. Arno Press, 330 Madison Ave., NYC 10017. Catalogs avail.

## SERIALS & COLLECTIONS

**The Future of Commercial Sail.** *Occasional Publications No. 2.* (papers from the RINA Symposium on Commercial Sail, 27 Nov. 1975). \$10. RINA, 10 Upper Belgrave St., London SW1X 5BQ.

**HSTC Bulletin,** Richard A. Jarrell & Norman R. Ball [SIA], Eds. A new quarterly newsletter for the history of science & technology in Canada. The first issue contains papers on 18th-19thC potash production, and the noted civil engineer Thomas C. Keefer. Dept. of Natural Science, Atkinson College, York Univ., Downsview, Ont. M3J 2R7.

**Logging Railroads of Penna.** A 13-vol. series covering the quite astonishing number of companies and miles, has been published by Benj. F.G. Kline, Jr., 920 Wheaton Dr., Lancaster, PA 17603. Each vol. covers a region or large company. One volume on Maryland lines also avail. Descriptive flyer.

**Windustries.** A new quarterly publ. by Great Plains Windustries (Kemp Houck, Ed.), Box 126, Lawrence, Kansas 66044 (913) 842-7662. \$10/year individuals; \$15 institutions. Full of information—some historical—on wind energy.

## SITE INVENTORIES, BIBLIOGS., LISTS, &c

Charles K. Hyde, **The Lower Peninsula of Michigan: An Inventory of Historic Engineering & Industrial Sites.** (Diane B. Abbott, Ed.) 1976. Historic American Engineering Record, Natl. Park Service, Wash., DC 20240. 322 pp., illus. Gratis. The most massive of the HAER inventories to date, and filled with wonders. Hundreds of sites in all categories, well described but, regrettably, only sparsely illustrated. Eight or 10 small photos ganged on single pages would be consistent with the relatively brief verbal accounts in such publications, would cost no more than the few, large photos now included, and would enormously increase the usefulness of these otherwise fine inventories.



Elizabeth Rogers (Comp.) & John Kneebone (Research & Ed.), **A Nation in Motion: An Informal Compilation of Historic American Transportation Sites by the (U.S.) Dept. of Transportation.** DOT Office of Environmental Affairs, Wash., DC 20590. 1976. 133 pp. Gratis. Intended not as a definitive listing, but to inspire an awareness of the age and variety of the nation's transportation structures. Curiously, nothing on the Natl. Register is included, in fact. Four major sections: Waterways; Roads; RRs; Aeronautics, with appropriate subdivisions (RRs proper, bridges, tunnels, and structures, i.e., under RRs); then by state under each. An odd assortment, perhaps, what with the major and the minor all there together, but a worthwhile undertaking, and the price can't be faulted.

**Long Island Wind & Tide Mills: An Interim Report of a Study Conducted by the HAER and the Society for the Preservation of Long Island Antiquities.** 1976. HAER, Nat'l Park Service, Wash., DC 20240. 19 pp., illus. Gratis.

**Historic Civil Engineering Landmarks of Sacramento & Northern California.** Sacramento Sect., ASCE. 48 pp.

**Bicentennial Trail of Western Maryland.** Folding guide to sites in the three western counties, of which many are IA. Maryland Bicentennial Commn., Annapolis, MD. Gratis.

Barbara L. Burke & Robert N. Meroney (Comps.), **Energy from the Wind + 1st Supplement to EFTW.** Totally, 1900 references, from 1759 to 1977. Basic vol. (1975): \$7.50 (\$8. foreign). Suppl.: \$10/11. The pair: \$15/16. Publications, Engineering Research Center, Foothills Campus, Colo. State Univ., Ft. Collins, CO 80523.

James O. Morris, **Bibliography of Industrial Relations in the RR Industry.** Ithaca, NY: N.Y.S. School of Industrial & Labor Relations, Cornell Univ. 1975. 153 pp. \$5.\*

**Preliminary Guide to Sources in Ohio Labor History.** 350 entries, 47 pp. \$2.25. Ohio Labor History Project, Ohio Hist. Soc., Archives/MS Divn., Columbus 43211.

**ALCO Photo Colln. Catalog.** This valuable collection of 5000 shop photos of American Locomotive Co. locomotives, c1880-1954, owned by the Nat'l Ry. Historical Soc., at last has been cataloged. Incls. 24 full-page reproductions of typical views; brief history of ALCO. 150 pp. \$2.50 PP. ALCO Historical Photos, Box 655, Schenectady, NY 12301.

A.H. Koschmann & M.H. Bergendahl, **Principal Gold-Producing Districts of the U.S.** *Geological Survey Professional Paper 610.* Wash.: U.S. Geological Survey, 1968. 283 pp. \$5.45. (Avail.: Supt. of Docs, USGPO, Wash., DC 20402.) The geology, mining history, and production of the major districts in 21 states.

**Building Stones of Our Nation's Capital.** U.S. Geological Survey, Public Inquiries Office, Nat'l Center, Reston, VA 22092. 44 pp. \$1.15. Source and appearance of the great number of different stones used in Washington, and the quarries.

**Waterways Users' Companion 1975.** British Waterways Board, Melbury House, Melbury Ter., London NW1 6JX. 56 pp. \$1.50. Over 1000 names and addresses: every organization associated with inland waterways in G.B.: preservation, travel, &c.

Ronald Abler (Ed.), **A Comparative Atlas of America's Great Cities: Twenty Metropolitan Regions.** Minneapolis: Univ. of Minn. Press, 1976. 528 pp.

**Historical Statistics of the U.S., Colonial Times to 1970.** 2 vols. U.S. Dept. of Commerce, Bureau of the Census. (Avail.: Supt. of Docs., USGPO, Washington 20402, or USDC dist. offices.)

Tivis Wilkins, **Colorado RRs: Chronological Development.** Boulder, Colo.: Pruett Publ. Co., 1975(?). 304 pp., 250 photos, 29 maps. \$25. 1867-1966. By RR: development, abandonment, ownership, &c.

Harold A. Edmonson & Richard V. Francaviglia (Eds.), **RR Station Planbook.** Milwaukee: Kalmbach Publ. Co. 95 pp. \$4. 28 large and small U.S. & Canadian stations, in a wide variety of styles. Photo, description, and scale dwgs. of each. Nice resource.

**Books.** A Worthy catalog in crafts, IA, tools, &c. Iron Horse Antiques, Inc., RD 2, Poultney, VT 05764.

## MISC. PUBLICATIONS

William R. Bagnall, **Sketches of the Manufacturing Establishments in N.Y. City and of the Textile Establishments in the Eastern States.** Unpubl. MS, c1890. Planned as the 2nd, 3rd, & 4th vols in Bagnall's history of the textile industry. Edited c1908 by Victor Clark of the Carnegie Instn. but never published. (Vol. I was publ. in 1893; reprinted 1971 by Augustus Kelly with added index.) The only copy, a 2500 pp. typescript in the Baker Library, has been reproduced on microfiche by the Merrimack Valley Textile Museum, N. Andover, MA 01845. 9 cards in the set, \$10.

**Code of Practice of Stone Cleaning & Restoration.** Federation of Stone Industries, Alderman House, 37 Soho Sq., London W1. \$1. Covers all common building stones + brick, stressing damage from wrong treatments.

Robert A. Weinstein & Larry Booth, **Collection, Use, & Care of Historical Photographs.** Nashville: American Assn. for State & Local History (1400 Eighth Ave. South, 37203). 222 pp., \$16.

## MICROREVIEW

Merritt Roe Smith [SIA], **Harpers Ferry Armory & the New Technology.** Ithaca, N.Y.: Cornell Univ. press. 363 pp., 23 illus. & charts. \$17.50. The title may be read without gaining a full realization of the contents. The text goes far beyond the Harpers Ferry experience. It surveys the entire small-arms industry of the U.S. up to the Civil War and thus places Harpers Ferry in a clear context. Beyond the technology, which is explored in depth, much attention is given to the social response to industrialization.

The book is the culmination of many years of patient and intensive study. It is soundly based on many unpublished MS sources, chiefly in the Nat'l Archives. There is an 8 pp. bibliography. Because the small-arms industry developed so much of the refined mechanical technology essential to the production of consumer goods, this book is a foundation resource for the understanding of American productive techniques. *E.A.B.*

## NOTE ON A REVIEW

The January issue of *Technology & Culture* carries a review by Robert S. Woodbury (emeritus professor of the history of technology, MIT, and author of a number of machine-tool history monographs) on the Historic American Engineering Record's **Eli Whitney Armory Survey** (1974). Except for short notes and one review on a number of HAER's surveys that have appeared from time to time in the *SIA*, there have been, if any, few critical appraisals of large-scale IA surveys in N. America. And Woodbury is critical, observing that the results of the survey were largely negative, both in terms of the physical evidence unearthed and the scholarly analysis derived. His conclusion is that the entire study might be put in a file marked "Eli Whitney Site—Negative." The larger point implicit in the review is one that needs to be considered before undertaking any IA survey/study, but which frequently appears to be disregarded because of the generally "visible" nature of IA as contrasted with the underground sites of traditional archeology: is there any real prospect that something useful will be learned?

## PRESERVATION PRESS

The National Trust's house press is satisfying a long-felt want by publishing a wide variety of consequential works in the general area of preservation and allied affairs. A catalog now is available as a supplement to *Preservation News*, from Preservation Bookshop, 740 Jackson Pl., NW, Washington, DC 20006. Some of the featured items of IA interest: **America's Forgotten Architecture** by Tony Wrenn & Eliz. D. Mulloy, 311 pp., illus., \$20/9. **A Guide to Fed'l Programs for Historic Preservation, 1976 Suppl.** (Nancy D. Schultz, Comp.), 110 pp., \$3. **Wooden Shipbuilding & Small Craft Preservation** (selected papers from a symposium on same), 104 pp., \$5.50. **Ghost Towns & Mining Camps: Selected [conference] Papers**—planning, interpretation, preservation, 38 pp., \$3.50. **Built to Last** (Gene Bunnell, Ed.), 125 pp., illus., \$5. (Summer)—30 adaptive re-use case studies in Mass., incl. 8 industrial: Chickering Piano Factory; Leeds Textile Mill; Lawrence Tannery; Northbridge Cotton Mill; +3 more factories. **The Failure to Save the Queen City Hotel** by Dianne Newell [SIA]. 32 pp., illus., \$3.