SOCIETY FOR INDUSTRIAL ARCHEOLOGY

NEWSLETTER

Volume 8 No. 6 November 1979

No. 299: A HEARTWARMING REPATRIATORY SAGA

299, the second of Paterson's wandering boys to see the error of his ways and return to his native soil, following in the footsteps of American Brake Shoe & Foundry No. 1 who came home last year (as told of in SIAN Nov. 78). *Paterson Dept. of Community Development photograph.*

Yes, you *can* go home again . . .

"The Panama Canal may belong to the Panamanians now, but the last remaining locomotive engine that helped to build that waterway belongs to us," remarked Paterson, N.J. Mayor Lawrence F. Kramer, beaming enthusiastically before a crowd of supporters. The controversy over Engine *299*, one of 100 Mogul types (2-6-0) built in 1906 by Paterson's Alco-Cooke Locomotive Works for the Isthmian Canal Commn., came to an end 6 June at a celebration marking her return to Paterson.

Three years ago Paterson officials began searching the world for Paterson manufactured locomotives (see *SIAN* Nov. 78). Some 60 were located, including several in South America. Mayor Kramer, Community Development Director Sidney Willis, and the Panama Canal Co. met in Panama last year to discuss a transfer of *299* to the U.S. Panamanians and the Natl. Legislative Council initially condemned the transfer as a flagrant violation of the Panama Canal Treaty signed by President Carter. Negotiations resumed, however, and Mayor Kramer and Panamanian officials agreed in February of this year on the locomotive's repatriation.

Engine *299* will be exhibited at the Paterson National Museum of Industry currently under construciton in the 119 acre Great Falls National Historical District. *W.P.*

REUSING ABANDONED RAILROADS

Since the 1920s, over 70,000 miles of American RRs have been abandoned. The great monuments of RR engineering — early tunnels and notable bridges — are listed in the National Register and the ASCE's Civil Engineering Landmarks list. But the actual roadbeds and rights-of-way also are impressive works that in many cases still exist. Several ex-narrow-gauge lines in Colorado now are driveable dirt roads; over 50 other lines have been converted to hiking and bicycling trails. The Heritage Conservation & Recreation Service is funding eight of these projects. Their cultural significance is enhanced by their value as recreation and transportation linkages. Acquisition costs have run $5,000 to $25,000 per mile, with paved trails and bridge work adding as much as $40,000 per mile. While Federal support is not expected to continue, there are many railroad grades throughout the country that deserve exploration and possible reuse. *S.H.M.*

CONTRIBUTORS TO THIS ISSUE

Harold D. Kalman, Ottawa; Stuart H. Macdonald, San Diego; William Poe, Smithsonian Institution; David H. Shayt, Carlene Stephens, Natl. Museum of History & Technology; Nan Sumner, Sumner Associates, Fairfax, Va. With thanks.

Published by the Society for Industrial Archeology Editor: Robert M. Vogel
Room 5020 National Museum of History & Technology Smithsonian Institution Washington, DC 20560

WHENCE H A E R, WHITHER N A E R?

It has not been our practice formally to editorialize, discounting the odd comment injected into an otherwise news item. On this occasion of your present editor's last issue of the ***SIAN*** *(all is well — the succession is in good hands) but actually having nothing to do with that, we find ourselves compelled to air an issue that rapidly is becoming more and more troubling to more and more people who have an abiding concern for industrial archeology in the U.S. and its future path.*

AS CLEAR AS THE EXTENT to which the field of IA has grown in N. America during the past 10 or 15 years is the indisputable fact that the single body that has produced the most effective work, has spread the most telling gospel in terms of educating those who should know about the importance of preserving and recording our industrial heritage, and has brought more people into direct, highly personal contact with all that industrial archeology stands for, is the Historic American Engineering Record.

HAER is in trouble, however, with implications that are grave and far-reaching, for trouble at HAER means trouble for much that IA stands for in America. Ironically, the problems are largely self induced, the result of inadequate leadership at several levels. Facing HAER are three major issues, all threatening: the very basis of the HAER mandate is being corrupted; the distinctive HAER identity, firmly established in the course of its ten-year history, has been effectively lost; and the vitality that springs from a strong central headquarters is about to be sapped by dispersal.

The events leading to this state of affairs have occurred relatively quickly, in the name of various rationales that in fact have little or nothing to do with the organic reasons for HAER's successes or any prior problems.

•

WELL-KNOWN AND HIGHLY RESPECTED is HAER's singular record of service in assembling a truly phenomenal body of documents recording America's historic industrial and engineering structures in every locale and of every type, age, and degree of significance, from New England textile mills to railroad stations to Western mining complexes to wind and water mills to bridges galore to manufacturing machinery to . . . . whatever.

The most noble of HAER's productions are the elegant measured drawings, painstakingly drawn from the living structures and exquisitely rendered for permanent preservation: drawings that elucidate, clarify complex machine details, and lay bare arcane production processes in a way that no photograph or verbal description ever could. These newly-created historical documents now number some 1,000, accompanied by photographs and written reports that in some cases are extensive. It's an impressive, useful body of work. It could have been assembled by no other means than HAER's eminently effective method of sending out summer teams of students and faculty to get right up to the subject structures, the fundamental system developed in the early 1930s by HAER's elder sibling and role model, the Historic American Buildings Survey (HABS).

But now they're fiddling with the formula! Never mind that HAER in its present configuration has produced a volume of work extraordinary in scope and excellence that literally is the envy of world industrial archeology. Ignore the fact that HAER has done more to arouse awareness of this side of our culture than anyone either inside or outside HAER probably ever will know. The trouble seems to be — *none of this is very good theater.* Almost plodding, in fact. Students crawling around the upper chord of an early wrought-iron bridge making notes. Maybe a little press on the first day because it *is* a bit *outre'.* Then the project photographer comes around and that's even less dramatic. And the final work goes on under cover of the drafting room in the field office. All this usually makes for minimal local impact and perhaps even a touch of boredom on the part of bureaucrats with low historical-awareness quotients.

During HAER's first eight years or so (1969 to about 1977) that didn't seem to bother anyone, either within the organization or in the Natl. Park Service hierarchy. Everyone seemed perfectly content that show biz or not, an emormous amount of valuable work contributing to preservation efforts, scholarship, and other worthy endeavors was being accomplished. That, after all, was what it was meant to be all about. There was a palpable vitality in the HAER family that went far in furthering its particular cause.

The signs of fiddling appeared some two or three years ago. First came the 1976 Tax Reform Act (in itself splendid), which prompted HAER to run a few "demonstration" projects in the summer of 1977. These were intended to show the newly gained financial benefits of rehabilitating old buildings as opposed to building from scratch. As we shall see, from this small seed sprang an entire new focus for HAER.

There followed an Interior Dept. reorganization. HAER and HABS were removed from the shelter of the Natl. Park Service and deposited in a new entity known as the Heritage Conservation & Recreation Service (HCRS). HCRS direction was by a newly-appointed, purely political figure of no perceptible historical awareness or concern. At about the time he came in HAER's Advisory Board went out. Since its formation, HAER had had — as had HABS — general external guidance by an Advisory Board composed of representatives from the major engineering professions, among others. The Board served the vital function of providing professional expertise and a broad planning and program perspective complimenting that provided from within. It was, in essence, the board of directors without which no organization can effectively operate.

The Board's last meeting was held in 1977, following which it was caused to whither by default — meetings simply no longer were called by the HAER chief. Soon this position was formalized by the HCRS directorate, ostensibly acting on a Presidential mandate to reduce the number of government advisory boards as an economy measure. The HAER Board (and HABS's) thus ceased to exist.

It is not hard to guess that the real reason for this was that life in an organization is a lot easier if you don't have a bunch of busybodies telling you how to steer your ship — especially when you're aware that they may have a more perceptive notion of the appropriate course. This seems a fair assumption when it is recognized how little the Board's expenses amounted to for its meeting once a year or so.

This unilateral action has not gone unnoticed by either the engineering or architectural profession. Both are angry over the loss and are acting to have the HAER and HABS boards reconstituted.

Having dismantled its Advisory Board, HAER entered upon a rapid doctrinal and functional divergence that can only be construed as bizarre in light of its elemental charge to "inventory and record significant engineering and industrial sites . . ." Beginning with the few Tax Reform Act projects of 1977, HAER launched a wholesale program in "rehabilitation action." This has ramified to the extent that already it largely has eclipsed the recording and inventorying functions and bids fair, ultimately, to subvert them entirely. A good understanding of just what rehabilitation action entails can be gained from the description of a 1979-summer HAER "rehab action project" — in this case in Lockport, Ill.

". . . Concentrating on the recreational, visual, and historical potential of the canal front area . . . a HAER team will complete a brief history and description of the buildings and structures . . . Suggested adaptive uses for the selected structures in the Lockport Historic District and specific rehabilitation costs and beneifts will be determined on the basis of a comprehensive local planning assessment. Based on evaluation of all aspects of the project, the team will develop an implementation proposal emphasizing the preservation and recreation potential of the area."

The scope of this aspect of HAER's efforts may best be judged by the numbers. The 1979 summer program consisted of eight

recording projects employing a total of 15 people (three are listed as having no participants!) and six rehab-action projects employing *53* people. *Fifteen* vs *fifty three*! True, there also were six state inventories accounting for all of six more people, so let's say, 21 against 53. And on the headquarters staff in Washington we now find a planner, an adaptive-use architect, and for the summer only (mercifully), a "social-science technician." This is inventorying and recording?

But, you say, all this is for a worthy cause, inasmuch as most of us definitely are *for* the preservation and adaptive use of industrial structures. And much of the fabric in the rehab areas *is* industrial/engineering. In the event, however, much *isn't*. We find houses, warehouses, store buildings, and a considerable volume of exceedingly fringy material. What, for example, do you make of the Laguna (New Mex.) *Pueblo* Rehab Action Project in which, among other things, the team was charged with developing ". . . a comprehensive open space/recreation plan for the reservation . . . and a set of rehabilitation programs for six representative adobe housing units . . "?

The current HAER tenet is that these projects are fit and proper, and that they don't divert funds and staff from the recording/inventorying programs. It's absurd on the face of it to pretend either that HAER has any business in the rehab business — which, while it *is* worthwhile, is sufficiently discrete and important an activity that it belongs in a separate office — or that HAER's recording resources are not being bled by the rehab projects. Even though the direct costs may be covered by the concerned outside organizations, what of the proportional headquarters staff time and overhead for administering these projects? And what of the very substantial amount of staff time spent rustling up rehab projects that otherwise would — should — be employed in locating support for documentation? Look again at the numbers above.

The other problems: A key element in the new order of things has been amalgamation of HAER and HABS into a single body known as the National Architectural & Engineering Record (NAER). Note, incidentally, that the critical word "historic" no longer appears. Further, there is to be decentralization of most of their functions through the establishment of seven regional offices plus an Alaskan "area" office. These offices actually will be in the form of newly appointed assistant directors for cultural programs reporting to the directors of already established regions (about which more later). This fragmentation, as we prefer to call it, purportedly will enhance the relationships between the programs, and local governments and groups wishing to sponsor projects.

We are apprehensive that the consolidation of the two offices will serve simply to diminish the outstanding reputations gained on the basis of their respective distinct areas of specialization, and that the public-relations value of the two highly visible titles will be lost. Worse, the diffusion resulting from decentralization will have the inevitable effect of curtailing the effectiveness of both programs. With a strong central headquarters from which flow all planning and implementation, there exists a state of critical mass, caused by interaction among a sizable corps of (mostly) dedicated professionals. Under the plan, there will be a handful only of staffers at HQ in Washington, and less than that at each of the eight outposts.

Another unfortunate facet of the regionalization debacle is the delineation of the regions themselves — which follow the boundaries of the former Bureau of Outdoor Recreation regions (for which they appear to make some sense). The Northwest Region, for example, consists of Wash., Oregon, and Idaho. This, presumably, is on an equal footing, IA-sitewise, with the Northeast Region which embraces Virginia, W. Virginia, Maryland, D.C., Delaware, N.J., N.Y., Pennsylvania, and all of New England!

•

WHAT WE ARE SEEING HERE, in total, is the ugly effect of politics running amok. Federal programs that are *professional* in their very nature and that should be directed by professionals are being taken over by politicians having little appreciation of or for the fundamental purposes involved. Respected professional historians are literally being driven out by politically-appointed spoilers and opportunists. Serious demoralization rules among those survivors dedicated to the pure cause of documentation.

Following the old axiom that in a political atmosphere the best way to prove yourself is by changing things around regardless of the effect, the new HCRS directorate has been moved to undertake massive alteration of the demonstrably successful HABS/HAER formula. The result — already well advanced — will be the essential crippling of a pair of the most cost-effective and valuable historical programs ever mounted by the U.S. Government. The traditional low-profile recording and inventorying activities are being displaced by the attention-getting rehabilitation-action program which, bursting with advocacy, superheat, and newsworthyness constitutes a sure-fire route to career and political advancement for its proponents.

The real tragedy of all this is that it's happening so close to home, for the essential dissolution of recording by HAER means the essential dissolution of industrial-archeological documentation in the U.S. *R.M.V.*

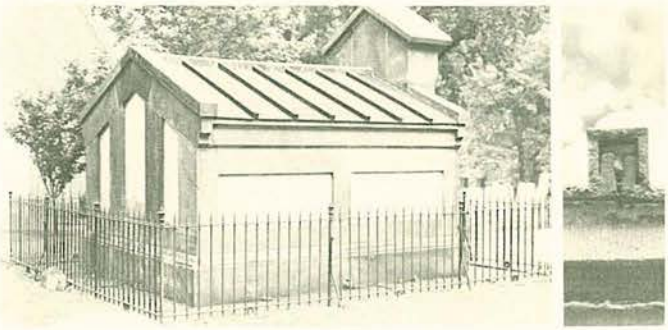
Expressions of concern by members of ASME or ASCE may be directed to the respective History & Heritage Committee, NYC. Members of the AIA may respond to David O. Meeker, Jr., Exec. V.P., AIA, 1735 N.Y. Avenue, Wash., DC 20006. Expressions of concern and *questions may also be sent to and asked of Cecil D. Andrus, Secretary, U.S. Dept. of the Interior, 18th & C Sts. NW, Wash., DC 20240.*

The Friends of HABS (and by association, HAER) is carrying inquiry forward with visible success, but in turn needs a few friends of its own to supply modest funds for postage and general operations: 332 Spruce St., Philadelphia, PA 19106.

CAST IRON AS ROOFING

Nothing less than remarkable is the vast number of uses to which cast iron was put in the 19thC, ranging from the purely structural to the highly decorative, to the utilitarian, to all combinations of the above. Not common was its employment as an architectural sheathing material, if we discount the "cast-iron-front" buildings where the castings themselves generally represent but a small percentage of the total wall area with respect to the window openings. There is, of course, the well-known cast-iron warehouse at Watervliet Arsenal near Albany, N.Y. (1859) in which the wall panels on all four faces are of iron, but that is a rare exception.

Recently observed was a small stone crypt in the burying ground of St. Thomas church on Garrison Forest Rd., near Owings Mills, Baltimore Co., Md., built in 1848. The roof is formed of very shallow cast-iron channel or pan sections, legs up, laid tight. Pairs of adjacent legs are embraced by narrow cast-iron channels turned down, sealing the joints between panels. Simple, weather-tight, and effective. The maker is not known but presumably was one of the many architectural foundries in Baltimore City. (See also the note on the cast-iron Weiskittel Burial Vault, *SIAN* Jan. 76:3.)



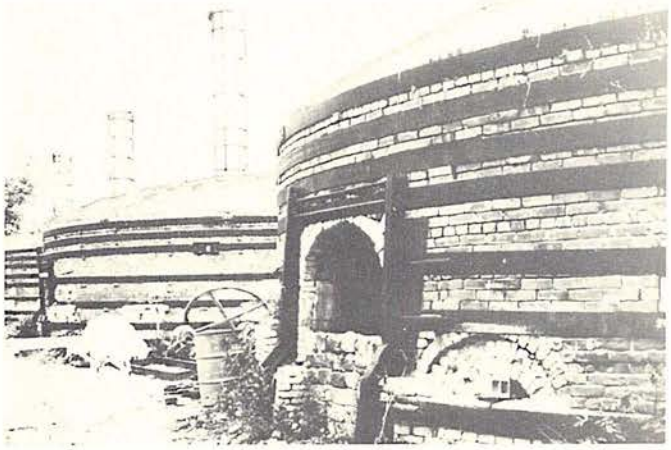
Canadian Developments
Adaptive Re-Use Canada-Wide

Harold D. Kalman [SIA], architectural history and conservation consultant of Ottawa, has in hand three interesting commissions involving new uses for redundant industrial structures (or, in the case of the cast-iron front buildings, industrially-produced).

THE MEDALTA POTTERIES in Medicine Hat, Alberta, may be restored and reopened. A feasibility study has been prepared recommending that the oldest portion of the buildings be developed as a combination museum of pottery (using original Medalta equipment), a working pottery (run by a nearby pottery), a workshop for professional ceramic artists, and a facility for local amateur potters.

The site was first developed in 1912 (as the Medicine Hat Pottery Co.), and operated under various names until it closed in 1966. Medalta was Canada's largest producer of stoneware in the 1920s, and of hotel ware in the 1940s. The buildings cover more than 100,000 sq. ft., and include four downdraft beehive kilns. About 40,000 sq. ft. would be developed as the museum-pottery complex, the rest left in use as warehouse and light industrial space.

Assisting in the study was arts management consultant Robert Bailey and architect Keith Wagland. It was commissioned by Jack Forbes, Head of the Ceramics Dept., Univ. of Alberta Extension and co-author of *Pottery in Alberta*, and was funded by the Alberta Historical Resources Foundation.



Beehive kilns of the 1920s at Medalta Potteries. *H. D. Kalman photograph.*

The same Associated Consultants also are directing the adaptation of the former **CANADIAN NATIONAL RYS. STATION at HALIBURTON, ONT.,** into a community arts facility. The station was built in 1878 as the northern terminus of the 50-mile-long Victoria Ry., which, with connections, could bring passengers to and from Toronto in 12 hours. The line later was integrated into the systems of the Midland Ry. and Grand Trunk Ry. (which made alterations to the building) before becoming a part of Canadian National. Service to Haliburton was discontinued in 1977.

The station will become the home of the Haliburton Highlands Guild of Fine Arts. The freight shed will be used for art and craft exhibitions, the waiting room will become a meeting facility, and the remainder developed as an office for the Guild, a lounge, and washrooms. The mud-sill structure will be stabilized. Work on the $75,000 project began in October 1978.

In the third project, a group of **commercial buildings in Halifax, Nova Scotia, many of which have CAST-IRON FRONTS**, is being preserved, although by somewhat unconventional means. The two sides of Granville St., between Duke and Buckingham, were built immediately after a major fire in 1859. The architects for half of the buildings were William Thomas & Sons of Toronto (son C.P. Thomas directed the firm's Halifax office). The four-story Italianate buildings combine stone (mostly Wallace

Opening of the rehabilitated Haliburton Station in July, as the "Rails' End Station Gallery." *H. D. Kalman photograph.*

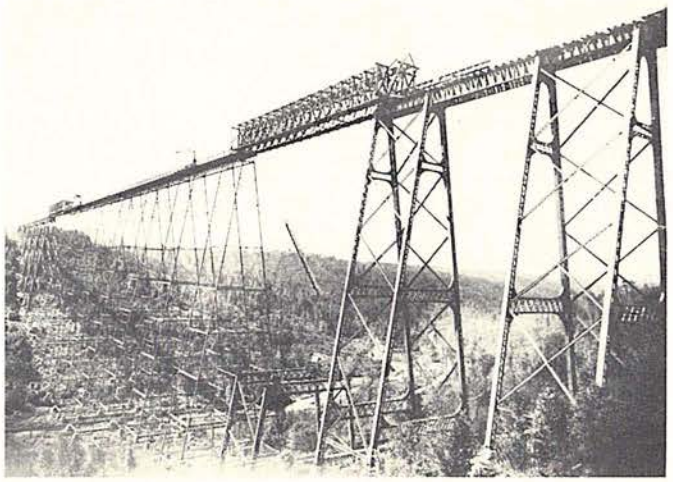
freestone, a local brownstone) and iron cast by Daniel Badger's Architectural Iron Works in N.Y.C. A few buildings seem to have wholly cast-iron fronts. Other foundry marks are visible on the buildings by other architects.

The buildings on the north side of the street have been conserved by Historic Properties Ltd. as retail space on the ground floor and the rented quarters of Nova Scotia College of Art & Design in the upper floors. The interiors have been rehabilitated; the exteriors are essentially untouched.

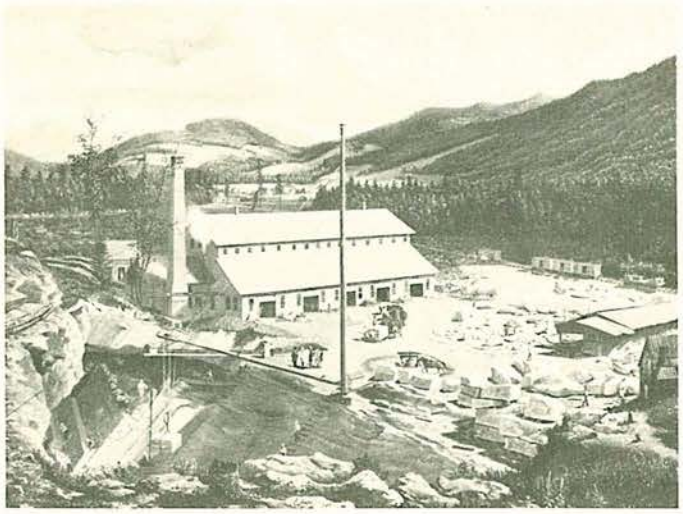
The facades of the buildings on the south side of the street are being "conserved" by Durham Leaseholds Ltd. under the terms of an agreement signed with Historic Properties and the College. Durham is developing a hotel complex on the site. They have demolished the buildings and dismantled the facades, intending to reassemble them on the front of the new structure. *H.D.K.*

KINZUA VIADUCT PARK

The central feature of what must be the only state park in the U.S. devoted solely to a "bridge" is the Kinzua *Viaduct*. It stands centrally in Kinzua *Bridge* (sic!) State Park near Mt. Jewett, McKean Co. in NW Penna. The state took the structure over in 1963 following its abandonment by the Erie RR. And a considerable feature it is. Kinzua Viaduct I was built by the Erie in 1882 to carry a branch across the valley of Kinzua Creek. It was designed by Octave Chanute and built by the Phoenix Bridge Co. The rail was 302 ft. above the stream while total length was 2,052 ft. It was the longest and highest viaduct in the US until construction of the Pecos Viaduct in Calif. in 1892. As it grew too light for increasing loadings it was completely rebuilt — in 1900 — in nearly identical configuration but about twice as heavy and using plate-girder spans rather than the continuous Howe trusses of Mark I. It stands thus today, fully and spectacularly accessable to park visitors.



Kinzua Viaduct at about the mid-point in replacement of the first by the second structure, 1900. The traveller spans across three towers, rebuilding the center one. *Erie RR photograph, Natl. Museum of History & Technology Collections.*



A MARBLE QUARRY (1851). James Hope; b. Drygrange, Scotland 1818/19, d. Watkins Glen, N.Y. 1892. Oil on canvas. 18 x 24 in. Interestingly, the block of stone being hoisted is marked "Washington Monument" (the monument was in its first construction phase between 1848 and 1854). Hope lived in Castleton, Vt. at this time and it is presumed that the quarry is one of those in that area. *Courtesy, Museum of Fine Arts, Boston.*

VERMONT ROCK QUARRY (1888-1900). Walter Shirlaw; b. Paisley, Scotland 1838, d. Madrid, Spain 1909. Oil on canvas. 30 x 60 in. As a Vermont scene, the subject stone could be marble or granite with equal ease. It would have difficulty being slate. *Courtesy, The Henry Francis du Pont Winterthur Museum.*

It is small wonder that quarrying was an intriguing subject for 19thC artists — soft form of the surrounding landscape contrasted with the hard of the stone; interesting angles, shades, and shadows on the blocks; and men in action. An industry to be sure but at the same time always a certain rustic picturesqueness. Of the many quarry paintings that must be about, two have surfaced recently, both by Scottish-born artists, coincidentally. Both are artistically striking and at the same time provide what we may take to be an accurate record of the industry. The Hope painting in particular tells all: getting out the blocks in the pit; hoisting them by horse-powered boom derrick; moving them about in the yard; working them in the cutting shed (to be taken on faith); and finally outshipping by rail. Although hoisting is by horse muscle, cutting and other shed operations clearly are by steam, as witness the chimney and engine exhaust.

Unfortunately, little seems to be known about the Shirlaw painting or its background. It represents a much less ambitious operation, obviously. But not quite evident from the monochromatic photocopy, however, is that things are not entirely biomechanically powered as they might at first glance seem. Lurking behind the pile of blocks is an engine house with its smoking chimney, barely visible between the derrick's mast and boom.

MUSEUM FROM WAREHOUSE

Museum Wharf, the new home of the Boston Children's Museum and the Museum of Transportation, has opened on Boston's Fort Point Channel in a converted wool warehouse. The two museums jointly purchased the site in 1975 with the aid of private and federal money.

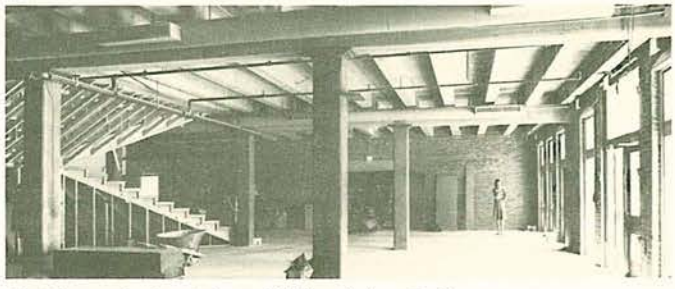
"The opening of Museum Wharf represents a major step towards the redevelopment of the warehouse district of Boston, as well as a tremendous addition to the cultural resources of downtown," said Mary Bennett, speaking for Dyer/Brown & Assoc., project architects. The brick and timber warehouse was constructed in 1888 by the Atlas Terminal Stores. The museums will operate independently but will share the high cost of building maintenance.

The George P. Henderson Foundation provided initial funding to restore the facade of the building. Architects used simple design techniques to rehabilitate the building, maintaining the basic construction design of the original warehouse. Open space was maximized to allow flexibility in changing and adding new exhibits.

A six-story free-standing elevator with exposed steel frame was added to the building's facade. Steel was used because it was compatible with other industrial artifacts near the Wharf.

The Museum of Transportation will feature "Boston: A City in Transit," a permanent exhibit outlining the impact of transportation on the city from 1630 through 1973. The Children's Museum will host "City Slice," a 3-story cross-section of a Boston street and mansard-roof house. *W.P.*

Museum Wharf, new home of the Children's Museum and the Transporation Museum on Boston's Ft. Point Channel. The colossal Hood milk bottle, late of Taunton, Mass., has come to be accepted as a commerical-archeological shrine of broad mystical significance. *Tom Stohlman photograph.*



The Museum interior, before exhibit installation. *Stohlman.*

Jeddo 7 Breaker, one of the last wooden breakers in the anthracite region, still in use processing strip-mined coal.

THE PENNSYLVANIA ANTHRACITE TOUR

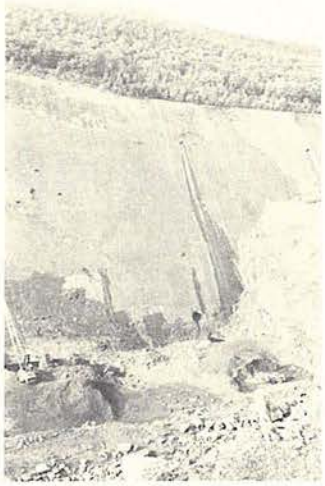
13-15 October 1979

The SIA's fall excursion into coal country offered about 120 members and friends stunning evidence of anthracite's impact on northeastern Penna. After dominating the area's industry for nearly 125 years, we saw firsthand that the mining of "hard coal" now is in critical decline. The derelict remains of the once-vital colliery breakers, mines, and transportation networks were the weekend's most memorable sights.

Saturday's trip began in Hazleton and ranged through three of the region's four coal fields, which together contain the world's most concentrated reserve of low-sulfur anthracite. One of the morning's highlights was a stop at **Eckley,** where the group clambered enthusiastically about a recently closed breaker and scrutinized the village. Founded as a company town by Sharpe, Weiss & Co. in 1854 and still tenanted by former miners and their families, Eckley now is a historic site owned and administered by the Penna. Historical & Museum Commn. Further along the route, the **Hudsondale Pumping Station** built in the 1889 to serve first U.S. oil pipeline—the Tidewater Pipe Co's. long-distance line to Bayonne, N.J.—was notable for its 1940ish Worthington diesel pumps (and hot coffee and donuts that materialized).

Eckley, a preserved 19thC miners' village.

Saturday's tour also offered an instructive juxtaposition of mining techniques. The trip into the **Ashland Pioneer Tunnel,** complete with vivid commentary from guides who themselves were miners, provided an outstanding illustration of mining in a subterranean vein. A working mine until 1931, the tunnel now is open to the public. In sharp contrst was the active strip mining operation at Bethlehem Mines Corp.'s **Panther Valley Job III Pit.** Where once extensive veins of underground coal stood, we saw an awesome gorge stretching 350 ft. down and a half-mile away from



Bethlehem's Panther Valley Job III Pit strip mine. This is actually the third mining operation on this coal-rich site. The first shaft mining occurred early in the 19thC. By the mid-19thC a modest stripping operation was underway, and within the last five years the present project was started. There is clear visual evidence of the two prior workings. Most dramatic is the series of mine tunnels exposed in the rock face of the pit's north wall (left). The pit ultimately will reach a depth of 620 ft. The rock overburden removed to expose the coal seams is trucked to fill another, worked-out pit.

Dorrance Colliery, built by the Lehigh Coal Co. in 1929. Most of the buildings survive on the site—which closed in the early 1960s. Maximum output occurred in the mid-30s with an annual production of some 900,000 tons. The lowest coal vein in the colliery lay 1,400 ft. below the surface. Left: the breaker—daily capacity 3,500 tons. Center: one of the three steam-driven ventilating fans. Right: the colliery entrance.

our observation point. Mammoth earth-moving vehicles and power shovels enlarged the pit even as we watched.

The day ended in **Jim Thorpe (Mauch Chunk)**, once a flourishing transportation center and now probably Penna's. best-preserved 19thC town. The site of the Lehigh Coal & Navigation Co.'s coal-hauling gravity RR (1827), the town also was served by the Lehigh Canal, and the Lehigh & Susquehanna and Jersey Central RRs. Remains of the last three were available for inspection. Architecture fans delighted in the Packer mansions, Millionaires' Row, and other stately buildings. Especially pleasant was the cocktail hour in the renovated Odd Fellows Hall where our hosts for the event—Bruce Conrad and Jane Mitchell—have apartments. There followed at a local church dinner and a delightful slide presentation by 82-year-old retired Lehigh Canaller Theodore Sherman.

Flagstaff Park overlooking Mauch Chunk (Jim Thorpe), "the Switzerland of America."

On Sunday, touring resumed in **Wilkes-Barre** and **Scranton,** the anthracite region's two largest cities.

Sights in Wilkes-Barre included a variety of 19thC factories that once supplied such diverse products as wire rope, lace, silk, and locomotives. Of particular note were stops at the defunct **Stegmaier Brewery**—a complex consisting of six turn-of-the-century Romanesque structures of local red stone, and at the eerie remains of the **Dorrance Colliery.** A Lehigh Coal Co. property, the Dorrance breaker and the surrounding array of abandoned steam engines, boilers, pumps, giant fans, and tumble-down structures thrilled one and all.

Lunch was a chilly but wholesome picnic on the grounds of 18thC **Swetland Homestead,** once the home of the Lackawanna & Bloomburg RR's founder and now owned by the Wyoming Historical & Geological Soc.

The busses then headed for Scranton. En route we inspected Conrail's **Pittston Repair Yards** (late the Coxton yards of the Lehigh Valley RR) and the impressive **Taylor Colliery**, where the world's first all-reinforced-concrete breaker (1915-1916) was on view.

Within several blocks of each other in Scranton itself stand the **Delaware, Lackawanna & Western RR Repair Shops** (now a munitions plant); the **quadruple stacks of the Lackawanna Coal & Iron Co's. blast furnaces** (1848-1869); and the **D L & W's passenger station** (built 1908, vacated 1970).

After driving by the **Jersey Central's 1886 freight depot** and a gas holder, one bus turned for home while the indefatigable in the second continued on for just a few more sights.

As always in these things there was a principal guiding spirit to this undertaking: David L. Salay, Director of the Anthracite Museum Complex of the PH&MC, who conceived and organized the tour. He is the first to assert, however, that he was far from alone in making this one of the very best ventures in SIA history. Behind him all the way were the AMC staff and friends, and friends of friends, all of whom put in time and effort well beyond normal expectations. Especially to be thanked are Joseph Grego who carried the logistics to such fine points as providing straw at critical spots for removal from shoes of that peculiar indigenous black substance composed in equal parts of anthracite dust and mud. A fall-tour first—a poster featuring the Taylor Colliery concrete breaker—was the work of Daniel Mayer. Wayne Laepple provided valuable information and acted as tour guide. Bill Siener and a host

Separation vessel in the Taylor breaker.

Taylor Breaker, built 1915-16 by the Delaware, Lackawanna & Western RR, the first of reinforced concrete in the anthracite fields. Although now derelict and partially stripped of its equipment, a considerable amount remians in place. The colliery passed from DL&W ownership in 1920 during an enforced divestiture of their mines by the RRs.

Philadelphia & Reading Coal & Iron Co.'s. Pine Shaft Colliery headframe, 1907, one of the few surviving structures here. The mine was abandoned in 1933.

of friends conducted research and *also* tour guided. Beth Jewell of the Anthracite Museum Complex carried out additional research and organized a Monday tour of the Spragne Henwood drill company, Scranton. As Salay himself so well puts it, "Their efforts made the tour move." And what good's a tour that doesn't move? *C.S.*

The tour was greatly enhanced by the wonderfully complete and clear Tour Guide compiled and edited by Salay. Copies are available from the Anthracite Museum, RD 1 Bald Mountain Rd., Scranton, PA 18504. $3.75. 44 pages, illus.; 29 sites cited. Incls. maps and a breaker flow diagram.

Walking dragline stripping shovel, near Eckley. The shovel is electrically powered, fed by cable from a remote source.

Coal watchers watching the World's Largest Lump of Anthracite, object of some veneration in the city park, Mauch Chunk.

MISCELLANEOUS NOTES

ART & EXHIBITIONS

THE WORKING AMERICAN — An exhibition of 32 paintings by American artists dating from the 1840s through the 1940s on the theme of American men, women & children earning their livelihood: farming, heavy industry, logging, &c. Accompanied by a splendid illustrated catalog with an essay by Patricia Hills on the history of the image of the American worker in painting. (80 pp; color cover, $6.) Exhibition fee: $3,200. On the road in Jany. Information; catalog: SITES, Smithsonian Institution, Wash., D.C. 20560.

INDUSTRIAL PHOTOGRAPHS BY E.O. HOPPE, 1928. Hoppe, a German, produced a stunning set of views of many heavy industries in the vicinity of Cologne: hydroelectric stations; steel mills; machinery works; &c. Prints at Sonnabend Gallery, 420 W. Broadway, NYC.

CINCINNATI IN 1876. Recent painting by John Stobart featuring Roebling's Ohio River Suspension Bridge of 1853-67. Limited edition prints $200. Purnell Galleries, 407 N. Charles St., Baltimore, MD. (301) 685-6033.

THE GÖTA CANAL IN STAMPS. Sweden has produced a set of six in a folder showing a steamer, the locks at Borenshult, a swing bridge, a lock keeper, and a sailing vessel in a lock. Interesting and attractive. From your philatelic dealer, presumably.

EVENTS

PETROLEUM HISTORICAL SESSION at American Soc. of Mechanical Engineers Energy-Sources conf., New Orleans, 4 Feb. 1980. Early refining technologies; standardization in oil field equip.; progress in the understanding of combustion in IC engines (Lynwood Bryant, [SIA]); and more. In celebration of ASME's centennial. Rivergate Exhibition Center, 4:30 PM. Information: Carron Garvin-Donohue, ASME, 345 E. 47th St., NYC 10017, (212) 644-7740.

MAKING TRANSPORTATION PROJECTS COMPATABLE WITH HISTORIC & ARCHEOLOGICAL PRESERVATION. Double session at Transp. Research Board meeting, 21 Jany. 1980, Shoreham Americana Hotel, Wash., DC. 9:00 AM: *Case Studies*; 2:00: *Issues*. Interesting and important papers. Detailed information: Howard Newlon, Jr., Box 3817 Univ. Station, Charlottesville, VA 22903.

PROGRAMS

M I T SCIENCE, TECHNOLOGY & SOCIETY — Research Fellowships, 1 year from Sept. 1980, partial or full stipend. Required: record of outstanding performance in a field of science, engineering, social science, or the humanities; evidence of a commitment to research involving the interaction of science or engineering with society. Full details: Donald L.M. Blackmer, STS Program, 20D-213, MIT, Cambridge, MA 02139. Deadline: 15 Jany. 1980.

HAGLEY GRADUATE PROGRAM—1980-81. Fellowships in American econ. history; history of tech.; or museum studies. Deadline: 7 Feb. 1980. Details: Coordinator, Hagley Graduate Prog., Box 3630, Greenville, DE 19807. (302) 658-2400 ext. 257.

GRANTS & AWARDS

FRIENDS OF CAST IRON ARCHITECTURE made its annual awards of commendation to seven individuals and organizations who were *especial* Friends OCIA during the past year. James M. Goode, curator of the Smithsonian Bldg., was commended for locating and rescuing (in Tenn.!) the iron gates made in 1879 for the Smithsonian's new Arts & Industries Bldg., as was the N.Y. Botanical Garden for restoration of its famed ferrovitreous conservatory in the Bronx, among others. Full list: FoCIA, 235 E. 87th St., Rm 6-C, NYC 10028. (212) 369-6004.

$30,000 AWARD TO CANAL MUSEUM. The Heritage Conservation & Recreation Service made the award to the Syracuse museum to mount an intensive underwater survey of 19thC Erie Canal boat remains, in an effort to document the design and construction techniques of these vessels. The two-year project will cover not only the canal itself but the Finger Lakes where the boats ventured to pick up freight. Full word from CM, Weighlock Bldg., Erie Blvd. East, Syracuse, NY 13202. (315) 471-0593. The Museum, naturally, welcomes any information on such remains.

MARITIME PRESERVATION GRANTS. HCRS also has awarded 84 grants, totalling $5 million, to 16 states and the Natl. Trust for the restoration and preservation of a wide variety of marine artifacts, the majority of them ships. Three light houses (East Brothers, Calif.; Twin Lights at Navesink, N.J.; and Split Rock, Minn.) will, however, receive assistance, as will a number of canal projects and other non-floating structures. A complete list of the grants is available: HCRS, Dept. of the Interior, Wash., DC 20243, Attn: Carolyn Harris. (202) 343-5726.

ORGANIZATIONS & THEIR WORK

SMALL HYDROELECTRIC SYSTEMS. A group has been organized, concerned with both the history and current applications. They will publish *Small Hydro Soc. Newsletter.* E.R. Schmidt, RFD No. 3, Slippery Rock, PA 16057.

EARLY AMERICAN INDUSTRIES ASSN. AWARDS. EAIA has made its annual awards of $750, of which one has special IA interest: to Page Talbot, PhD candidate at Univ. of Penna., who will examine the Penna. furniture industry, 1850-80, with emphasis on the effects of mechanization. The grants-in-aid are awarded to grad and post-grad students for research or publication. Applications for 1980 accepted until 15 March: Charles F. Hummel, Winterthur Museum, Winterthur, DE 19735.

PUBLIC WORKS BIBLIOGRAPHY. The Public Works Historical Soc. has received a Natl. Endowment for the Humanities grant of $29,132 to cover the major cost of preparing an annotated bibliography on public works and environmental history in the U.S. It will list published sources describing the development of public works facilities and services and their relationship to public values and the natural environment. Information: PWHS, 1313 E. 60th St., Chicago, IL 60637. (312) 947-2547.

MINNEAPOLIS-MOLINE CO. ARCHIVES. Recently received by the Minn. Historical Soc., comprising 50+ linear ft. of photographs, catalogs, brochures and manuals, and PR Dept. files, c1895-1970s. Covers both M-MCo. and its predecessors/absorbees: products and manufacturing processes: agricultural machinery, industrial engines, construction and oil-field equipment, structural steel, and military equipment in WW-I & II. Information: Jno. M. Wickre [SIA], Asst. Head of Technical Services, MHS, Divn. of Archives & MSS, 1500 Mississippi St., St. Paul, 55101. (612) 296-6980.

ARROW & SPIKE ASSN. An initial meeting was held on 4 August near Havre, Mont., a railroad town near the Canadian border. The assn. intends to establish a museum and cultural center "emphasizing the Indian point of view of the railroad." A&SA, c/o Arthur Dolman, Northern Mont. College, Havre, MT 59501.

THE STEAMSHIP HISTORICAL SOC. has moved. Mail re administration and its publication *Steamboat Bill* now to 170 Westminster St., Rm. 1103, Providence, RI 02930.

AVAILABLE

IRON JIB CRANE, for RR freight. Abandoned in Leominster, Mass., probably available as salvage. The very thing for a RR museum or tourist RR. Ex NYNH&H, now Conrail. Information: Reginald Foster, 171 Pleasant St. 01453.

AMMONIA COMPRESSOR (REFRIGERATION), steam driven by Corliss engine. Probably by Featherstone Foundry & Machine Co., Chicago, ca1900. Horizontal, engine & compressor side-by-side on common shaft with wheel between. L.o.a. 28 ft., w.o.a. 12 ft.; wheel ca24 ft. Operable. In Amarillo, Texas. Information: Joyce Wheat, 408 Thompson La., Canyon, TX.

CURIOSA

THE 7 WONDERS OF THE 19th CENTURY are identified by A.V. Abbott in *Frank Leslie's Popular Monthly* (Aug. 1890: 129-44) as: The Croton Aqueduct's inverted syphon under the Harlem River; the Forth Bridge; the Eiffel Tower; the East River (Brooklyn) Bridge; the Mississippi Jetties (at its mouth); the St. Gothard Ry.(notable for its tunnel); and the project to remove the rocks in Hell Gate of the East River, NYC.

A CENTURY OF IT FLOATS. We never hesitate to observe the key anniversaries of pivotal industrial products. This year it's the 100th of IVORY SOAP, the first for which you didn't have to grope around on the bottom of a murky wash or bath tub in search. It was an accident, actually, Procter & Gamble legend has it. Seems an anonymous employee left the bubble machine on during an extended lunch break and when he returned the batch was whipped and aerated beyond recognition. They ran it through the cake-maker anyway, and . . . you know the rest. And the name? Harley Procter, in church shortly thereafter, impiously preoccupied with coining a suitable title for the new product, found it during a reading of the 45th Psalm: "All thy garments *smell* of myrrh, and aloes, *and* cassia, out of the ivory palaces, whereby they have made thee glad." (For more on P&G and their celebrated works at Ivorydale, Ohio see SIAN May 78:6.)

EARLY MECHANICAL & INDUSTRIAL FILMS

A remarkable and fortuitous record of early American motion-picture film is represented by the Library of Congress' collection of "paper prints." These were deposited at LC as the copyright documents for commercial films rather than actual film prints as the paper print was more readily viewable by the naked eye. Fortuitous, for the original negatives and film prints, invariably produced on chemically-unstable nitrate film, all have long since self-destructed, leaving us only the paper prints as records. Even these were not always in good condition. In recent years an active restoration program has been undertaken, and as important, the prints have been described and listed in **Motion Pictures from the Library of Congress Paper Print Collection, 1894-1912**, by Kemp R. Niver (Ed. by Bebe Bergsten); Univ. of Calif. Press, Berkeley, 1967.

The films are listed alphabetically by title, giving also producer, date, format, and length in feet. With each entry is a succinct description of the subject and action. The average film length is only some 50 ft., representing less than 2 minutes of viewing. But many of the subjects are contemporary, often unique records of IA concern: railroads, industrial works, logging, ships, fire-engines in action, &c. (In an advertising film of 1903 the inventor of a street-car safety fender [cowcatcher] proves his infinite faith by allowing a car so equipped to run him down. "All safe, Gentlemen!)"

Copy prints are available from LC, Motion Picture Division, Washington, D.C. 20540. And the good news is that with the kind permission of Mr. Niver, SIA has extraced from his book a list of all IA-interest entries. We will send you a copy for a stamped envelope. Room 5020 &c.

WINDMILL FILM — And Funding Source?

A 28-minute film documenting construciton of a 16thC-style English windmill is available through the Va. Foundation for the Humanities & Public Policy (1B West Range, Univ. of Va., Charlottesville, 22903). The full color film of "Flowerdew Hundred Windmill" was funded primarily by a grant from the Va. humanities committee, one of 52 such organizations established by the Natl. Endowment for the Humanities Divn. of Public Programs, to encourage scholars in history, philosophy, art history, and other humanities disciplines to become involved in discussions and media programming with politicians, plumbers, and other out-of-school citizens.

SIA members needing funds for local projects might check into the guidelines set by the relevant state humanities program. Each state organization receives a federal block grant from which funds are disbursed for projects ranging in cost from $500 to $500,000. Red tape usually is minimal. Film documentation, IA radio broadcasts, community consciousness-raising in regard to preservation values — perhaps even local recording and inventorying projects — and similar activities could fit the guidelines of many of these state committees.

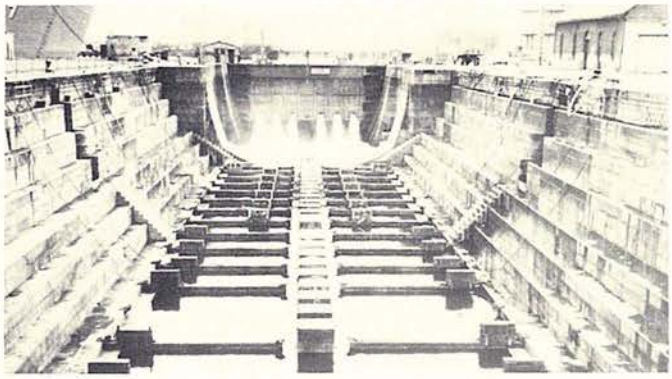
Information may be obtained from state humanities council offices, whose addresses are available from NEH, State Based Programs Division, 806 15th St., NW, Wash., DC 20506. (202) 724-0386. *N.S.*

ASCE LANDMARKS

Six sites recently were designated Natl. Historic Civil Engineering Landmarks by the American Society of Civil Engineers:

MASON-DIXON LINE. Highly-precise boundary surveying received its first field test in 1763 when Charles Mason and Jerimah Dixon plotted an accurate boundary separating Penna. from Del., Md., and what is now W.V. The line was mapped using the secant method, today the most widely-used technique for determining parallels of latitude.

DRY DOCKS. Boston and Norfolk naval shipyards boast a pair of granite dry docks built in 1837 under the direction of Engineer-in-Chief Loammi Baldwin II. Able assistance was provided by architect Alexander Parris. Though original pumps and related hydraulics have since vanished, both docks continue in active service.



Norfolk Naval Shipyard's Drydock No. 1, 1827-34. *ASCE photograph.*

MULLAN ROAD. Interstate highway engineering blasted its way into the Pacific Northwest in 1862 with completion of the Mullan Road, a military wagon route stretching 624 miles between Fort Benton, Mont. and Walla Walla, Wash. Unlike the existing Oregon Trail, the road required extensive grading and blasting, occasional bridging, and corduroy support along swampy sections.

CHICAGO RIVER REVERSAL. The Sanitary & Ship Canal, completed in 1900, redirected the flow of Chicago River, compelling it to carry its sewage into the Mississippi, thereby saving the waters of Lake Michigan for Chicagoans. The canal took advantage of a continental divide running through the city. Canal excavation was imaginative, for it founded the "Chicago school of earth moving," used later in the Panama Canal dig. *D.H.S.*

•

WESTWARD THE COURSE OF IA BUFFS?

Nevada Co., Calif., claims to be the richest site for early mining technology study in the U.S. A visit to the Grass Valley Mining Museum in July revealed the North Star Mine's 30-ft. Pelton wheel, only slightly damaged by the fire that destoryed the original mine building. Restoration by the Nevada Co. Historical Soc. has attracted donations of an impressive array of stamp mills, a Berdan pan, a Cornish pump, and other machinery from mines in the region.

Certainly Grass Valley should be considered as a future SIA conference locus. Not far from Sacramento, Donner Pass, and Lake Tahoe, it could include visits to a variety of RR, mining, irrigation, and hydroelectric sites. Correspondence: Glen Jones, GVMM, Mill St., Grass Valley, CA 95959. *N.S.*

S I A AFFAIRS

CALL FOR PAPERS

The conveners of the 1980 Annual Conference in Detroit again have asked one and all to consider presenting a paper. The formal notice that went out early this year has elicited good response but *more is wanted.* Make yourself and your ideas and findings heard. Chas. K. Hyde, Dept. of History, Wayne State Univ., Detroit, MI 48202.

CHAPTER NEWS

SOUTHERN NEW ENGLAND. At the initiative of Betsy Woodman the SNEC on 30 Aug. presented its first Award of Distinction to Robert W. Lovett, retiring Curator of the MSS & Archives Divn. at the Baker Library, Harvard Graduate School of Business. During his 26-year tenure Lovett became widely recognized and respected among scholars of industry and engineering — particularly that of New England — as a consequence of both his acquisition emphasis on that area, and the efforts he made in encouraging use of the collections. These are well known through Lovett's catalogs of them.

The award was presented at Lovett's retirement party at Baker, and cited at the SNEC Annual Meeting on 10 Nov. at Mechanic's Hall, Worcester. The meeting opened with a total tour of the recently restored building, built in 1857 as a meeting hall with facilities for many other community and professional functions. The grand assembly room surely is one of the most striking Victorian halls in the country.

CHICAGO. This newest chapter is alive and apparently flourishing. An inventory of IA in the Windy City area is contemplated, a wonderful prospect to be sure. Contact: Amy R. Hecker (Secy.-Treas.) 2819 N. Cambridge, Chicago, IL 60657.

(NASCENT) NORTH CAROLINA. An organizational meeting was held on 27 Oct. at the abandoned Spencer Shops of the Southern Ry. (1896-1924), one of the largest RR repair shops in the South. Forty five attended. Alan Paul of the N.C. Divn. of Archives & History led the group through the facility including the colossal 150-ft. x 600-ft. back shop, and explained the proposal to convert the site into a transportation museum and visitors' center. Brent Glass [SIA Bd.] presented a slide show of other N.C. IA. The group agreed to form a local chapter, suggestions of an appropriate name for which (and visitors/members from adjoining states) would be welcome. Contact: Mac Whatley, No. 7-A Royal Park Apts., Carrboro, NC 27510.

WORKING PLACES — THE SLIDE FILM

This seminal presentation on the adaptive reuse of early industrial structures produced by the Society in 1974 continues to be effective in spreading its special message and continues to be available for rent or puchase from

SIA FILM DISTRIBUTION
Room 5020 NMHT
Smithsonian Institution
Washington, DC 20560

Requests should be in writing, at least three weeks in advance of showing. Please include phone number and correct mailing address.

RENTAL FEE: $20. PURCHASE PRICE (Subj. to increase) $285. In 16 mm form; color; sound.

WATERPOWER WORKSHOP

*We failed to report, in the account of the Society's Annual Conference held in Columbus, Ga. (**SIAN** May), on the several workshops conducted Sunday morning. (These were instituted several years ago as a means for common-interest groups to examine in detail problems and mutual concerns in their areas.) Theodore Z. Penn, SIA president, describes here a workshop led by him.*

The waterpower workshop was designed to explore the working principles of various types of water motors and hydropower systems. Beginning with gravity wheels, the discussion soon turned to impulse and reaction wheels and turbines employed in American mills during the early 19thC. Historical development of these wheel types was discussed and problems confronted by the industrial archeologist in understanding the relationships and differences between wheels were stressed.

The workshop provided a useful opportunity for participants to engage in an extensive discussion on the history of water power and the typology of early water wheel designs.

RESPONSES

Sir: **A better source for lists on Wind Energy** than the two listed in *SIAN* Sept. 79:5 is: Rockwell International, Rocky Flats Plant, Energy Systems Group, Box 464, Golden, Colo. 80401. They maintain the Rocky Flats Wind Systems Program, working with Dept. of Energy in the development of small wind systems — less than 100 kW.

Referring to the footnote on recent good works by the U.S. Army Corps of Engineers, they have, in addition to saving the Gruber Wagon Works, improved their image considerably among the membership of the Society for the Preservation of Old Mills by restoring the Mill Springs (Ky.) Mill and now are preparing to restore McCosh's Mill, Randolph Co., Ala. The July 1977 issue of *Old Mill News* details these projects. *Everett Powers, V.P., SPOM, Glenside, Pa.*

Sir: The article on the **Newmarket, Ontario concrete arch bridge** (Sept: 3) led me to wonder whether this was of the Melan type. From 1894 to 1915 quite a few concrete arch bridges were built in the US with reinforcing steel in forms other than rods, on the Melan plan. The Concrete-Steel Engineering Co., NYC, was responsible for some of them. Perhaps a further examination of the Ontario bridge would show the reinforcement. *Willis Klotzbach, C.E., Trenton.* [See *SIAN* May 78:6]

Sir: **With respect to the review of the Corps of Engineers histories** noted in the Sept. issue, the mention of the Philadelphia District history may have misled readers to believe that Frank Snyder was merely the illustrator. He was all of that, but was, in fact, co-author as well. *John Ingle, C of E., Phila. Distr.*

PUBLICATIONS OF INTEREST

Compiled by Robert M. Frame III and Susan Queripel, Minnesota Historical Society.

John N. Jackson & John Burtniak, **Railways of the Niagara Peninsula.** Belleville, Ont.; Mika Publ. Co. (200 Stanley St. K8N 5B2), 1978. 239 pp. $20.00. Development 1850-1900.

William & Evelyn M. James, **A Sufficient Quantity of Pure & Wholesome Water: The Story of Hamilton's Old Pumphouse.** London, Ont.: Phelps Publ. Co. (87 Bruce St.), 1978. 150 pp., 50 illus. ca$15.00. Construction of the system; biogs. of designer Saml. Keefer, CE & enginebuilder John Gartshore.

Tom Kemps, **Historical Patterns of Industrialization.** London: Longmans, 1978. 183 pp. $6.00

Edwin T. Layton, Jr. **Scientific Technology, 1845-1900: The Hydraulic Turbine & The Orgin of American Industrial Research.** In *Technology & Culture,* Jan. 1979. pp. 64-89. Examination of the turbine's theoretical basis as practically interpreted by the principal developers.

Edward A. Lewis, **American Short Line RY Guide.** Morrisville, VT: The Baggage Car (Box 733, 05661), 1978. 134 pp. $14.95. Directory to more than 360 lines: inter/intrastate; switching & terminal cos.

John W. Lozier, **Taunton & Mason: Cotton Machinery & Locomotive Mfr. in Taunton, Mass., 1811-61.** Ann Arbor, MI: Univ. Microfilms 48106. PhD thesis, Ohio State Univ., 1978. (no. 7819630).

Stuart H. MacDonald, **Evaluation of Recreational Reuse of Abandoned RR Rights-of-Way.** MA thesis, Utah State U., 1979. 187 pp. (Avail: author: 3933 St. James Pl., San Diego, CA 92103). Thorough study of reuse for trails: potential; politics; details; precedents. Vital for communities considering this.

Colleen A. Oihus, **Lignite: N. Dakota's Fledgling Coal Industry, 1873-1900.** In *N. Dakota Quart.,* Autumn 1978, pp. 51-67., illus.

Mary Procter & Bill Matuszeski, **Gritty Cities.** Phila.: Temple U. Press, 1978. 288 pp., illus. $17.50/9.95. A "new" look at the industrial cities of Allentown, Bethlehem, Bridgeport, Hoboken, Lancaster, Norwich, Paterson, Reading, Troy, Trenton, and Wilmington, all both dirty & plucky, i.e., "gritty."

I.E. Quastler, **Some Major Unanswered Questions about the Historical Geography of American Railroads.** In *Historical Geography Newsletter* VIII (Spring 1978), pp. 1-10. (Dept. of Geog., Calif. State U., Northridge 91330.)

Joe D. Roberts, **An Economic & Geographic History of Cushing, Okla. From its Origins Through the Oil Boom Years 1912-1917.** Unpub. PhD. Thesis, U. of Minn., 1976. The famous Cushing field.

N. J. Schnitter, **The Evolution of the Arch Dam.** In International Water Power & Dam Construction, Oct./Nov. 1976. 12 pp. Emphasizes the structures marking the principal technical innovations and concepts leading to modern methods.

Duane A. Smith, **Colorado Mining: A Photographic History.** Albuquerque: U. of New Mexico Press, 1977. 176 pp., illus. $13.50.

Susan & Michael Southworth, **Ornamental Ironwork, An Illustrated Guide to its use in American Architecture.** NY: David R. Godine, 1978. (Avail.: Friends of Cast Iron Architecture, 44 W. 9th St. room 20, N.Y.C. 10011) 202 pp., illus. $20; $17.50 FCIA members.

J.W. Stocks, **Constructing the Lackawanna Cutoff.** In *Natl. Railway Historical Soc. Bulletin,* 1977, pp. 33-41. (1911 reprint). Constructed 1908-11 from the Delaware River (Pa.) to Lake Hopatcong, N.J.

G.N. von Tunzelmann, **Steam Power & British Industrialization to 1860.** London: Oxford Press (Press Rd., Neasden, NW10 ODD), 1978. 344 pp. £12.50. First full-length assessment of the economic contribution of the stationary steam engine.

George Watkins, **The Steam Engine in Industry — I: The Public Services.** Ashbourne, Derbyshire: Mooreland Publ Co. (9-11 Station St. DE6 1DE), 1978. 128 pp., £5.75. Another of Watkins' marvelous, essentially photographic essays on the steam engine, covering a stunning variety of pumping, blowing, generating, and even marine engines, all UK. Running commentary on engine design and construction in the photo captions. First-rate work.

Paul J. Westhaeffer, **History of the Cumberland Valley RR.** Washington D.C. Chapter, NRHS (P.O. Box 3512 Central Station, Arlington, VA 22203), 1978. 285 pp. illus. $21.50.

John H. White, Jr., **Car Builders of the U.S., et al.** In *Railroad History* 138, Spring 1978. (Ry. Locomotive Historical Soc., Harvard Bus. School, Boston, MA 02163.) Special issue devoted to the subject, White's article leading four others on specific builders and on the origins of the steel passenger car. Good stuff.

John R. White, **X-Ray Flourescent Analysis of an Early Ohio Blast Furnace Slag.** In *Ohio Journal of Science*, July 1977, pp. 186-88. [See SIAN March 1977:4:4.]

Richard Wolkomir, **Industrial Archaeology: Reappraising the Nuts & Bolts of our National Heritage.** In *TWA Ambassador,* October 1978, pp. 110-11.

Lionel Wyld, **The Erie Canal: A Bibliography.** American Canal Soc. (c/o author, Box 171, Ashton, RI 12864), 1978. 16 pp. illus. $3.75 PPd. Books, monographs, theses, articles, pamphlets, brochures, folklore & general literature. Most entries annotated.

Natl. Historic Landmarks of the Civil Engineering Profession. NY: American Soc. of Civil Engineers (345 E. 47th St., 10017.), 1979. 11 pp. Gratis. Listing and brief description of the c80 CE Landmarks designated by ASCE since 1966.

Army Plans 'Modernization' at Watervliet Arsenal, N.Y. In *Headquarters Heliogram No. 106* (Council on Abandoned Military Posts, Box 171, Arlington, Va. 22210), Nov. 1978, p. 12. Demolition prospects for oldest arsenal complex in US (bldgs. of 1830, '45, and 1918).

Charles River Dams. Auburndale, Mass.: Charles River Watershed Assn., (2391 Commonwealth Ave., 02166), 197? 25 pp. $2. PPd. Historical narrative, 1630 - present, with chronologies of individual dams along the river.

The Hand of Man: Railroads in American Prints & Photographs. Baltimore Museum of Art (MD 21218), 1978. $4. PPd. Catalog of an exhibition to commorate the 150th anniversary of the start of the B&O RR (21 Nov. 1978 - 7 Jan. 1979). Illus. 15 of the exhibits and listing all 64, with introductory text.

Inspection, Maintenance, & Rehabilitation of Old Dams. Proceedings of an Engineering Foundation conference, Sept. 1973. American Soc. of Civil Engineers, 345 E. 47th St., NYC 10017. 944 pp. $8.

National Historic Landmarks of the Civil Engineering Profession. ASCE as above, 1979. 11 pp. Gratis. List and brief description of each of the 80-odd CE Landmarks designated by ASCE since 1966.

Preservation Information. The Natl. Trust for Historic Preservation (1835 Massachusetts Ave. NW, Wash. DC 20036) has issued a group of Information Sheets of use in IA preservation: No. 20—**Basic Preservation Procedures,** 15 pp; No. 21—**Significant State Preservation Statutes,** 34 pp; No. 22—**Private Funds for Historic Preservation,** 38 pp. A way to answer the classical question: "Having got hold of this old mill, what do I do now?"

A Primer: Preservation for the Property Owner. Preservation League of N.Y. State, 13 Northern Blvd., Albany 12210. (518) 462-5658. 35 pp. $2. PPd. 15 illus. articles on various aspects of preservation. Mainly dwellings but of general application.

Welland Canal Intelligencer: Occasional publ. of Welland Canal 150th Anniversary, Inc. Box 1829-1879, St. Catherines, Ont. L2R 7K1. Gratis. Vol. 1. (4 pp.) out, filled with lore of the Canal. Inspired by original paper of same name.

MICRO REVIEWS

Milton S. Graton, **The Last of the Covered Bridge Builders.** Ashland, NH: The author (03217), 1978. 148 pp., illus. $16. PPd. Hardcover.

Graton is one of the few—perhaps only—contractors restoring covered bridges or building new ones with any acknowledgement of the old techniques. With characteristic Yankee reserve he tells of his work on some 22 bridges, primarily in New England. Some were refurbished (rotted lower chords a common illness); others moved or re-built; and two, at Henniken, N.H. and Woodstock, Vt., were built from scratch, using Town's latticework design and tools and methods in the spirit of the 19thC builders. With the latter span, trusses were laid out and drilled in his yard, trucked to the site, pinned, and edged out across falsework by patient oxen.

The author recently spoke before a Stockbridge, Mass. group giving a number of anecdotes pertaining to the decline of early bridges. In one case, rather than employ iron corner gussets to keep a bridge from swaying (as suggested by one engineer), he painstakingly acquired white-pine stumps ("You have to find a tree that grew on level ground, so the roots are at right angles") from which to fabricate "ship knees" for braces. "I could make this conform to the bridge," he explained, "instead of making the bridge fit the iron." Makes sense. *Bernard A. Drew, Gt. Barrington, MA.*

Norman Smith, **A History of Dams.** Secaucus, NJ: Citadel Press, 1972 (1st Amer. edn.) 279 pp., 65 photographs; numerous sketckes; annotated, extensive biblio; glossary. $10 (being remaindered).

The definitive work on the 4500-year history of dams, the result of lengthy research, site visits, measurement, and analysis. Emphasis on period before 20thC but includes survey to present. Chapters: Antiquity; the Romans; Byzantium & Persia; the Moslems; Christian Spain; the Early Americas [mostly Spanish]; Europe; 1st-half of 19thC; 2nd-half of 19thC; 20thC; Last 20 years. *Donald C. Jackson, HAER.*

Ted Ruddock, **Arch Bridges and their Builders, 1735-1835.** Cambridge: Cambridge U. Press, 1979. 254 p.; Illus.

This history examines the design and construction of the arch bridge in Britain and Ireland. A century of intensive innovation began with the construction of the Westminister Bridge, the first modern structure over the Thames, and climaxed with the superb masonry designs of Rennie and Telford. Among the topics Ruddock focuses on are: the refinement of design theory; the emergence of the bridge engineer; the modification of continental models; the introduction of new building practices; and the acceptance of iron in bridge construction. The work spans a large gap in the history of bridge design in both Europe and America. *George Danko, Library of Congress.*

Jean E. Kock, comp., **Industrial Archeology: An Introductory Bibliography** (#A-32). Monticello, IL: (Box 229, 61856.) Vance Bibliographies, Jan. 1979. 64 pp. $6.50.

The 534 sources provide an introduction to the field of IA and its methods, a coverage of major surveys, and a categorization of citations according to subject. Both European and U.S. publications are included. Individual sections list IA-related journals, bibliographies, and conferences. A commendable effort. *G.D.*