

SOCIETY FOR INDUSTRIAL ARCHEOLOGY

NEWSLETTER

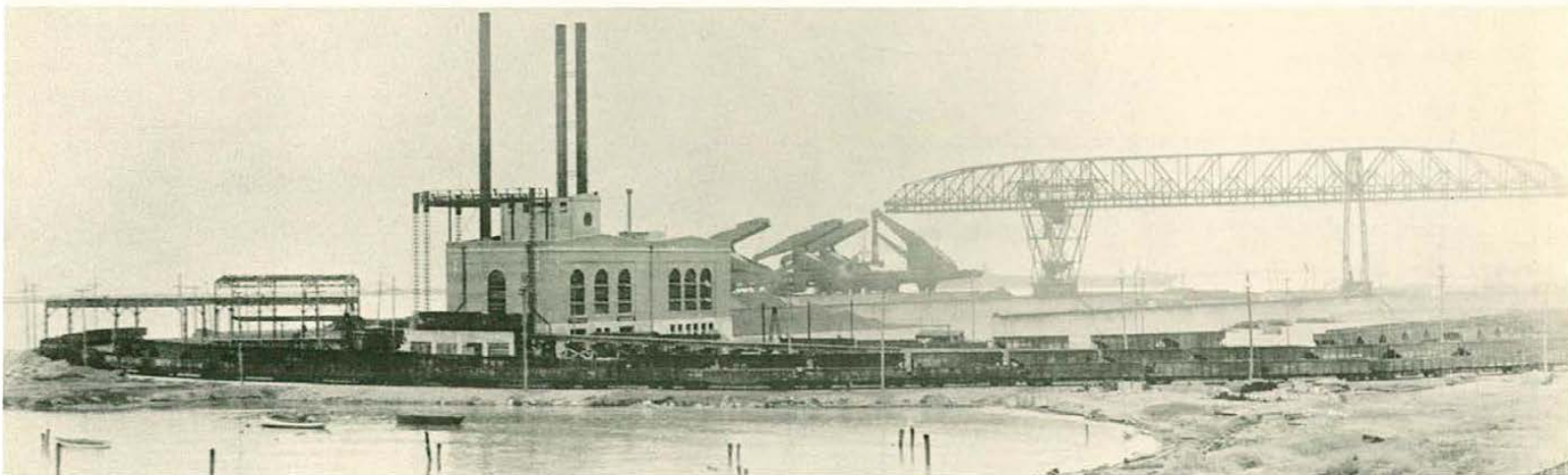
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LANDMARK UNLOADERS FACE EXTINCTION

Can Cleveland's mighty Hulettts be saved?



THE HULETT UNLOADERS.

Above: General view of the Pennsylvania Railway Ore Dock (also known as the C&P Ore Dock) taken in June 1912, shortly after completion. Looking north toward Lake Erie. The Hulett unloaders can be seen at work between the powerhouse and the ore-stocking bridge. The bridge was destroyed in a 1978 storm. *HAER Collection, Library of Congress.*

Right: Hulett No. 4, C&P Dock, poised in full open position over the hold of the *George M. Carl*, in 1979. Cleveland's are believed to be the last Hulettts operating. Note the operator in the cab window above the bucket. The dock was recorded by HAER in 1979. *Jet Lowe photo for HAER.*

If Conrail has its way, Cleveland's remarkable Hulett ore unloaders, among the last on the Great Lakes, could go the way of the dinosaurs—the very creatures to which they have so often been compared (see related story).

In June, Conrail announced that the 80-year-old unloaders will be stilled at the end of the shipping season because they are too costly to repair. They have also been rendered obsolete by modern self-unloading vessels, which carry their own boom-and-conveyor systems. (Since 1966, all new lake carriers have been self-unloaders. Of 66 U.S.-owned carriers on the Great Lakes, all but 5 are self-unloaders, according to the Cleveland-based Lake Carriers' Assn.)

Those who attended the 1986 SIA Annual Conference in Cleveland will remember visiting these unusual machines and watching them work. The Hulett unloaders have been a prominent feature of the city's industrial landscape since 1912, when the Pennsylvania Railway completed construction of the largest ore-unloading dock on the lakes.

Since the 1870s, the Cleveland & Pittsburgh Railroad had operated extensive ore docks at its western terminus on Cleveland's Whiskey Island, a strip of land sheared off from



HULETT, cont.

the mainland by the old Cuyahoga riverbed. In 1908 the Pennsylvania, successor to the C&P, decided to build a new dock on the lakefront equipped with modern Hulett machinery. The dock, which eliminated the need for bulk freighters to make the tortuous trip around the hairpin curves of the Cuyahoga River, featured four Hulett unloaders with bucket capacities of 17 tons, a 15-ton-capacity ore stocking bridge, and a 1,000,000-ton storage yard. The dock machinery was designed by the Wellman-Seaver-Morgan Co. of Cleveland.

The movement of iron ore in the Great Lakes region is essentially the same today as it was in 1855, when the opening of the Sault Ste. Marie Canal marked the beginning of ore shipments. Ore mined in the Lake Superior area is carried by rail to the shipping ports, then by ship to the lower lake ports, where it is rehandled into railroad cars for the trip to the blast furnace.

Before introduction of the Hulett, iron ore was unloaded by a mechanical hoist consisting of two towers supported by a cableway; a steam-powered rope trolley suspended from the cableway traveled out over the vessel's hold and carried hand-filled tubs of ore back to the dock. The Hulett unloader, first patented in 1898 by Cleveland George Hulett (1846-1923),

was a radical improvement. It did away with gangs of shovelers in the hold, substituting instead a 10-ton-capacity grab bucket. The novel machines revolutionized the handling of iron ore by reducing labor costs and unloading times. The first Hulett unloader was built for the Pittsburgh & Conneaut Dock Co. at Conneaut, Ohio, in 1898-99. By 1913, Hulett unloaders were in use at almost every port on Lake Erie. Their widespread adoption led to larger boats especially designed to accommodate the Hulett.

Leased and operated by a subsidiary of M.A. Hanna Co., the C&P Dock today supplies iron ore principally to Weirton Steel and Wheeling-Pittsburgh Steel. However, Conrail is studying the future of its ore-handling operations and reportedly is considering a move from Cleveland to another port on Lake Erie. According to one source, Conrail personnel already have visited the dock at Cleveland to discuss the most efficient way to scrap the historic Hulett machines.

A task force of concerned Clevelanders is working to head off those plans. Its goal is to preserve the Hulett unloaders in place, whether or not Conrail continues to operate the dock as a self-unloading facility. SIA members can help by urging Conrail to preserve the Hulett unloaders as a gesture of good corporate citizenship. Write: James A. Hagen, Chairman and President, Consolidated Rail Corp., 6 Penn Center Plaza, Philadelphia PA 19103.

C.P.M.



How to handle a Hulett

"If you can imagine riding on a dinosaur's head while he's feeding," William Donohue Ellis wrote in 1966 (*The Cuyahoga*), "you can imagine how it feels to operate a Hulett. In repose, this monster is the ugliest, ungainliest machine ever made. In action, it's sheer poetry."

The Hulett unloader practically defies description, so unusual is it in appearance and motion. It consists of a main framework mounted on trucks that travel parallel to, and along, the dockside. The framework, perpendicular to the dock, is cantilevered at the rear so that it overhangs an ore storage trough. A trolley travels on rails mounted on the main framework. The trolley carries a walking beam from which a stiff, vertical leg is suspended. There is a grab bucket at the lower end of the leg, and directly above the bucket is an operator's cab.

The motions of the walking beam and bucket are controlled by cables at the rear of the trolley and powered by DC motors located in a small room (the "dog house") at the rear of the walking beam. The walking beam may move forward and backward on the main framework, up and down from the vessel's hold, and laterally along the face of the dock to permit retrieval of ore from the various hatches of a bulk freighter. The bucket can be rotated in a complete circle, allowing it to turn in any direction to gather a load of ore. When the operator has

grabbed a load, the leg is raised out of the hold, and the trolley supporting the walking beam is run back until the bucket is in position to deposit the ore into a dual hopper mounted on the main framework of the machine. The ore passes from the hopper into a "scale larry" suspended from the underside of the main framework. Here the ore is weighed, then run back in the larry and deposited into either the ore storage trough or railroad cars positioned on tracks directly beneath the machinery.

With a few exceptions, the C&P Dock operates the same way today as when it opened in 1912. Narrow gauge electric shunt cars equipped with side pusher-arms move empty rail cars into place beneath the Hulett and move loaded cars to the east end of the dock, where they are assembled into trains. Each Hulett machine requires a crew of three: a Hulett operator, a larryman, and an oiler. A foreman stationed on the deck of the freighter coordinates the unloading. The dock initially was equipped with its own powerhouse, but power has been supplied commercially since the 1930s. The ore stocking bridge, which formerly transferred ore within the storage yard, was destroyed by a storm in 1978; front-end loaders perform this task today. [Adapted from "Cleveland to Akron: A Guide to the Sites," prepared for the 15th Annual Conf. of the SIA, June 12-15, 1986.]

30,000 rare bridge photos saved in Rhode Island

The "Clarence L. Hussey Bridge Collection," reportedly the nation's most comprehensive visual documentation of bridge construction and the largest single thematic photo collection in Rhode Island, was transferred in March from the R.I. Dept. of Trans. to the State Archives. The earliest images date to 1912, when a bridge section was established within the State Board of Public Roads, now RIDOT. Hussey (1885-1925), the state's first bridge engineer, is credited with establishing the systematic procedure of photographing all the state's bridges and related construction activity. Included are some 30,000 negatives, along with some prints, of 700 bridges built by the state from 1912 to c1950. Each image is identified by bridge name and number, location, view, and date. Also transferred were all annual reports beginning with 1903.

As part of the transfer, R.I.'s governor declared March 24 as "Clarence L. Hussey Day," and the Secy. of State recounted the significant achievements of Hussey's career. In addition to his involvement in photography, Hussey advocated the use of concrete in bridge construction and developed an open-spandrel design that has become associated with R.I. Examples of Hussey's design are the Elmwood Ave. Bridge on the Warwick and Cranston line and the Washington Bridge in Coventry.

RIDOT officials are working with Patrick Malone [SIA] to develop an exhibit from the collection to be made available to businesses, schools, and libraries. Info.: R.I. State Archives, Office of Secy. of State, 337 Westminster St., Providence RI 02903 (401-277-2353).



Above: The Clarence L. Hussey Memorial Bridge, Wickford, under construction, Nov. 17, 1925.

Below: Worker pours concrete into form for balusters of railing on Elmwood Ave. Bridge, Cranston/Warwick, April 7, 1919.

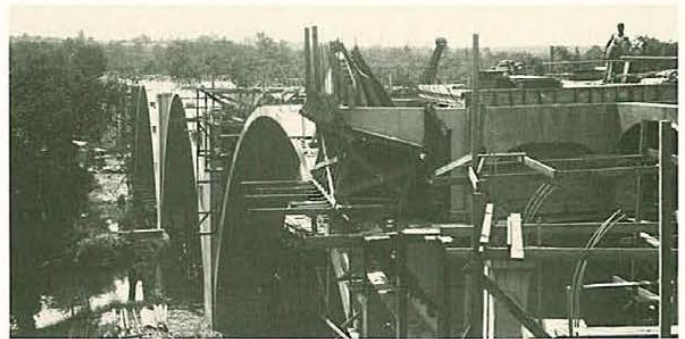
Photos from Clarence L. Hussey Bridge Collection, R.I. State Archives.



Above: Spandrel-wall forms are erected for the Barrington Bridge, Aug. 30, 1913.

Below: Joseph Russo Memorial Bridge (Ashton Viaduct), Cumberland/Lincoln, under construction on June 15, 1943.

Photos from Clarence L. Hussey Bridge Collection, R.I. State Archives.



HAER Bridge Program receives National Historic Preservation Award

The Historic Bridge Program of the Historic American Engineering Record, National Park Service, is among the 10 recipients of 1992 National Historic Preservation Awards. It was the only one recognized specifically as an "innovative program." These awards honor excellence in federally assisted preservation efforts and are administered by the Advisory Council on Historic Preservation, under the auspices of the White House. A companion program, the President's Historic Preservation Awards, honors privately funded preservation projects.

HAER's interest in historic bridges, beginning in the mid-1970s, has been familiar to readers of this newsletter and to SIA Annual Conference attendees, who in growing numbers participate in HAER Chief Eric DeLony's annual bridge symposium. Early on, HAER recognized the prefabricated metal-truss bridge as one of the nation's greatest engineering and manufacturing achievements and launched a special initiative to capture it visually before federal and state bridge-replacement programs destroyed all evidence of its existence. Thanks to HAER, bridges became the first category of historic resources to be comprehensively inventoried and listed in the National Register and an increased awareness of their importance ultimately slowed replacement efforts. Many of these structures remain in danger; however, this project ensures that their visual images and significance as singular examples of American ingenuity will not be forgotten. Info.: HAER Historic Bridge Program, NPS, Box 37127, Wash. DC 20013-0127.

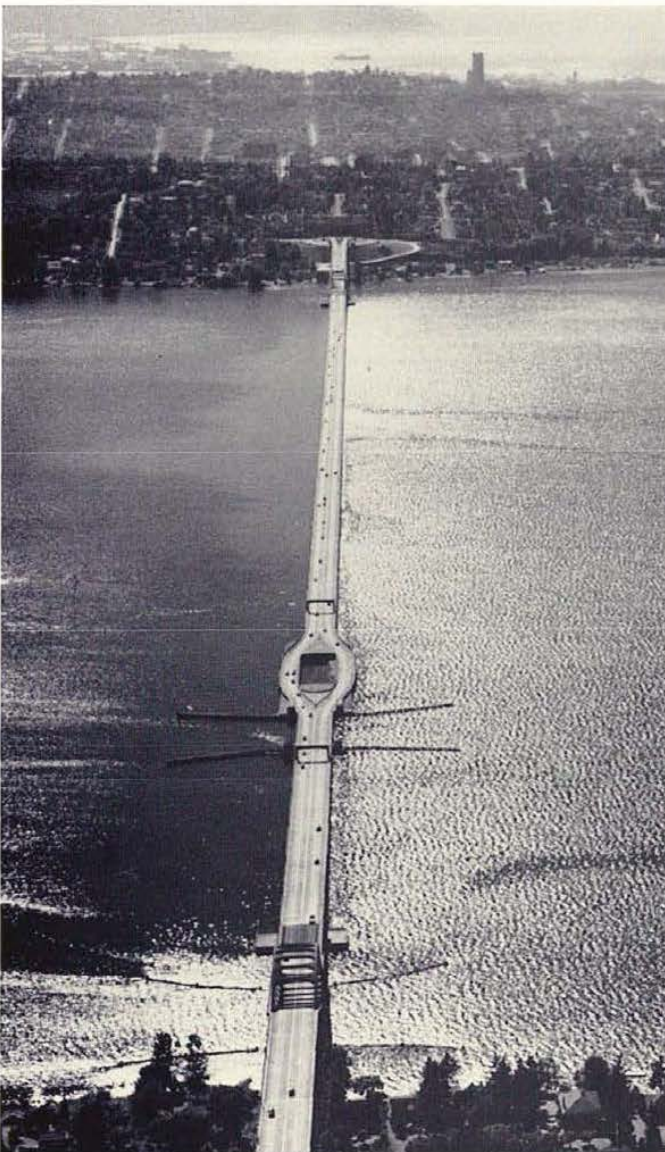
A President's Award was given to the **Statue of Liberty** restoration project, which included important documentation work by HAER. Other National Award winners of IA interest include **New Haven Union Station** in New Haven, Conn. (1917-19), and **Washington Union Station** in Wash., D.C., both recognized for rehabilitation work. For information on the awards program contact the Advisory Council on Hist. Pres., The Old Post Office Building, 1100 Pennsylvania Ave. N.W., Suite 809, Wash. DC 20004 (202-786-0503).

Floating-bridge demolition becomes nightmare in Seattle

Demolition is a routine part of every historic bridge rehabilitation project. Whether components must be removed due to deterioration or because modifications are required to meet new highway standards, preservationists generally are more concerned about the appearance of the final structure than the techniques used for the demolition itself. For the Lake Washington Bridge (AKA Lacey V. Murrow Memorial Bridge) adjacent to Seattle, Wash., the failure to properly monitor this element during a fall 1990 rehabilitation project proved disastrous. The central portion of the bridge was not made of traditional spans on piers, but was a continuous floating structure (and, at the time of its opening in 1940, was the world's largest floating object).

Floating bridges (i.e., pontoons) have been used widely by military forces ever since Alexander the Great campaigned against the Persians, but, under certain circumstances, were also appropriate for more permanent applications. As early as 1819, a permanent wooden pontoon bridge, later rebuilt in iron, was completed over the Rhine at Koblenz, Germany. In

LAKE WASHINGTON FLOATING BRIDGE. By drawing a section of the bridge into the open center of the split, "bellied" segment, a 200-ft. passageway could be provided for ocean-going vessels. *Museum of History & Industry, Seattle.*



1912 a steel pontoon bridge was erected in Constantinople, and two midwestern American railroads tried out floating bridges on their lines during the first two decades of the 20th C.

In the case of the Seattle bridge, established traffic patterns within the city and over the Cascade Mountains to the east suggested that the most desirable location was very near the center of Lake Washington. The great depth of the lake, which is accessible to ocean-going vessels through a ship canal, and the soft bottom meant that traditional piers would have been extremely expensive. These and other practical concerns worked in favor of a floating bridge. The lake has no current or tide, and the level is controlled by the ship canal lock to no greater variation than three feet. The idea for building the bridge in reinforced concrete apparently was original with Homer Hadley, an official of the Portland Cement Assn. and lake shore resident who had built concrete ships during World War I. First proposed in 1921, it engendered a fierce debate about feasibility and safety that was not resolved until the late 1930s, when the Seattle City Council finally voted to proceed with construction.

Charles E. Andrew was chief engineer for the project and responsible for the final design. A special study of the wave action on the lake was conducted to determine the necessary strength for the anchor cables. Reinforced concrete was chosen for the pontoons over wood or steel because its greater dead weight was an advantage against wave action. The pontoons, flat-bottomed cellular boats or barges, whose interiors were 15-ft. thin-walled cubes of reinforced concrete, measured 60 ft. wide and between 177 and 378 ft. in length. Every other cell was watertight, so that any leakage could be confined to a single compartment. When connected between the permanent approach spans at both ends, the 25 pontoons, each securely anchored to the lake bottom, stretched over 6,500 ft. and made the longest continuous bridge in the world. Dedicated and put in service on July 2, 1940, the world's first reinforced-concrete floating bridge proved to have great stability and continuity over its entire length. It was, as Donald C. Jackson [SIA] indicated in *Great American Bridges and Dams* (1988), "unlike any other reinforced-concrete structure in the U.S."

Predictably, with the increased lakeside development fostered by the new bridge, the four lanes of the original roadway eventually proved inadequate. A new floating bridge, which opened in the late 1980s, was built adjacent to the 1940 structure. Along with the new bridge came plans to renovate the earlier bridge that included removing the sidewalks and widening the roadways to meet "current interstate standards." Since the bridge was listed on the National Register, the SHPO's office was, through the Section 106 process, able to get a commitment from state engineers to incorporate some of the architectural features of the original railing in the new replacement.

The contractor on the renovation project decided on hydro demolition, using water from the lake to remove the sidewalks. When environmental concerns were raised about dumping the demolition water back into the lake, the contractor decided to store it temporarily within the pontoons themselves. State engineers were assigned responsibility for monitoring the water levels in the pontoons and periodically were to order a shut-down while the water was pumped out for proper disposal. Unfortunately, this contract condition change was not completely thought out, for nothing like Plimsoll marks (lines painted on merchant ships to indicate their legal loading) were added to the sides of the pontoons. A further complication came from the fact that new inspection

hatches, which were to have watertight covers, had to be cut in the sides of the pontoons to replace the original hatches in the sidewalks.

Demolition proceeded and, on Nov. 25, 1990, everyone's worst nightmare came true. Several of the pontoons began taking on water, gradually sinking and eventually pulling under 8 of the 25 pontoons. Compounding the catastrophe, the sinking sections of the old bridge severed the anchor cables of the adjacent new floating bridge, threatening it with destruction. It remained open only because a fleet of tugs was enlisted to maintain its lateral stability for several weeks until



The Floating Bridge included conventional, fixed approach-spans at each end. This view from the Seattle end was taken several months after the official opening in July 1940. Museum of History & Industry, Seattle.

the cables could be reattached. Fearing that the remainder of the old bridge would break loose and ram the new structure, the remaining pontoons were towed to shore.

Writing in the Dec. 24, 1990, *Pacific Builder & Engineer*, John Watkins argued that this failure, coupled with the infamous 1940 Tacoma Narrows suspension bridge collapse and the 1979 sinking of the Hood Canal floating bridge, meant that Western Washington "has cornered the top three spots for bridge structural failures in the nation."

This winter, a contract was let to replace the old floating bridge with an entirely new structure. Consideration was given to reusing the remaining original pontoons, but it was feared that the accident might have resulted in their being overstressed. Instead, the remaining 14 were sold to various parties along the West Coast, where they have been installed as floating docks and breakwaters.

The new bridge will be similar in design to the old except that the pontoons will be post-tensioned longitudinally, have fewer cells, and be composed of a higher-strength concrete. To prevent a future repetition of the accident, a different connection system also will be used.

An investigation of the accident was initiated immediately in 1990 and has been completed, but the results have not been released due to pending litigation. The state, of course, holds the contractor responsible, who, in turn, blames state officials for flawed plans. One acerbic critic of both parties suggested the fault lay with "dry-land engineers," who failed to see the pontoons for what they are: boats that will sink when filled with water. In any event, it serves as a lesson in the need for reviewing the demolition procedures used in historic bridge rehabilitation.

D.A.S.

BRIDGE NEWS

COVERED-BRIDGE NEWS. The 1877 **Smith Covered Bridge** over Big Flatrock Creek at Rushville, Ind., is on the list of "Ten Most Endangered Landmarks in Indiana," designated by the Historic Landmarks Foundation of Indiana. It is one of the state's thirteen surviving covered bridges built by A.M. Kennedy's firm and has suffered severely from fire, vandalism, and neglect. Info.: HLFI, 340 W. Michigan St., Indianapolis IN 46202.

The Wakefield [Quebec] Covered Bridge Project has been formed to reconstruct its 1915 Town lattice bridge (known as the **Gendron Bridge** after Ferdinand-Ambroise Gendron, an early 20th-cen. member of the provincial legislature). It burned in 1984. The 288-ft. bridge was the third longest of 18 Town trusses in Quebec. The Wakefield group intends to raise funds and solicit donations of materials for the \$600,000 reconstruction project, which will replicate the 1915 structure in size and design. Info.: WCBP, Box 444, Wakefield, Quebec J0X 3G0.

La Société québécoise des ponts couverts (The Quebec Society of Covered Bridges), a nonprofit organization founded in 1981, encourages the recognition of covered bridges as an important aspect of Quebec heritage. The society seeks to build a network of people interested in the conservation of covered bridges, and also to promote an awareness of this heritage, encourage research, and circulate information through their quarterly bulletin, *Pont' Age*. Contact the society at C.P. 102, St-Eustache, Quebec J7R 4K5.

A new **Town lattice truss** was constructed recently in Wisconsin's Chequamegon Natl. Forest, the state's first covered Town bridge in 100 years. At first skeptical about the U.S. Forest Service proposal, civil engineer Art Johnston inspected similar bridges in the East and found several 1850s examples not only serving light traffic nicely, but also generating considerable interest. Johnston subsequently designed an updated truss for crossing the South Fork of the Flambeau River, using glue-laminated members and drilled split rings between timbers. Built for \$187,000, the new covered bridge is proving to be quite a tourist attraction.

J.G.

BRIDGE AVAILABILITY. The Suffolk County Dept. of Public Works and the N.Y. State Dept. of Trans., in conjunction with the Federal Highway Admin. (FHWA) and the State Historic Preservation Officer (SHPO), pursuant to regulations implementing Sec. 106 of the Natl. Hist. Pres. Act, offer the NRHP-eligible **Beach Land Bridge** free to any interested parties for relocation and reuse. Interested parties submitting plans for the relocation of the bridge must demonstrate their ability to fund the project. All relocation plans submitted to FHWA will be reviewed in consultation with the SHPO prior to approval. The bridge is situated on Beach Lane in the Village of Westhampton Beach, Suffolk County, where it spans Quantuck Creek. It is a double-leaf bascule bridge with two simply supported spans on each end. The overall length of the bridge is 162 ft., including a 20-ft. approach span on each end; the width is 38 ft. It was designed by Strauss Engineering and built in 1935 for Suffolk County. Art Deco bas-relief panels are mounted on one of the four towers. Info.: FHWA, Div. Admin. Harold I. Brown, Albany, N.Y.

Alaska Highway marks 50th anniversary



ALASKA HIGHWAY BRIDGES.

Above: The curved, timber, Kiskatinaw Bridge was built in 1942 between Dawson Creek and Fort St. John, B.C. Although bypassed, it remains open today. *B.C. Archives & Records Service.*

An international celebration of the 50th anniversary of the construction of the Alaska Highway is under way, heading for the Nov. 20 rededication ceremonies marking the official opening anniversary. An ongoing series of celebratory events has been scheduled throughout 1992, many of IA interest.

The bombing of Pearl Harbor in 1941 made Alaska Territory a strategic outpost, pushing the governments of the U.S. and Canada into action to build a road that had been contemplated and studied since at least 1930. A chain of airfields was developed from the American Prairie interior to Ladd Field near Fairbanks, which became known as the Northwest Staging Route. Connecting many of these new airfields, the road would be built through more than 1,500 miles of wilderness north of Dawson Creek, B.C., through the Yukon to Delta Junction, Alaska. The Richardson Highway already connected Delta Junction with Fairbanks.

Under a U.S.-Canada agreement, the Alaska Canada Military Highway was to be built using American troops and equipment. The Americans would pay for the construction and turn over the Canadian portion to the Canadian government after the war. Canada would furnish the right-of-way, waiving import duties, sales taxes, income taxes, and immigration regulations, and would provide building materials along the route.

Construction began in early March 1942 by seven regiments of U.S. Army Corps of Engineers. The road was rammed through in eight months and twelve days, one of the 20th C's great engineering achievements. Between March and June, 10,000 military and civilian workers moved into the construction area. Soon there would be 30,000, working around the clock, seven days a week. While the no-expenses-spared effort poured huge amounts of money and resources into Canada, it also brought serious disease epidemics to the native Indian population.

In 1943 the U.S. Public Roads Administration (PRA) moved in to improve, widen, and straighten the 1942 military road. They discovered that, built in haste, the first effort twisted and turned, had steep grades and other hazards, and was often out of alignment with the surveyed corridor. In July 1943 torrential rains destroyed 124 temporary bridges.

In April 1946 the U.S. officially turned over operation and maintenance of the road to the Canadian Dept. of National Defence. In 1964 the work was transferred to the Federal Dept. of Public Works. Parts of the original 1942 road remain in use on the highway today.



Above: Shore lines anchor this pontoon bridge across the Donjeck River, Yukon, in 1942. *Yukon Archives.*

Below: Replica of original Alaska Hwy. bridge can be seen in the Yukon today. *Sandy Baker photo.*



Among the multitude of scheduled events are the following of IA interest:

—Dedication on Sept. 13 of the 50th Anniv. **Contact Point Monument** at Contact Creek, Yukon, marking the meeting of the construction crews from the north and the south.

—**CANOL [Canadian Oil] Project exhibit** at the Yukon Transportation Museum, Whitehorse. "CANOL" was a controversial and expensive (and failed) oil pipeline and road built in conjunction with the Alaska Highway.

—**Photography exhibit, "The Highway Then & Now,"** opening at the Yukon Transportation Museum and travelling throughout the territory.

—**"Ribbon of Change" exhibit** at the MacBride Museum, Whitehorse, presenting Whitehorse from 1896 to the 1960s, focusing on the highway construction as the turning point of the city's history.

—A **steam engine** used in the construction of the Watson Lake Airport has been restored and is on display there.

For Alaska Highway Rendezvous '92 info., contact any of the following: Alaska Highway 50th Anniv., 14-9223-100th St., Fort St. John, B.C. V1J 3X3 (604-787-1992); Yukon Anniversaries Commission, Bag 1992, Whitehorse, Yukon Y1A 5L9 (403-668-1992); Yukon Historical & Museums Assn., Box 4357, Whitehorse, Yukon Y1A 3T5 (403-667-4704); Great Alaska Highways Society, POB 74250, Fairbanks AK 99705 (907-452-8000).

The unusual saga of Stupp Bros. and the Kansas Avenue Bridge in St. Louis

Few bridge companies have survived long enough to rebuild their own 19th-cen. bridges in the late 20th-cen. Certainly more rare, if not disturbingly unique, is the builder that also participates in its own bridge's accidental demolition. One such company is Stupp Bros. Bridge & Iron, a firm that recently celebrated its 135th anniversary [*SIAN* Fall '91:6]. According to President Robert P. Stupp [*SIA*], his firm built this I-beam-arch bridge in 1887 to carry Kansas Ave. in St. Louis over a Missouri Pacific RR grade. On Feb. 12, 1969, a MoPac car with a too-high load of steel hit the bridge, destroying it. Ironically, the car had come from Stupp Bros. own St. Louis plant and was heading to the company's bridge project at the Kanawha River in W. Va.

It was only fitting that Stupp Bros. should be the ones to rebuild the bridge. Over several years, a local "rebuild the bridge" movement worked its way through neighborhood organizations and committees to the city's Landmarks & Urban Design Commission. The commission first had to ascertain if the 240 ft. of original ornamental railing could be salvaged to restore the bridge to its original design, retaining its aesthetic, historical, and sentimental features. The commission members considered the wooden-floored bridge a "little jewel," and wanted it rebuilt as closely as possible to the 1887 appearance.

A railing design was submitted to the Missouri Pacific consisting of tubular-steel horizontal members, steel posts, and an ornamental rosette centered in each eight-ft. section. Instead



Award-winning reconstruction of Stupp Bros.'s Kansas Avenue Bridge in St. Louis.
Photo courtesy R.P. Stupp.

of a wooden deck, an eight-in. reinforced concrete deck would be used over a 90-ft., three-hinged, steel-arch span. The design was approved in Spring 1974, and Stupp Bros. began fabricating the new span. The erector and general contractor was the St. Louis Bridge Co.

The rebuilt Kansas Ave. bridge won the Award of Merit 1975/Short Span in the American Institute of Steel Construction's 47th Annual Prize Bridge Competition. It remains in use today.
R.P.S.

Sharp-eyed readers take a closer look at the English Center Bridge

Following the Fall 1991 publication of a *SIAN* article on the centenary of the unusual steel eyebar-chain bridge in English Center, Pa., Edward M. Kutsch [*SIA*] wrote the following:

"After the *SIA* Fall Tour in Williamsport in Oct. 1990, Frank Weer [*SIA*] and I took a trip to English Center to see this bridge. While we were there we saw a truck loaded with

EYEBAR SUSPENSION BRIDGE, English Center, Pa.

Below: The eyebars appear to be anchored to a house foundation and a tree.

Right: Frank Weer watches as heavy log truck fords Little Pine Creek instead of crossing posted (6 ton) bridge. *E.M. Kutsch photos (1990).*



logs coming down the road toward the bridge. Knowing that the loaded truck weighed more than the six-ton bridge limit, we wondered what he would do. Just before reaching the bridge, he turned down a dirt trail and forded Little Pine Creek, crawled up the opposite bank, and went on his way.

"We also noted how the building on the English Center side was built just inches from the anchorage."



More on New Orleans streetcars

Rogers says Canal Street carbarn is eligible to National Register

Edwin Weber, prime mover behind the effort to save New Orleans' 1861 **Canal Street carbarn** and its rare iron roof trusses [cover story, *SIAN* Fall '91], reports that Jerry L. Rogers, Keeper of the National Register, has sustained his (Weber's) appeal of the Louisiana State Historic Preservation Officer's decision not to nominate the structure to the NR. In his June 3rd letter, Rogers noted that the carbarn (AKA Canal Station) is "a rare surviving example of early long-span trussed roof engineering technology." This aligns it with the nation's dozen surviving long-span, trussed-roof train sheds that long ago were declared National Landmarks [see *SIAN* Sept./Nov. '76:2 & Sept. '78:2]. Among the persuasive statements was a letter early this year from Emory Kemp [SIA], who supported the NR eligibility of the roof system.

Guilbeau on the St. Charles line rehab

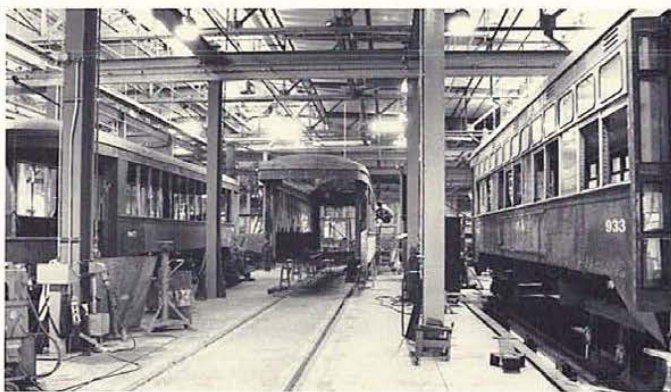
James L. Guilbeau, about to publish the third edition of his *The St. Charles Street Car, or the History of the New Orleans & Carrollton Rail Road* (La. Landmarks Society), writes to correct the story on the Canal Street carbarn [*SIAN* Fall 91:1]. That account stated that "New Orleans was the second U.S. city, after New York in 1832, to have street railway service." Mr. Guilbeau, relying on research by Arthur Krim, suggests an alternate sequence: Baltimore first, in 1831; Philadelphia second, with two lines in 1831-32; and New York third, in 1832.

Mr. Guilbeau also sends an update on the important rebuilding and restoration work on the historic **St. Charles line** [NR, ASME], whose historic 1892-93 buildings are about to celebrate their 100th anniversary. Thanks to the 1973 entry of the line in the National Register, a huge \$47-million renovation project begun in 1988, which used \$35.5 million in federal funds, restored 35 original 1923-24 streetcars, making this the oldest original fleet of electrical vehicles in regular revenue service in the nation. The restored Perley A. Thomas-designed 900 class cars retain General Electric K36JR manual, eight-point motor controllers (rebuilt) and MR12 motor circuit-breakers. The controllers are the same as those used on the line's 400-class cars built in 1915. Original plans called for stylistically similar new cars, reusing some original equipment, but with new controllers. The agreement to restore the equipment resulted from major efforts by area preservationists and political representatives. A number of other Thomas cars survive, but are in museums.

In addition to rebuilding the controllers, there was a renovation of the electrical systems. The old 600V DC series lighting wiring was removed. A new 30 kW converter was installed to supply 12-V AC for interior lighting and a battery charger. A 12-V DC battery supplies power for the automatic farebox and headlights. All the 600-V wiring to the high-voltage motor controllers and motors was replaced. The original electric motors were rewound, and roller bearings replaced the sleeve bearings on the armature shafts. The pinion-gear, sleeve-bearing lubrication was improved with wicking installed in the motor case.

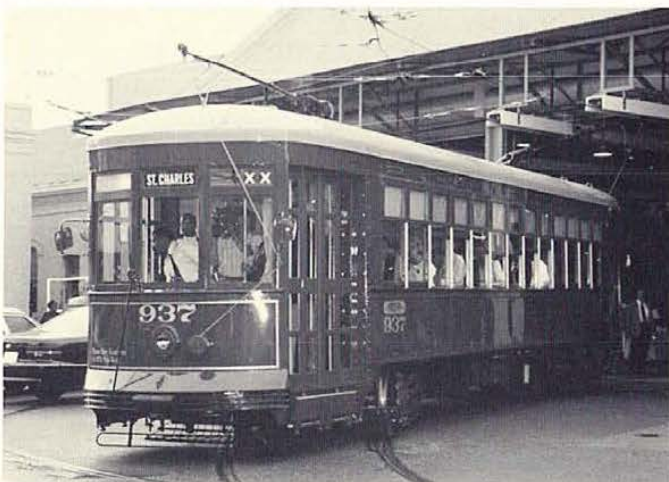
The electrical work in all operating cars was completed a year ago, as was the first rebuilt car body, No. 937. All

bodies are to be finished by 1995. The end vestibules are being strengthened for greater crash resistance. The vestibule floors receive new H-beams and a 6-in.-sq. box at the end. Those floors and associated portions of roof, which had been cantilevered separately from the body, are now tied together with new solid aluminum posts to form a more rigid structure. Any corrosion on the frame and steel sides was repaired and new oak planking was installed in the wooden floors. The rounded standee and door windows (installed in 1962-64) were replaced by rectangular windows similar to the original 1923 design. The old two-cylinder air compressor has a new head with readily available reed valves. The Brill #76E-2 trucks are completely rebuilt with new springs to equalize the weight on the new wheelsets and with Nylaton (self-lubricating plastic) on high-wear surfaces. The 21-ton restored



ST. CHARLES LINE, NEW ORLEANS.

Above: Rebuilding the original 1923-24 streetcars. Paul Brou photo. Below: The first rebuilt car, No. 937, rolls out of the rehabbed 1892-93 barn. Photos courtesy J.L. Guilbeau.



cars are 47 ft., 8 ins. end-to-end and can carry 52 passengers. The top speed is 27 mph, with a scheduled speed of 10 mph.

Other work on the line included complete replacement of the 13 miles (single-track equivalent) of track and renovation of the car barn and shops. Extensive fire-alarm and sprinkler system were installed for protection of the 1892-93 buildings. A new electrical distribution system was installed. The 266 x 128 ft.-barn was refurbished with eight (of an original ten) through tracks replaced and a new, larger, three-track inspection pit was constructed. The heavy-repair building, 82 x 203 ft., had a second overhead gantry crane installed, six of its seven stub tracks replaced, and one of the two maintenance pits was relocated. Two of the tracks were equipped with new, dual, 11-ton car jacks (mechanical screw lifts) and two small turntables were installed for easier exchange of streetcar trucks. This work was finished at the end of 1990.

IA sites on Indiana's 'Ten Most Endangered' list



INDIANA OXYGEN CO., endangered in Indianapolis.

Above: A truckload of steel oxygen cylinders at the loading dock. Bass Photo Co. photo.

Right: "IA in Art," at the Indiana Oxygen Co. building. Note the bas-relief sculpted cylinders at the top of each pilaster. Actual steel cylinders were artistically cut to create the ornamental lights flanking the main entrance. Marsh Davis photo (1991).

All photos courtesy Historic Landmarks Foundation of Indiana.



Four sites of IA interest appear on the 1992 list of "Ten Most Endangered Landmarks in Indiana," prepared by the Historic Landmarks Foundation of Ind. The **Indiana Oxygen Co. building** (1930) in Indianapolis is significant for its eclectic combination of Art Deco and Gothic Revival designs in an industrial structure. In 1914 the firm was the first in the state to commercially produce hydrogen and oxygen. A decade later IOC pioneered a process to extract liquid gases from the components of water and has since been the state's leader in the production of argon, nitrogen, helium, and other gases for welding, cutting, and medical applications. IOC's product is advertised by unusual carved limestone gas cylinders, mounted at the top of each of the brick pilasters along the building's two-story facades. Flanking the Gothic-arched front door are light fixtures made by cutting geometric patterns in original steel gas cylinders. The building's interior and exterior are virtually unchanged. IOC was purchased in 1991 by Eli Lilly & Co., which moved the business elsewhere, vacating the building. (Eli Lilly, 1885-1977, is noted as the founder of the Historic Landmarks Foundation.)

The 1849 **Cannelton Cotton Mill**, built on the Ohio River in Perry County, has been vacant for 30 years. The giant building has been owned since 1975 by Historic Cannelton, which continues its search for a developer. Last year the mill became one of eighteen National Historic Landmarks in Indiana.

For decades, the **Elevated Walk** in Michigan City helped keepers reach the Light Tower at the end of the Pierhead on Lake Michigan, when stormy waters or winter ice made travel along the pier treacherous. Today, operations at the Coast Guard-owned Light Tower have been computerized, and the Elevated Walk is no longer necessary. The Coast Guard has agreed to donate the Walk to the city, whose officials are considering the offer. Both the Walk and the Tower date from 1904.

Also on the endangered list is the **Smith Covered Bridge** (1877) near Rushville in Rush County (see note under

"Bridge News" in this issue).

For additional info. on these sites, contact Tina Connor, Historic Landmarks Foundation of Indiana, 340 W. Michigan St., Indianapolis IN 46202 (317-639-4534).



MORE ENDANGERED INDIANA LANDMARKS.

Above: Cannelton Cotton Mill, built in 1849 on the Ohio River in Cannelton, Perry County, Ind. Mason King photo.

Below: The U.S. Coast Guard has offered to donate the 1904 East Pierhead Elevated Walk to Michigan City. Local preservationists hope to raise \$50,000 for restoration. Creager Smith photo.



NOTES & QUERIES

1882 FOUNDRY CATALOG REPRINTED. Writes Margot Gayle, president of Friends of Cast Iron Architecture and a long-time friend of the SIA:

"There are very few publications dealing entirely with cast-iron architecture, and very few of these publications are in print. It is really good news that the 1882 foundry catalog of Walter Macfarlane's Saracen Foundry in Glasgow, Scotland, has just been republished. Macfarlane was born in 1817 and established his Saracen Foundry in 1851.

"The 1882 publication was the sixth edition and was issued in two hardcover volumes with nearly 700 pages of precision artwork. It presented hundreds of examples of iron architecture available on order and sold widely around the world, particularly in the British Empire. Macfarlane & Co. designed and manufactured everything from decorative lighting and store-front systems to public drinking fountains and furniture. Among 10,000 engraved illustrations in the reprint are: railings, columns, windows, signs, roof cresting, grilles, gates, bridges, gazebos, lanterns, and finials. Only a few copies of this important catalog survive and these are to be found in the rare-book rooms of reference libraries, such as Avery Architectural Library of Columbia Univ., the library of the Metropolitan Museum of Art, and the library at Winterthur in Delaware.

"The Baird family in Salt Lake City, Steven and his sons Robert and Richard, now operating under the firm name of Historical Arts & Castings, has faithfully reproduced the catalog in two volumes, with a historical introduction by me. It is available for \$73.45 ppd. from Historic Arts & Castings, 4130 W. 1939 So., Unit F, Salt Lake City UT 84104."

FOUNDRY PATTERNS AVAILABLE. "I need to find a permanent home for a large accumulation of wooden patterns used in my family's foundry in upstate New York from the late 19th cen. to the early 20th. Items made included sleigh runners, agricultural machinery, and water wheels. The patterns are hand made and generally in good condition, although some need repair. I also have some history to go with them." L.A. Arnold, 6574 Brock St., Dublin OH 43017-1609.

1992 HERITAGE DIRECTORY, Canada's only national directory of heritage organizations, has been revised and updated to include over 400 Canadian groups. Also included is information on chief officers, contacts, mandates, major programs, grants, and publications of federal, provincial/territorial and municipal government departments, nonprofits, and foreign organizations. Avail. for \$35, plus G.S.T. (#R-119 237 477) & P.S.T. (in Ont.), from Heritage Canada, Box 1358, Station B, Ottawa, Ont. K1P 5R4 (1-800-668-1867).

CURATOR OPENING, National Building Museum, to develop and implement selected exhibitions, supervise exhibition teams, participate in long-range planning, and share administrative responsibilities for the exhibitions dept. Must have Ph.D. or equiv.; minimum five years exhibition/curatorial experience in an object-oriented, educational museum; strong exhibit development, organizational, communication, & leadership skills. Expertise in construction technology, industrial, engineering, with emphasis on 20th cen., preferred. \$30-40,000. Letter, resume, salary history, & three refs. to Administrator, NBM, 401 F St. NW, Wash. DC 20001.

1992 EAIA GRANTS. The Early American Industries Assn, through its Grants-in-Aid Program, has announced the recipients of annual awards of \$1,000 for 1992.

—John M. Edwards, Grand Rapids, Mich., recipient of the 1992 Winthrop L. Carter Memorial Grant Fund, will discover, identify, and document hand-carving tools made at home forges and small manufactories in Grand Rapids that were used in small furniture workshops and larger factories.

—Margaret D. Banks, Vermillion, S.D., will research the industrial technology and manufacturing and craft processes and techniques of the engravers and instrument makers of the G.C. Conn Musical Instrument Mfg. Co. of Elkhart, Ind., 1874-1900.

—Regina Blaszczyk, Newark, Del., will study the machinists and mold-makers of the 19th-C glass industry.

—Jessie A. Ravage, Cooperstown, N.Y., plans to identify and classify a wide variety of butter churns made by patent holders from 1820 to 1880.

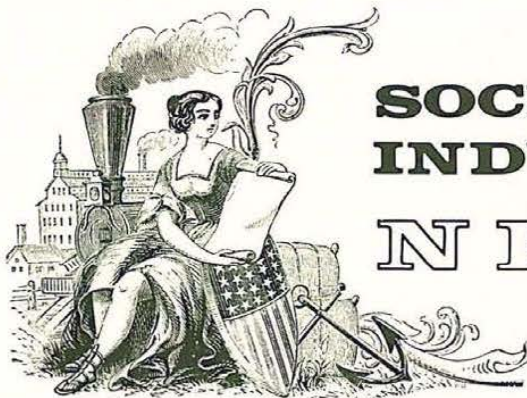
For info. about the Grants-in-Aid Program, contact Justine J. Mataleno, Coordinator, 1324 Shallcross Ave., Wilmington DE 19806 (302-652-2249); for info. about the EAIA contact John S. Watson, POB 2128, Empire State Plaza Station, Albany NY 12220.

HILL PAPERS RESEARCH GRANTS. The James Jerome Hill Reference Library in St. Paul, Minn., is continuing its program of awarding a limited number of grants of up to \$2,000 to support research in the papers of James J. Hill (1838-1916) and Louis W. Hill (1872-1948). These two collections, totalling about 1,000 lin. ft., document a century of the wide-ranging business, social, and personal interests of Great Northern Ry. founder James J. Hill and his son Louis. (The five linear miles of Great Northern & Northern Pacific Ry. archives are a few blocks away at the Minn. Historical Society's new History Center.) The application deadline is Oct. 1, 1992, and the awards will be announced in early 1993. For application info. contact W. Thomas White, Curator, JJHRL, 80 W. 4th St., St. Paul MN 55102 (or feel free to call your friendly *SIAN* editor Bob Frame, Associate Curator, at 612-227-9531, fax-222-4139).

PA. "SCHOLARS IN RESIDENCE" PROGRAM. The Pennsylvania Historical & Museum Commission is initiating a scholars-in-residence program, beginning in May 1993, to promote the interpretation of state history, to encourage research in the PHMC collections, and to develop relationships between scholars and staff. Awards will be made for periods of four to twelve consecutive weeks between May 1993 and April 1994 at \$1,200/mon. Scholars will be in residence at one of the PHMC facilities corresponding to their research needs.

Applicants are encouraged to develop broad topics, and research need not be limited to PHMC collections. Particular consideration will be given to proposals that address topics relevant to the broad interpretive themes of PHMC programs. Topics related to current programmatic initiatives in African-American history, industrial history, and social history are especially encouraged.

The program is open to college and university affiliated scholars, including graduate students who have completed all degree requirements except the dissertation; independent



SOCIETY FOR INDUSTRIAL ARCHEOLOGY NEWSLETTER

PUBLICATIONS OF INTEREST

A SUPPLEMENT TO VOL. 21, NO. 2

SUMMER 1992

Compiled by

John M. Wickre

61 Clapboard Ridge Road, Danbury, Connecticut 06811 (203-730-9532)

Poff will return to its more general coverage in the next issue. For those of you who sent material (or better yet, full-fledged entries), my thanks; I will get it (them) in.

If anyone out there is interested in seeing IA material in electronic form, please call or write. I am especially interested in sharing information with anyone who has experience in OCR [optical character recognition], CD-ROM production or searching, and full-text searching.

TRANSPORTATION

Mark Aldrich, "Safety First Comes to the Railroads, 1910-1939." In *RRH* 166, Spring 1992, p6-33.

Edward Forbes Bush, **Engine Houses and Turntables in Canada 1850-1950**. Boston Mills Pr. (133 Main St., Erin Ont. NOB 1T0), 1990. 160p, illus. \$35. Based on a Parks Canada report; primarily eastern Canada. Rev.: *RRH* 166, Spring 1992, p151-52.

Colorado Railroad Museum, **Coal, Cinders and Parlor Cars: A Century of Colorado Passenger Trains (Colorado Rail Annual No. 19)**. The Museum (Golden CO), 1991. 236p. \$40. Rev.: *RRH* 166, Spring 1992, p144-46.

William R. Childs, "The Transformation of the Railroad Commission of Texas, 1917-1940: Business-Government Relations & the Importance of Personality, Agency Culture, & Regional Differences." In *BHR* 65, Summer 1991, p285-344.

Harold E. Cox, **Diamond State Trolleys: Electric Railways of Delaware**. Harold E. Cox [address not given], 1991. 88p. \$13 pap. Rev.: *RRH* 166, Spring 1992, p159.

Brian J. Cudahy, **Over and Back: The History of Ferryboats in New York Harbor**. Fordham U. Pr. (NY), 1990. 472p, illus., tables, appendixes, bibliog., index. \$50. Rev.: *T&C* 33, April 1992, p373-75.

Ian Eastbrook, et al. (eds.), **Wellington County History, Vol. 4, 1991, Railway Issue**. Wellington County Historical Research Soc. (Box 5, Fergus Ont. N1M 2W7), 1991. 87p. Pap. Incl. Grand Trunk / Canadian National; Guelph, Ont. Rev.: *RRH* 166, Spring 1992, p152-53.

Frank M. Ellington, **Steam Locomotives of the Santa Fe: A Former Shopman's Scrapbook**. RR Car Pr. (11 N. Oak Park, Colfax IA 50054), 1991. 276p. \$57 pap. A "remarkably complete mechanical cyclopedia," with quotes from newspapers, trade periodicals, and company reports. Rev.: *RRH* 166, Spring 1992, p146-47.

Bill Fisher, **30 Years over Donner: Railroadng "Family-Style" over Southern Pacific's Donner Pass, through the Eyes of a Company Signal Maintainer**. Trans-Anglo Books (Glendale CA), 1991. 200p. \$30/20 pap. Rev.: *RRH* 166, Spring 1992, p141.

Rudy J. Gerber, **Grand Canyon Railroad Illustrated Guidebook**. Primer Publishers, (5378 N. Central, Phoenix AZ 85012), 1990. 80p, illus. \$6 pap. Ariz. Rev.: *RRH* 166, Spring 1992, p144.

Jane Hancock, Sheila Ffolliot, & Thomas O'Sullivan, **Homecoming: The Art Collection of James J. Hill**. Minn. Hist. Soc. Pr. (St. Paul MN), 1991. 116p, illus., incl. some color. \$23 pap. Incl. design and

construction of the Hill mansion. Rev.: *RRH* 166, Spring 1992, p142-44.

Herbert H. Harwood, Jr., "History Where You Don't Expect It: Some Surprising Survivors." Incl. stations, bridges, stone rails, the "Tapeworm" RR (begun 1838). In *RRH* 166, Spring 1992, p103-125.

Anthony Hobson, **Lanterns That Lit Our World**. Golden Hill Pr. (Spencertown NY 12165), 1991. 231p, illus. \$15 pap. Identification, dating, and restoration, care and maintenance of RR, marine, fire, carriage, and other lanterns; with illus. and data for 16 major mfrs. Rev.: *RRH* 166, Spring 1992, p148-49.

Interborough Rapid Transit, **The New York Subway: Its Construction and Equipment [1904]**. Fordham U. Pr. (Bronx NY), 1991. 154p, illus. \$45. Reprint of 1904 vol. celebrating opening of IRT Manhattan-Bronx route. Rev.: *RRH* 166, Spring 1992, p156.

Christine Johnson, **Learning the Hard Way: A Case Study of Selected Railway Accidents in New Zealand since the 1920's**. New Zealand Rwy. & Hist. Soc. (POB 5134, Wellington NZ), 1990. 48p. \$NZ13.50 pap. Rev.: *RRH* 166, Spring 1992, p154.

Ed King, **The A: Norfolk & Western's Mercedes of Steam**. Trans-Anglo Books (Glendale CA), 1989. 176p, illus. \$45. N&W's 2-6-6-4s; Roanoke, Va., shops; restoration of #1218. Rev.: *RRH* 166, Spring 1992, p147-48.

Richard Kunz, **Overhead and Underground: A Guide to Chicago's Rapid Transit**. Andover Jet. Publ. (POB 1160, Andover NJ 07821), 1991. 48p. \$20 pap. Contemp.; but incl. a brief history. Rev.: *RRH* 166, Spring 1992, p155-56.

E. Daniel Larkin, **John B. Jervis: An American Engineering Pioneer**. Iowa St. U. Pr. (Ames), 1990. xix+192p, illus., notes, bibliog., index. \$28. Civil engineer, from Delaware & Hudson Canal and Croton Aqueduct to Midwest RRs. Rev.: *T&C* 33, April 1992, p360-61.

Jeffrey N. Lash, **Destroyer of the Iron Horse: General Joseph E. Johnston and Confederate Rail Transport, 1861-1865**. Kent State U. Pr. (Kent OH), 1991. 228p. Rev. in *RRH* 166, Spring 1992, p137-38, doubts author's thesis.

Steven G. Marks, **Road to Power: The Trans-Siberian Railroad and the Colonization of Asian Russia, 1850-1917**. Cornell U. Pr. (Ithaca NY), 1991. 272p. \$32. Rev.: *RRH* 166, Spring 1992, p153-54.

Albro Martin, **James J. Hill and the Opening of the Northwest**. Minn. Hist. Soc. Pr. (St. Paul MN), 1976, 1991. 676 p, illus. \$23 pap. Great Northern Railroad et al. Rev.: *RRH* 166, Spring 1992, p142 (orig. 1976 ed. rev. *RRH* 137, p98-99).

Michael J. Martin, "The Big Blow." In *Timeline* 9, June-July 1992, p30-43. Great Lakes shipping: Nov. 1913 storm that left at least 235 dead, 12 large vessels lost with all hands, 51 more severely damaged. Photos, map.

William M. McBride, "Strategic Determinism in Technology Selection: The Electric Battleship and U.S. Naval-Industrial Relations." In *T&C* 33, April 1992, p248-77. Steam turbines; mechanical and hydraulic reduction vs. electric drive; GE and Westinghouse; c.1900-1930.

Wheeler McMillen, "The Horse and the Buggy." In *Timeline* 9, June-

July 1992, p44-54. Photos; catalog views of wagons and related products.

Ralph S. Podas, **"A Point in Time on the Milwaukee Road: The Custer Creek Olympian Tragedy, June 19, 1938."** CMSTP&P, Yellowstone River, N.E. of Miles City, MT; 47 killed, 75 injured. In *RRH* 166, Spring 1992, p34-56.

Henry Earle Riggs, **The Ann Arbor Railroad 50 Years Ago.** Riggs Miller (306 Westwood, Ann Arbor MI 48103), 1947, 1991? 52p., reprint. \$6 ppd. Riggs (1865-1949) reconstructed the Toledo, Ann Arbor & North Michigan in 1890-1895. Rev.: *RRH* 166, Spring 1992, p134-35.

Harry L. Rinker, **The Schuylkill Navigation: A Photographic History.** Canal Captain's Pr. (103 Dogwood Lane, Berkeley Heights NJ 07922), 1991. 96p, illus., maps. \$16 pap. Coal canal, Port Carbon to Phila., Pa., 1815-1931. Rev.: *RRH* 166, Spring 1992, p160.

Frances C. Robb, **Industry in the Potomac River Valley, 1760-1860.** Ph.D. dissertation, West Virginia Univ., 1991? Role of the Chesapeake & Ohio canal in the region's industrial development.

Donald B. Robertson, **Encyclopedia of Western Railroad History — The Mountain States: Colo., Ida., Mont., Wyo.** Taylor Publishing Co. (POB Box 597 TX 75221), 1991. 418p. \$43. Rev.: *RRH* 166, Spring 1992, p140-41.

D. J. Rohrer, **There Were Stars in Those Cars.** Mobile Post Office Society (Lexington GA), 1992. 24p. \$5. Rwy. mail service. (Avail. from the author, 2190 N. Pascal St., Roseville MN 55113.)

Jack Santino, **Miles of Smiles, Years of Struggle: Stories of Black Pullman Porters.** U. of Ill. Pr. (Champaign IL), 1989, 1991. 160 pp. \$13 pap. Now avail. in paperback. From oral histories; related 1982 film won Emmy award. Rev.: *RRH* 166, Spring 1992, p136.

Douglas V. Shaw, **"Ralph Budd, the Great Northern Railway, and the Advent of the Motor Bus."** In *RRH* 166, Spring 1992, p57-79.

Ronald E. Shaw, **Canals for a Nation: The Canal Era in the United States, 1790-1860.** U. Pr. of Kentucky (Lexington), 1990. x+284p., illus., notes, bibliog., index. \$28. Rev.: *T&C* 33, April 1992, p372-73.

Ronald E. Shaw, **Erie Water West: A History of the Erie Canal, 1792-1854.** U. Pr. of Kentucky (Lexington), 1990. xii+449p, illus., maps, notes bibliog., index. \$30/15 pap. Rev.: *BHR* 65, Spring 1991, p171-73.

Donald Sims, **Union Pacific's West.** Trans-Anglo Books (Glendale CA), 1991. 192p, illus., some color. \$43. Modern system, coffee table book. Rev.: *RRH* 166, Spring 1992, p139-40.

* Smithsonian Railroad Photographs: Catalogs.

Catalogs avail. from Rail Photographs, Div. of Transportation, National Museum of American History, NMAH-5010/MRC 628, Smithsonian Institution, Washington, D.C. 20560:

Chaney Collection. Approx. 20,000 postcard-size negatives, some originals by Charles B. Chaney, many copied from prints. Majority of views are of locomotives on eastern lines. \$20.00

Pullman Collection. Approx. 13,000 negatives from Pullman, Ill. plant, 1888-1950s (bulk 1888-1932).

1. Alphabetical by Railroad. \$10.00
2. General Cars. 6.00
3. Private Cars. 2.00
4. Rapid Transit and Streetcars. 3.00
5. Freight Cars. 3.00
6. Supplemental List. 3.00

(Suppl. list includes file prints for which there are no negatives. For further information write Office of Printing and Photographic Services, address below.)

Thomas Norrell Collection. Approx. 10,000 negatives, mostly locomotives on Class I and short-line railroads, logging and industrial lines. \$25.00

Haskell & Barker Collection. Approx. 6,000 negatives from 1926-1949, mostly of freight cars, many of routine plant operations. \$10.00

Harry McBride Collection. Approx. 3,000 negatives from 1940s and 1950s, especially strong on yard scenes, stations, and operations. \$5.00

Clayton Hall Collection. Small collection of locomotive views in various settings from about 1900 to the 1930s. \$2.00

Southern Iron & Equipment Co. Collection. 700 negatives of locomotives purchased for rebuilding and resale between 1896 and 1926. \$3.00

National Museum of American History Collection. Mostly views of eastern lines.

1. Locomotive and Railroad Views. \$3.00
2. Car Views. \$3.00

* Smithsonian Railroad Photographs: Catalogs and Laserdisc.

A complete set of the printed catalogs listed above and a laserdisc of all images is available for \$200 from Office of Printing and Photographic Services, Smithsonian Institution, Washington, D.C. 20560.

* Also available with laserdisc

Taunton Locomotive Manufacturing Co. **The Electric Railway Snow Plows Made by the Taunton Locomotive Manufacturing Co.**

Reproduced by Harold E. Cox (80 Virginia Terrace, Forty Fort PA 18704), 1990. 10p, illus. \$4 pap. Catalog reprint. Rev.: *RRH* 166, Spring 1992, p149-50.

James A. Toman, **The Shaker Heights Rapid Transit.** Interurban Pr. (Glendale CA), 1991. 144p. \$37. Cleveland OH, 1913-present. Rev.: *RRH* 166, Spring 1992, p157-59.

Allen W. Trelease, **The North Carolina Railroad, 1849-1871, and the Modernization of North Carolina.** U. of N.C. Pr. (Chapel Hill NC), 1991. 486p. \$38. Rev.: *RRH* 166, Spring 1992, p138-39; *T&C* 33, April 1992, p378.

James E. Vance, Jr., **Capturing the Horizon: The Historical Geography of Transportation since the 16th Century.** Johns Hopkins U. Pr. (Baltimore), 1986, 1990. xv+660p, illus., notes, index. \$27 pap. Now avail. in paperback. Rev.: *T&C* 33, April 1992, p348-49.

Augustus J. Veenendaal, Jr., **"The Oklahoma Central Railway: A 'Dutch' Railroad in the United States."** In *RRH* 166, Spring 1992, p80-102.

J. William Vigrass, **The Lindenwold Hi-Speed Line.** W. Jersey Chapter, Natl. Rwy. Hist. Soc. (POB 647, Palmyra NJ 08065), 1990. 56p. \$10 pap. Ext. of the Phila. PA - Camden Bridge (NJ) High Speed Line, 1969-present. Rev.: *RRH* 166, Spring 1992, p157.

Dennis Zembala, **"Power in Motion" at the Henry Ford Museum.** Exhibit rev. in *T&C* 33, April 1992, p342-46. Subtitled "The Design Career of Bill Mitchell" [GM head of design; responsible for finned Cadillacs, Corvette Stingray, etc.]. Illus. catalog avail. from the museum shop.

GENERAL SUBJECTS

David Buisseret (ed.), **From Sea Charts to Satellite Images: Interpreting North American History through Maps.** U. of Chicago Pr. (Chicago), 1990. xvi+324p, illus., glossary, appendix, index. \$75/25 pap. Incl. canals, RRs, streetcars, autos, and a bicycle map; ironworking, coalfields, mining; insurance and birdseye view maps. Rev.: *T&C* 33, April 1992, p368-69.

Tore Frängsmyr, et al. (eds.), **The Quantifying Spirit in the 18th Century.** U. of Calif. Pr. (Berkeley CA), 1990. viii+411p, illus., notes, bibliog., index. \$35. Misc. 1A within 13 essays, incl. use of balance in metallurgy and assaying; Swedish waterpower technology and charcoal production (both studied by Swedish Ironmasters' Assn.) and naval yard manpower. Rev.: *T&C* 33, April 1992, p354-55.

Martin V. Melosi, **Thomas A. Edison and the Modernization of America.** HarperCollins (NY), 1990. ix+221p, bibliog., index. Pap. Rev. in *T&C* 33, April 1992, p361-62, considers it the best "short life-and-times" biog.

Michael O'Malley, **Keeping Watch: A History of American Time.** Viking Penguin (NY), 1990. xiv+384p, illus., notes, index. \$20. Rev.: *T&C* 33, April 1992, p366-67.

Philip Scranton, **"Diversity in Diversity: Flexible Production and American Industrialization, 1880-1930."** In *BHR* 65, Spring 1991, p27-90. Custom and batch work, esp. in machine tool and jewelry mfg.

Abbreviations used in this PoFI:

BHR	Business History Review
RRH	Railroad History
T&C	Technology & Culture
Timeline	[Ohio Historical Society, Columbus OH]

Readers are urged to send all notices of pertinent publications to John M. Wickre, Compiler, Publications of Interest, SIA Newsletter, P.O. Box 65158, St. Paul MN 55165-0158 or 61 Clapboard Ridge Road, Danbury, Connecticut 06811.

NOTES & QUERIES, cont.

researchers; and public-history professionals. Application deadline is Jan. 24, 1993. Info.: Div. of History, PHMC, Box 1026, Harrisburg PA 17108 (717-787-3034).

CALL FOR PAPERS. Paper proposals are being solicited for "The Preservation of the Industrial Heritage & Modern Environmental, Health, & Safety Regulations," an international working conference sponsored by the Flemish Assn. for IA. It is scheduled for Oct. 15-16, 1993, in Oostende, Belgium. The premise of the conf. is that the methods and techniques of IA can aid in understanding and solving modern environmental issues at historic industrial sites. These issues arise in two areas. In some cases, sites are contaminated by their own past processes and products. At other sites, new health and safety regulations may restrict or even prohibit operating historic machinery.

The conf. is held in connection with "Conservare'93," the European Heritage Forum, Oct. 13-17, also in Oostende. The industrial heritage conf. is expected to cost about 4500 BFR, which includes meals, coffee, papers, local site visits, and entry to Conservare'93. Those presenting a paper will pay only 2750 BFR. Info. on the industrial heritage conf.: Flemish Assn. for IA, P.O. Box 30, B-9000 Gent-12, Flanders, Belgium (phone/fax +32-56-359102). Info. on Conservare'93: Conservare n.v., Troonstraat 66, B-8400 Oostende, Belgium (phone: +32-59-556611; fax: +32-59-501650).

\$600,000 TO FORD MUSEUM. Henry Ford Museum & Greenfield Village has received a \$600,000 challenge grant from the Kresge Foundation in Troy, Mich., to complete the final phase of its \$6-million campaign to build "Made in America," a major new permanent exhibit opening in Dec. "Made in America" will examine contemporary issues of productivity, product quality, and quality of life through the lens of historical choices and their consequences. To augment the museum's renowned collections of industrial and power artifacts, the exhibit includes 14 AV presentations, 10 hands-on visitor activities, 6 operating machines, and 2 historic buildings. Info.: Bill Northwood, HFM&GV, POB 1970, Dearborn MI 48121 (313-271-1620).

MILITARY ENGINEERING. The work of the British **Fortress Study Group** will be interesting to those whose IA curiosity ranges into the military field. Founded in 1975, FSG is devoted to the study and recording of all aspects of fortifications and their armaments, especially works constructed to mount or resist artillery. They publish an annual journal, *Fort*, a trimestral newsletter, *Casemate*, and sponsor conferences and field trips. Past issues of *Casemate* have included discussions and photographs of such items as pillboxes (named for the WWI Moir Pillbox; some now preserved and reused as bat roosts); searchlights (developed in connection with minefields & torpedo boats; first experiments in 1871); 19th-cen. submarine mining observation stations; and coastal forts in Auckland, N.Z. Membership is US\$34. Info.: Dennis W. Quarmby, FSG Secy., Blackwater Forge House, Blackwater, Newport, Isle of Wight, PO30 3BJ, U.K.

"DL&W: COLOSSUS OF COAL & RAIL," an exhibit on the Delaware, Lackawanna & Western RR, opened in March at the Canal Museum in Easton, Pa. An Aug. 15th tour in

connection with the exhibit visits the Pa. Anthracite Museum and Steamtown Natl. Historic Park, Scranton, along with a steam-locomotive train ride over the DL&W cut-off between Scranton and Kingsley, including a pass over the massive, concrete Tunkhannock Viaduct at Nicholson. Info.: HMHP&M, Canal Museum, POB 877, Easton PA 18044 (215-250-6700).

HOT-AIR PUMPING ENGINE QUERY. Background information is sought for a Canadian museum project on the Rider-Ericsson hot-air pumping engine and the R-E firm. Do any company records exist? Contact R. John Corby [SIA], 9 Amberly Pl., Gloucester, Ont. K1J 7J9.

IA IN FILM & VIDEO. A three-part, 90-min. video series, **Ohio's Canal Era**, produced in cooperation with the Canal Society of Ohio, visits restored sections of this 19th-C system. The three videos and a 16-pp. teacher's guide are available for \$70 + \$6.25 s/h. Info.: CINEMARK, Inc., 1761 Karg Dr., Akron OH 44313.

Grandin: The Big Mill & Tall Timber is a 24-min. video about the lumbering operations, sawmills, workers, and company town of Grandin, Carter County, Mo., where the Missouri Lumber & Mining Co. operated one of the nation's largest sawmills from 1889 to 1909. It is available for \$11 from the Mo. Dept. of Conservation, Film Library, POB 180, Jefferson City MO 65102-0180 (314-751-4115).

An original collection of videotapes in the history of science and technology, produced by 18 Smithsonian scholars, is now open for use. The collection was created between 1986 and 1991 under the guidance of the **Smithsonian Videohistory Program**. It includes 22 projects on 200+ hours of tape, covering topics primarily since the beginning of World War II. Topics include: aeronautics & space exploration, computer development, medical technology, robotics, the Manhattan Project, small-arms design and manufacture, slate quarrying, clockmaking, and automotive manufacturing and management techniques. Tapes, transcripts, and finding aids are available for researchers; copies are available for a fee. For info. and a catalog, contact Smithsonian Institution Archives, 2135 Arts & Industries Building, SI, Wash. DC 20560 (202-357-1420).

Maritime IA is featured in three videos. *Shipyard*, a 14-min. video by Rudy Buttignol, features the now-extinct side-launching shipyard at Collingwood, Ontario. Another Buttignol video is *Inward Passage: A Film Journey through the St. Lawrence/Great Lakes System*, which includes footage of the Seaway, an icebreaker, Iroquois Lock, the Welland Canal, the Mackinac Bridge, and Collingwood Shipyard. Both have been seen on CBC TV. Each is available for \$18 ppd. from Rudy, Inc., 40 Glengarry Ave., Toronto M5M 1C9 (416-489-7115, fax 489-7760).

Remembering the Globe is an 83-min. video based on Harold Andressen's World War II-era film footage of the Globe Shipyard in Superior, Wis. It is available for \$17.50 ppd. from the Superior Public Library, 1530 Tower Ave., Superior WI 54880 (715-394-8860).



THE CLIFFS SHAFT MINE PROJECT



CLIFFS SHAFT MINE.

Above: "C" Shaft, with its Koepe Hoist, erected in 1955.

Right: Egyptian Revival "A" Shaft, built in 1910.



The Cliffs Shaft Mine site in Ishpeming, Mich., may be preserved and developed, if a preservation plan and fund raising efforts are successful. The mine has an important place in the history of the Lake Superior region and iron-mining history. It survives as the best preserved example of an underground mine site on the Marquette Iron Range. It was the largest and longest-operating, underground, direct-shipping, hard-ore mine in the U.S., producing nearly 29 million tons of ore from 1848 to 1967. Its hard ore could be shipped directly for use because of its low moisture content. Other qualities were also highly desirable and for many years it was the benchmark for ore prices.

The future Cliffs Shaft Mine began as a number of smaller mines to the east of Ishpeming. During the 1870s diamond drilling indicated that the ore body continued to the west of the city, and in 1880 the current site was developed. Two shafts were sunk and headframes, boiler and engine houses, and a blacksmith shop were built. The Cliffs Shaft Mine was sited entirely due to diamond drill testing, since there was no outcrop of the ore body as was the case in most Marquette Range mines.

The mine's A and B headframes are unusual and probably unique among such structures in the U.S., both as the product of a collaboration of the engineers who usually designed them and for their Egyptian Revival design, the work of architect George W. Maher. They were built in 1919 to replace the earlier wooden frames and remained in use until 1955, when the first Koepe Hoist built in the Western Hemisphere replaced them. They remain important landmarks, not only for Ishpeming, but for the U.S. iron industry.

The mine is just northwest of downtown Ishpeming, and the headframes are visible from most of downtown and U.S. 41. When it became necessary in 1919 to replace the original wooden headframes, the Cleveland-Cliffs Iron Co. was certain the mine would have a long productive life, thanks to its ore reserves, and wanted durable frames. Wood was not fire-proof and, along with steel, would have required the mine to shut down during construction. Steel, moreover, was costly in

the postwar economy and delivery was slow. Concrete, however, would not require any disruption of operations, it could be constructed with unskilled labor, and there was a large bed of suitable gravel at the site.

Because of the mine's proximity to Ishpeming, Cleveland-Cliffs president William Gwinn Mather wanted an architecturally attractive design. The preliminary plans were submitted to the Condron Co., Structural Engineers, of Chicago, with George W. Maher as consulting architect. Maher submitted three plans, adding important window detail and ornamentation. The selected design employed cast concrete, obelisk-shaped headframes in an Egyptian Revival style.

The frames are not identical, being right- and left-hand-oriented in relation to their ore pockets and the trestle for moving ore to the crusher. (The trestle and crusher are gone.) They are 33 ft. square at the base, with solid vertical walls rising 31 ft. before gradually tapering to 21 ft. square at the height of 88 ft., 9 ins. Each is capped with a low pyramidal roof, bringing the total height to 96 ft., 9 ins. There are 14 windows on each side. The two frames were constructed between July and Dec. 1919. The only time lost from mine operations was the four hours when hoisting was suspended to switch over the cables.

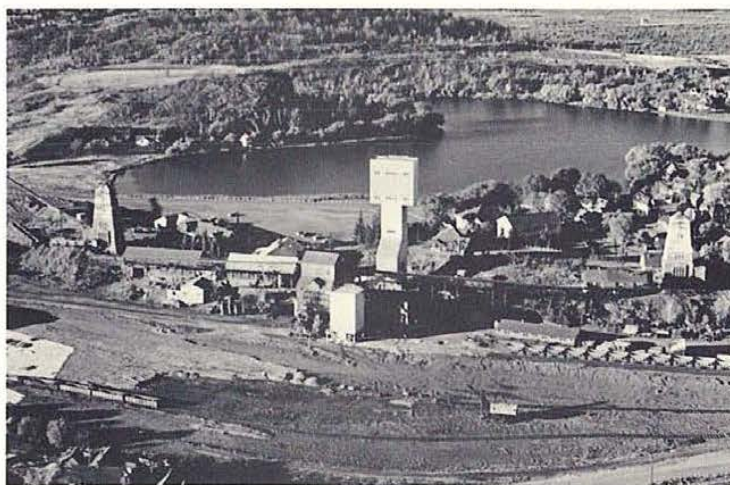
In 1955 A and B shafts were retired from active mining by a Koepe Hoist erected over a new C shaft, and in 1967 the mine hoisted its last ore. The depth of the old mine had made it less competitive with the open-pit mines producing the pelletized ore that had come to dominate the industry. The site has since been used for storage by the Cleveland-Cliffs Co.

Today, the Economic Development Corp. of Marquette County is raising funds to implement a plan to preserve this landmark as a business park and museum complex. The exteriors of all the structures will be restored, following the Secretary of the Interior's standards for rehabilitation, to preserve the site's historic appearance. In addition to the two Maher-designed frames and the Koepe Hoist, the boiler and engine houses and blacksmith's shop (all 1880), miners' dry house (1901-02), and several other buildings survive. The site is listed in the Michigan State Register of Historic Sites and in the National Register. It also was included in the HAER survey of Michigan's Upper Peninsula. For additional info., contact the Cliffs Shaft Project, Marquette County EDC, 198 Airport Rd.—Main Terminal, Negaunee MI 49866 (906-475-4121).

W.H.M.

Bird's-eye view of the Cliffs Shaft Mine site in Ishpeming, Mich., about 1960. At center is C Shaft, flanked by the pyramidal A and B shafts.

All photos courtesy W.H. Mulligan, Marquette County EDC.



Farewell to Angus Shops

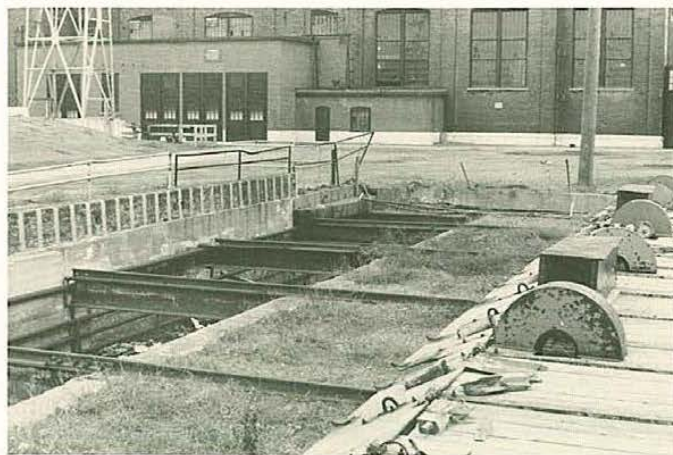
Almost 90 years of Canadian railway history ended in January when CP Rail, the rail division of Canadian Pacific Ltd., closed the Angus Shops in Montreal—probably for good. In recent years, the principal work there had been the rebuilding of the company's older motive power, but with much of this now complete, and with the center of Canadian rail activity moving farther west, Angus and its 850 employees became redundant. Major locomotive rebuilding, repair, and maintenance will henceforth be done in Winnipeg and Calgary.

The Angus Shops were named after Richard Bathgate Angus, president of the Bank of Montreal and one of the leading fundraisers for the building of the railway. They were erected between 1901 and 1903 on a new 200-acre site in the city's east end to replace the original locomotive and car shops located at Delorimier Ave. and Hochelaga respectively. In an era when labor and materials were relatively cheap, the buildings were substantial and, according to a contemporary account in the *American Engineer & RR Jnl.* (vols. 78-79



Above: An electrically powered transfer table travelled between Angus Shops' two major buildings.

Below: The edge of the table is equipped with angled blades to push snow into the steam-heated pit at left, where it would be melted.



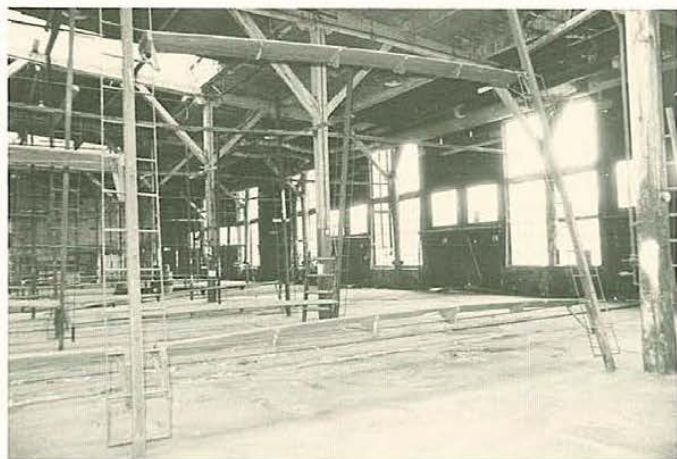
The car shops comprised two long opposing structures separated by an electrically powered transfer table. This had an unusual feature: full-width snow-plow blades, necessitated by severe Montreal winters. Snow was pushed into a steam-heated pit at one end of the tracks, where it melted and drained into the city sewer system (a questionable practice under today's environmental standards).

According to a recent account in *Trains*, Angus "was a city within a city," with its own police, fire, and hospital departments, lunchrooms, glee clubs, bands, and picnics. In 1930 the shops could repair 720 steam locomotives a year while building 48 new ones, along with 6,000 new freight cars.

With the decline of passenger rail service in the late 1960s, the car shops first were idled and then demolished in 1974. A shopping and office complex was planned but never built, and most of the area now is occupied by public housing. In 1981, the centenary of the CPR, Angus received a major facelift and clean-up as it prepared to host a number of gatherings in celebration of the event. Chief among these was a "Family Day," a giant party for the employees that featured the appearance of operating steam locomotive No. 1201, outshopped in 1944 and the last steam locomotive built there.

What will happen to Angus is unclear. Certainly the site is a valuable piece of near-to-downtown real estate, but it is difficult to see any prospect of adaptive re-use, with the possible exception of the administration building. Of more immediate interest is the fate of the many steam-era machines still in situ and operative. It is to be hoped that at least some of these may find a good home.

R.J.C.



ANGUS SHOPS.

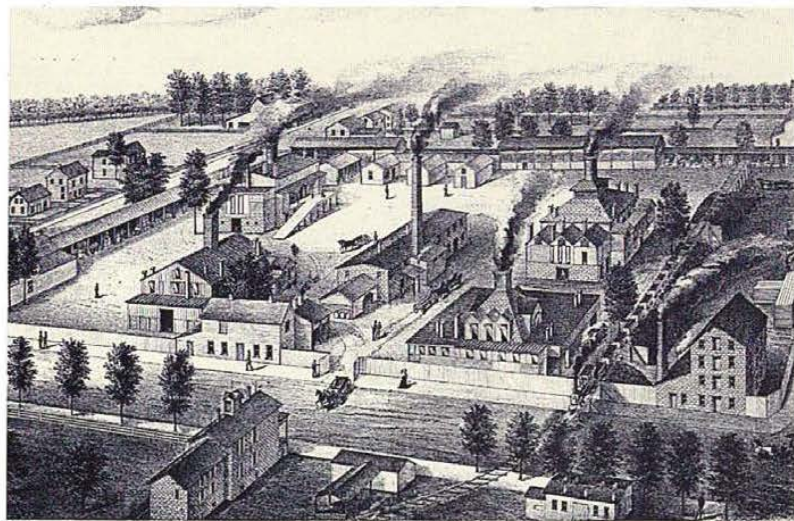
Above: In this 1974 interior view, note the ladders and staging for working on cars.

Left: Roof detail.

All photos courtesy R.J. Corby.



have detailed descriptions), they were the largest rail facilities ever assembled in one place at one time. A 1,116-ft. erection shop was complemented by a foundry, machine shop, and all the other services needed for the construction and repair of steam locomotives. In addition there were large car shops with their own specialized departments for woodworking, upholstery, and other work, although with the switch to steel car bodies in the early 20th C the CPR tended to order these from outside contractors, confining their in-house activities to finishing interiors and painting.



Ditch dig at Glassboro reveals last Whitney handwork

In 1980, sediment and debris were removed from a drainage ditch less than a half mile from the former site of the Whitney Glass Works in Glassboro, N.J. Recutting of the ditch sidewalls coincidentally exposed a stratum of cullet. The artifacts recovered from this deposit in 1981 and 1982 are among the last of the glassblowers' handiwork.

The matrix of delicate flakes of glass contained a variety of small, flawed bottles. The bottles recovered and now preserved were originally produced for the makers of nostrums, patent medicines, extracts, pills, sauces, and other products. Few are more than a few inches tall. All were blown of clear or amber glass. (No beverage bottles or fruit jars were found.) According to a local authority who examined much of the collection, the bottles are blown-molded pieces from c1900.

Glassblowing required skill. The trials and errors involved in developing that skill are the cullet. Some of the bottles were discarded upon removal from the mold, when they were discovered to have been underinflated or overinflated. Most of the recovered bottles have the characteristic flared lips that remained after the separation from the blowpipe. Several pieces collapsed or wilted due to overexposure to the "glory hole" in which they were reheated for the lips to be finished.

The most interesting pieces, which are unique to glass-house waste, are the "mold warmers." Blowing glass in a cold iron mold could cause the bottle to adhere to the mold or to shatter, due to temperature differential. This problem was solved by placing a gather of molten glass in the mold and leaving it there until the mold had sufficiently heated. This solid plug of glass was then removed and discarded. The ultimate mold-warmer has wings of glass, formed by the oozing of plastic glass between the halves of a mold that hadn't been closed completely.

Several embossed mold warmers were recovered at the Whitney site. They identify "The Economical Drug Co. Chicago," "Pettingills Kidney-Wort Tablets," and "George G. Steketees Haarlem Oil." According to a Whitney catalog, the "P.D. & Co." and "E.L. & Co." embossed on the bottoms of several amber mold-warmers represent Parke, Davis & Co. and Eli Lilly & Co. The dark glass was intended to prevent chemical reaction and product degradation due to exposure to light.

The bottoms of the most historic bottles from the ditch are embossed with "McIlhenny Tabasco Sauce." They are very similar to the modern two-ounce bottles of this fiery product,



WHITNEY GLASS WORKS, Glassboro, N.J.

Left: The Works at full throttle in the 19th cen.

Above: Two excavated mold warmers: the bottom of a McIlhenny Tabasco Sauce warmer and an Economical Drug Co. warmer.

Litho & photos courtesy M. Bernstein.

which has been made by the McIlhenny firm of New Iberia, La., since 1868. The Chicago and Louisiana bottles indicate the market reach of Whitney at the turn of the century, shortly before mechanization displaced the glass blowers.

Soon after 1906, an Owens automatic bottle-blowing machine was clandestinely delivered to the Whitney works. When the glassblowers learned of its arrival they walked out on strike. In June 1910, Whitney was the scene of the first attempt to simultaneously blow different sizes of bottles on a single machine. Molds for five square bottles and one oval bottle (representing three weights, three heights, and three capacities) were placed in a six-arm Owens machine. The experiment was a success and the fate of the blowers was sealed. In 1916, construction began on a building to house six Owens machines.

The Whitney works was purchased in 1918 by the Owens Bottle Co. of Toledo, Ohio. A new plant was built elsewhere in the town. The old works was demolished and used as fill around Glassboro and Elk Township. Residences, the Glassboro fire station, and small commercial establishments in downtown Glassboro now occupy the Whitney site. The cullet deposits occasionally encountered in excavations around Glassboro probably represent the use of industrial waste as fill.

M.B.



CONTRIBUTORS TO THIS ISSUE

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With thanks.

SITES & STRUCTURES

PILLSBURY ENDS MILLING. It's hard to believe, but Pillsbury, one of the greatest American flour millers, has sold its last four mills to Decatur, Ill.-based ADM (Archer Daniels Midland). Actually, Pillsbury hasn't been Pillsbury for the past few years, having been bought by Grand Metropolitan PLC of London. Included in the March 1992 deal is the extraordinary Pillsbury A Mill [1881; NHL] in Minneapolis, once the world's largest flour mill, viewed during the 1983 SIA Annual Conf. The Minneapolis Pillsbury complex at St. Anthony Falls on the Mississippi is the last operating flour mill at this turn-of-the-century international milling center. Other mills sold to ADM are at Enid, Okla., Buffalo, N.Y., and St. Louis. As the president of the Minneapolis Grain Exchange said, "This is kind of sad. Pillsbury will continue to have flour, but it won't be the miller."

LETTER FROM OTTAWA: ABERDEEN PAVILION & DALY BUILDING. When we last visited the Aberdeen Pavilion [*SIA* Spring '90:8], the 1898 steel-framed, metal-clad, 150 x 310-ft. "Cattle Castle," the future looked bright. It is believed to be the last remaining example of the once-ubiquitous 19th-cen. agricultural exhibit-hall structure and in 1984 was designated a national historic site by the Canadian government. R. John Corby [*SIA*] writes that his optimism at the time was "a mite premature":

"Last fall the city council voted to demolish it, but a public outcry forced reconsideration. Then we had civic elections, and the new council took a more charitable view. By the beginning of this year everything looked to be on track, but just as contracts were about to be approved, the provincial government, whose participation to the tune of \$850K seemed assured, backed out, arguing it was too much to spend when people were eating in soup kitchens, etc. The renovations were predicated on the fact that there would be no new taxes, but at the same time the pro-Cattle Castle faction are unwilling to concede just yet. This story is not over.

"Things didn't go well for the **Daly Building**, Ottawa's only example of the Chicago school of architecture and designed by the same Moses Eddy who did the Cattle Castle. The Natl. Capital Commn. (NCC), one of 11 government agencies that have a finger in the planning pie here, had let the contract for the building's rehab to a Montreal company which, after starting on the work, got cold feet and backed out, going bankrupt soon after. The structure stood half-demolished for several months before someone nearly got killed when a piece fell off. At that point it was decided to take it all down, a job that was done this past winter. Frankly, in my eyes and that of many others, it was no great loss. Not being an architect, I have to say that it was an ugly bloody thing, and the hole it left has opened up vistas of the downtown that have surprised even those who fought the good fight on its behalf. Ottawa, though, is still Ottawa, and now there's controversy brewing about the future of this valuable piece of real estate. The NCC want to put up another building, but the citizens want the space to remain open and be turned into a park, so the NCC has retired temporarily from the fray to consider the matter. I confidently predict that nothing will be done until after our next federal election, which has to be held before October of next year. In the meantime, the site is occupied by a few benches and potted trees, ideal for assignments or trading a little hash."



Among the smallest of the Marion Power Shovel Co.'s big buckets, this 20-cu. yd. dragline "dipper" is in a park at the plant site. Standing on its teeth, Bill Ellenberger [*SIA*] reveals the massive scale of even this small example.

W.J. Ellenberger photos.



BIG-SHOVEL PARK. When the Marion [Ohio] Power Shovel Co. was taken over in recent years by Dresser Industries, the new owners memorialized the founders in a small park across the street from the plant. Henry Barnhart, George King, and Edward Huber established the Marion Steam Shovel Co. in 1884. In the park rests a 20-cubic-yard dragline bucket and memorial plaque (*above*). Over the years, the bucket capacity of Marion's shovels and draglines grew from 20 cu.yd. to 100 cu.yd., then 250 cu.yd., and finally a 500-cu.yd. behemoth was built that required two operators along with four others to tend the electric motors. Now the Marion plant is used only for manufacturing replacement parts for these monsters, since the market apparently is saturated and there is no more demand for the excavators. Most of Dresser Industries' business is related to the petroleum industry, making Marion a sort of IA artifact in itself.

W.J.E.

WORLD TURNING CONF. AT HAGLEY IN 1993. The World Turning Center of Phila., Pa., and the Hagley Museum & Library of Wilmington, Del., are co-sponsoring an international World Turning Conf in April, 1993 at the Hagley's facilities. This conference was conceived to expand on national efforts to celebrate 1993 as the "Year of American Craft" and to promote discussion among visual artists and the public. The conf. goal is to enhance scholarship, understanding, and continuing dialogue about historical and contemporary lathe-artists, use of the lathe, and lathe-turned objects.

This event will showcase the Hagley's notable collection of historic industrial machinery, including lathes. Located along the Brandywine Creek on more than 230 acres, this site was the original du Pont black-powder works. The restored machine shop is belt-driven and features five historic lathes.

The agenda of the five-day conference will explore the social, technical, and aesthetic context of lathe work, drawing from specialists in furniture history, the history of technology, and contemporary crafts. The program will include tours of local museums recognized for their historical/contemporary collections of work, tools, and machinery. A "Call for Pro-

SITES, cont.

posals" is expected to encourage a variety of demonstrations, panel discussions, and speakers, including international artists, turners, woodworkers, curators, furniture historians, and historians of technology. Running concurrently with the conf. will be a Hagley exhibit of historical and contemporary lathes and lathe-turned objects from the permanent collection of the Turning Center and the Hagley Museum, as well as from conf. participants. Info.: Wood Turning Center, POB 25706, Phila. PA 19144 (215-844-2188, fax-844-6116).

MODIFYING HISTORY: IS NEWER BETTER? When should historic machinery be modified for modern operations? It might depend on the reasons, no longer apparent, behind an original design decision. Through their milling-machine experiments at the Smithsonian, Robert Gordon and Carolyn Cooper explored one aspect of this question [see *SIA* Spring 92:6-7]. Additional insight comes from the work of the Mich. State Trust for Rwy. Preservation, which has been restoring, maintaining, and operating Pere Marquette Locomotive 1225. The following discussion on machinery modification is excerpted from the April 1992 issue of the Trust's newsletter, *Project 1225* (avail. from MSTRP, POB 665, Owosso MI 48867).

"As a rule, we are very suspicious of suggestions that we modify or modernize the locomotive. We get a lot of those suggestions; with some people it's almost a sickness. It is always a temptation to assume that technology has progressed so much since 1941 that a modern solution is always superior to the old technology. It's also tempting to look for a simple way out of a complex problem, when all you have is a few people, simple tools, and no money. Nonetheless, we distrust any advice that begins, "Those guys at Lima (or Baldwin, or Pullman-Standard, or General Electric) didn't know what they were doing...." We find there was *always* a reason why the railroad did it the way they did. It takes research to discover it, but when we do, only rarely do we find that the historic reasoning no longer holds up.

"Besides damaging the historical value of the engine, modifications have to be as carefully engineered as the rest of the locomotive if they're to be safe and effective. Some of us have taught ourselves a lot about steam engineering, but not enough to second-guess the 1225's designers without good reason. Accordingly, the 1225's new thermic syphons will be as close a duplicate of the originals as we can manage. [This issue of the newsletter includes a detailed discussion of syphons and locomotive boilers.]

"Some modifications make sense. We've heard of at least one large engine running with a set of circulators in its firebox that didn't have them until the 1970s. There are some new materials in the 1225. For example, it would be very difficult to cast and machine a duplicate of the original metallic piston-rod packing, so it's been replaced by semi-metallic material. Not as long-lived, but at a couple bucks each we can afford to replace it after every few trips.

"When machinist Norbert Weber made new wristpin bearings, he found that the 1225 had operated with loose bearings at some time in the past, and that the hole in front of one main rod had been battered by the loose parts and was no longer flat and square. Failure to provide a flat seat for the new bushings would mean that they wouldn't last. The solution: a thin layer of industrial-grade epoxy glue, which withstands the full pressure of the 1225's piston thrusts just fine."

SIA AFFAIRS

ROYALTIES RECEIVED, APPRECIATED. The Society is pleased to announce receipt of the 14th royalty check for \$71.53 from sales of *Historical Archaeology: A Guide to Substantive & Theoretical Contributions*, edited by Robert L. Schuyler [SIA] (\$27.50 ppd., Baywood Publishing Co., Inc., Amityville NY 11701).

NEWS OF MEMBERS

John Mayer is the new director of the Manchester [N.H.] Historic Assn. He has been a curator with the Atwater Kent Museum, Phila., where he organized a major exhibit on the history of radio. Mayer was a contributor to *Workshop of the World*, produced by the Oliver Evans Chap. for the 1990 SIA Annual Conf.

Chuck Parrott was among a group receiving a Federal Design Achievement Award for their work on the "Windows Through Time" exhibit, which traces the history of window design and manufacture from the 17th through 20th cens. The exhibit opened in Dec. 1987 at the Window Conf. for Historic Buildings in Boston and subsequently has been seen in New York, Phila., and Wash., where it was at the Natl. Building Museum. It is scheduled to open at the N.Y. State Museum in Albany in Nov. 1992.

LOCAL CHAPTERS

ELECTRONIC NEWSLETTER NETWORK. Peter Stott [SIA] announces in the recent *New England Chapters Newsletter* a pilot project making preservation information available in an electronic form for anyone with a personal computer and modem. Included are the joint New England chapters newsletter, plus other newsletters, historic property lists, legislation, and other historic preservation material here and abroad. The network is "EcoNet," a non-profit group of electronic "conferences" on a wide variety of community planning topics.

Because the network has potentially a worldwide distribution, this conference is not limited to material from the U.S. Already posted is material from UNESCO, the U.K., and Australia. For example, among the UNESCO items are the World Heritage List and the text of the 1972 World Heritage Convention. Although much of the U.S. material may be familiar to U.S. users, it is anticipated that the increasing variety of international material will attract a growing number of readers.

Even more important than the document collection is the potential for the "internationalization" of the field of historic preservation and related fields like IA. Electronic networks, whether nonprofit like EcoNet, or commercial like CompuServe or GTE Telenet, offer the opportunity to send electronic messages instantly, and (in EcoNet's case) for substantially less than the cost of either postage or a phone call. Messages are not limited to EcoNet, and can be sent with equal facility to most other networks in the U.S. and abroad. The cost (\$10/month + online charge) is minimal when viewed against the potential of the system.

For a brochure describing the project, send SASE to Peter Stott, Box 240, Fletcher School of Law & Diplomacy, Medford MA 02155. For membership in EcoNet and other particulars relating to the network, write to the Institute for Global Communications, 18 de Boom St., San Francisco CA 94107.

Florida Fall Tour promises pleasures of subtropical IA



Above: The sugar mill of the Sugar Cane Growers Cooperative of Florida began operations in 1962 at Belle Glade.

Below: The Merrill-Stevens Boatyard & Drydock opened on the Miami River in 1922.

All photos by J.P. Johnson.



Discover the "Venice of America" in Fort Lauderdale, Florida on the Society's 1992 Fall Tour! Spend a sun-filled weekend, Nov. 5-8, in a city laced with miles of scenic canals, romantic lagoons, and fabulous beaches. Enjoy the subtropical climate and balmy breezes as you watch gulfstream sailboats on the Atlantic and cruising yachts on the Intracoastal Waterway. Superlative accommodations at the world-famous Bahia Mar Resort and Yachting Center are within walking distance of the heart of Fort Lauderdale.

Party with us on Thursday night at the Caribbean Party. Join the boat tour of **Port Everglades**, a busy deep water seaport that is the focus of international trade, transportation, and tourism.

On Friday morning we will visit the world's largest blimp, Goodyear's new *Spirit of Akron*, and then travel inland to the reclaimed agricultural fields of western Palm Beach County for a tour of **Florida's largest sugar mill**, the Sugar Cane Growers Cooperative of Florida at Belle Glade.

We'll watch Florida's only **manually operated swing bridge** at Torry Island and then travel north to the **St. Lucie Canal** for a spectacular view of immense Lake Okeechobee.

Friday evening is your opportunity to explore the variety of restaurants and nightlife on the New River or the Intracoastal Waterway via the water taxi.

Saturday morning we'll board the *Island Queen* at Bayside in



Above: The Hillsboro Inlet Light Station dates from 1907.

Below: The Torry Island Bridge (1916), the only manually operated Warren pony-truss swing bridge still in use in Florida, was relocated to the Lake Okeechobee Rim Canal at Belle Glade in 1935.



Miami for a tour of maritime related industries along the Miami River and the picturesque **Port of Miami**, the world's largest cruise-ship port.

Friday and Saturday afternoon tours will include either the **H.P. Bulmer Pectin Plant**, a lime processing factory, or **Caulkins Indiantown Citrus Co.**, one of the state's largest orange and grapefruit concentrate factories. We will tour the extensive limestone quarries and processing plants at **Pennsuco** of either the **Rinker Materials Corp.** or the **Tarmac Florida Corp.**

Saturday evening we'll discover South Florida's largest contemporary country club, **Desperado's**, for a western-style buffet, line-dancing, bull-riding, pool-shooting, beer-drinking, good-old-time in Fort Lauderdale.

Optional activities on Sunday include scuba diving on coral reefs; charter-boat, deep-sea fishing; or airboat rides in the **Everglades**. Three of the state's finest museums are all within a short driving distance: the Bonnet House in Fort Lauderdale, Viscaya in Miami, and the Flagler Museum in Palm Beach. Excellent examples of Mediterranean Revival and Art Deco architecture can be seen in Palm Beach and Miami Beach.

As the sun sinks slowly in the West, you'll depart, happy, tanned, and IA-satisfied. For info., contact John P. Johnson, Historic Palm Beach County Preservation Board, POB 1494, Boca Raton, FL 33429 (407-395-6771).

CALENDAR

Aug. 23-29: Intl. Conf. on the History of Civil & Commercial Aviation, Swiss Transport Museum, Lucerne, Switzerland. Includes tours to Swissair HQ, Zurich; Swiss Air Force Museum, Dubendorf; Pilatus Aircraft Factory; Federal Aircraft Factory & Wind Tunnel, Emmen. Info.: W. David Lewis, Dept. of Hist., 7030 Haley Center, Auburn U., Auburn AL 36849 (205-844-4360, Fax 844-2378).

Aug. 26: "Upgrade or Remove," a day-long seminar on historic bridge rehabilitation, held in connection with historic bridge conf. below. Info.: Eric DeLony (202-343-9603) or Abba Lichtenstein (201-796-6550).

Aug. 27-29: 4th Intl. Historic Bridges Conf., Columbus, Ohio. Info.: David Simmons [SIA], Ohio Hist. Soc., 1982 Velma Ave., Columbus OH 43211-2497 (614-297-2360).

Sept. 13-18: Annual meeting, Intl. Assn. of Transport Museums (IATM), & pre-ICOM'92 conf. of the Intl. Comm. of Museums of Sci. & Tech. (CIMUSET), at the Natl. Museum of Sci. & Tech., 2380 Lancaster Rd., POB 9724, Ottawa Terminal, Ottawa, Ont. K1G 5A3.

Sept. 16-19: "Mission, Money, & Moxie: Survival of the Fittest," Annual Meeting, American Assoc. for State & Local History, Miami, Fla. Info.: Phillip C. Kwiatkowski, Western Heritage Museum, 801 S. 10th St., Omaha NE 68108-3299.

Sept. 16-18: 8th Intl. Conf. on the Conservation of the Industrial Heritage (TICCIH), Madrid. Info.: Tech. Secy., Natl. Rlys. Museum, PASEO de las Delicias, 61, 28045 Madrid, Spain (or contact the U.S. rep., Dennis Zembala [SIA], Balt. Museum of Industry, 1415 Key Hwy., Baltimore MD 21230).

Sept. 20-27: Annual conf., Assn. for Preservation Technology, Phila. Info.: APT Intl., POB 8178, Fredericksburg VA 22404 (703-373-1621).

Sept. 23-26: 50th anniversary meeting, Lexington Group in Transportation History, Milwaukee, Wis. Incl. tours of Kalmbach Publishing (RR & model RR) & Wis. Central RR shops. Info.: Don Hofsommer, Dept. of History, St. Cloud St. Univ., St. Cloud MN 56301.

Oct. 3: Annual Drew Symposium on IA, Drew Univ., Madison, N.J. Sponsored by Roebing Chap. SIA. Info. from symposium coordinator, Tom Flagg, SUNY/Optometry-14th Floor, 100 E. 24th St., NY NY 10010 (212-420-5155, fax 420-5094).

Oct. 7-11: 46th Natl. Preservation Conf., Natl. Trust for Hist. Pres., Miami. Info.: NTHP, 1785 Massachusetts Ave. NW, Washington DC 20036 (1-800-YES-NTHP, fax 202-673-4038).

Oct. 15: Deadline for paper proposals for 1993 Vernacular Architecture Forum Annual Meeting, Natchez, Miss., May 12-15. Program info.: Mary Corbin Sies, Advanced Studies office, Winterthur Museum, Winterthur DE 19734 (302-656-2513; meeting info.: Belinda Stewart, POB 873, Eupora MS 39744 (601-258-6405).

Oct. 15-17: Annual Meeting, Pioneer America Society, Warren, Ohio. Proposal abstracts by Sept. 10 to: David Stephens, Geography Dept., Univ. of Akron, Akron OH 44325-5005 (216-747-3317).

Oct. 29-Nov. 2: 32nd Annual Convention, Assn. of Rwy. Museums, Wash., D.C. area. Features Natl. Capital Trolley Museum, B&O RR Museum, & John Hankey [SIA] as keynote speaker. Info.: NCTM, POB 4007, Silver Spring MD 20914 (1-800-466-6352).

Nov. 5-8: SIA Fall Tour, Southern Florida (based in Ft. Lauderdale). Info.: John P. Johnson, Historic Palm Beach County Preservation Board, POB 1494, Boca Raton FL 33429 (407-395-6771).*

**Find details on this event elsewhere in this issue.*

The *SIA Newsletter* is published quarterly by the Society for Industrial Archeology. It is sent to SIA members, who also receive the Society's journal, *IA*, published annually. SIA promotes the identification, interpretation, preservation, and re-use of historic industrial and engineering sites, structures, and equipment. Annual membership: individual \$25; couple, \$30; institutions, \$30; contributing, \$50; sustaining, \$100; corporate, \$250; student, \$20. Send check payable to SIA to Treasurer, Room 5014-MRC629, National Museum of American History, Smithsonian Institution, Washington, D.C. 20560; all business correspondence should be sent to that office.

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