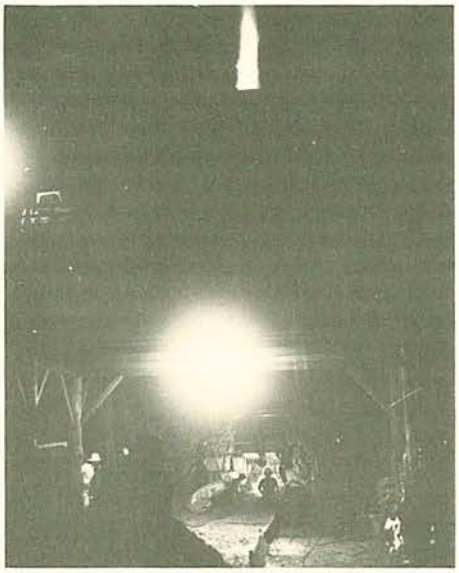
SOCIETY FOR INDUSTRIAL ARCHEOLOGY

NEWSLETTER

Volume Five Numbers 5 & 6 **September & November 1976**

'BAMA IRON FROM TANNEHILL

"Fergit hell!" read a sign on the side of the restored stone stack. Some 111 years after it was rendered *hors de combat* by Capt. Sutherland's 8th Iowa Cavalry (during the "late unpleasantness"), Tannehill Furnace Number 1 was again in blast. Again it was to be a source of iron cannon.



Robert L. Johnson [SIA], photographs.

Other charcoal furnaces have been saved, restored, even rebuilt and interpreted. But Tannehill was fixed up, charged up, fired up, and tapped. Real fire. Real iron. It was a landmark IA event.

The restored iron works is located in Tannehill State Park SW of Birmingham, Ala. On 16 Sept furnace Number 1—built in 1855—was charged with Brazilian ore, coke, and "lime rock." It was fired and kept in (cold) blast until Sunday 19 Sept. when it was tapped. Molds were on hand for casting shot, souvenir pigs (piglets?) and a mountain howitzer. "Better than two-ton" yield was the estimate of furnacemaster Ray L. Farabee, emeritus professor of metallurgy, Univ. of Alabama. Alas, the iron came too slowly and at too low a temperature for the anticipated on-the-spot casting.

There were some modern touches: a Bobcat front-end loader to scoop the slag. Fluorescent lights in the casting shed. Tuyeres (pr. "tweers") whistling with air furnished by electric Roots-type blower. A hillside swarming not with grimy charcoal handlers but with a cheerful, shirt-sleeved audience.

But the essentials were true and authentic: iron ore being smelted in a century-old cold-blast stone-stack iron furnace, charged from the top and tapped into sand at the bottom.

Restoration of the furnace stack, casting shed, and charging bridge—and their operation on this weekend—was educational, experimental, and expensive. It cost about $125,000 and there were substantial donations of materials and labor from over 30 interested companies. U.S. Steel provided some 50 tons of high-grade ore, 20 tons of limestone, and 70 tons of coke. Charcoal is too expensive and furnacemaster Farabee noted that there "probably isn't enough charcoal made in Alabama in a year to run the furnace for two days." Molds were produced by Stubbs Foundry and ABEX-Calera (a manufacturer of RR hardware). The work force was mostly from U.S. Steel and ABEX. Dollar support came from the state, the Dept. of the Interior, the American Revolution Bicentennial Commn., the Ala. Historical Commn., the Birmingham locals of the United Steel Workers of America, and keen individuals.

Putting the old works into working order was fraught with difficulty. Tuyeres had to be fabricated and installed, and a blower to be improvised. The furnace stack still had the old refractory lining with only a three-ft. high hearth added of new firebrick—

which had only 10 hours' instead of two weeks' drying time.

Still, by Sunday morning, Number 1 was putting out some iron. It was a warm day and a sizeable crowd gathered (estimates range from 5,000 to 15,000, exclusive of Boy Scouts and deputies).

The furnace was the main attraction. It didn't roar but it did hiss and flare and smoke. Tons of air were pumped. The stack was charged about every 30 minutes and a tall column of heat-distortion waves emerged from the top. Furnacemaster Farabee recorded a high reading of 3275° F on his optical pyrometer, but the heat wasn't getting to precisely where it would do the most good. Also, there seemed to be some problems of getting the slag and iron to emerge separately, so asbestos-clad workers periodically ventured into the casting arch to insert an oxygen lance. There were satisfying flare-ups of orange flame, with sparks and smoke. Long-handled devices were used to draw off samples, which were given oracular examinations. Glowing, taffy-like slag flowed into channels grooved in the sand, where it cooled until removal via Bobcat. Black-sand molds were painstakingly prepared and held in readiness. But there never was quite enough iron *right there* to resume production of 12-pound Confederate Napoleon cannon.

Iron from Tannehill Number 1 later was re-heated and cast by ABEX, Stubbs, and the Univ. of Alabama.

Furnacemaster Farabee termed it a "glorious success." It was a genuine blast. And yes, they're going to do it again. Most likely July 4. *MR.*

The undertaking was video-taped by Channel 10 (educational), Montgomery.

Complementing the furnace in Tannehill State Park is the John Wesley Hall Grist Mill & Cotton Gin, a reconstruction of a structure that operated in the vicinity from 1867 to 1931.

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Room 5020 **National Museum of History & Technology** **Smithsonian Institution** **Washington, DC 20560**

ENDANGERED SPECIES

Just as the whooping crane is an endangered species of the animal world, the railroad trainshed is an endangered species of the historical man-made environment. Of the hundreds of long-span, trussed-roof trainsheds that loomed behind the headhouses of urban railroad stations at the turn of the century, only eleven are known to survive.

In 1974 the Educational Facilities Laboratories and the Natl. Endowment for the Arts (NEA) sponsored a conference in Indianapolis that focused on the problems of reusing redundant RR stations [SIAN Sept 74:2]. The proceedings were published in two booklets that have been enthusiastically received by not only historians and preservationists, but people involved in transportation, real estate development, and urban management as well. Because of this national attention, the abandoned RR station seems now secure, and is one of the most popular structures for conversion.

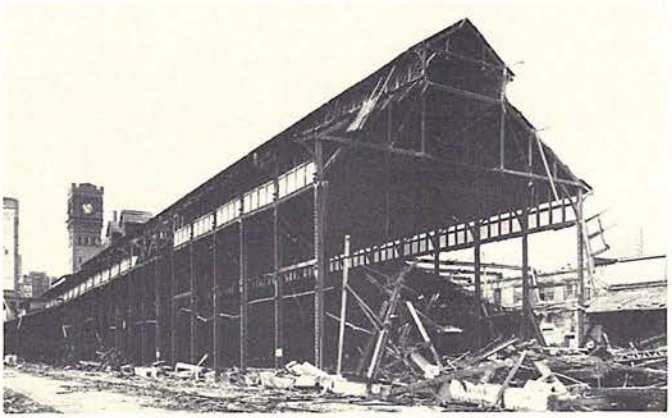
Neglected in the popularization of the station, however, is the trainshed that often stood behind it. At one time every large station had its shed to shelter passengers.

By recent count, HAER has identified only eleven survivors of the hundreds that existed. Many of the oldest sheds have been destroyed only within the past decade, despite it being the most enlightened one in the historic preservation movement.

A paper on the historical significance and difficulties of preserving trainsheds was presented at the 1976 annual meeting of the Soc. of Architectural Historians.* The SAH was thereby prompted to resolve that Reading Terminal Trainshed, Philadelphia—largest single-span trainshed surviving in the world and perhaps the most historically significant in America—be adapted for new uses on the upper (track) level while retaining the ground-floor market, thus keeping an ensemble that is an important part of America's architectural, technological, and social heritage.

At the very moment of the paper's reading, the Chicago & Western Indiana RR Co. was in the process of demolishing Chicago's 1884 Dearborn St. Station Trainshed—second oldest in the nation—and contracts were being prepared for demolition of the L&N RR's Montgomery (Ala.) Union Station Trainshed of 1897 [SIAN Suppl. 7]. This tragedy was averted through concerted efforts by the Montgomery Landmarks Commn. and the state preservation officer who were successful in raising 11th-hour funds for the shed's restoration.

Inspired by these events, HAER prepared a case study on the surviving trainsheds for presentation to the Secy. of the Interior's Advisory Board on Natl. Parks, Historic Sites, Buildings, & Monuments on 5 October. Designated by the Secy. as Natl. Historic Landmarks on 8 December were the following: Reading Terminal Trainshed; Central RR of Georgia Station & Trainshed, Savannah; Penna. RR Station & Trainshed, Harrisburg; B&O RR Mt. Royal Station & Trainshed, Baltimore; Montgomery Union Station & Trainshed; L&N RR Union Station & Trainshed, Nashville; and Main St. Station & Trainshed of the Seaboard Airline/Chesapeake & Ohio RR, Richmond, Va. Landmark designation is the highest form of recognition afforded a historic resource by the government and signifies its status as a national treasure.



THE DEMOLITION OF THE DEARBORN ST. STATION TRAINSHED. *10 May:* S. Dearborn Renovation Assoc., Ltd. offers to buy shed for conversion into tennis & raquet-ball courts. *16 May: Chicago Tribune* feature article draws attention to shed's importance. *17 May:* RR issues demolition contract. *19 May:* Demolition begins. *21 May:* SDRA obtains temporary restraining order, halting demolition. *25 May:* Order dismissed; demolition proceeds. The sequence of events demonstrates the efficiency of Chicago city government and real estate developers, and the vulnerability of preservation efforts. *HAER photographs by Hedrich-Blessing.*

Earlier in the summer, several federal agencies such as the Fedl. Ry. Admin., Amtrak, HUD, and the Advisory Council on Historic Preservation, which should be involved with planning for the continued use of these structures, were alerted to the threat. Later, a group of interested individuals representing the Smithsonian, the Natl. Trust, the Advisory Council, the American Inst. of Architects, and the Natl. Park Service met and discussed the possibility of recommending to the NEA that they follow up on the RR station issue, focusing now on the continued use of trainsheds, a concept overlooked by the 1974 conference.

Several of the surviving sheds do not serve their original purpose. Some have not been well maintained and are in disrepair. Their size and form restrict the number of adaptive-reuse possibilities. A creative, comprehensive evaluation by the country's most imaginative architectural minds clearly is in order if we are not to lose more of these irreplaceable structures. *ED.*

**Summary and update in* SAH Journal, *Dec. 1976, pp. 265-71.*

S I A ANNUAL CONFERENCE

Hagley Museum, Wilmington, Delaware—28 April - 1 May. Full details to follow.

THE LANDMARK TRAINSHEDS

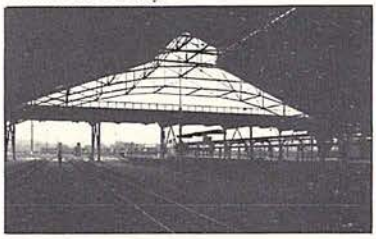
Montgomery, *Boucher.*

Richmond. *DeLony.*

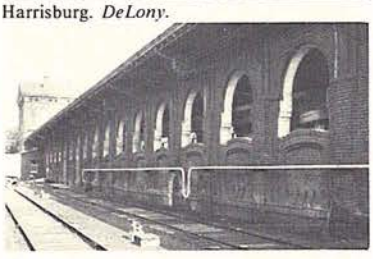
Harrisburg. *DeLony.*

Reading Terminal. *Mills Photography.*

Mt. Royal. *Barrett.*



Nashville. *Boucher.*



Savannah. *Schwartz.*

AN OHIO CHARCOAL IRON FURNACE REOPENS

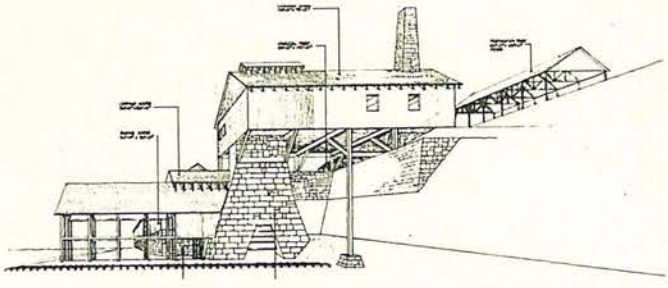
Buckeye Furnace, a reconstructed 19thC charcoal iron furnace and village near Jackson, Ohio, recently opened. The Ohio Historical Soc. has been working on the project for several years and work will continue for some time.

The furnace is situated in the heart of the Hanging Rock Iron Region, a 100-mile-long elliptical belt, 25 to 30 miles wide, extending from Hocking Co., Ohio, to Carter Co., Ky. In the 19thC the area provided the raw materials for the 80-odd charcoal furnaces that dotted its hills. Virgin hardwood for charcoal as well as shallow deposits of iron ore, coal, and limestone for flux all were close at hand. Most of the furnace building activity occurred in spurts, whenever the demand for iron rose. The first furnace in the area was Union, built in 1826 near Ironton, Ohio. The most active period was 1853-56 when 21 new furnaces began operations. While most closed following the Civil War, some did persist. In 1916 the region's final cast of charcoal iron was made at Jefferson Furnace in Jackson Co.

In 1851 the newly formed Buckeye Furnace Co. selected a site for their operations on the east bank of Little Raccoon Creek. According to the inscription on the stack, it was erected by T. Price. The stack, of native sandstone, originally was 11 ft. across the bosh and 34 ft. high, later increased to 37 ft. by brickwork. The furnace was blown by steam and employed ring stoves to preheat the blast. The output of the original stack averaged 7.3 tons/day; with the increased height, better stoves, and the addition of a small amount of coal to the burden, Buckeye's output reached a maximum of 12 tons. As the economics of iron production fluctuated, the furnace changed hands several times and periodically ceased operations altogether. Buckeye closed permanently in 1894 and was abandoned.

After the iron industry faded in the Hanging Rock Region, the property was bought and sold several times. Plans to make the site into a state park faltered, but interested citizens in the area pressed to have the furnace preserved. State geologist Wilbur Stout, who made the study of Ohio charcoal furnaces his lifelong hobby, also urged that Buckeye be saved for future generations. In 1935 the Ohio Archaeological & Historical [now Ohio Hist.] Soc. purchased the site and for many years preserved the stack and maintained a recreational area there. Adjoining parcels of land were acquired by the society over the next 30 years. In the late 1960s the society formulated plans to reconstruct the furnace complex and establish an interpretative program to acquaint the public with one of Ohio's important 19thC industries. Following extensive research, the reconstruction of Buckeye Furnace began.

After the stack was refurbished, a charging house and casting shed were added. These, like all structures at Buckeye, are of braced-frame oak construction. A 140-x-60-ft. charcoal shed was erected and a typical ironmaster's house built near the stack. The engine house, rebuilt on its original foundations, is now being outfitted with a Griffith & Wedge [Zanesville, Ohio] steam engine and blowing tubs. The company store, reconstructed from photographs and set on the foundations of the original, has been outfitted as one typical of the period and location. The furnace offices, originally located on one side of the store building, also have been recreated. Future plans call for a church, school, and workers' cabins to complete the village complex. No actual firings are planned at this time. *CD.*



Ohio Dept. of Public Works drawing by Harder & Kincheloe, Architects.

CONTRIBUTORS TO THIS ISSUE

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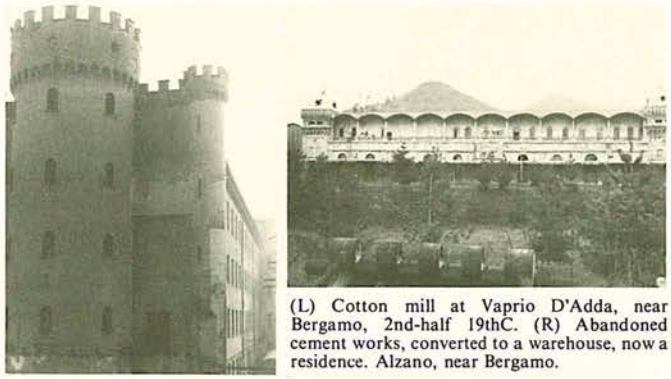
INDUSTRIAL ARCHEOLOGY IN ITALY



(L) Cotton mill at Vaprio D'Adda, near Bergamo, 2nd-half 19thC. (R) Abandoned cement works, converted to a warehouse, now a residence. Alzano, near Bergamo.

The Archeologia Industriale Centro di Documentazione & di Ricerca (Italian Assn. for Industrial Archaeology—IAIA) was officially established in June, promoted by scholars of various backgrounds. President is Dr. Eugenio Battisti, on the Faculty of Architecture, Polytechnic of Milan (FAPM), presently visiting prof. at Penn State Univ.

The IAIA's main purposes parallel those of similar bodies in N. America and the U.K., i.e., to promote research in the field of IA, to foster the preservation and recording of industrial monuments, to compile materials and bibliographical aids useful to everybody interested in the subject, and to act as a clearing house for organizations and individuals concerned with the industrial heritage in Italy or elsewhere—but with particular concern for the social dimension of "industrial phenomena."

The establishment of the IAIA is only one element of the activity started three years ago in the FAPM Dept. of Humanistics, where some scholars, now members of the IAIA board of directors, carried out a research project on the 18th-19thC École des Ponts & Chaussées of Paris. Others took part in an international program of recording and preservation in the 18thC southern industrial community of San Leucio, near Naples, a project sponsored by FAPM and the Penn State Dept. of Architecture. During academic year 1975/76 there was held at the Dept. of Humanistics a course on industrial monuments and IA, involving scholars with different backgrounds. This opened the way to an inter-disciplinary approach—historical, architectural, and sociological. At the present the IAIA is carrying on a project of recording and classifying industrial sites and buildings in two areas of the Milan region: the Valsesia—an important textile manufacturing center; and the Valley of the Adda, location of one of the nation's most important 19thC industrial villages—Crespi d'Adda.

The IAIA has established a working association with the Museo Nazionale della Scienza & della Tecnica, Milan, internationally known for its collection of Leonardo da Vinci models.

A book on Italian IA by drs Massimo Negri and Antonello Negri will be published early in 1977, and the Milan publisher, Electa Editrice, is sponsoring a series of monographs on IA world wide, contributions to which are actively being sought. Contact: Aldo Castellano AICDR, Via Rosellini 8, 20100 Milano, Italy.

LE CREUSOT INDUSTRIAL HERITAGE CONFERENCE

An international conference on the "Industrial Heritage & Modern Society" was held at Le Creusot, France from 19 to 22 September. Sponsored by the Internatl. Council on Monuments & Sites (ICOMOS), the Internatl., Council of Museums (ICOM), and the Écomusée de la Communauté Urbaine, Le Creusot, Montceau-les-Mines, the meeting brought together nearly 100 representatives from almost 20 nations to discuss international issues of industrial site preservation.

First, a word about the écomusée concept itself, which is rather interesting for it incorporates environmental conservation, historic preservation, and continued economic vitality on a regional basis, as noted in SIAN Mar/May 75:10. The director and staff made short presentations on what was being done there, but little opportunity was afforded for exploring the details of operation or to discuss at length problems encountered over the several years since its inception.

The general organization of the sessions was logical and offered considerable promise. Each day had a separate theme. Monday afternoon was devoted to research on the industrial heritage, Tuesday to questions of industrial building and site conservation, and Wednesday to interpretation of industrial remains. On the latter two days, formal papers were presented at morning sessions, followed by afternoon field trips. The mornings were good beginnings, but momentum generated was soon lost in delightful luncheons and seemingly pointless field trips. Many would have preferred a visit to C. N. Ledoux's royal salt works at Arc et Senans, to several hours at the local nuclear reactor casings assembly plant, for instance. There were, nonetheless, tangible achievements as evident in the papers that will be published by ICOMOS in the near future.

Most importantly, the Le Creusot conference does represent recognition by ICOM and ICOMOS that the industrial past constitutes a signficant part of man's history and culture. Although during the final, all-too-short session, no formal statement could be worked out, there did seem to be consensus that the issues of research into, and conservation and interpretation of industrial remains should be done on an international basis. Inter-national transfer of technology has been—and is—too pervasive for even the oldest industrial nations to confine themselves within their own boundaries in attempting to deal intelligently with their industrial past.

It also is hoped that one of the recommendations forthcoming from this conference—which did not seem fully aware of the groundwork laid in the 1st & 2nd conferences on the conservation of industrial monuments (FICCIM & SICCIM)—will be endorsement of the 3rd conference (TICCIM), planned for Stockholm in 1978. *TS.*

PITTSBURGH AREA BRIDGES CRISIS

Allegheny County's bridges—some of them at least—are falling down. The reasons are insufficient maintenance and rapid corrosion caused by the salt that has been used since 1960 to de-ice the bridges. The switch was made because the salt was cheaper (!) and cleaner (!) than sand and cinders. Since then all bridges appear to be corroding at the same rapid rate.

Supports and sidewalk sections have fallen away from some major area bridges including the 1882 Smithfield St. lenticular truss over the Monongahela and the Sewickley Bridge over the Ohio. The immediate result is restricted vehicular and pedestrian traffic. Currently some 60 of the area's 1700 bridges are deteriorated to the point of having weight restrictions imposed.

Allegheny Co. is not alone. The Fedl. Highway Admin. has listed more than 100,000 American bridges as "structurally deficient or functionally obsolete" according to Rep. James Howard (N.J.), chairman of the House Subcommiteee on Surface Transportation. (It would be interesting to know how many of those are on the Natl. Register.)

The problems—no surprises here— are attitude and money. Allegheny Co. spent millions early in this century to build and maintain its bridges but since then, according to Penna. Dept. of Transportation (Penndot) inspector Carl Angeloff, "hardly anything has been done to build or maintain bridges....The public psychology is that once a bridge is built, it will take care of itself. Maybe it will need a coat of paint once in a while." Statewide, the Penndot bridge maintenance backlog amounts to $858 million. How much will be raised for bridge repairs this year? $9.3 million. Sic transit etc.

Abstracted from Wall St. Journal, *18 Nov. MR.*

SPLIT ROCK LIGHTHOUSE RESTORATION

Work-in-Progress

The Split Rock Lighthouse was constructed in 1909-10 on an outcropping near Split Rock Point, Minn., 46 miles NE of Duluth on the N shore of Lake Superior. The octagonal brick tower is 54 ft. high, the rock itself 130. A fog-signal building was part of the original complex, which included three keepers' dwellings, three barns, an oil house, and a pump-house-boathouse, and a hoist derrick.

It was constructed primarily because of the great Nov. gale of 1905, which wrecked and stranded a good number of ships at the western end of the lake. Magnetic attraction due to iron ore deposits near the shore tended to deflect ships' compasses northward as they approached Two Harbors, either to make a landfall or to load iron ore. This brought them in the vicinity of Split Rock, where soundings were difficult to obtain, foggy weather making it a dangerous spot.

In 1969, the Coast Guard shut the light down as obsolete; electronic navigational equipment and a fog signal at the nearby taconite facilities in Silver Bay had superceded it. It was run as part of a state park from 1971 until last July when the Minn. Hist. Soc. took over the 7.63 acre reservation with the intention of restoring it and upgrading the historical interpretive program.

One of the society's first priorities will be restoration, in 1977, of the rapidly deteriorating fog-signal building. A longer-range hope is to somehow locate equipment like the original or persuasive replicas. Air was compressed by duplicate 22-h.p. compressors. They functioned rather touchily until 1932, when replaced by semi-diesel oil engines. The original horns, with a sound rather like a "bull moose," were replaced in 1936 by a less picturesquely-disturbing 6-in diaphone with its characteristic double note, ending in a "grunt." The building stood unheated when the station shut down for the winter, which undoubtedly accounts for its present sorry condition. Needless to say, the society is interested in contact with anyone who might be able to help restore this equipment. *SH.*

Minnesota Historical Society photograph.

NOTES TO READERS OF THE *NEWSLETTER*

1). Occasionally, following the name of a site or structure, will be seen a notation, *viz:* (PECKS LAKE 899766). This is the *UTM coordinate location.* We would print these for every U.S. site mentioned but for lack of time to derive them. If submitted with copy, they will, of course, be published. (See SIA Data Sheet No. 1 for full explanation of the UTM system.) 2). In *Publications,* prices shown thus: $12.50/5.25 mean the work is available in both hard and soft cover, the respective prices shown.

WHAT'S THE SCORE IN BALTIMORE?

Sunshine & Shadow in the Monumental City. Baltimore's record of official preservation of the city's IA patrimony has been spotty in recent times: some good, some bad, and some indifferent. The score for projects touched by the hand of municipal government is: one restored; one that always had been safe re-opened and interpreted; one in limbo; and two down, but with likelihood of resurrection for one of them.

In Limbo. Vague, is the future of Wendel Bollman's unique Lombard St. Bridge [SIAN Jan 72:3], removed from its crossing of Jones Falls in 1973 and the parts stored since at the Baltimore Streetcar Museum. The unique span has been the subject of a theoretically ideal preservation scheme, that would have seen it re-erected in the historic former cottonmill town of Dickeyville on the city's western edge, replacing a bridge washed out by Agnes in 1972 and restoring access to one of the mills there. The theory involved fiscal and in-kind cooperation by city, state, and federal governments, and the present owners of the mill site. The combination apparently, was simply too ponderous to work, and the project has foundered in an unbelievable series of bureaucratic starts, stops, misunderstandings, misfires, miscues, and withdrawals.

The longsuffering mill owners, under the patient guidance of Charles Wagandt [SIA], were compelled ultimately to pack it in and erect a nondescript span over the stream that blocked access to their property so they could turn a dollar from it. (Wagandt and co. have, in fact, leased much of the mill's space to a group of artisans in a fine example of constructive adaptive use, . . . nuns making stained glass . . . but that's a story for another time.) Meanwhile, the bridge parts lie amoldering. The last word is not in, however. There are other possibilities and the final chapter in this curious saga may yet be a happy one.

Wins. The City has done much better at times, though. Under the personal stewardship of mayor Donald Schaeffer it recently completely restored the locally-produced cast-iron dome of the City Hall (1873) [SIAN Mar/May 75:12]. The Shot Tower, one of the U.S.'s few remaining, [same ref.] built in 1828 and in active production until 1892, has been a city property for years, but closed and useless. As a Bicentennial project, funds were appropriated to open the ground flood and produce a dandy little exhibit on the history and function of this rare industrial structure. Bravo on both counts, Your Honor.

Good to learn, also, is that the city is giving serious consideration to the acquisition and preservation for a proposed museum of Baltimore industry of some early and important industrial structure.

Losses. But wait . . . despite these gains, there is a dark side to official involvement in industrial preservation in the Monumental City. The summer witnessed two tragedies, both wholly needless. The Cedar Avenue Bridge Saga is the worst and most bizarre. The

three-hinged steel span of 1889 that crossed the historically industrial Jones Falls Valley N of the city proper was a structure of considerable beauty and elegance, wholly appropriate in a setting surprisingly scenic. (Viewed, as was every structure mentioned above, during the 1975 SIA Conference.) It became, however, the victim of a self-fulfilling prophecy. Over the last decade the city neglected it, failing in any way to maintain it despite its providing useful access to the city's huge Druid Hill Park, especially for park maintenance vehicles. Its condition so deteriorated that several years ago it was closed, and, of course, both concrete deck and steel superstructure continued to decline.

Demolition and replacement was proposed in April, at which point preservationist attorney Leonard J. Kerpelman [SIA], who has embraced a series of unorthodox causes in and out of preservation, instituted against Baltimore City and its director of public works a $40,000 suit in compensation for the "mental anguish" he had suffered in seeing the bridge deteriorate, and for the "deprivation of peace and joy" he would suffer each time he passed the site after the bridge was demolished. Kerpelman also sought an injunction to prevent demolition, maintaining—with full justification, certainly—that the replacement span would be a "modern, ugly, soulless monstrosity devoid of any aesthetic quality."

Clearly a man with a strong sense of what IA is all about, Mr. K. further contended in his complaint that the public works director "has kept himself blind and in the dark concerning the value of the bridge."

The affair reached a crisis when in mid-July the city began demolition. A Baltimore Circuit Court judge ordered a halt under the Kerpelman injunction, which further maintained that the bridge was historically, architecturally, and aesthetically significant in relation to the Valley. In the subsequent hearing, the structure's significance was vigorously attested to by railroad and industrial historian Herbert H. Harwood, Jr. and Robert M. Vogel [both SIA], and its structural integrity and capability of carrying the loadings that might be expected described by civil engineer Carl L. Redd. DPW director Francis W. Kuchta, as might be expected, alleged the customary pressing need for a new structure. The court, in its wisdom, agreed, and that was that.

All this didn't go unnoticed, though. The Baltimore *Sun* editorially regarded the episode ". . . instructive as a dreary lesson in callous municipal wastefulness," musing that "By rights, public works employees from the director on down ought to be required to scrape and paint the old Cedar Avenue Bridge on their own time as penance for their department's years of neglect."

Kerpelman and his supports—of whom there were a surprising number not only within the area's IA community—may have lost this one, but *the injunction,* based on aesthetic, historical, and other intangible factors, as well as those having to do with the need to prove the need for structures to replace serviceable old ones, is a preservation tool of greater potential than generally supposed.

And finally, the Fava Fruit Co. Building, standing on S. Charles St. several blocks W. of the Inner Harbor waterfront. It is considered to be the finest surviving cast-iron front in a city that both produced and erected cast-iron fronts in numbers not far behind N.Y. and Phila. The majority were fabricated by the city's

Hayward, Bartlett, & Co. and its successor firms, as was this example in c1869. Of the hundreds erected, a mere handful survive, a shocking number having succumbed only recently under various urban removal schemes. The building began life as an oyster and fruit packing factory and warehouse, remaining in more or less the same business until just recently, when the entire surrounding area was cleared for a massive new convention center. Fava was spared on the basis of a substantial proposal by a group of private

architects and planners that advocated its reuse in a variety of functions connected with the center. The building was, they pointed out, sound, and large enough (4 stories, 5 triple bays wide, 32,000 sq. ft.) to make the scheme practicable. There were no compelling reasons for demolition and a number of historical, financial, and aesthetic reasons for retention, principal of which was the visual contrast it would provide within the new complex. A great deal of solid support was mustered, including that of both Baltimore papers, and considerable pressure brought to bear on the city's Commissioner of Housing & Community Development, Robert C. Embry, in whose hands the final decision lay inasmuch as the property at that point belonged to the city.

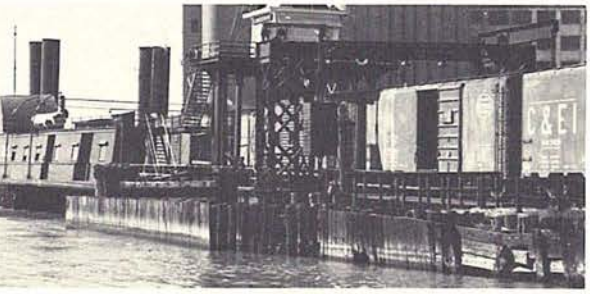
Despite the weight of the evidence favoring preservation *in situ,* Embry, who has declared his department ". . . committed, both emotionally and intellectually to rehabilitation wherever possible . . . ", ultimately decided against it, citing "insurmountable obstacles." The biggest "obstacle" appears to have been the building's unfavorable siting with respect to the new traffic pattern. Embry did, however, commit the city to carefully dismantling and storing the iron facade elements, to be made available to any private developer presenting an acceptable scheme for their incorporation into a new structure in the immediate area. Well and good, but despite that compromise, there has been widespread and intense feeling in the preservation community that the decision was thoroughly irresponsible, based on considerations of expedience that were heavily outweighed by the long term benefits that would have resulted from full, original-site preservation. Here again, though, the last chapter remains to be written.

A CANADIAN IA MISCELLANY

STEAM-LIVES-ON DEPT. The powerhouse of General Motors at Oshawa, Ont. has a very fine Corliss engine, on stand-by for supplying plant compressed air. Built by Worthington's Laidlaw-Dunn-Gordon Works in Cincinnati c1922, it is a cross-compound with 20 & 30-in. cylinders x 34-in. stroke. The air pumps, driven from tail rods, are 21 & 36 in. diam. and the flywheel is 10-ft. in diam. The engine originally was installed in Detroit, but moved to Oshawa c1934. Its future seems reasonably secure, since removal would involve demolishing the powerhouse. G.M. seems rather shy about publicizing the existence of this plant, since they seem to feel that involvement with steam is prejudicial to their marketing image!

DE RE METALLICA. Intelligence has been received of the existence of a rare steam mine hoist at Sudbury, Ont. This is a double bi-cylindro-conical machine with 35-ft. diam. drums, located at Inco's Creighton No. 5 shaft. It was built by Canadian Allis-Chalmers (Montreal), installed here, 2nd-hand, in 1934. Only two such installations are known to exist in Canada. Although currently in service, its future is precarious since this type of machine is suitable only for hoisting from one level. It is hoped therefore that the device can be documented by the CEHR in the near future since preservation elsewhere would be a very expensive undertaking. [For "bi-cylindro-conical," see photo of Quincy Mine Hoist, SIAN July 72:4.]

MATTERS MARITIME. The *Lansdowne,* famed Windsor-Detroit side-wheel car ferry of 1884 is still in service, as a barge, having been sold by Canadian Natl. Ry. to the Windsor-Detroit Barge Co. this year. Her two independent horizontal engines, said to be the oldest on the Great Lakes, were built in 1872 by E. E. Gilbert & Sons, Montreal, for the Gt. Western Ry of Canada's *Michigan.* With cylinders of 50 x 108 ins. (1360 hp each), her salvage has proved to be impossible due to cost. The ferry suffered an unfortunate mishap earlier this year, when it capsized at its Windsor slip due to a miscalculation. Although raised after three weeks to sail again, the experience has no doubt had an adverse effect on the machinery, rendering preservation even less likely. However, if anyone out there has $50,000 or so to spare, the Natl. Museum of Science & Technology is still willing to entertain the idea. Meanwhile . . .

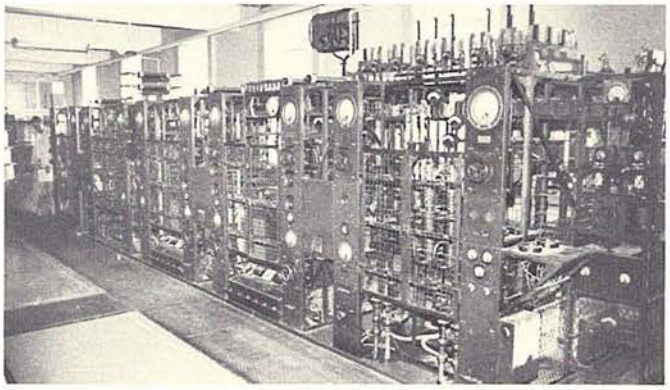


The *Lansdowne* in happier days (1953 photograph). Her pilot house and paddle wheels (29.5-ft. diam.) were removed in converting her to a barge.


National Museum of History & Tech'.

. . . The aforesaid Museum recently has acquired an entire ship's engine room for future display. The source of this bonanza was a former Dept. of Transport buoy tender, the *C. P. Edwards* (ex-*Ottawa Mayhill*), one of a number of coastal freighters built in 1945 as support ships for the anticipated invasion of Japan. Put up for sale in 1970, she passed through several hands before being acquired by her present owners, who have re-engined her for use as a supply ship for Arctic oil exploration. During the time she was laid up the fuel tanks sprang a leak, engulfing the engine room in Bunker C which although unfortunate from the owner's point of view, resulted in the vitals being well-protected from corrosion. The engine is a 9 & 16 & 26 x 18-in. triple-expansion of 375 IHP by Canadian Vickers, lavishly adorned with copper and brass, as are the auxiliaries. Restoration should commence in 1978.

WONDERFUL WIRELESS. The Museum has also retrieved a significant communications artifact from Drummondville, Que.: Canada's first commercial short-wave transmitter, which went into service in October 1926 as part of the so-called "Empiradio Beam Services Network." EBSN by 1930 linked all major countries of the Commonwealth. Experiments following World War I had clearly shown the superiority of short as opposed to long-waves for trans-oceanic radio transmissions, due principally to the lower power requirements. The Drummondville station was designed by noted communications engineer C. S. Franklin and built on site by the Marconi Co. of England who also provided all the other transmitting and receiving station components for this ambitious and successful project. The transmitter, which operated until 1956, measures about 6 x 6 x 30 ft. and is made almost entirely of brass, with large, bulbous tubes and power-station-size meters—a most impressive sight and an example of craftsmanship now rarely seen. It is on display adjacent to the Museum's Communications section. *RC.*


Marconi Transmitter *in situ. R. John Corby [SIA] photograph.*

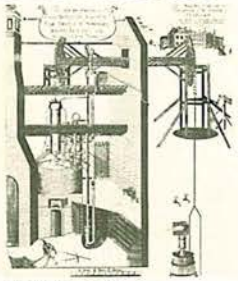
The following from Heritage Conversation, *Heritage Canada newsletter, winter 1975.*

THE CAPE SPEAR LIGHTHOUSE, oldest in Nfld., is to be restored by Parks Canada at a cost of $500,000. The light, which

opened in 1836 and was declared a Natl. Historic Site in 1968, will be outfitted with period furniture and artifacts. Cape Spear is the part of N.A. closest to Europe. The Cape was first inhabited by the Cantwell family who moved there when the light was constructed, the 6th generation now looking after the new light, which opened in 1954. Already under restoration is the **CAPE BONAVISTA LIGHTHOUSE,** St. Johns, Nfld., the exterior completed this past summer. Phase II, the interior, has been started.

MEDALTA POTTERIES, MEDicine Hat, ALberTA, one of this community's oldest industrial areas, has been classified a Provincial Historic Site. The nine-acre plant, which opened in 1916, had, by the late 1920s, captured three quarters of the Canadian stoneware market. It became a major producer of hotel china serving both the CPR and CNR hotels and restaurants. The original buildings and four 1920s beehive kilns survive. Plans for a museum and gallery are underway.

NEWCOMEN ENGINE RECONSTRUCTION



The Science Museum, Crown Copyright Reserved.

The region to the west of Birmingham, England has for untold time been known as the Black Country as a consequence of having been built from and dependent upon its native coal, iron, limestone, and clay. These minerals have been extracted and worked from pre-Roman times, giving rise to an area of uncommon industrial concentration. Its most famous period occurred during the Industrial Revolution, culminating in c1865 when some 200 blast furnaces were at work in the region. In recent years its industries and trades have diversified and iron no longer is produced, but most of its industrial archeology and social heritage survives. Both form the the basis of the newly established **Black Country Museum** at Dudley, West Midlands, due W of Birmingham, an open-air museum incorporating both relocated and replicated structures.

The museum's most important, not to say astonishing exhibit is to be a full-scale, working replica of Thomas Newcomen's first steam engine, the famed Dudley Castle Engine that was erected in 1712 near Dudley Castle, not far from the museum site. For that reason, and because of the fundamental importance of the Newcomen engine as the first to employ the power of steam on a practical basis, this was seen to be an appropriate undertaking. An advisory panel is preparing drawings based on the available evidence of the engine's appearance and details, directed by John S. Allen, co-author with the late L. T. C. Rolt of a book on the engine shortly to be published. This engine, as were most of the early Newcomen engines, was built to drain a (coal) mine. It worked until at least the mid-1750s, at three separate sites.

Work on the replica is to start shortly. The plans are nearly complete, and the tree that will form the main beam has been cut. More on this singular project as it unfolds.

IA IN THE NATIONAL REGISTER

We note here some recent interesting additions to the Natl. Register, observing again that while registration offers no legal protection to a privately owned property, it does provide: 1) important psychological protection; 2) eligibility for certain restoration grants; and 3) a considerable degree of protection against alteration or demolition threats posed by projects involving federal funds. New legislation pertinent to this recently has been passed, to be noted next issue. (A new edition of the NR has just been published. See ***Publications,*** *below.)*

ALABAMA

KYMULGA GRIST MILL, near Childersburg. Built 1867, recently privately purchased for restoration and opening to the public.

DELAWARE

Delaware's NR program has been recognizing industrial and engineering landmarks for some years. The state's two **Town-lattice covered bridges,** at **Ashland** and **Wooddale,** still are in the highway system. **Woodland cable ferry,** Sussex Co., operating since the 18thC, was rescued from discontinuance by direct gubernatorial intervention. **Pagan Creek Dike,** a 17thC causeway near Lewes, probably built by the Dutch West India Co., has been abandoned for two centuries. The 1831 **Newcastle & French Town R R right-of-way,** with an original stone bridge intact, was studied by HAER and is being repaired with Natl. Park Svc. grant funds.

William Strickland's monumental **Delaware Breakwater** has been nominated. **Mills on the Brandywine,** once a principal source

Walker's Mill on the Brandywine, now part of the Hagley Museum complex. *Both photographs: Del. Div. of Historical & Cultural Affairs.*

of paper, black powder, and flour, are registered, together with several districts of 19thC workers' housing nearby. **Abbott's Mill,** near Milford, contains a full ensemble of machinery. Oliver Evans, who invented the automated grist mill, worked on the 18thC **Greenbank Mill.**

Two iron furnace sites in Sussex Co., **Pine Grove** and **Deep Creek,** have been nominated to the Register.

A highball railroad signal at Delmar, a type virtually obsolete for 130 years, is preserved in a town park. The **Mason & Dixon Line,** the Del.-Md. and Del.-Penna. boundary, is registered as a milestone in the history of surveying accuracy. The error over many miles is calculated in mere inches. **The cupola of the New Castle Court House,** center point for the Circular Survey, is now a Natl. Historic Landmark.

The Eastern Lock of the C & D Canal, made obsolete by the sea level route, is being restored by the state [SIAN Jan 76:4].

The Del. Divn. of Historical & Cultural Affairs has co-sponsored two seasons of HAER surveying to culminate in a state catalog. *EH.*

MARYLAND

NEWCASTLE & FRENCH TOWN R R RIGHT-OF-WAY. An early scheme—1831—for transporting goods between Chesapeake and Delaware bays. Failed early in competition with the C&D Canal. The line still is visible as a trace along field boundaries, through woods, and as a county road. (See Del., above.)

PINEY POINT LIGHTHOUSE, St. Mary's County. Built 1836, in use to 1964. Brick tower 35-ft high and brick keeper's house. The first lighthouse on the Potomac River, 14 miles NW of its mouth.

OELLA HISTORIC DISTRICT. Baltimore Co., W. of Baltimore. An industrial site since the early 19thC, an essentially intact community of mill housing, churches, and the W. & J. Dickey woolen mill, now otherwise used.

UNION BRIDGE STATION, Carroll Co. Passenger depot and office building, built by Western Md. Ry., 1902, and an express office. The depot still is in use by the WM; the office occupied by the WMRy Historical Society.

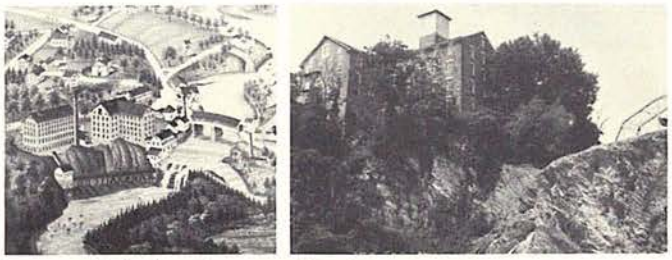
NEW YORK

BUFFALO GAS LIGHT CO. WORKS, 1859. The distinctive fortress-like retort house is Buffalo's outstanding 19thC industrial

structure. The company supplied illuminating gas for lighting streets and buildings, navigational buoys on Lake Erie, and the cars of the area's vast RR complex.

OLD CHAMPLAIN CANAL, Saratoga & Washington Cos. Completed in 1823, the Champlain Canal opened a vital bulk transportation route between Albany and Lake Champlain. Many early American civil engineers gained valuable experience from the building of this route. Numerous aqueducts and locks survive.

STUYVESANT FALLS MILL DISTRICT, Stuyvesant Falls, Columbia Co. A rural mill complex encompassing cotton mills built in 1827, 1845, and 1888, a truss bridge erected in 1899, an operating hydroelectric plant of 1900 (recent equipment), and the sites of earlier water-powered industries along the Kinderhook Creek.



Stuyvesant Falls: Van Alen cotton mills, c1880—then and now.

SODUS POINT LIGHTHOUSE, Wayne Co. Erected in 1870 on the site of an earlier light station. A stone lighthouse and keeper's dwelling typical of the "lake-coast" class of lights erected on Lake Ontario. Ceased operation in 1901.

TIORONDA BRIDGE, Beacon, Dutchess Co. A three-span, tubular-chord, iron bow-string truss bridge erected sometime between 1869 and 1873 by the Ohio Bridge Co., Cleveland. Among the oldest iron vehicular bridges still in use in the state, and one of few truss designs for which a patent model survives (in the Natl. Museum of History & Technology). A collision damaged the bridge on 2 Nov., but it will be repaired.

Tioronda Bridge. The deck today is carried by concrete girders, the trusses structurally inactive.

BUSTI GRIST MILL, Chautauqua Co. An early-19thC mill being rehabilitated by the Busti Historical Society.

HARLEM FIRE WATCH TOWER, N.Y.C. Built *not* by James Bogardus, "inventor" of cast-iron architecture as has widely been held, but by Julius B. Kroehl, who underbid J. B. for the job. [Account and photo SIAN Mar/May 75:7. See also: David M. Kahn, "Bogardus, Fire, & the Iron Tower." In *SAH Journal,* Oct., pp. 186-203.]

AURORA STEAM GRIST MILL, Cayuga Co. A stone mill built in 1817 on the shore of Lake Cayuga, notable as one of the first steam mills west of the Hudson.

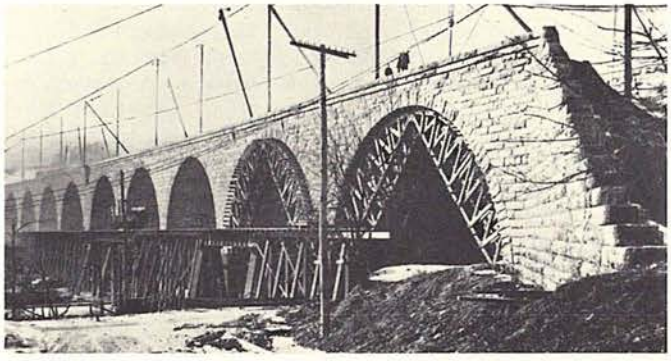
THE (WILLIAM E.) WARD HOUSE, Port Chester, Westchester Co. Built 1871-76 by Ward, a wealthy screw and hardware

Howard A. Newlon [SIA] photograph.

manufacturer, entirely in reinforced concrete. Characterized by Carl Condit as one of the century's most remarkable works of building art. A landmark in demonstrating the practicability of the new material for buildings. *RS.*

PENNSYLVANIA

COATSVILLE HIGH BRIDGE—One of the outstanding examples of the group of "Masonary-Revival" bridges built as replacement for iron and timber spans by the Penna. RR between about 1885 and 1910. The project resulted from the realization that where RR bridges were concerned, despite high capital cost, stone (in most cases combined with concrete) in the long run was the cheapest material because of nearly unlimited load capacity, indefinite life span, and negligible maintenance. The PRR, including some of its subsidiaries, threw up dozens, from the heroic four-track, 70-span, 3830-ft. stunner across the Susquehanna at Rockville above Harrisburg, down to culverts, and everything in between. Most of them are in the Keystone State. By rights they should be on the Register *en masse,* as A Concept. The Coatsville structure, erected in 1903-04, actually is a viaduct. It crosses the valley of the W. Branch of Brandywine Creek on eight 78-ft. and two 88-ft. arches.



Coatsville Bridge under construction. Jan. 1904. *PRR photograph.*

LUKENS STEEL CO. OFFICE BUILDING, Coatsville, 1902/1916. A rich thirteen-bay, 2-1/2-story Georgian-Revival mansion with an identical block (1916) at the rear, connected by a hyphen.

Restoration Funding

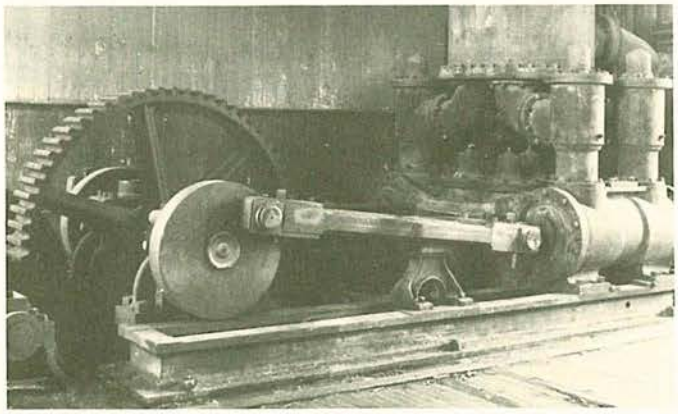
That one important, tangible benefit to a site/structure that derives from inclusion in the Register—elegibility for certain federal restoration funds in the form of grants-in-aid—is seen in several recent instances (see also: 11593 *[noted in* ***Publications-Serials,*** *below], Nov:4).*

MIDWAY MILL, along the James River between Richmond & Lynchburg, Va., built 1787: $12,000 for stabilization prior to complete restoration to operating condition.

NEWCASTLE & FRENCH TOWN R R RIGHT-OF-WAY (Del. section): $10,000 for clearing, stabilizing, and preparing for use as walking & cycling paths.

U.S.S. OLYMPIA, built 1888, sole survivor of the Great White Fleet; Dewey's Flagship. Docked at Philadelphia. Contains all original machinery; probably the earliest large marine screw engines in N. America: $30,000 to scrape and paint the superstructure.

VERGENNES (VT.) PUMP HOUSE, built 1871, a handsome granite building, now derelict, that formerly supplied the village's water, pumping directly from Otter Creek, utilizing its drop to power a vertical turbine that drove a locally-manufactured horizontal power pump. All machinery is in place. With 50-50 federal/town funds the roof and exterior woodwork have been renewed; the machinery is next. *From Possibilities.*



The Vergennes pump. *Eric N. DeLony photograph.*

IA IN ART

Fulton, by Broome—1876. Parian (biscuit porcelain) tile. 11¼ x 8 ins. *New Jersey State Museum collection, Trenton, gift of Cybis.*

We feature this issue an IA curiosity in ceramic, a Parian Plaque of Robert Fulton in the collections of the N.J. State Museum, Trenton. Trenton was a leading U.S. ceramics production center by 1876. The city's assembled displays at the Centennial Exhibition in Philadelphia (including this tile) prompted the judges to assert that Trenton's potters were "gradually making their city the Staffordshire of America " A leader was Ott & Brewer, who exhibited a new line of white bisque figurines and plaques.

What O&B's house sculptor Isaac Broome had in mind with regard to Fulton is impossible to imagine 100 years after he created this bizarrely disoriented memorial. Strange enough that the pioneer steamboater is depicted as a late Victorian dandy, wearing a moustache that F. never had, but it is the machinery that really gets scrambled. Whereas the lengendary *North River Steamboat* (erroneously referred to in song and story as the *Clermont*) was propelled by side wheels (as were all of Fulton's vessels), driven by a Boulton & Watt side-lever engine with a four-ft-stroke cylinder and steam chests at either end, Broome has rendered a typical American mill-engine cylinder of perhaps two-ft stroke with center steam chest, and shows us a screw propeller. At least he got the cylinder, marked "Liberty—1876," upright.

HARLEY J. McKEE

With profound sadness we report the death on Nov. 9 of Harley McKee, a member of the Society from the very outset and always one of its most supportive. An architectural historian of the highest order, he saw architecture as it should be seen—not simply as an assortment of styles and idioms, but as *construction:* materials arranged first so as to produce a stable and durable structure, and second according to stylistic considerations. He will be remembered for his many books and articles relating to IA from a number of standpoints, most recently his manual of recording techniques for the HABS, and his monograph: *Introduction to Early American Masonry*. His field study of the surviving stone bridges on the National Road in Ohio took the form of a paper delivered at the first SIA Annual Conference in N.Y.C. in 1972 and a subsequent article in *Ohio History*. He was a founder and president of the Assn. for Preservation Technology, and a charter member of the Soc. of Architectural Historians.

Sad and ironic, Harley died less than a month before he was to have received a special Conservation Service Award by the Dept. of the Interior for his half-century of valuable contribution to the cause of architectural history and preservation.

Harley was more than a broad and competent scholar. He was a true spirit, moving gently and effectively through the worlds of history, preservation, industrial archeology, and everything related. Our loss is great.

RESPONSE & COMMENT: MAY/JULY ISSUE

PRIME-MOVER AMBIGUITIES. The caption for the photographs of Minn. flour mills has proven unclear with respect to what's driving what, when. As noted, the A Mill proper was built in 1881, strictly waterpowered. The contiguous South A Mill, actually an addition, was built c1916. An element of that installation was the large electric motor shown, which was direct-connected to the existing A Mill water-turbine shaft, from which was taken the drive for both the new and the old mills. By that means both mills were driven by water, normally the motor idling, and used only when the turbines were down for repairs. About 1955 the turbines were retired. A c300 hp motor was installed to drive the small amount of machinery in the A Mill, and the large motor employed solely to drive the South A Mill. Its rope drive is a double one—two separate 1200-ft ropes.

MILL RESTORATION. To be added to the names of Charles Howell and Derek Ogden, noted as capable and historically sensitive millwrights/restorers, are those of: 1) **R. E. Crysler** of Crysler & Lathem Ltd, consulting engineers and resource planners, who has acted as consultant for the restoration of eight historic mills in Ontario and Mich., including saw and flour mills, powered variously by waterwheels, water turbines, and steam. 5385 Yonge St. (Suite 30), Willowdale, Ont. M2N 5R7. (416) 225-7734; 2) **John B.Campbell,** a hydraulic engineer and millwright of long standing and high reputation, who specializes in water-powered mills. One of his most notable recent works is the Colvin Run Mill restoration, Fairfax Co., Va. Campbell Water Wheel Co., 420 S. 42nd St., Phila., PA 19104. (215) 386-9799; and 3) **Dewey Sheets,** miller and consultant to a number of Midwestern restorations. 210 Meeks Ave., Muncie, IN 47303.

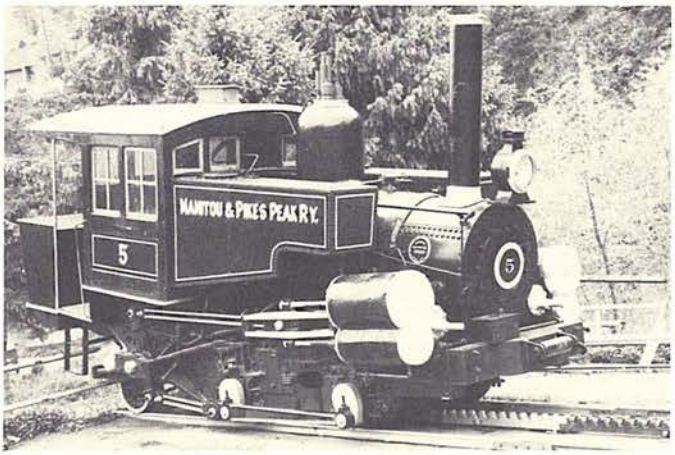
LOCKRIDGE FURNACE MUSEUM. Noted was the opening of this site in Lehigh Co., Penna. Note further that the hours are somewhat limited: 1-4 PM, Sat. & Sun. only. If passing through at other times, however, it sometimes is possible to arrange special tours by contacting the person who has been the motive force in the county's tangible recognition of its IA: Dr. Mahlon H. Hellerich, Co. of Lehigh Archivist, Box 1548, Allentown 18105. (215) 434-9471 ext 305.

SIA Pres. Richard M. Candee, whom we accused of being a PhD *candiate,* isn't any longer; his ascension has been completed.

The Mechanicals. *The American Soc. of Mechanical Engineers in 1976 designated the following Natl. Historic American M.E. Landmarks:*

AIR CONDITIONING OF THE MAGMA COPPER CO'S. SUPERIOR [ARIZ.] MINE, 1937. Because of high rock temperatures, which increased with depth, it was necessary to cool the mine's lower levels before they could be worked. Earlier practice had been to open up a level and let it sit for several years, removing heat by draft fans, until cool enough to be workable. The mine's 3,600-ft. level required three years to cool. In opening up a level at 4,000 ft., where the rock temperature was 140 ° F (60° C), it was decided to accelerate the cooling process by artificial refrigeration. Two 140-ton-capacity Carrier centrifugal units were installed underground, the first such use in N. America and the second in the world. The machines were abandoned in place when the mine was worked out, c1950.

PIKES PEAK COG RAILWAY, Manitou Springs, Colo., 1891. Highest RR in the U.S. and the highest cog RR in the world. Built by Zalmon G. Simmons, the Kenosha, Wisc. mattress king. The line is 46,292 ft long, rising from 6,571 ft at the base station to 14,110 ft at the summit. Average grade is 16.23%; maximum 25%. Built on the Swiss Abt system employing a double rack of sheet steel, the teeth staggered. Original equipment: Baldwin geared locomotives; replaced after 1893 by Baldwin beam-connected Vauclain-compounds (photograph). From 1936 a series of gasoline and diesel railcars with electric and hydraulic transmissions were added, gradually replacing the steam locomotives.



2nd-generation Pikes Peak locomotive: Vauclain compound, 1901, now enshrined at the base station. Another survives nearby in a Manitou Springs park. Each driving axle carries a cog wheel.

MOUNT WASHINGTON [N.H.] COG RAILWAY, 1869. First cog railway in the world, in continuous operation since construction. Based on the designs of and built by Sylvester Marsh. Uses a single rack formed of steel pins set between steel angles. Still operated by steam locomotives; probably the only one in the world still so powered.

The Civils. *The following have been designated Natl. Historic Civil Engineering Landmarks by the American Soc. of Civil Engineers during 1976:*

ELECTRIC POWER CABLES ACROSS CARQUINEZ STRAIT, Cal., 1901. Spanning nearly a mile, brought the first hydroelectric power from the Sierra Nevada to the Bay Area. The cables are supported on 225-ft towers.

CUMBRES & TOLTEC RR, between Antonito, Colo. and Chama, N.M., 1879-80. (Also a Natl. Historic Landmark). Cited as a "testament to the role of the civil engineering profession in developing the West." Operating today as a steam tourist line, 64 miles long.

SMITHFIELD ST. BRIDGE, Pittsburgh, 1882. Probably the oldest extant major steel truss and the largest lenticular truss ever built in the U.S. Crosses the Monongahela River from the city center, to the south. Designed by Gustav Lindenthal. Still in full service, although with some structural and architectural modifications. Also a Natl. Historic Landmark.

Smithfield St. Bridge, attending the SIA Annual Conference, 1974.

THE NATIONAL ROAD, Cumberland, Md. to Vandalia, Ill., started 1811, completed 1839. The first federally-funded U.S. highway; an important link with the "West." The original route largely survives as U.S. Route 40. (A number of the Road's original stone bridges survive. See Harley J. McKee, "Original Bridges on the Natl. Road in Eastern Ohio," in *Ohio History,* Spring 1972. Delivered at SIA 1972 Conference, NYC.)

CROZET TUNNEL, Rockfish Gap, Va., completed 1858. Longest in the U.S. when completed, at 4,273 ft. Culmination of tunnel technology based on hand drilling and black-powder blasting. Built by Claudius Crozet. Abandoned.

HOOSAC TUNNEL, North Adams, Mass., 1852-1876. Longest tunnel in N. America when completed (4.7 miles), first on this continent driven with pneumatic (Burleigh) rock drills and high explosives (nitroglycerine), introducing the modern era of rock tunneling. In full use.

Hoosac nearing completion. *State Library, Commonwealth of Mass.*

ELEPHANT BUTTE DAM, near Truth or Consequences, N.M., 1910-16. One of the most massive dams in the SW U.S., its reservoir when completed was the largest impoundment in the world. Opened four formerly arid valleys for agriculture. In use.

THE FIRST CONCRETE ROAD PAVEMENT IN THE U.S., Bellefontaine, Ohio, 1893. A portion, on Court St., still in use.

KING'S ROAD, along Florida's east coast, 18thC. Parts still in use, incorporated into U.S. Route 1.

FOLSOM CORRECTED. The last issue noted the ASCE's designation of the Folsom hydroelectric station as a C.E. landmark. The station's date was incorrectly given as 1896. The station, 22 miles NE of Sacramento, Calif., went on line in July, 1895, a year in which several important long-distance electric power transmission schemes went into service, including the first at Niagara. The Folsom plant was the first to transmit high-voltage, 3-phase power on a large scale (to Sacramento), the system still in widest use. The station was in service until 1952.



Passaic Valley Tour. (L) Hearth of a ruinous blast furnace, N.J. Iron Works. Boonton. (C) Water wheel for driving a blast engine, Long Pond Iron Works. (R) Dundee Dam.

SIA 1976 FALL FIELD TRIP—THE PASSAIC VALLEY

Sponsored by the Roebling Chapter

It was a squeaker, this trip that almost wasn't, due to the shameful inadequacy of the U.S. Postal Service, who took the best part of a month to get the announcements out via 3rd-class, necessitating an emergency, last-minute, 1st-class mailing. Some people received even these too late, for which the management is truly sorry. Never again bulk-mailing of critical matter.

For the 50 or so who did make it, though, it was an eyeopener. After rallying at the GHQ of the Great Falls Development Corp. Archeology Lab [SIAN May/July 76:2] on the morning of 23 Oct, the busload of the devoted departed for **Speedwell Village** in Morristown, site of the former Speedwell Iron Works, a prominent early-19thC machine works that evolved from an 18thC forge. Here in 1818 was built most of the machinery for the *SS Savannah,* the first to cross the Atlantic under (occasional) steam power. Here also Alfred Vail, son of the prop., in 1838-39 assisted his friend Samuel F. B. Morse in perfecting the details of his electric telegraph. The surviving original buildings include a combined grist-mill/machine shop in one end of which is an operating (reconstructed) water wheel, and a carriage house containing a variety of foundry relics [SIAN Jul 72:4]. At nearby Boonton were seen the remains of one of the great **inclined planes of the Morris Canal** by which means the two-section, articulated canal boats were elevated over the series of summits along the route in cradles hauled up by water-powered winding machinery. Adjacent to the plane were the remains of the once-prosperous **N. J. Iron Works** on the Rockaway River.

The most exciting of the sites visited was the former **Long Pond Iron Works** in Ringwood State Park just inside the state's NE boundry, an area that once abounded in iron works. Long Pond, which had operated sporadically for 100 years from the mid-18thC, was bought in 1853 by the legendary ironmasters Peter Cooper and his son-in-law Abram S. Hewitt, and immediately refitted. With the market provided by the Civil War, production of pig iron and iron products flourished, the boom lasting until the panic of 1873. Among the remains are several stonebuilt blast furnaces and the ruins of two 25-ft water wheels for blowing them.

Final stop of the day was water works of the **Little Falls & Passaic Valley Water Commn.** at Little Falls. Here water was first taken from the Passaic in 1902 to supply Paterson. Although there have been a steady series of improvements and additions to the plant, much of the original construction remains in service, the earliest buildings constructed of the local "Belleville Brownstone," quarried on site. In a former storage shed the Commn. has established a fine small museum containing relics and photographs of the plant and distribution system.

And that was only the half of it. On Sunday the gang was off again, this time addressing the metropolitan areas of Passaic and Newark under the continued guidance of Edward S. Rutsch—a local boy who had ingested more of the area's IA lore than he himself probably realized at the time—and a rotating support cadre having specialized regional and topical expertise.

Working down the Passaic from Paterson the tour stopped first at the **Dundee Dam,** in its first version built 1828, added to in 1833, and in its present form built 1858-60 to supply a navigation canal for shipping cotton by barge from N.Y.C. to Paterson. The first and only barge passed through the system on 4 July 1861; the railroads by then were offering cheaper transportation. The system survived by providing hydraulic power to a series of industries. The **Botany Worsted Mills** were organized along the Canal in Passaic, in 1890, becoming in time one of the largest woolen-goods mills in N. America. Botany employed at its height 9,000, producing yarn, cloth, and, atypically, finished clothing. The firm vacated the site in the 1950s, leaving behind a huge complex of structures of all ages, purposes, and scales.

In nearby Rutherford the **Becton-Dickinson factory,** a former medical-specialties plant of 1907-1915-1927, decidedly New Englandesque in feeling, was inspected. The building has been adapted for offices.

The afternoon was spend in Newark's **"Ironbound District,"** an industrial section so-named because surrounded on all four sides by RR tracks. The first stop afforded the only instance on the tour of transportation by means other than bus or foot, when the assembled were swung open, then closed, on the **Bridge St. swing bridge** over the Passaic. The span was built in 1913, and still is operated by its original steam machinery, although today supplied by compressed air from a diesel compressor. The swing was, in a sense, a charter, there being no river traffic at the time. From there the tourists dispersed individually to a variety of industrial and religeo-architectural sites, the less dedicated succumbing to the collection of ethno-culinary establishments for which the area is noted.

Final stop was the **Essex County Geriatric Center,** Belleville. In the institution's powerplant resides a battery of **three steam engine-generators,** themselves full of years but spry and operational. Two were touched off for the occasion. The machine of most devoted attention was a 14 x 30-in. Hewes & Phillips Corliss engine (Newark, N.J.) of 1909, direct-connected to a 100 kW Ft. Wayne Electric Co. generator, running like a Swiss movement at 125 rpm.

The majority of the sites and structures seen were well beyond the traditional, and, almost without exception, of the first order of significance and interest. The obvious conclusion is that nowhere in N. America would an inventory of a region's IA be more rich and productive than in northeastern N.J.

The Tour was superbly organized, nearly couple-handedly, by Edward & Mary Jane Rutsch of Paterson.

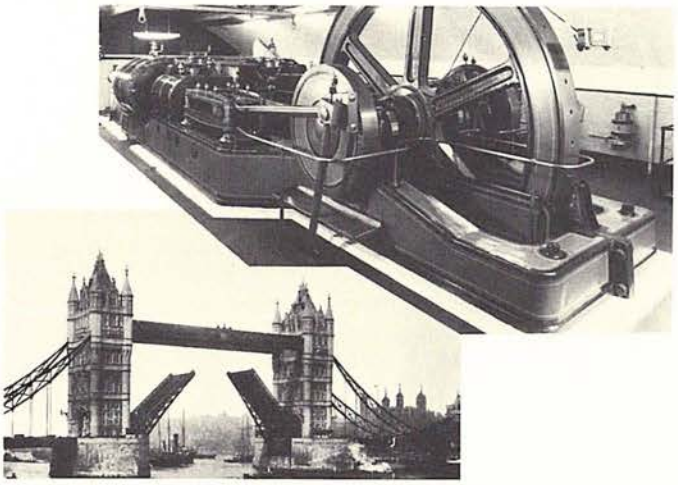
1976 AWARDS

We have up to now resisted that near-universal year-end pastime indulged in by most serial publications: the awarding of awards. We had vowed to maintain forever this snobbish purity—that is, until one of our reporters-at-large, wandering about in Northern, N.J. attempting to attach himself to the SIA Passaic Valley Tour [see account above] a full two weeks after it had passed through, stumbled on something too worthy of an award to be ignored.

Thus, *the First Annual SIAN Award for the Most Grotesque Adaptive Use of an Industrial Site, Structure, or Object (Wheeled Vehicle Division),* goes to Fat Mike of Passaic-on-the-Passaic, for his tastefully rendered wienie stand.

MISC. SITES & STRUCTURES

TOWER BRIDGE: NOT FOR SALE, BUT THE MACHINERY IS. The famed span over the Thames at London, 1886-94, which by the ignorant frequently is mistaken for London Bridge (including, rumor has it, the promotors of Lake Havasu City in Ariz., the gang that wound up with the *real* London Bridge, but who well into the negotiations fancied they were buying *Tower Bridge*), contains a pair of exquisitely designed, built, and finished steam-powered hydraulic pumping engines for raising the two bascule leaves. These recently have been replaced by electric pumps and one is offered for sale by sealed bid. Included is an operating scale model of the bridge and one of the hydraulic engines that powered the



bascules. **Pump:** twin-tandem compound, 20 & 37 x 38 ins., 360 hp, 24-45 rpm; pumps on piston-rod extensions. Air & condensate pumps below floor, driven from main crank pins. Flywheel, 12 ft. Total weight, c45 tons. **Engine:** 3-cylinder in-line, 8-1/2 x 27 in., 20 rpm, 140 hp., 20 tons. Both by Armstrong Mitchell, Ltd., Newcastle-upon-Tyne. **Model:** 1:100, mostly cast resin, in 12-ft-long case, motorized. Bids in by 31 Mar. 1977. Forms, details: Town Clerk, Corp. of London, c/o The Hallkeeper, Guildhall, London EC2P 2EJ. The buyer is, of course, responsible for getting it all out.

ROTHERHITHE PUMP HOUSE. There is a project afoot to convert the pump house on the S. bank of the Thames, erected by Marc I. Brunel to keep dewatered his pioneer Thames Tunnel (1825-43), into a Brunel museum, and to landscape the surrounding area. (A 32-page, heavily illus. booklet describing the tunnel and other of the works of both Brunels is avail: Brunel Exhibition Project, Hope (Sufferance) Wharf, 61 St. Marychurch St., London SE16. $1.50.)

STONE-ARCH BRIDGES. A group of five in Townshend, SE Vt., is the subject of a current study by the Conservation Soc. of Southern Vt. to examine their historical origins, engineering basis, and adaptability for modern traffic requirements. The results recommending retention of the spans, will be presented to the town selectmen and incorporated into a brochure to generate public awareness. *Extracted from* Possibilities, *2nd Quarter 1976.*

OXFORD [N.J.] FURNACE, scene in the 1830s of America's first experiments with the "Hot Blast" technique for smelting ore, is under consideration for restoration by the N.J. Dept. of Environmental Protection. The furnace operated from 1743 to 1884. The nearby iron mines were active into the 1960s. The furnace's present sorry state has long been a cause of distress to preservationists and embarrassment to the state.

LOCKPORT CAVE RACEWAY. Lockport, N.Y. is famous for the flight of five locks on the Erie Canal, now bypassed for modern traffic by the State Barge Canal paralleling the original. Lockport is also the home, however, of the Lockport Cave Raceway. Built in 1858, the tunnel originally served to send water down to the Genesee level of the canal. Later this fall of water was used to power mills, such as an old pulp mill from which one now can enter the Raceway on guided tours. Daily except Mondays, mid-June to Sept. Contact: Thomas P. Callahan (716) 434-4203.

INCLINE. If underground Lockport doesn't turn you on, then perhaps the Mt. Beacon Incline, Beacon, N.Y., will lift your spirits. Almost a half-mile in length, the incline rises 1540 ft with a 64% average grade. Fittingly, this slanting elevator was constructed by the Otis Elevator Co., and has been in service since 1902. A spectacular Hudson panorama is available from the summit. May-October, except Mondays. Information: (914) 831-8070.

THE ECHO BRIDGE in Hemlock Gorge Reservation, Newton Lower Falls, Mass., which carries an 8-1/2-ft. aqueduct across the Charles River, is being refurbished by the Metropolitan District Commn. in preparation for a Landmark application. The bridge has six arches, with a principal center segmental arch of 130-ft. span and 51-ft. rise. It was built of solid granite in 1876-77. Joseph P. Davis designed the aqueduct as part of Boston's expanded water supply. It served until the 1950s, when it went into standby. Capacity is 18-million gallons per day.

Echo Bridge. *Tyrrell Colln., Natl. Museum of History & Technology.*

ANOTHER LARGE WATER WHEEL DISCOVERED! This one at an abandoned grist mill in Augusta Co., Va. near Craigsville at junction of rural rts. 683 & 684. An iron or steel over-shot-type wheel, pitchback, on a concrete pedestal, it appears to be in good shape and approximately 40 ft+ in diam. Little more is known of this giant research needed.

TROLLEY STATION. An unlikely source of funds has rescued a suburban trolley building N. of Washington, D.C. from extinction. The Chevy Chase Land Co. has agreed to move the 1892 waiting station to the Maryland Natl. Capitol Park & Planning Commn's. Trolley Museum in Montgomery Co. at a cost of over $30,000. Congratulations to the Museum and thanks to the CCLCo. for a singularly generous act. *RF.*

SIA AFFAIRS

TOURS

Among the most important, interesting, informative, and popular of the Society's activities are its Tours or Field Trips. These occur *between* the Annual Conferences, generally in the fall but occasionally in the spring as well. Past Tours have been to:

Quinebaug Valley, Mass. & R.I. Fall 1972
Paterson, N.J. Spring 1973
Rideau Canal, Ont. Fall 1973
Bethlehem, Pa. Fall 1974
Toronto-Hamilton, Ont. Fall 1975
Passaic Valley, N.Y. Fall 1976

The Board of Directors is always interested in receiving proposals for such trips. There are two simple requisites: an area of concentrated IA within a reasonable geographical scope; and an individual or group in that area willing and able to take on the entire responsibility of organization. This embraces 1) planning the trip, making access arrangements with owners, lining up capable tour guides, &c; 2) making logistical arrangements—buses, meals, and lodging if an overnighter, as some trips are; 3) preparing appropriate publications, at the least an illustrated tour-guide describing the sites and structures to be seen; 4) keeping registrarial and fiscal matters straight; and if warrented and feasible, doing some local fund raising, to defray costs and involve the community. (These jaunts are expected to be financially self-sustaining).

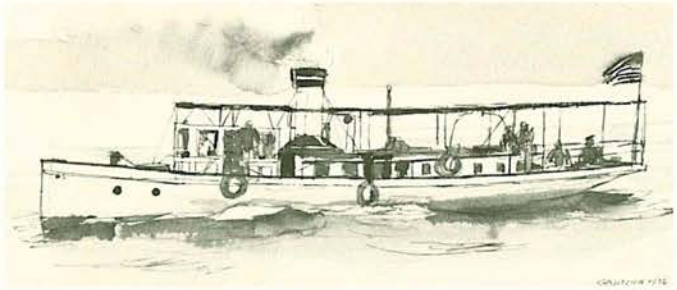
This may appear overwhelming but it isn't. It takes little more than endless hours and the expenditure of a colossal amount of emotional energy. The compensation is knowing that you have made a lasting and meaningful contribution to Industrial Archeology, and that you have brought to international attention the IA of your own area.

It is not an impossible task. Many others before have carried it off, invariably with success. The Board stands ready to assist with its cumulative experience in these ventures. If you would like to take on a tour in the near or distant future, contact Richard M. Candee, Pres., SIA, 109 Bow St., Portsmouth, NH 03801. (603) 436-0333.

CHAPTER AFFAIRS

THE ROEBLING CHAPTER conducted a tour of New York Harbor in the steam yacht *Kestrel.* Two trips, engineered by Conrad Milster [SIA], were made from Weehawken on 2 & 3 October.

The *Kestrel,* 62 ft. long by 12 ft. beam, was built in Charlestown, Mass. in 1892. The coal-burning boiler (125 p.s.i., installed in 1967) supplies a teak-lagged compound engine by the Fore River Engine Co. (Weymouth, Mass.), also 1892. The yacht is believed to be the last such craft in the U.S. burning coal.



The *Kestral. Watercolor by Klaus Grutzka [SIA].*

Approximately 40 people attending the outings, 25 of them turning out in the pouring rain on Sunday. From Weehawken the tour followed the N.J. waterfront south, viewing the former marine shops and facilities of the N.Y. Central, Penna, Lehigh Valley/Jersey Central RRs, and the Central of N.J. RR terminal restoration (by Nat'l Heritage, Inc.) on the Morris Canal Basin. Ellis and Liberty islands, Red Hook, and Erie and Atlantic basins followed.

At the Brooklyn Bridge a 30-minute stop provided a look at the Nat'l Maritime Historical Society museum, and the Eagle and Empire warehouses.

The *Kestrel* explored the Brooklyn Navy Yard and then returned down the river following the Manhattan shoreline, its course interrupted only briefly by an unscheduled stop at a Manhattan pier to gather wood. After rounding the Battery the tour passed numerous abandoned piers on its return to Weehawken. The vessel is on the N.J. State Register of Historic Places, and has been nominated to the Natl. Register. *PS.*

Roebling will hold its Annual General Meeting in the East Bldg., Pratt Inst., 200 Grand Ave., Brooklyn at 1 PM, Sat. 5 March, to elect new officers, discuss new programs, and address other matters. Included will be short films and a tour of Pratt's steam-powered generating plant of 1887 (engine-generators of 1900), believed to be the oldest continuously operating in N. America. Contact: Conrad Milster, (212) 857-9524.

MCMOC. Kenneth Hudson, noted British author on industrial historical topics and a leading internat'l spokesman for IA, spoke before the Montgomery C. Meigs Original Chapter of the Society on Monday evening, 18 October. His topic was IA in the underdeveloped nations. These frequently humble versions of man's industrial activity—a salt works, a hemp manufactory, for example—deserve our attention just as much as the more impressive sites such as blast furnaces and textile factories, Hudson argued. He explored this theme with his customary wit and incisive commentary, bringing into juxtaposition the problems we face in heavily industrialized countries as well. A key point: the important industrial site must be understood and preserved as part of the larger community. Just as Hudson feels strongly that IA is human history as much as technological history, so he believes that industrial remains are tightly woven into their places and that changes to them—often well-intentioned changes—have an adverse effect that reaches beyond an industrial site's limits and thus must be carefully thought out beforehand from a community-wide point of view. *TS.*

SOUTHERN NEW ENGLAND CHAPTER FORMED. The SNEC of the SIA was formed at an organizational meeting on 3 Oct., to embrace the Conn., Mass., and R.I. region. The meeting was held, appropriately, at the Old Slater Mill, Pawtucket, R.I., the very site where in 1793 Samuel Slater established the first successful American cotton mill, introducing to this continent Richard Arkwright's cotton-yarn spinning machinery.

The chapter has officially been recognized by the Board of Directors, although the fine details of organization await a spring meeting. It has been established, however, that the officers are:

Theodore Z. Penn (Old Sturbridge Village), Pres.

Nancy H. Goodwin (8 Wolcott Terr., Winchester, Mass. 01890), Secy. (To her apply for information)

Stanley I. Moss (Mass. Dept. of Public Welfare), Treas.

Patrick M. Malone (Slater Mill Historic Site), Program Coordinator.

This, the SIA's third local chapter, is the first to break with the timeless tradition of adopting for its style the name of a prominent engineer of the region, as with the Meigs and Roebling chapters. The SNEC organizers explain this on the perfectly logical grounds that "there were so many great engineers in New England that no one could be singled out above the others without long and serious consideration."

In addition to such conventional chapter goals as field trips and recording, SNEC, taking a heavy mechanical stance, proposes to establish a card catalog of historical machine tools in both public and private collections, and undertake an oral history project among New England master craftsmen.

MISC. NOTES

THE CANADIAN SOCIETY FOR MECHANICAL ENGINEERING is forming a committee to systematically study ME history in Canada, and assess its role in the country's social and economic development, all to be published. Participators are sought. Contact: Andrew H. Wilson, Chairman, CSME ME History Comm., Science Council of Canada, 150 Kent St., Ottawa K1P 5P4.

TRANSPORTATION ARCHITECTURE IN CANADA. The topic of the Annual General Meeting of the Soc. of the Study of Architecture in Canada, 13-17 June, 1977 at Univ. of New Brunswick, Fredericton. Details: SSAC, Box 2935, Station "D", Ottawa K1P 5W9.

CAST-IRON AWARDS. Friends of Cast-Iron Architecture on 27 Oct., in conjunction with the Natl. Trust's Annual Meeting, presented 25 Certificates of Commendation to architects, realtors, architectural historians, and property owners who contributed substantially in one way or another to the maintenance, appreciation, or general welfare of cast-iron architecture.

PHOTO USE: RESPONSIBILITIES & RIGHTS. A thoughtful article of that title by RR historian, photographer, and IAist Herbert H. Harwood, Jr. [SIA], appears in *RR History,* Bulletin 135 (Fall). A valuable essay for all who deal with historical or current photographs. (Copies avail from Ed.)

BRUCE M. KRIVISKEY [SIA], formerly exec. director of Historic Walker's Point, Inc., Milwaukee, has initiated a consulting practice in urban planning, historic preservation, and neighborhood conservation. 3048-A N. Shepard Ave., Milwaukee, WI 53211. (414) 332-9073.

INQUIRY: High Pressure Pumping Station, operated by the Baltimore City Fire Dept. Built after the disastrous fire of Feb.

1904 to supply a series of special HP hydrants in the CBD. Equipped with Allis-Chalmers horizontal steam pumping engines. Demolished c1962. Information, photos, specifications, &c. sought by Stephen Heaver, Jr. [SIA], 116 W. University Pkwy., Baltimore, MD 21210.

POSITION SOUGHT. Cultural resource mgmt., administration, or archeological survey. MA in anthropo., surveying exp., familiarity with fedl. legislation relating to cult. resources; above & below-ground archeology. John S. Wilson, 399 Exchange St., Athol, MA 01331.

GOODS

BROOKLYN BRIDGE POSTER. That used for the Whitney Museum's exhibition of BrBr original drawings. Reproduction in full color of Roebling's official 13-ft.-long presentation drawing, rendered by his chief draftsman, Wilhelm Hildenbrand, Sept. 1867. Elevation & plan; principal dimens. 16 x 58 ins. $5 ea. up to five; addl. copies $4. $1.50 per order handling + sales tax for NY & NYC residents. Whitney Museum of American Art, Sales Dept., 945 Madison Ave., NYC 10021.

SALE OF THE GOLDEN GATE BRIDGE. On the occasion of the 39th anniversary of completion of SF's famed suspension bridge, the Bridge District has completed installation of new suspender cables. The old cables have been cut into 4-in., 4-lb. sections that are being sold at prices ranging from $35 to $50- depending upon whether a teak or steel base is chosen, and whether the buyer wishes the section in nickel or gold plate, or Internatl. Orange. San Francisco Bridge Co., 311 Calif. St., SF, CA 94104.

SLATER TOWEL. Slater Mill Historic Site has produced a linen calendar towel for 1977 bearing a portrait of Slater, a view of the Slater & Wilkinson mills from the river side, and four panels showing "The Progress of Cotton:" Carding, Drawing, Spinning, and Warping (where's Weaving?). Line work, in brown. $3. PP (U.S.). SMHS, Pawtucket, RI 02865.

MEDIA

TERMINAL, STATION, & DEPOT. *Traveling Exhibition.* The RR station as an architectural form reflecting aesthetic and technological developments of the 19th & 20thCs. Three major issues are developed: the solution to a new & complex architectural problem; the dichotomy between the historic architecture of the RR station and the honest technological statement of the train shed that developed behind it; and the importance of preservation. The structures represented span the period from the first American station—built in Baltimore in 1830 in the shape of a toll house—to such monumental early-20thC terminals as Penn Station, N.Y. City. Organized by the Historic American Bldgs. Survey (HABS), Natl. Park Service. Twenty vertical panels: 48 x 36 ins.; 780 lbs. (3 crates @ 260 lbs.) Fee: $275. Avail: Smithsonian Instn. Traveling Exhib. Service, Wash., DC 20560. (202) 381-6631.

A WORLD WITHIN A WORLD—THE AMOSKEAG MFG. CO. *Film.* The historical, industrial, and social significance of the legendary Colossus on the Merrimack, that from 1838 to 1936 produced a staggering variety of textiles in quantities measured in miles-per-day—the largest textile complex on a single site in the world, ever, and the virtual life of Manchester, N.H. Documented sensitively and honestly, based on the hundreds of superb photographs in the collections of the Manchester Historic Assn. by Univ. of N.H. Dept. of Media Services; Gary Samson, Cinematographer. 33 mins., 16 mm, color, sound. Rental—$9.50; Purch.—$240. UNH Media Services, Diamond Library Floor C, Durham 03824. (603) 862-2240.

PERIOD FIRE EQUIPMENT. *Film.* American steamer (1897), 1905 ALF Water Tower, & c1900 chief's wagon with horse—all in full, live action! Other, related material. 16mm, color, sound. $145. Baltimore Fire Museum, c/o Stephen Heaver, Jr. [SIA], 116 W. University Pkwy., Apt 305, Baltimore, MD 21210.

AMERICAN SOC. OF CIVIL ENGINEERS ANNUAL CONVENTION. *Audio casssettes.* Sessions of CExpo '76, complete & unedited. Each about 2-1/2 hours, on two C-90 cassettes. $14 a pair + $1.25 per order handling. Audio Visual Communications, Inc., Box 85, Radnor, PA 19087. (215) 272-8500. Historical sessions avail:

8. Two Centuries of Hydraulics.
13. Army Engineering—201 Years of Service.
25. Colonial Ports.
31. Early Exploratory Surveys.
34. Historical Perspective on Water Systems.
40. 20 Years of Water Resources.
47. Early American Ports.

THE PANAMA CANAL: A PHOTOGRAPHIC ESSAY. *Exhibition.* Fifty photographic murals depicting life in the Zone and construction of the Canal, 1906-26, by Earl Russell Parsons, recently reprinted by his son. San Jose [CA] Museum of Art, 110 S. Market St. 95113. 1 - 28 February 1977.

PUBLICATIONS OF INTEREST

Will Anderson, **The Breweries of Brooklyn.** The author: Box 352, Croton Falls, NY 10519. 160 pp, 300+ illus. $12.95 PP. Heavy on the firms, labels & lore, but many good photos of the breweries in one of the lager beer capitals of the US.

Jean Hare (Ed.), **Hampden-Woodberry.** Bicentennial project of the Hampden-Woodberry Community Council (4134 Falls Rd., Baltimore, MD 21211). 32 pp, heavily illus. $4 PP. Human, informative account of the development of a 19thC textile village and nearby workers' housing area, once north of, now entirely surrounded by and part of Baltimore, still possessing a powerful sense of identity. Essays on life, the people, and the individual mills, where much of the world's cotton duck and sail cloth once was produced; also Poole & Hunt, important foundry & machine works. (The area visited during SIA 1975 Annual Conference.)

Brooke Hindle [SIA] (Ed.), **America's Wooden Age: Aspects of its Early Technology.** Tarrytown, N.Y.: Sleepy Hollow Restorations, 1975. 218 pp. $15. Seven essays: **Introduction: The Span of the Wooden Age** (Hindle); Charles F. Carroll, **The Forest Society of New England;** Nathan Rosenberg, **America's Rise to Woodworking Leadership;** Charles E. Peterson [SIA], **Early Lumbering: A Pictorial Essay;** Silvio A. Bedini, **Artisans in Wood: The Mathematical Instrument-Makers;** Charles Howell [SIA], **Colonial Watermills in the Wooden Age;** Louis C. Hunter [SIA], **Waterpower in the Century of the Steam Engine.** A fine, broad view of wood, that most versatile of materials that is at once a fuel, a structural & decorative material, and a raw material for chemicals.

John Hix, **The Glass House.** Cambridge, Mass.: M.I.T. Press, 1974. 208 pp, illus. $22.50. History of the greenhouse to the present. (Good review by Chas. E. Peterson [SIA]: *Technology & Culture,* July 1975, pp 498-500.)

Bengt Holtez, Marie Nisser, et al, (Eds.), **Swedish IA: Engelsberg Ironworks: A Pilot Project.** Stockholm: Swedish Royal Academy of Letters, History, & Antiquities, 1975. Distrib.: Almqvist & Wiksell Int'l, Stockholm. 363 pp. Account of the preservation & restoration as an open air museum of an 18th-19thC ironworks that operated to the early 20thC and is virtually intact. A model case of preservation, technological and social analysis, and full documentation. (Reviewed: K. Hudson [SIA], *Tech. & Culture,* July.)

Kenneth Hudson [SIA], **Exploring our Industrial Past.** London: Teach Yourself Books (St Pauls House, Warwick, La., EC4P 4AH), 1975. $4.50. An essentially humanistic view of IA, Hudson believing strongly that "people are more important than objects, and that all history is, in the last resort, social history." All this in the context of "how to do it": collecting documents, interviewing, photographing, documenting industrial undertakings, &c. Excellent introductory work for nascent IAists of all ages.

W. David Lewis, **Iron & Steel in America.** Greenville, DE 19807: The Hagley Museum. 64 pp, illus. $2.50. The thing we've all been

waiting for: a handy, comprehensible, brief account of the entire business: from Colonial ironmaking to steel, to WW-II. The background *and* the technology. Vital for anyone who even glances at an old blast furnace.

William H. Shank [SIA], **300 Years With the Pennsylvania Traveler.** York, Pa.: American Canal & Transp. Center (809 Rathton Rd., 17403). 200 pp., 250 illus. $13.50 (+ 81¢ in PA). From Indian trails to future speculation and all between; everything that moved on land, water, and in the air in the Keystone state, ever.

William H. Sheppard, **Tidewater Terminals of the Erie-Lackawanna Ry.** Electric RRers' Assn., 145 Greenwich St., NYC 10006. $3.95 + post. Historical development of and current E-L rail & marine facilities; track diagrams of six yards; index of marine equipment; large foldout map of NY Harbor.

Carol D. Shull, **New Tax Law.** In *11593,* Nov., pp. 1-2. [See *11593,* Serials below.] The Tax Reform Act of 1976 provides important new tax incentives for historic preservation.

Volta Torrey [SIA], **Wind-Catchers—American Windmills of Yesterday & Tomorrow.** Brattleboro, VT: The Stephen Greene Press. 226 pp. $12.95. The first complete history of wind-power, venturing into its current renaissance and potential.

John Vaizey, **The History of British Steel.** London: Weidenfeld & Nicholson, 1974. xvii + 205 pp. $9. †

James D. VanTrump [SIA], **A Trinity of Bridges: The Smithfield St. Bridge over the Monongahela River at Pittsburgh.** In *Western Penna. Historical Mag.,* Oct 1975, pp 439-70.

Kenneth Warren, **The American Steel Industry, 1850-1970: A Geographical Interpretation.** NY: Oxford Univ. Press, 1973. $19.25.

Hoyt N. Wheeler, **Mountaineer Mine Wars: An Analysis of the West Virginia Mine Wars of 1912-13 & 1920-21.** In *Business History Review,* Spring, pp. 70-91.

Dudley White, **The Lighthouse.** Toronto: McClelland & Stewart, 1975. $27.50. Exquisite photographic treatment, much in color, mostly Canada. Labrador to the Keys.

Mary E. White, **UTM Representation of Extensive & Complicated Sites.** In *11593,* Sept, pp. 5-7. Boundaries of such sites translated to Universal Transverse Mercator grid coordinates.

Tivis E. Wilkins (Comp.), **Colorado RRs: Chronological Development.** Boulder, Color: Pruett Publ. Co. (Box 1560, 80302), 1974. 309 pp. $25. Unified source of information on physical development and partial demise, 1867-1966.

Frank D. Woodall, **Steam Engines & Waterwheels.** Moorland Publishing, The Market Place, Hartington, Buxton, Derbyshire, England. 1975. 94 pp., 113 illus. $7.50 + post. Mostly in mining. Incls. account of a German man engine.

William S. Young [SIA], **Covered Wagons: The Early Road Diesels of the Erie Lackawanna.** *Railroading Series Vol 2.* Starrucca, PA: Starrucca Valley Publs. (Lanesboro Rd., 18462). 52 pp., heavily illus. with author's photos. $4. From their arrival in the late 40s to the recent decline, one man's witness of RR motive power transition. The customary high quality of this press.

A Brief Account of the Windsor Locks Canal—10 pp, $2, and **The Story of Windsor Locks**—70 pp., illus., $4.50. Windsor Locks Hist. Soc., 76 West St., Windsor Locks, CT 06096. Among the oldest operating canals & industry along it.

Fifty Old Bridges of Lebanon, N.H. Lebanon Historical Soc., 40 Mascomo St., 03766. 32 pp. $2. Mostly covered.

Historic Industrial Scenes. A series of illus. books, based on contemporary views, of the technology & social aspects of Britain's industrial heritage. All 9½ x 7¼ ins, on art paper, hardbound. New avail: K. C. Barraclough, **Sheffield Steel.** 112 pp. 156 illus, and I. J. Brown, **the Mines of Shropshire.** 120 pp., 161 illus. Flyer on future titles: Moorland Publ. Co., The Market Place, Hartington, Buxton, Derbyshire. Avail US & Canada: Ken Roberts Publ. Co., Box 151, Fitzwilliam, NH 03447. Each title $8. PP, less 10% to non-profit libraries, hist. socs., &c.

REPRINTS

J. Snowden Bell, **The Early Motive Power of the B & O RR** (1912). Glenwood Publs., Box 194, Felton, CA 95018, 1975. 157 pp. $9.

Thomas Bell, **Out of This Furnace** (1941 novel). Pittsburgh: Univ. of Pittsburgh Press (127 N. Bellefield Ave. 15260). Three generations of an immigrant Slovak steel mill family in W. Penna: 1880s-1930s. Unionization; social side. New afterward by David P. Demarest, Jr. 424 pp. $7.95/3.50.

John W. DuBose, **Jefferson County & Birmingham, Alabama—Historical & Biographical** (1887). Southern Historical Press, Box 738, Easley, SC 29640. 600 pp., illus. $30. (2 or more: $25.) Origins of the area's iron industry, RRs, misc. industry.

Agostino Ramelli, **Le Diverse & Artificiose Machine** (1588). Tr. by Martha Teach Gnudi; annotated by Eugene S. Ferguson [SIA]. London: Scolar Press/Baltimore: Johns Hopkins Univ. Press. 700 pp, 195 engraved plates. Full English trans., biog. sketch, notes & pictorial glossary of Ramelli's machine elements. $100. One of the most important documents of the technology of the period and a profound influence on the publishing of mechanical books for the next 200 years.

Rex Wailes, **Windmills in England** (1948). Charles Skilton, Banwell Castle, Weston-Super-Mare, Avon, England. 108 illus, photos, & sectional & detail drawings. $6.50 + post. A classic, illustrating many mills and types.

Harper's New-York & Erie RR Guide (1851 edn.). Aurelian Publs., 80 Jersey Ave., Port Jervis, NY 12771. $8.50/5. Dead-perfect facsimile, incl. the original folding map of the system. Delightful running account of the towns and all else along the entire route of this important early RR, from Piermont-on-Hudson to Dunkirk, N.Y. Numerous small engravings of ways & structures, townscapes, scenery, &c. Arthur Gatti, the Pt. Jervis book dealer who has done this wonderful thing, is to be commended & emulated. These contemporary along-the-line accounts are far more than just fun—they're elemental historical resources.

SERIALS

INDUSTRIAL ARCHAEOLOGY REVIEW

After a two-year dormancy *Industrial Archaeology—the Journal of the History of Industry & Technology* has emerged in a slightly different incarnation, as the *IA R.* The same are the Editor: John Butt, Prof. of economic history at the Univ. of Strathclyde; and the Asst. Editor: Ian Donnachie, Staff Tutor in History, Open Univ. Significant administrative differences are affiliation with the Assn. for Industrial Archaeology, and the existence of an international Editorial Executive Board which, while heavily British (incl. Neil Cossons, R. A. Buchanan, and John C. Robinson [all SIA]), has two members from other lands: Marie Nisser (Sweden), and Robert M. Vogel [SIA] (U.S.A.).

While the editorial thrust appears at first glance to differ little from that of *IA—the J* ("While deriving most of its material from within the British Isles, [*IA R*] aims to be international in its coverage . . . [dealing with] material in the technological, archaeological, historical, geographical, social and architectural aspects of the subject, [and] with the surviving evidence of industrial activity as the focal point and common theme."), the practical aspects of surveying, preservation, and interpretation will be covered as well. The first issue includes articles on an iron furnace, coopering, a lead mine, a marble quarry, the early industrial landscape, the Sunderland Iron Bridge, a windmill, and capital formation in the early mining industry—all British except an article on Iceland.

Triennial: Autumn; Spring, & Summer; 10 x 7½ ins.; £10/$25 (£8.50/$22 to AIA members) per ann., which appears steepish, but let us see. Oxford Univ. Press, Journal Subs. Dept., Press Rd., Neasden, London NW10 ODD.

11593: *Information Related to Responsibilities of the Secy. of the Interior, Sect. 3, Exec. Order 11593.* Ronald M. Greenberg, Ed. Office of Archeology & Historic Preservation, Natl. Park Service, Wash. DC 20240. Bi-monthly, 12 pp./issue. Gratis. A new publ. filled with notes, articles, and general information on all aspects of the U.S. government's role in historic preservation.

Commentary, Vol 7, July 4: Special bicentennial issue: **Iron & Steel & US.** Richard Deily [SIA], Ed. Inst. for Iron & Steel Studies, 1103 N. Washington Ave., Green Brook, NJ 08812. 8 pp. Good, largely statistical essay on the growth of use of I & S in the U.S. (average yearly production of pig iron doubled every decade, but two, in the 110 years from 1810 to 1920).

Steel '76. A Bicentennial Special Report on the American Steel Industry . . . Past & Present. American Iron & Steel Inst., 1000 16th St., NW, Wash., DC 20036. 24 pp. Articles on 4 early iron makers (Winthrop, Wilson, Cooper, Kelly); short essays on 28 early furnaces; misc other material.

INVENTORIES & GUIDES

Maureen Quimby, **Hagley Museum Guide.** Hagley Museum, Greenville, DE 19806. $1.00. Updated and improved version of this valuable work, describing and illustrating with old and current photos one of the more important of America's IA sites. Maps of site; floor plans of exhibition buildings.

George Swetnam & Helene Smith, **A Guidebook to Historic Western penna.** Pittsburgh: Univ. of Pittsburgh Press (127 N. Bellefield Ave. 15260). c304 pp., illus. $11.95/4.95. 1300 sites in 26 counties with historical sketch of each county. Incls. factories, bridges, ruins, museums, as well as the other stuff; the proportion unknown.

American Canal Guide, Part 2: The South: FL, GA, SC, NC. The 2nd part of the American Canal Soc's. guide to N. American canal sites. Maps, photos, descriptions, UTM refs. 12 pp. $1. PP. (Pt. 1: The West—50¢). From: Wm. Trout, 1932 Cinco Robles Dr., Duarte, CA 91010.

The National Register of Historic Places in the U.S., publ. by Natl. Regis., Natl. Park Service. 961 pp. $13. U.S. Govt Printing Office, Wash.,DC 20402. Stock No. 024-005-00645-1. Third published catalog. All structures, districts, objects, &c in the NR as of 31 Dec. 1974. For each: name, location, owner, surveys done, description, brief statement of significance. IA is running about 10-15% of the entries overall.

The Next Station Will be . . . Vol 4: The Northern RR of N.J. Railroadians of America, 270 W. Colfax Ave., Roselle Park, NJ 07204. 48 pp. $4.50. Fourth in a series reproducing a group of 1910 photos of Erie and subsidiary RR stations in the N.J. suburban area, in large format. Regarded as the best of the series by the nation's authority on stations.

Technische Kulturdenkmale (Technical/cultural monuments). 32 pp. Avail: Förderkreis, Westfälisches Freilichtmuseum tech. Kulturdenkmale e.V., 58 Hagen, Bahnhofstr. 18, W. Germany. Descriptions of several of W. Germany's excellent open-air museums with IA emphasis.

U.S. Transportation Zone Maps. Fed'l RR Admin., U.S. Dept. of Transp. Approx 1000 unnumbered looseleaf pp. in 2 vols, 1975. Avail: U.S. Govt Printing Office, Wash., DC 20402. $10.90. All operating RR lines, by "zones." For each zone are 2 maps: general, of rail lines and major highways; and rail lines only, showing ownership, traffic density, no. of tracks, type of signalling. (Fuller description by H. H. Harwood [SIA] in *RR History,* Fall.)

REFERENCE & TECHNIQUES

Samuel Peter Bell (Comp.), **A Biographical Index of British Engineers in the 19thC.** NY/Lond: Garland Publishing, 1975. 246 pp. $22. For 3,500 subjects gives field of endeavor, dates of birth & death, location of obits.

Paul B. Cors, **Railroads.** Elec RRers' Assn., 145 Greenwich St, NYC 10006, 1975. 152 pp. $10. Annotated bibl. of 259 books in print.

Melvyn Green [SIA] & Patrick W. Cooke, **Survey of Building Code Provisions for Historic Structures.** Natl. Bureau of Standards, Washington, DC 20234. 48 pp. $1.15. U.S. Govt. Printing Office, Wash, DC 20402. SD Cat. No. C13.46:918.

Maryland Historical Trust. Pamphlet describing programs, concerns, means of assisting historic preservation in state; all with good IA emphais. 20 pp. Gratis, MHT, Shaw House, 21 State Circle, Annapolis 21401.

Property Tax Incentives for Preservation: Use-Value Assessment & the Preservation of Farmland, Open Space, & Historic Sites. 1975. Proceedings of Property Tax Forum, Washington, June 1975. Publ. Dept., Int'l Assn. of Assessing Officers, 1313 E. 60th St., Chicago, IL 60637. $8. paper.

SPECIAL PUBLICATIONS

Robert C. Post [SIA] (Ed.), **1876: A Centennial Exhibition.** NY: Neale Watson Academic Publs. (156 5th Ave., 10010). 224 pp., 345 illus. $7. Prepared in conjunction with Natl. Museum of History & Technology's major exhibition of the same name commemorating and replicating the Centennial. Introduction by John Maas; essays by NMHT staff on treatment at Philadelphia and general state-of-the-art in 1876 of RRs, machine tools, electricity, timekeeping, the Patent Office, photography, scientific instruments, refrigeration, and steam & internal-combustion power.

American Industrial Architecture from the late 18thC to the mid-20thC. In *Society of Architectural Historians Journal,* Dec., 1976, pp 265-71. Synopsis of session at SAH annual meeting, chaired by Theodore A. Sande [SIA]. Papers: Sande, **The Architecture of the R.I. Textile Industry, 1790-1860;** Richard M. Candee [SIA Pres], **19thC New Towns: Alternate Models for Development within the Early New England Textile Industry;** Eric N. DeLony [SIA], **The RR Train Shed in America;** Leonard K. Eaton, **Oscar A. Eckerman: Architect to John Deere & Co., 1897-1942;** Grant Hildebrand, **Albert Kahn & the Development of a Design Process for 20thC Industrial Architecture.** Illus.

MICRO—REVIEWS

Reading's Victorian Stations, by Edward A. Lewis. The Baggage Car, Box 223, Strasburg, PA 17579. 120 pp.; 231 photos; maps. $10.95/5.95.

Not the city, but the railroad, that is. Mile for mile, the Reading RR had the most individualistic collection of 19thC stations anywhere. Rich from anthracite, varied in parentage, and always a maverick, it had a personality more memorable than the average RR. Much of its visual charm came from the eccentric Philadelphia architectural genius, Frank Furness, who designed about 125 structures for the RR at the height of his creativity in the early 1880s. But the co. apparently had its own resident pixies in its Engineering Dept., and many earlier and later stations were equally unique, if not as inventive.

Lewis's book illustrates over 200 of them, built between the 1850s and 1920s—many of which still stand. Much of the material is from co. files, fortunately rescued immediately before the Reading disappeared into Conrail. Included is data on construction dates and architects, plus thumbnail histories of each line and a complete 1920 co. station inventory showing dimensions, and construction and retirement dates. In all, a superb display, and outstanding quality for the price. *HH.*

British Steam Locomotive Builders, by James W. Lowe. Goose & Son, Cambridge, England, 1975. 703 pp. £30 (c$75.)

A comprehensive, but non-interpretive and undocumented history of nearly 400 commercial and RR work shops engaged in the manufacture of steam locomotives. This catalog includes a brief business history of each firm. Biographical data on the proprietors often is included. The builders' lists for the smaller houses are reproduced. Most illustrations show locomotives rather than work shops. The concentration on small builders of industrial locomotives makes this volume especially valuable. *JW.*

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AVAILABLE FROM AMERICAN CANAL & TRANSPORTATION CENTER

Cossons, **BP Book of Industrial Archeology,** $14.50; Pannell & Major, **Techniques of IA,** $10.50; Lewery, **Narrow Boat Painting** (new), $13; Myer, **Building the Potomac Aqueduct,** $1.50, all postpaid. 809 Rathton Rd., York, PA 17403.