Some Industrial Archeology of the Monumental City & Environs

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THE PHYSICAL PRESENCE OF BALTIMORE'S ENGINEERING and INDUSTRIAL HISTORY

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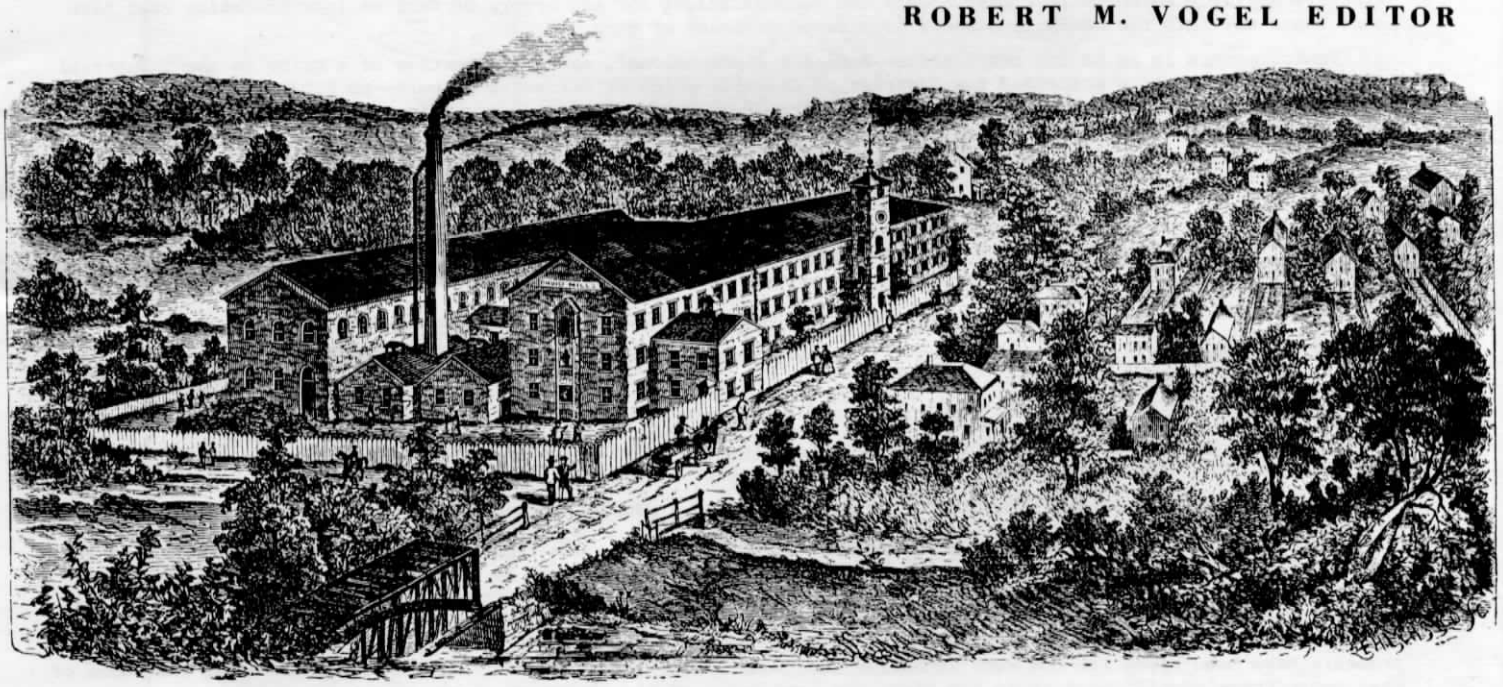
A GUIDE FOR S·I·A TOURISTS

ROBERT M. VOGEL EDITOR



SOCIETY FOR INDUSTRIAL ARCHEOLOGY

APRIL 1975

INTRODUCTION

This guide to 61 sites and structures of industrial archeological interest in Greater Baltimore has been assembled primarily to provide background for the members and guests of the Society for Industrial Archeology on the various tours that are to be part of the society's 4th Annual Conference being held in Baltimore 25 - 28 April 1975. Thus the sites are arranged in the Guide in the order in which it is planned they will be seen on the tours.

As a tour guide, the selection of sites to be included was a function not only of such intellectual considerations as significance, interest, and the other criteria of merit that usually determine what constitutes "Industrial Archeology," but also of such purely practical factors as how much could be seen by, or was accessible to, a large group within the given time. The range of both scale and relative importance of the sites covered is enormous, running from the massive complexes of the B&O's Mt Clare Shops and the Wiessner Brewery, down to the exotic cast-iron Labrador retrievers Sailor & Canton; and from the wholly ordinary Pratt truss bridge at Guilford to the majestic, unique Thomas Viaduct, a National Historic Landmark. Several sites that at best would generally be regarded as only marginally industrial-archeological, are included simply because they will be passed on the bus tour, are visually prominent and interesting, and will be sure to be wondered about: the Druid Hill Park Conservatory, for instance.

The one thing common to all the sites is that there is something tangible there; none of the "on-this-site-once-stood" pseudo sites so dear to the hearts of some historians. Even the "Deep Cut" near Ellicott City, the sort of anti-structure that the English tend to refer to as "significant voids," is a quite legitimate and interesting example of industrial archeology. At the same time, it is recognized that the physical remains of our engineering and industrial history can be extremely fragile in the face of progress, and unless a structure, such as the Shot Tower, occupies a position of considerable prestige, these remains face constant threats of one sort or another. It is, unhappily, certain that a year from now some of the structures seen on these tours will in fact have become intangible. But also seen will be a number of examples of imaginative re-use, and thus extended life: the Mt Royal Station and the B&O RR Museum to name two; and the same year probably will see others come into existence.

This guide is in every way a cooperative effort, representing the work of many people. The principal guiding spirit, the man who really first took it in hand, nursed it along, and did much of the research, is Prof Charles T. G. Looney, Smithsonian Research Associate and loyal supporter of the SIA from nearly its inception. His talents and efforts pervade the work. One of the general essays and many of the individual site accounts have been provided by scholars of the state's industrial history, identified in each case by their initials:

EMB - Elsa M. Bruton, Research Assistant, Smithsonian Institution.

HHH - Herbert H. Harwood, Jr, Asst to the Vice President for Merchandise Traffic, B&O and C&O Railroads; railroad historian.

WHH - Wilbur H. Hunter, Jr, Director, the Peale Museum; historian of the city of Baltimore and its architecture.

PDS - Philip D. Spiess, II, Research Coordinator, Dept of Education, National Trust for Historic Preservation.

The account of Ellicott City Station is based on material kindly furnished by Andrew M. Cascio, its restoration architect, while George F. Nixon, Founding Father of the Baltimore Streetcar Museum, provided the basis for the note on that remarkable institution. Furthermore, the Guide is heavily indebted to Maryland molinologist John W. Mc Grain of Towson, editor and former president of the Baltimore County Historical Society, who, in the course of his extensive research on the state's mills and other industrial structures has unearthed quantities of important material that he has freely shared. So too has the Maryland Historical Trust, under whose sponsorship all National Register applications are prepared. The Baltimore forms, written for the most part by MHT Historians Nancy Miller and Catharine F. Black, have been drawn upon for many of the entries for sites that are on the Register. Despite this extensive multiple authorship, I must accept the responsibility for any errors of fact or interpretation that have found their way into the Guide, and would be pleased to learn of them.

Because this is an ad hoc publication--actually a provisional, extracted portion of a guide to the industrial archeology of the entire state and the District of Columbia which is currently in work--no bibliography has been included. There are, however, several works that are of such broad value in examining the industrial/technological history of Baltimore, that I felt they should be mentioned:

John Dorsey & James D. Dilts, *A Guide to the Architecture of Baltimore.* Cambridge, Maryland: Tidewater Publishers (in cooperation with the Peale Museum), 1973.

Michael R. Farrell, *Who Made All Our Streetcars Go?* Baltimore: Baltimore Chapter, National Railway Historical Society, 1973.

Vera Ruth Filby, *Savage, Maryland.* Savage: the Author & the Savage Civic Assn., 1965.

George W. Howard, *The Monumental City.* Baltimore: J. D. Ehlers & Company, 1873.

Edward Hungerford, *The Story of the Baltimore & Ohio Railroad, 1827-1927.* New York: G. P. Putnam's Sons, 1928.

Wilbur H. Hunter, *The Historical Guide to Baltimore.* Baltimore: The Peale Museum, 1973.

Ferdinand C. Latrobe, *Iron Men and Their Dogs.* Baltimore: Ivan R. Dreschler, 1941. [The story of Bartlett, Hayward & Co. and their predecessor firms.]

Thomas J. Scharf, *The History of Baltimore City & County.* Philadelphia: Louis H. Evarts, 1881.

And a final detail. It's true, the sites and structures herein are treated with anything but consistancy in terms of the relative amount of space devoted to each. It would be nice to be able to state that the space allotment is in direct proportion to the historical significance of each site mentioned. In many cases--perhaps most--it has turned out that way, at least insofar as it is possible to determine the absolute level of a historic industrial structure's "significance." I hasten to admit, however, that by any standard of judgement some structures probably have been given far too much attention, and some, surely, the reverse. Let us simply leave it that much of what constitutes significance is in the mind, eye, and heart of the observer. Happy touring.

Robert M. Vogel Washington, April 1975

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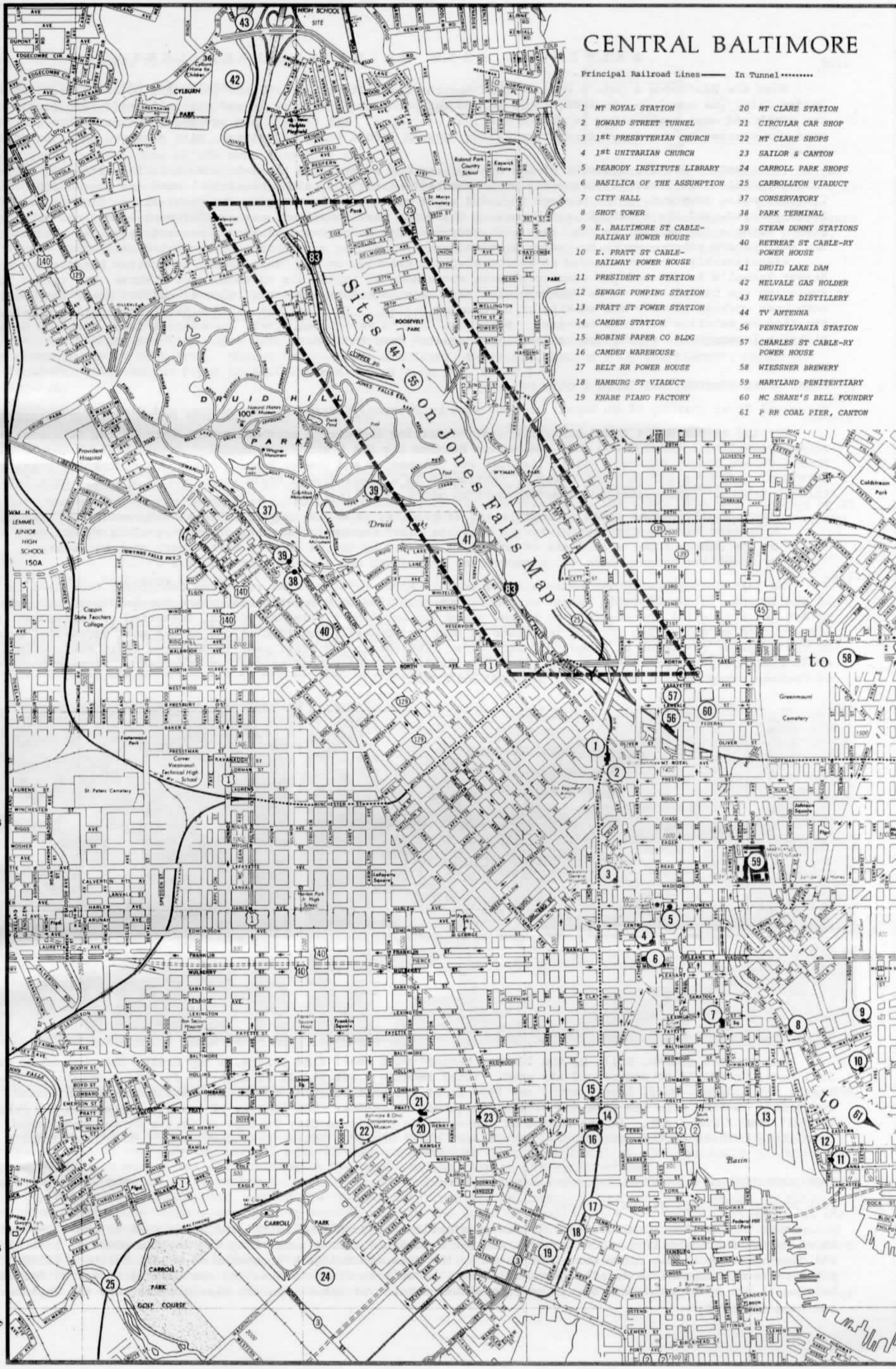

36 2 MILES

30 - 35 7 MILES

27 - 29 12 MILES

26 4 MILES

BALTIMORE BELT RAILROAD 1892-1895

When the Baltimore & Ohio's Philadelphia Branch from Baltimore to Philadelphia (and by affiliated lines to Jersey City) was completed in 1886, there was no rail connection between it and the railroad's main lines from the south and west terminating at Camden Station, Baltimore. All freight and passenger business through Baltimore was carried by car ferry across the harbor between Locust Point and Canton, with enormous inconvenience and delay.

To connect these two elements of its system, the B&O constructed the Baltimore Belt RR, extending about eight miles from Bay View Junction (Orangeville) in northeast Baltimore, along the (then) northern edge of the city to Camden Station downtown. The project included eight minor tunnels carrying the double-track line under principal thoroughfares, and the Howard Street Tunnel. This, the last completed, was a major work--among the longest soft-ground tunnels in the U.S. at the time. It extended from Mount Royal Station, the railroad's new uptown depot and part of the scheme, south to Camden Station.

Significantly, it was decided to employ electric traction on the "Belt Line", imperative because the Howard Street Tunnel's length and the commercial area above made it impossible to ventilate. 'Worse, the entire line, including the tunnel, was on an 0.8% upgrade from Camden Station; had steam locomotives been used, they would have been working heavily and smokily on northbound trains. This was the world's first application of electric traction in mainline railroad service. Northbound trains were towed, their locomotives dead, by heavy General Electric locomotives; southbound trains simply coasted down to Camden.

1 MOUNT ROYAL STATION, Baltimore & Ohio RR — 1894-1896 & 1967

Cathedral St at turning of Mt Royal; bounded also by Preston, Howard, & Dolphin sts, and Park Ave.

Erected as the B&O's grand Baltimore station serving the city's northern areas, part of the Baltimore Belt RR scheme providing a through B&O rail connection between its S & W and N & E lines. Sited at the N end of the Howard Street Tunnel entirely within the open cut between it and the Mt Royal Tunnel. A monumental granite structure dominated by a 143-ft clock tower. Contiguous is a steel-framed train shed, 420 ft x 71 ft, over four through tracks. B&O historian Edward Hungerford wrote of it in 1927:

> Mount Royal remains today a sturdy thing of granite, handsome, imperturable and impressive. A station of much dignity--always. With its chief feature, that tall commanding clock tower, by day and by night a landmark of modern Baltimore; by day, a sheer granite shaft of Romanesque, by night its bright clock faces surmounted by a great and glowing electric "B & O" ...

The last through passenger train stopped here in April 1958; to 1961 it served commuters; from then to 1964 it was vacant, in considerable danger of demolition. In 1964 it was purchased by the Maryland Institute, College of Art and with skill and sensitivity to the grand old building's original spirit, converted to classrooms, a library, and an auditorium for the institute in what is generally regarded as one of the most successful examples of the adaptive re-use of an industrial structure. Freight trains still pass through the train shed, within an arm's reach of a sculpture studio. Architects: Baldwin & Pennington; adaptation architect: Richard Donkervoet of Cochran, Stephenson & Donkervoet. *NATIONAL REGISTER.*

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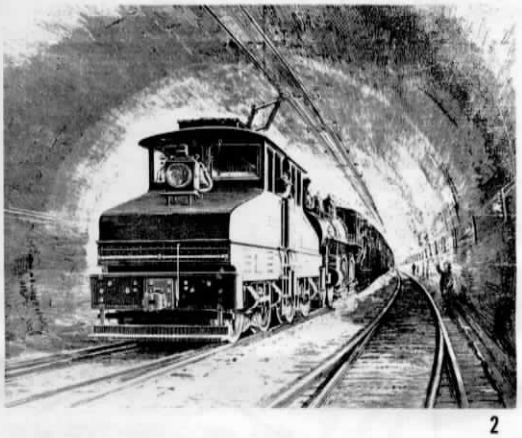

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2 HOWARD STREET TUNNEL, Baltimore Belt (Baltimore & Ohio) Railroad — 1890-95

Under Howard St between Camden Station (Camden & Howard sts) and Mt Royal Station (Mt Royal Ave & Cathedral St).

All in soft ground, built by the "German Method" with small side drifts, a top drift, then opened up to the full bore; no shield or compressed air used. Total length: 7,341 ft; 21 ft high; 29 ft wide. Originally double track; now single. Roof, invert arch, and 5900 ft of the side walls of brick; the remainder and the portals of cut stone. Worked from the ends and several intermediate shafts. The longest of the 176 tunnels on the "Chessie System" (B&O / C&O / WM). In the course of the work the Baltimore City College at Centre St was undermined, and completely rebuilt by the contractor. Samuel Rea, chief engineer (later president, PRR). *NATIONAL REGISTER.*

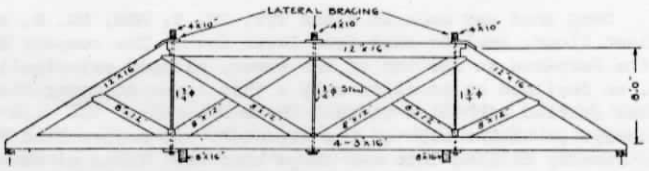
3 IRON ROOF TRUSSES & FRAMING, First Presbyterian Church — Begun 1854; spire 1874

Park Avenue & Madison St (NW corner).

Much of the structural framing of this spectacular neo-Gothic building--including that of the 273-ft tower--is of cast and wrought iron. The trusses, and the cast-iron columns supporting the steeple plus the iron tie rods and cross bracing in the spire were fabricated by the Patapsco Bridge & Ironworks of Wendel Bollman, Baltimore civil engineer responsible for the City Hall dome, the Bollman Truss bridge, and the Lombard Street Bridge mentioned below. It may be assumed that he, in collaboration with the architect, Nathan Starkweather, was the engineer. *NATIONAL REGISTER.*

4 TIMBER VAULT TRUSSES, First Unitarian Church 1893

Charles & Franklin sts (NW corner).



The church, built in 1818, is of brick, the nave originally formed of four full arches of 53-ft span bounding a square plan, supporting the nearly hemispherical dome of the same diameter, 80 ft above the floor at its crown. Because of hopeless accoustics, the church was remodeled, a longitudinal barrel vault fitted below the dome. It is supported by four heavy-timber Howe trusses formed of 12 x 16 chords and 8 x 12 diagonals spanning 52 ft transverse to the vault axis and eight ft high. These are carried by 8 x 12 plates in turn borne by 12 x 12 posts, four on each side, placed under the truss bearings and forming columns in the original side arches. False arches are struck between the columns, covering the knee bracing between columns and plates. Architect: Maximilian Godefroy; reconstruction architect: Joseph E. Sperry. *NATIONAL HISTORIC LANDMARK.*

5 CAST-IRON STACK STRUCTURE, Peabody Institute (branch, Enoch Pratt Free) Library 1872-74

1 East Mount Vernon Place; SE corner Charles & Monument streets.

A breathtaking six-tier, open book-stack structure surrounding a roofed court. All structural and decorative elements are of cast iron. Edmund George Lind, architect; Bartlett, Robbins & Co (Baltimore), engineers and founders. (See Robins Paper Co Building and Sailor & Canton, below.)

6 BASILICA OF THE ASSUMPTION (OLD BALTIMORE CATHEDRAL) 1806-18

Cathedral St between Franklin & Mulberry sts.

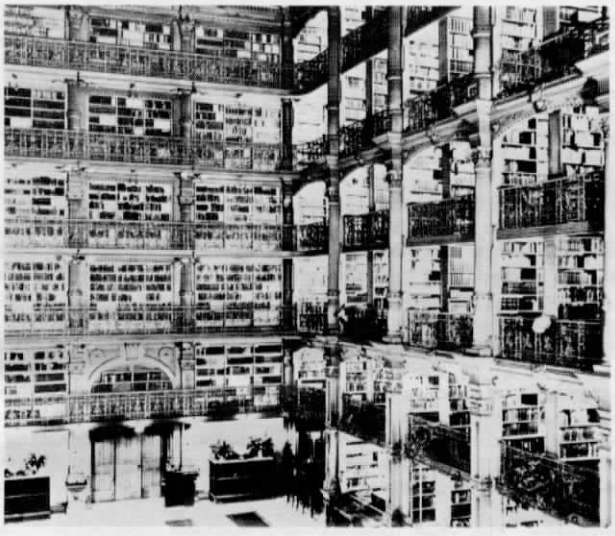
The best surviving example of the architectural and engineering skill of Benjamin Henry Latrobe, who also was architect of the U.S. Capitol. As his biographer says, "Structurally the Baltimore Cathedral is a masterpiece." The entire church is vaulted in masonry, a daring concept in America at the time. The central dome is 65 ft across. The structure is completely of brick, with sheathing of Ellicott's Mills (Ellicott City) granite, and more than 150 years later there is no sign of movement or cracking. *WHH. NATIONAL HISTORIC LANDMARK.*

Sunday: bus | Saturday: foot

7 CAST-IRON DOME, Baltimore City Hall 1873

Between Lexington & Fayette sts and Guilford Avenue & Holiday St.

The dome framing is of cast-iron ribs, the exterior clad with cast-iron plates. George A. Frederick, architect; Wendel Bollman, engineer. Fabricated by Bollman's Patapsco Bridge & Iron Works, Canton, Baltimore. Currently the cladding is being removed for renovation (1975). Height: 227 ft above street level. The floor joists, rafters, and staircases also are of iron by Bollman. *NATIONAL REGISTER.*



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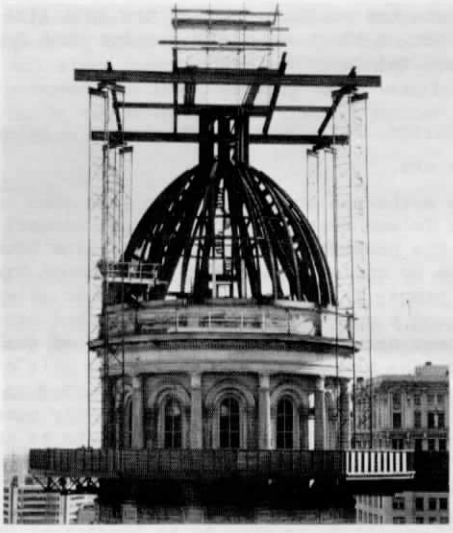

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8 PHOENIX (MERCHANTS') SHOT TOWER, Phoenix Shot Company 1828

Fayette & Front streets.

This well-known Baltimore structure, now owned by the City, is the last remaining of three Baltimore shot towers, and one of the very few left of some 32 that once existed throughout the U. S. It was built by Jacob Wolfe and was reputed to be the tallest building in the world at the time of its construction.

The tower, made of an estimated 1.1 million handmade, wood-burned bricks, is 234 ft high, its foundation 17 ft in depth resting on solid rock, making the tower nearly free from vibration. The outside diameter at the base is about 40 ft, 6 inches, and narrows considerably to the top. The walls are 4 1/2 to 5 1/2 ft thick at the base; about 20 inches thick at the top. Lighting of the tower was from 11 windows and by gas. The first twelve floors were of wood, supported by two main horizontal beams built into the walls and bolted to four wooden columns that rose the height of the building. The thirteenth and fourteenth floors were of 1/2-inch thick iron, and supported two melting furnaces. A brick stack connected the two furnaces with the roof. No outside scaffolding was used in the construction. In 1878 the tower interior was destroyed by fire and rebuilt.

continued

Drop shot was made in sizes TTT, TT, T, BBB, BB, B, and 1 through 14. Large shot was dropped from the highest floor; smaller shot from lower down. The company also made mold shot and bar lead. The lead was melted in the furnaces at the top of the tower, alloyed principally with arsenic. It was then poured into a dropping pan, so designed as to allow only a thin layer to cover the bottom of the pan, in which there were small perforations stuffed with wire gauze. These determined the size of the shot. The dropping pans being suspended over hatchways on either side of the elevator, the molten lead formed into spheres which cooled in passing through the air, finally falling into two large boot-heel tanks of water at the bottom of the tower. A continuous chain of iron buckets scooped the shot out of the tanks and carried it to the top of a series of inclines, located between the third and fourth floors and terminating on the second floor near the adjoining building. Next dumped into a revolving drum heated by steam, the shot was thoroughly dried. It was then put into a revolving cask along with black lead, and a high polish was produced.

In the building adjoining the tower the shot was rolled down an incline consisting of five plates of French plate glass. The perfect shot ran freely down this incline, jumping the spaces between the plates, while the imperfect shot slid slowly and fell between the plates, being collected for remelting in a trough at the bottom. The angle of this incline could be changed so that only certain sizes of shot would reach the bottom. The perfect shot was next put through sieves of different sizes. In the early days, these sieves, made of drawn sheepskin, were set in a mahogany rocking chest which shook the smaller shot to the bottom; later, a rack of revolving perforated cone-shaped cylinders was used, the shot which had not fallen through the holes of one cylinder passing thus on to the next cylinder. The shot was then run again down an incline, this time made up of mahogany plates, and the resulting high grade shot weighed and sewn into bags for shipment. The Shot Tower's capacity was 100,000 bags of 25 lbs in season, which could be raised to 500,000 bags annually if necessary. No shot was manufactured after 1892. In 1847 the Merchants' Shot Co bought out Phoenix. *PDS. NATIONAL HISTORIC LANDMARK.*

9 EAST BALTIMORE STREET CABLE-RAILWAY POWER HOUSE, Baltimore City Passenger Railway 1892-93

East Baltimore & Aisquith streets.

One of Baltimore's five surviving cable-railway power houses, a close neighbor of the East Pratt Street Power House, this one built slightly later by a competitor. Like Baltimore Traction, BCPRy also ran a horse car route between Druid Hill and Patterson parks; when BTCo converted to cable operation, BCPRy was forced to do likewise. This power house operated the east end of the line and another line up Gay St to North Ave using two non-condensing compound Reynolds Corliss engines. The cable lines were converted to conventional electric trolley operation in 1898, having lasted only five years. Afterwards the building served a variety of other uses, most recently as an ice cream plant. *HHH.*

10 EAST PRATT STREET CABLE-RAILWAY POWER HOUSE, Baltimore Traction Company 1890-91

E Pratt St & Central Ave.

Built to serve the east end of BTCo's cable line that ran between Druid Hill and Patterson parks. (Baltimore, incidentally, was a latecomer to cable traction.) This large building housed two 500 h.p. Corliss engines to turn the cable machinery. The company also built a second power house on Druid Hill Ave, containing identical engines to operate the northern half of the same line--a much more elaborate building, which also still stands, and will be seen later on the tour. The onetime East Pratt Street Power House now is owned by the City and used for truck storage and maintenance. *HHH.*

11 PRESIDENT STREET STATION, Philadelphia, Wilmington & Baltimore RR 1849-50

President and Fleet sts.

This extremely motheaten structure is no less than the oldest large-city railroad terminal still standing (and, unhappily, it is not destined to stand much longer). It was built as the Baltimore terminal of the PW&B, the predecessor of the present Penn Central main line between Baltimore and Philadelphia. As such, it predates B&O's Camden Station by at least six years. Although President Street has been unused as a major passenger terminal for over 100 years, it still retains its basic exterior form. The original decorative pilasters have long since been removed and a new door cut in one end, but otherwise the building shell is remarkably original.

Oddly, President Street Station also was one of the country's shortest-lived passenger terminals. In 1873, trains were moved to the new Union Station (on the site on Charles St of the present Pennsylvania (Penn Central) Station). At that time, President Street was converted to a freight station and spent most of the balance of its life in that capacity. Incidently, trains originally reached the station--and still do--over city streets. Over the years track was laid in many surrounding streets as the area developed into a manufacturing and warehousing center. Much of this trackage remains, running past the 18th-century buildings of Fells Point. Curves and switches are so sharp that conventional locomotives could never be used; today it is virtually the only area in the U. S. where rubber-tired tractors must be used to switch cars.

At present the headhouse is used by an electrical contractor, the shed serving as a freight warehouse. The station sits in the path of a projected extension of the Jones Falls Expressway (I-83), slated for demolition. *HHH.*

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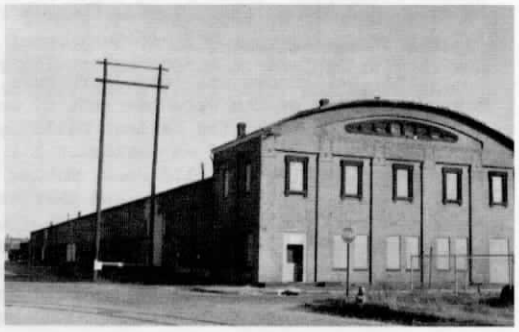

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12 SEWAGE PUMPING STATION, Baltimore Sewerage Commission 1907-12

Eastern Ave between Falls Ave & President St

Built to pump sewage to a treatment plant at Back River. Originally equipped with three 27.5 mgd vertical triple-expansion Corliss pumping engines by Bethlehem Steel Co; replaced in 1960 by electric turbine pumps. The boilers were removed and the chimney (to the S) shortened at same time. An imposing structure of yellow brick, heavily copper trimmed.

13 PRATT STREET POWER STATION, United Railways & Electric Company 1904 & later

Pier 4, Pratt Street, between foot of Frederick St & foot of Market Place (Dugan's Wharf).

Built to supply power for the newly consolidated streetcar system, supplanting many small stations around the city. By 1909 capacity was 39,000 KW. In 1921 it was sold to Consolidated Gas, Electric Light & Power Co (now Baltimore Gas & Electric Co). Originally equipped with engine-generators, replaced by G.E.-Curtis turbo-generators, these in turn by other types. Three buildings: originally two engine houses and a boiler house, the latter topped by four steel, brick-lined, self-supporting stacks of 13-ft diameter, 192 ft above the water, each serving eight boilers. Of the 32 boilers, 16 remain. Out of commission since 1973; slated for demolition.

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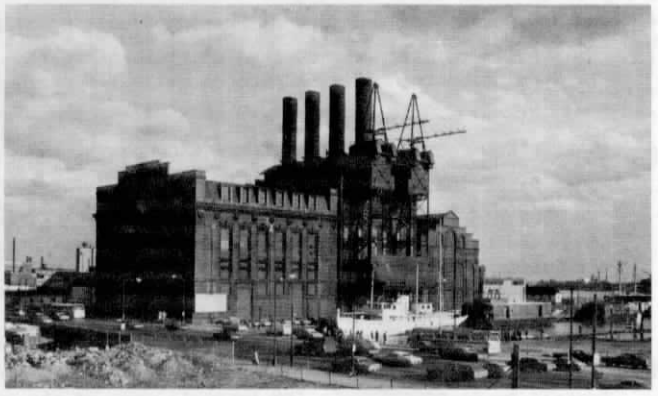

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14 CAMDEN STATION, Baltimore & Ohio RR 1856/1865/ca 1897

Camden Street between Howard & Eutaw streets.

From its completion until erection of Mt Royal Station in 1896, the B&O's principal Baltimore terminal, and since 1961 when Mt Royal was abandoned, its sole one. Contained also the railroad's main offices until construction of the (first) B&O Building, ca 1880. Fitted originally with an elaborate 185-ft central tower and 80-ft towers on the east and west wings (constructed 1865); all since removed and the building otherwise considerably altered. The train sheds to the south also have been removed. In 1897, shortly after completion of the Belt RR and Howard Street Tunnel, the lower-level station was built to serve the new through tracks from the tunnel. Today serves commuter traffic only. Niernsee & Nielson, architects.

15 ROBINS PAPER COMPANY BUILDING ca 1870

314 West Pratt Street, between Howard & Eutaw streets.

A classical structure in the cast-iron-front tradition, one of the few remaining of the many even recently standing in Baltimore. Just west of the area destroyed by the Great Baltimore Fire of 1904, and so spared. Fabricated by Bartlett, Robbins & Co (predecessors to Bartlett, Hayward & Co) whose Peabody Library stack structure is perhaps better known. A stock design, apparently, for a building identical in every detail, but of four rather than five stories, was erected at 300 1/2 West Pratt for William Wilkins & Co (hair and bristle products). Occupied by Robins from completion to ca 1971; presently vacant and in the midst of a renewal area. There is some possibility that the city will re-erect it elsewhere. The ground floor has been defaced with concrete blocking.

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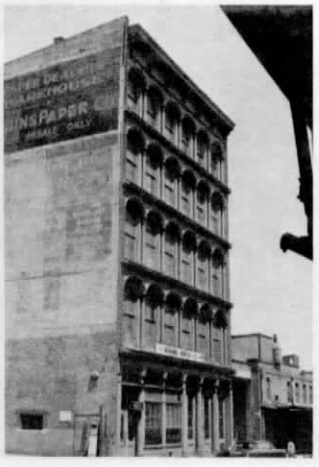

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16 CAMDEN WAREHOUSE, Baltimore & Ohio RR — 1904; Office 1905

Eutaw St between Camden & Lee sts.

A massive brick structure erected by a B&O subsidiary, Camden Warehouses, originally separately operated as a warehousing and transfer company. Eight stories high, 1,116 ft long (4 blocks), 51 ft wide, 430,000 sq ft of floor area.

17 BELT RAILROAD POWER HOUSE, Baltimore & Ohio RR — cal894

South Howard Street between Henrietta & Montgomery streets.

A brick, gable-roof structure of conventional construction with steel roof trussing, adjacent to the line of the electrified Belt RR, for which it provided the electrical power. (See essay above.) In use until 1914 when the B&O began to purchase its power; a car and electric locomotive repair shop to cal971. Later the N end roof was damaged by fire; to be razed shortly. Fitted originally with five E. P. Allis 500 KW engine-generators plus several lighting dynamos. The boilers were housed in the slightly wider S end.

18 HAMBURG STREET VIADUCT, United Railways & Electric Company — 1911

Hamburg Street between foot of Fremont Avenue & Sharp Street.

Built to carry the "United's" Fremont Ave line over the B&O tracks below Camden Station. Now carries Hamburg St. Steel girders; concrete parapet walls. Several lattice trolley-wire supports, probably original, survive.

19 KNABE PIANO FACTORY, William Knabe & Company — 1869

Eutaw Street between West & Cross streets.

Baltimore was a center of piano manufacture from 1810 until well into the 20th century. The great Knabe works--encompassing the buildings on the S side of West Street as well as this one--was the city's largest. Established 1837. The building is notable for the excellence of its brickwork. The heavy timber interior framing has been little altered by the cup and straw firm that presently occupies the site. Knabe pianos now are made by the Aeolian Co in Buffalo.

20 MOUNT CLARE STATION, Baltimore & Ohio RR — cal830

Pratt & Poppleton streets (SW corner); part of the Mount Clare Shop complex, SE of the Passenger Car Shop.

The B&O's first Baltimore terminal building, with Ellicott City Station the earliest in the U.S. A simple two-story brick building with an angled face on the SE containing the entrance. Served as the Baltimore terminal only until 1831 when the road obtained access to the city center to the east and established a new terminal on the harbor at Charles & Pratt sts. Later an agent's office; since 1953 part of the B&O Museum. *NATL HISTORIC LANDMARK.*

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20 & 21

21 PASSENGER CAR SHOP, Baltimore & Ohio RR 1883-84

Pratt & Poppleton streets (SW corner); part of the Mount Clare Shop complex.

A unique structure, undoubtedly the largest circular (actually 22-sided polygonal) industrial building in the world, commonly misidentified as a "roundhouse." Erected to build and repair passenger cars, so serving to cal953 when it was converted to the B&O Museum's principal building, housing the collection of full-size locomotives, cars, and other large exhibits.

The sloping lower roof is supported by radial trusses carried at their outer ends by the brick exterior walls and at their inner by 22 wrought-iron columns that also support the lantern and cupola, and surround the 60-ft turntable. Diameter: 235 ft; height to top of cupola: 123 ft. E. Francis Baldwin, architect/engineer.

The brick museum building to the NE was built in 1891 as an employees' library; later was the railroad's printing shop. In 1974-75 the entire museum complex was renovated by the Chessie System, including a complete new slate roof for the car shop.

22 MOUNT CLARE SHOPS, Baltimore & Ohio RR 1829 & various later dates

Pratt St (S side) between Carey & Poppleton sts.

Site of the road's first Baltimore terminal, Mt Clare Station, and repair shops, and until after WW-II its principal manufacturing and repair facility for locomotives, cars, bridges, and other material; the oldest and one of the largest such works in the U.S. and probably the world. It was largely Mt Clare that gave the B&O its high degree of self-reliance in terms of its entire physical plant. The shops were most noted for the manufacture of complete locomotives, starting with Peter Cooper's legendary *Tom Thumb* in 1829--erected in the B&O horse stable--and ending in 1948 when the last engine was outshopped. In the 1920s, when Mt Clare was at its zenith, 18 locomotives, new and rebuilt, left the works weekly and the work force was 3000.

During the past 20 years the work handled there gradually dwindled, either contracted for or carried out in other of the RR's facilities. In 1974 the entire complex was decommissioned and the equipment sold. In 1953 the print shop, Mt Clare Station, and the Passenger Car Shop were converted to the B&O Museum, a function they still serve. The future of the other buildings is uncertain. The principal of these are a foundry, forge & smith shop, wheel shop, car shop, wood shop, electrical(ex-bridge) shop, and office building/testing laboratory. The locomotive erecting shop, the largest building and the heart of the complex, burned in 1962.

23 SAILOR & CANTON (AND SIBLINGS), Hayward, Bartlett & Co (Koppers Co, Bartlett Hayward Division) cal860

200 South Scott St, between Pratt & McHenry streets.

A pair of cast-iron Newfoundland retrievers guarding the entrance of the Koppers office building, cast as a stock decorative product, an outgrowth of the firm's principals' fondness for "ducking." These dogs came to be regarded by HB & Co as a "talisman" of their good fortune. (The prototypes, Sailor and Canton, who came to Maryland in 1807, were the primogenitors of the Chesapeake Bay retriever, the state dog.) HB & Co and their successors were responsible for much of Baltimore's ironwork, major and minor: the Peabody Library stack structure and the Robins Building, inter alia. A second (nameless) pair of dogs guards the entrance to the Service Building at the Baltimore Gas & Electric Co's Spring Gardens Gas Works, for which HB & Co supplied the early gas holders and other equipment.

23

24 CARROLL PARK SHOPS, United Railways & Electric Co 1900-01

Washington Blvd & Monroe St.

When the "United" was formed to consolidate Baltimore's street railway system, one of its first major projects was a single centralized shop to handle all heavy car repairs and rebuildings. The complex was designed by Baldwin & Pennington, the Baltimore architects who also did Mount Royal Station and many way stations on the B&O system. Carroll Park was located directly opposite the Mt Clare Mansion of Charles Carroll and, more practically, also adjacent to the B&O's Baltimore-Washington main line. The basic shop design consisted of two immense monitor-roofed main buildings with a total of eight repair bays, plus extensive yard trackage.

Carroll Park still serves its original purpose after a fashion, as the headquarters and major shop for the Mass Transit Administration, the city bus system that succeeded the successor to the United Railways. *HHH.*

24

25

25 CARROLLTON VIADUCT, Baltimore & Ohio RR 1828-29

Crossing Gwynns Falls, W of Carroll Park Golf Course; Washington Blvd SW of Monroe St.

The viaduct, near the Mount Clare yards at Carroll Park, is the oldest railroad bridge in the U.S. First used by horse-drawn railroad cars, the handsome masonry structure has been in continuous use. The architect was James Lloyd, while the engineering designers were Jonathan Knight, B&O chief engineer, and Caspar Wever, chief of construction. The cornerstone was laid in May, 1828, by Charles Carroll of Carrollton, last living signer of the Declaration of Independence, after whom the viaduct is named.

The viaduct is 297 ft long, with a single full-centered Roman arch of 80 feet spanning the stream. The arch measures 62 ft from the crown of the intrados to the stream bed. There is a second and minor arch of 20 feet on the W bank, believed to have served for the passage of a wagon road. The arches and spandrel walls are of gray granite, mainly from the vicinity of Ellicotts Mills, though some was brought from Port Deposit on the Susquehanna. On either side of the arch are long, solid, masonry-walled approaches, with four shallow buttresses on the eastern approach and five on the western. The width of the viaduct is 26.5 ft, and the roadbed carries a double track. There are also two 3-ft wooden walkways. The spandrel spaces originally were not filled, the track carried on a system of 12-inch brick walls, spaced three ft apart transversely and five ft longitudinally, making a grid that rested on the arch rings. Solid 12-inch slabs of Maryland granite covered the grid.

This work took about six months to complete, cost about $58,000 and contained approximately 274,875 cubic ft of masonry. *PDS. NATIONAL HISTORIC LANDMARK.*

26 THOMAS VIADUCT, Baltimore & Ohio Railroad, Washington Branch 1833-35

Crossing the Patapsco River near Elkridge, Howard County and Relay, Baltimore County.

The first multi-span masonry railroad bridge in the U.S. and the first to be built on a curving alignment. It was the largest bridge in the nation in its day, and was named for Philip E. Thomas, first president of the B&O.

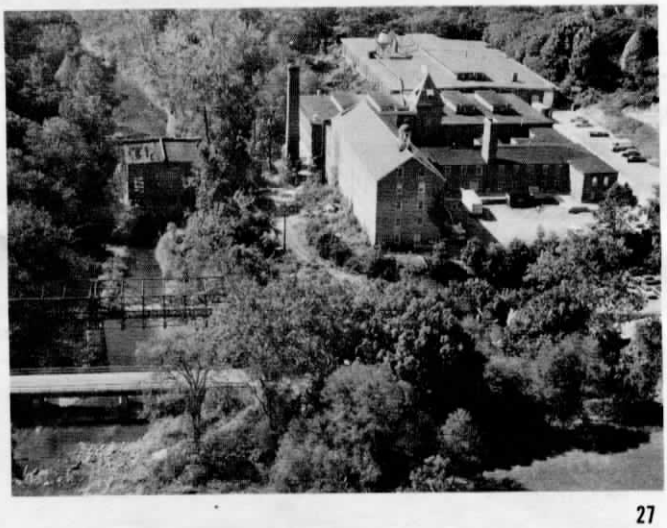
The stone, Roman-arch bridge is divided into eight spans. It was designed by Benjamin Henry Latrobe II (son of the famous architect of the Capitol and the Basilica of the Assumption), then B&O assistant engineer; later chief engineer. It was built by John McCartney of Ohio under the supervision of Caspar Wever, the road's chief of construction. The main design problem to be overcome was that of construction on a curve: there would be variations in span and pier width between the opposite sides of the structure. This problem was solved by having the lateral pier faces laid out on radial lines, thus making the piers essentially wedge-shaped, and fitted to the 4° curve.

The viaduct is 612 ft long, each arch about 58 ft; height, 59 ft from water level to the base of the rail. The width at the top of the spandrel wall copings is 26 ft, 4 inches. The bridge is of rough-dressed Maryland granite ashlar, from Patapsco River quarries. A wooden-floored walkway, four feet wide and built for pedestrian and railway employee use, is supported upon cast iron brackets and is edged with ornamental cast iron railings.

In 1929 extensive pointing of the masonry was carried out, and in 1937 and 1938 major repairs were effected, including installation of a new drainage system. Nevertheless, the bridge is still indicative of the way in which, in the early days of the B&O, track and major structures were put down in the most permanent manner possible. The viaduct contains 24,476 cubic yards of masonry, and cost $142,236.51.

The original B&O route followed the Patapsco River to Ellicott's Mills; later, the "Washington Branch" was constructed. This new line branched at Relay, site of a former post-road hotel and changing point for stage horses. The main line was rerouted about 1870, and since then the viaduct has carried the railroad's full traffic between Washington and Baltimore. Although its ability to support even its own weight was widely doubted at the time of construction, it has since carried 300-ton diesel engines and heavy freight traffic. A B&O station and hotel at Relay was demolished cal948. *PDS. NATIONAL HISTORIC LANDMARK.*

26



27

MARYLAND'S TEXTILE INDUSTRY

Maryland's textile industry was launched toward the end of the 17th century, beginning with a woolen "felting" or "fulling" mill along Jones Falls in 1789. The state--especially the Baltimore area--was destined to become the world's foremost center for the production of cotton duck (heavy canvas). The stage had been set by 1800: a host of skilled artisans had arrived from European factory centers; Whitney's gin had assured an ample domestic cotton supply and mass production techniques for textiles were in process of rapid development elsewhere. Above all, an exploding demand for large quantities of cotton duck accompanied the expansion of the Baltimore clipper fleet.

By 1810, two sizable mills were producing textiles near Baltimore. The Union Mill in Oella, near Ellicott City, was organized in 1801 with $1 million capital stock. Along Jones Falls, well north of the (then) Baltimore city limits, the Washington Manufacturing Company had begun making cotton goods in a converted flour mill. A contemporary source reported 9,000 spindles in operation in the Baltimore area in these two mills and nine lesser ones. From these beginnings the textile industry grew steadily and rapidly until the end of the 19th century, with factories in and near Baltimore claiming about 125,000 spindles in 1881 and more than 200,000 by the turn of the century.

The mills, with few exceptions water powered, were ranged along the streams and rivers crossing the fall line to the north and west of the city: the Patuxent, Middle Patuxent, and Little Patuxent near Laurel and Savage; the Patapsco from Elysville (now Daniels) through Oella, Ellicott City and Thistle to nearly its mouth at Baltimore harbor; Gwynns Falls at Wetheredsville (later Dickeyville), Franklintown and other sites; and especially Jones Falls, from north of Mount Washington, through the greatest concentration of mills in the state at Woodberry. On other streams scattered throughout the state were erected mills for working both cotton and wool--the Elk Mills in Cecil County for example--but it was the Baltimore area that stood as the textile capital of the state, ranking with Philadelphia as the most important center in the Middle Atlantic region.

Literature of the late 19th Century boasted that the Maryland mills produced 80% of the cotton duck in use world wide. Duck was used chiefly for sail cloth but also, in large quantities, for freight car covers and in hydraulic mining. The Maryland mills' production of duck ebbed and flowed in the 20th century, falling off as steam replaced sail in the merchant navy and increasing with national defense needs in world wars I and II. After World War II, however, the industry suffered a terminal decline.

Most of the Jones Falls mills at Woodberry stand, having been converted to new uses, principally storage and light manufacturing. (See Savage, Oella, and Woodberry sites, below.) *EMB.*

27 SAVAGE MILL & VILLAGE, Savage Mfg Company cal815 & various later dates

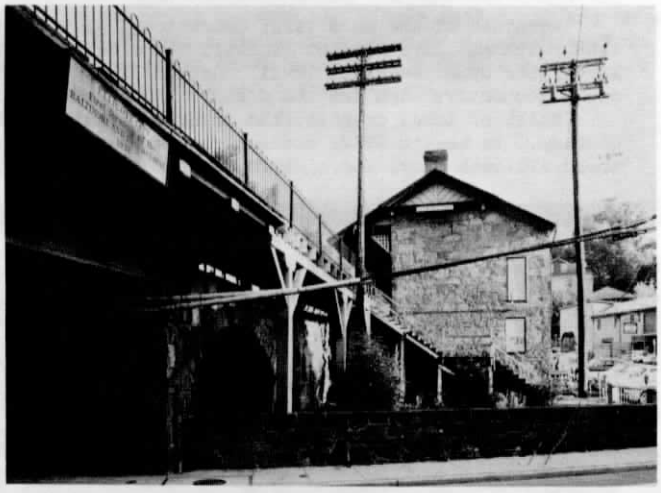
Howard County, NE of Laurel.

Savage, on the Little Patuxent River, is a prime example of a town whose commercial and social life was run by the company that ran the local mill. The mill, still extant, may be the oldest standing textile mill building in the state. It was built sometime between 1810 and 1816. It is a three-story structure of native stone, with a fourth story of brick added about 1881, a gable roof, and a belfry. It sits below a 52-ft fall of rapids in the river. By 1825 the mill was operating 1,000 spindles and 125 power looms producing cotton cloth. A grist mill, an iron foundry, and a machine shop had also been constructed. In 1835 the railroad (a spur from the B&O's Washington Branch) came to Savage.

In 1880 steam power was installed to supplement the waterpower, and in 1881 a new building, of 80,000 square ft, was added. It had a tower. About the same time a separate wheelhouse was erected, with a large horizontal water turbine by Poole & Hunt of Baltimore.

The era between the Civil War and the turn of the century saw Savage become a full-fledged mill town. Most of the houses were company owned. There was a corporation flour mill and a saw mill, an ice plant, and a quarry. In the early 1900s the Savage Manufacturing Co constructed water and sewerage systems for the town, built a lighting plant, handled the snowplowing and garbage collection, had apple orchards, sold the townsfolk coal and cordwood, employed the mill's night watchman as town patrolman, and ran the town's grocery and drygoods stores. In 1921-22 the company erected the Carroll Baldwin Memorial Community Hall, and about the same time helped build a new school.

28



30 & 31

In 1916 yet another major building--of 123,000 square ft--was added to the mill complex, with special flooring to support 16 to 27-ton looms, known as "Big Berthas." A steam turbine station was built over the river in 1918; it is now ruinous and the equipment removed. An enlarged water turbine, still present, drove a 750 kW generator until 1943.

By the 1920s, the company was making cotton duck for sailcloth, tarpaulins, fire hose, awnings, feed bags, golf bags, and even the cloth for painted movie backdrops. During WW-II the Savage Mill hit its peak: 400 hands ran 12,000 ring spindles, 3,000 twister spindles, 72 cards, and 194 looms; 400,000 pounds of cloth was produced a month. In 1947, due to a faltering post-war market, the company went out of business. The mill complex now is used for light manufacturing, warehousing, and commercial sales, owned by the Winer Brothers. The former corporation houses and stores are privately owned. *PDS. NATIONAL REGISTER HISTORIC DISTRICT.*

28 BOLLMAN-TRUSS BRIDGE, Baltimore & Ohio RR 1869

Savage, Crossing Little Patuxent River, Howard County

The Savage bridge, which carried a spur of the B&O serving the Savage Mill, is, despite its present state of neglect, one of America's most significant civil engineering relics. The system of bridge trussing invented by Baltimore engineer Wendel Bollman (1814-1884) was the first, in which all principal structural members were of iron, to be used with consistency on an American railroad. Of the perhaps one hundred Bollman Truss bridges built on the B&O, its subsidiaries, other railroads, and highways by Bollman's Patapsco Bridge & Iron Works in Canton, the Savage double span is the sole survivor.

The B&O was a pioneer venture, from its inception. Its innovations in railway construction, motive power, and structural engineering influenced and led the thinking of railroads around the world. No single departure was more crucial or far reaching than the decision by Benjamin H. Latrobe, the road's chief engineer, in about 1848 to substitute iron for timber in all major bridges on the line, both old and new, to eliminate fire hazard, rot and other deficiencies inherent in timber construction. Considering the primitive state of structural theory and practice in iron at the time, plus the material's high cost, the proposal was an awesome one.

Bollman, then Master of Road, gave form to Latrobe's concept with what he called his "suspension" truss, patented in 1852. The design seemingly was inspired by the classical method of strengthening a wood beam by adding an iron truss rod below. In the Bollman truss, the upper chord is analogous to the beam; the diagonal wrought-iron tie rods to the truss rod. The lower chord is non-functional in the truss.

A feature of the Bollman system was the independence of its structural units: each floor beam was supported by two separate pairs of tie rods on each side of the bridge, so that if those carrying one beam should fail, the others would continue to carry their load, preventing total collapse. Much was made of this point in an era when structural failures were not uncommon and the spindly appearance of iron work, contrasted with the familiar massiveness of works in masonry and timber, was a source of some anxiety to the traveling public.

As railway rolling stock became heavier and longer spans were required, and particularly as the shortcomings of cast iron's structural properties became increasingly evident, the Bollman truss was used in less and less important applications, the last being built in 1873.

The Savage spans originally were in main line service at a now unknown site, disassembled when superceded in 1887 and moved to the lighter service here. They were active until about 1947 when the mill folded, standing derelict since then. In 1966 simultaneously the American Society of Civil Engineers declared the bridge a *Historic American Civil Engineering Landmark*--the first of many to follow--and title to the bridge was presented by the B&O to Howard County. The county plans ultimately to restore the bridge to its original livery of (it is believed) cream and oxide red. *NATIONAL REGISTER.*

29 LITTLE PATUXENT BRIDGE, Baltimore & Ohio RR, Guilford Branch cal900

Adjacent to MD-32, 0.5 miles SW of Guilford, Howard County.

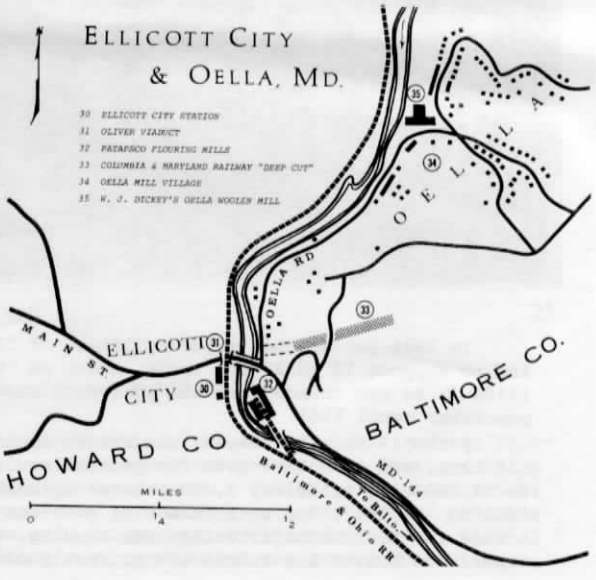
Skewed, pin-connected, single-span through Pratt truss. The Guilford Branch was built to serve an important granite quarry at Guilford, connecting via Savage with the Washington Branch (Baltimore to Washington, D.C., built 1835; now the main line, Baltimore to the West). After abandonment of the branch in 1928 the bridge was used as a private road bridge; now disused and the deck removed.

30 ELLICOTT CITY STATION, Baltimore & Ohio RR cal830

Ellicott City: on the B&O (original Mainline) SW of Main St (formerly Frederick Turnpike) crossing of the Patapsco River, Howard County.

Terminal of the RR's first operational section, the 13 miles between Baltimore and (then) Ellicott's Mills; thus, with Mt Clare Station (above), the oldest RR terminal in the U.S. Built on two levels, the lower at street level; the upper at track level. Originally there were a Superintendent's and an Agent's office, a produce room, and a locomotive shed (at the S end). A turntable, also at the S end, was built cal840, its pit later filled.

Built of local granite, the interior framing of heavy timber. Some decorative modifications in the late 19th century. In use to 1972; presently under extensive archeological investigation and restoration, sponsored by Historic Ellicott City, Inc. *NATIONAL HISTORIC LANDMARK.*



34 & 35

31 OLIVER VIADUCT, Baltimore & Ohio RR 1829-30

Ellicott City: on line of the B&O, crossing Main Street (formerly Frederick Turnpike).

Consisting originally of three 20-ft stone arches--two over the turnpike and one (the southern) over the Tiber River (a minor trickle). Only the latter survives, the former having long since been replaced by plate girders to increase clearances. Adjacent to the Ellicott City Station.

32 PATAPSCO FLOURING MILLS, C. A. Gambrill Mfg Co. 1916-17

Oella: across the Patapsco River from Ellicott City; on MD-144, Baltimore County.

A large reinforced-concrete mill of eight stories, a nearly direct descendant of the 18th-century flour mills of the brothers Ellicott. Originally hydro-electric powered. Presently owned by Wilkins-Rogers Milling Co. of Washington; no original milling equipment. The size has been greatly increased by later additions.

33 "THE DEEP CUT", Columbia & Maryland Ry (Baltimore Transit Co) cal898

Oella: E of Ellicott City, across the Patapsco River running E about 0.2 mile, Baltimore County.

A major rock cutting about 80-ft deep, unique on the area's electric railway network. On the original company's Ellicott City-Catonsville line; last used by the BTC's No. 9 line on same route (about 3 miles, mostly on private right-of-way). Abandoned 1955. A scenic walk, muddy in wet weather.

34 OELLA cal810 to early 20th C

On the Patapsco River, 1/2 mile N of Ellicott City, Baltimore County.

A nearly perfectly preserved 19th-century mill village, showing few effects of time's passage. On the hilly, narrow streets are stone, brick and frame corporation houses--single and multiple--of several generations. Now privately owned, the houses still are occupied by mill families, although the mill having closed, the workers now are employed elsewhere. An extraordinarily picturesque area.

35 DICKEY WOOLEN MILL, W.J. Dickey & Sons 1919

Oella, Baltimore County.

A large, classical brick mill of the period, nearly devoid of architectural embellishment. Replaced on the same site a mid-19th century mill that burned, that in turn a successor to the first textile firm chartered in Maryland, the Union Mfg Co (1808). Originally water powered, drawing from Union Dam through a 1 1/2-mile headrace, still intact. In full use until 1972; presently in partial use for warehousing.

36 "WINANS' WHEEL" cal880

Franklintown Road in Leakin Park, E of intersection with Winans Way.

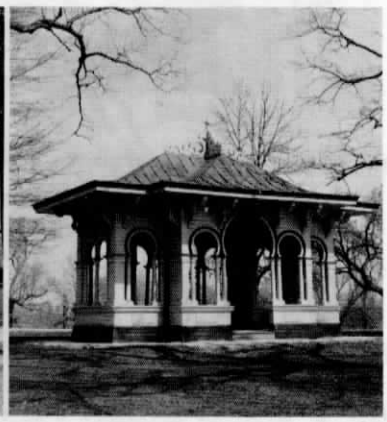
Wrought-iron overshot water wheel approximately 25-ft diameter x 20-inch width, in stone masonry setting. Supplied water from adjacent Dead Run to *Crimea*, estate of Thomas DeKay Winans, taking its driving water, apparently, from a spring or other natural source at an elevation somewhere between the stream valley and the house above, conducted underground, and rising to the top of the wheel through a rectangular-section penstock conforming to the wheel's radius. A pump crank remains on one end of the wheel shaft and the pump mounting bolts are in place in the masonry, but there are no traces of the pump. An unusual and attractive ruin.

37 "CONSERVATORY" cal870

Druid Hill Park: Swan Drive at Whittier Ave.

An elegant Victorian "glass house" erected shortly after the park's founding in 1860. After some years of neglect by the city, it has recently been restored.

36



FULTON and OREM (LATROBE) Steam Dummy Stations, Druid Hill Park. 39

38 PARK TERMINAL CARBARN, United Railways & Electric Company 1909

Druid Hill & Fulton avenues.

This immense fortress-like structure was one of the largest "modern" carhouses in the city. It was constructed as part of a massive program beginning around the turn of the century, which created a single company operating all city streetcar lines and new facilities for the system. (Carroll Park Shops, also seen today, was a slightly earlier product of the same program.) Originally, Park Terminal also housed the company's offices. Its location was both historic and strategic; originally, many city streetcar lines were built to Druid Hill Park (opened 1860), and at least three carhouses were built earlier in the area (including the Druid Hill Cable Ry Power-Carhouse). Later, the spot also became an important junction and transfer point as the system expanded. *HHH.*

39 DRUID HILL PARK STEAM DUMMY STATIONS cal1863

Druid Hill Park, various locations.

Baltimore's most obscure and short-lived railway left some of the most picturesque structures in the city--all of which still stand, almost 100 years after the railway ceased operations. About 1863, after the city acquired the park, a steam-powered street railway was built from North Ave--the then northern city boundary and terminal of the horsecar lines--into Druid Hill Park, about a mile north. Three stations were built along the line: one at what is now Fulton & Druid Hill aves; one near the present Auchentoroly Terrace and Orem Ave, and the terminal inside the park W of the present zoo. All were ornate open pavilions, each with its own exuberant architectural style. The steam dummy line was dismantled about 1879, but the three stations were kept for a variety of uses:

- FULTON STATION: Adjacent to the later Park Terminal, originally was embellished with an incredible array of Victorian-oriental roof motifs, and called the "Chinese Station." Most of this has long since been stripped away, but the structure continued in use as a streetcar, and is now a bus waiting station.
- OREM STATION: Later relocated to a hillside overlooking Druid Lake, this oriental-style structure is now called the Latrobe Pavilion.
- COUNCIL GROVE STATION: The dummy line terminal, adjacent to one of the zoo entrances. This large open pavilion continued in use as a park structure long afterwards, slowly decomposing to the point where it was condemned and closed in the 1960s. Happily, however, it recently has been fully restored, complete even to reproductions of the original ornate roof finials. *HHH.*

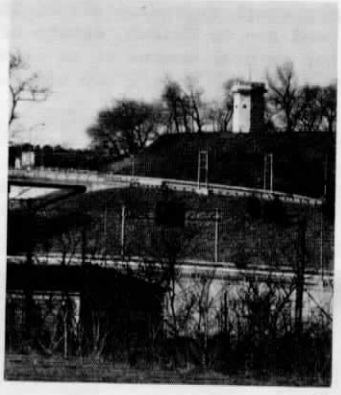
40 DRUID HILL (RETREAT STREET) CABLE-RAILWAY POWER HOUSE, Baltimore Traction Company 1890-91

Druid Hill Avenue & Retreat Street.

This combination power house and cable carbarn was the most ornate cable railway structure in Baltimore. It powered the north end of BTCo's cable route between Druid Hill and Patterson parks. (East Pratt Street Power House, also still standing and seen earlier on the tour, operated the other end of the line.)

The north section of the building housed the cable machinery, powered by two 500 h.p. Corliss engines. The south section housed the cars and incorporated a large transfer table to move cars from one track to another. After abandonment of the cable system in 1896, the building was used as an electric carhouse for several years; now is a warehouse. The name of the original company can be seen carved in a cornice on the front of the building. *HHH.*

40



41

43

41 DRUID LAKE DAM, Baltimore Water Works 1864-71

SE corner of Druid Lake (Reservoir); Lake Drive & Mount Royal Terrace.

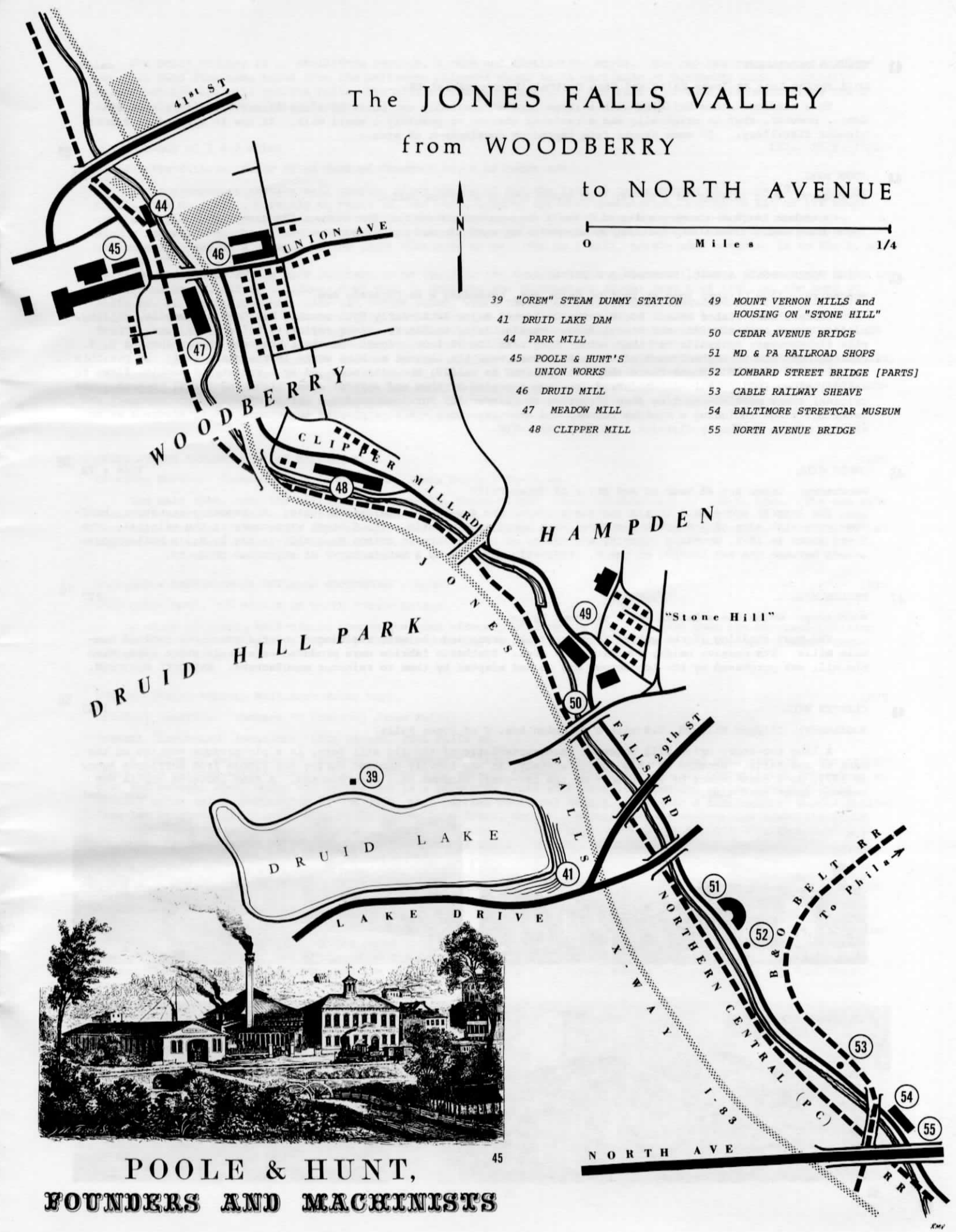
The first major earthfill dam in the United States. Forms the SE embankment of the reservoir. Height: 119 ft; reservoir capacity: 429 million gallons. Robert K. Martin, chief engineer. An ASCE *National Historic Civil Engineering Landmark.*

42 MELVALE "WATERLESS" GAS HOLDER, Consolidated Gas, Electric Light & Power (Baltimore Gas & Electric) Co. 1932

W of Jones Falls Valley, S of Cold Spring Lane.

Built by Baltimore's Bartlett, Hayward Co on the plan developed by M-A-N of Augsburg, the American rights to which were purchased by BHCo in 1923. In this system, the pressure on the contained gas is maintained not by the weight of the holder cylinders (which rise and fall guided by a rigid framework and sealed by a tank of water in the ground beneath the holder), but by a movable piston within the holder's rigid shell that "floats" on the gas. The piston is maintained gas tight against the smooth inner surface by a canvas rubbing strip sealed by a light liquid hydrocarbon. Capacity: 7,000,000 cubic ft; diameter: 218 ft; height to top of vent: 254 ft.

The JONES FALLS VALLEY
from WOODBERRY
to NORTH AVENUE



45

POOLE & HUNT,

FOUNDERS AND MACHINISTS

43 MELVALE DISTILLERY

cal1870

Cold Spring Lane at Jones Falls and Penn Central (Pennsylvania) RR.

This handsome stone building with a large cupola reportedly was built as a distillery. There is some evidence, however, that it originally was a railroad station or possibly a small mill. It now is a Standard Brands vinegar distillery. In some danger from impending development of area.

44 PARK MILL

1855

Woodberry: E of Clipper Rd & PC RR; N of Union Ave; W of Jones Falls.

A modest one/two-story granite mill built to manufacture netting for seins. The tower on the W face has been drastically truncated, spoiling an elegance apparent in early photographs.

45 UNION WORKS, Poole & Hunt, Founders & Machinists.

Various dates 1853-cal912

Woodberry: 3500 Clipper Road at foot of Union Ave, extending W to Parkdale Ave.

Poole & Hunt (later Robert Poole & Son Co.) were major 19th--early 20th-century builders of textile, milling, mining, power transmission, and miscellaneous manufacturing machinery; steam engines & boilers; RR cars; screw-pile lighthouses; hydraulic turbines, etc. They cast the 36 iron columns and their brackets supporting the U. S. Capitol dome and throughout much of their existence were the largest machine works in the state (with the possible exception of the B&O's Mount Clare shops). Operated to cal920; the site occupied by a variety of machine firms to cal970; since 1972 by Bilt-In-Wood Products, now occupied by them and several other light-industrial tenants. The original stone machine-erecting shop (fronting on Clipper Rd) survives amidst a welter of nearly contemporary and later buildings including a mammoth foundry and erecting shops. A site of vast importance and interest; a major element of the Woodberry district. *NATIONAL REGISTER.*

46 DRUID MILL

1866 & 72

Woodberry: Union Ave at head of Ash St, E of Jones Falls.

The largest stone mill in the state and one of the few in the Italianate style. An imposing structure, handsome even with some of its windows covered with corrugated plastic. The S block with tower is the original. The N was added in 1872, doubling capacity and making of it the largest cotton duck mill in the U. S. A boiler house stands between the two blocks, on the W. Presently occupied by a manufacturer of styrofoam products.

47 MEADOW MILL

1877

Woodberry: Union Ave & Seneca St; W of Jones Falls.

The most striking of the entire Woodberry mill group and the most reminiscent of the grand New England textile mills. Its massive belfry dominates the area. Synthetic fabrics were produced here until about 1960, when the mill was purchased by the Londontown Mfg Co and adapted by them to raincoat manufacture. *NATIONAL REGISTER.*

48 CLIPPER MILL

1863

Woodberry: Clipper Mill Rd, 0.4 mile S of Union Ave, E of Jones Falls.

A long two-story brick mill somewhat uncharacteristic of textile mill form, in a picturesque setting on the bank of the Falls. Because of this, unfortunately, it was heavily damaged during the floods from Hurricane Agnes in 1972, as a consequence of which most of the lst-story windows have been blocked. A fine louvered cupola was removed about that time.

continued

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47

The brick chimney is of stelliform section, a rare and distinctive style. Its cap has been removed. Clipper Mill Road (the name taken from the Baltimore Clippers whose sails were made of Woodberry duck) originally passed between the mill and the Falls, the mill's head race located on the road's present alignment along the E side of the mill. Now a brush factory.

49 MOUNT VERNON NO 1 & 2 MILLS 1873, 1879, 1881

Jones Falls Valley: Falls Rd at foot of Chestnut St, N of Cedar Ave.

The southernmost textile mill complex along the Falls and the last to cease making cloth, in 1973 (synthetics). The No 1 Mill, directly on Falls Rd, has been rendered somewhat nondescript, virtually all of its tower caps and other distinguishing architectural features having been removed over the years. Most of its double window frames, even, have been extirpated and the openings infilled, except for several that survive near the entrance allowing us a glimpse of the glory that used to be. The No 2 Mill, hardly more notable, is to the E, up Chestnut St.

There actually is far more interest to be found in the surrounding ancillary buildings. Between the mills is a small mansarded office building; S of that is what was the corporation store; just S of that, at the bend of Falls Rd, is (what apparently was) the cotton house, where the bales were stored, characterized by small, iron-shuttered windows (to shut off air supply in the event of fire); and just SW of the No 1 Mill, across the road from the cotton house, is a striking pair of gable-roofed cotton or picker houses bearing massive datestones. To the E of these, on the S face of the mill's stair tower, is a large name & date tablet.

Perhaps the most outstanding element of the complex however, is the enclave of stone, semi-detached (duplex) corporation houses on the bank above (to the SE), known as "Stone Hill," built between cal845 (the date of the first mill on the site) and 1877. Still (non-mill) worker occupied, they are in fine condition, commanding a marvelous view of the mill and the valley below.

The dam for the No 1 mill is still present to the N, the headrace filled in.

50 CEDAR AVENUE BRIDGE, City of Baltimore 1889

Crossing Northern Central (Penn Central) RR, Jones Falls & Falls Rd.

The main span, over the Falls, is a three-rib, three-hinged, steel trussed-arch of 150-ft span. The two side spans are carried by three lines of deck Warren trusses. The W approach has been reworked into a concrete ramp structure from the Jones Falls Expressway (I-83). Closed since cal970, the city plans eventually to reopen it to light vehicular and pedestrian traffic.

51 MARYLAND & PENNSYLVANIA RAILROAD ROUNDHOUSE & SHOPS 1910

2601 Falls Road, 0.5 mile N of North Avenue Bridge.

A stone 11-stall, half-circle roundhouse with offices, used by the M & P to 1958 when the Maryland Division was abandoned; presently as a depot by the Baltimore Dept of Public Works, Bureau of Utility Operations. Turntable pit filled in.

52 LOMBARD STREET BRIDGE, Baltimore Water Dept. 1877

Original location: Lombard St crossing Jones Falls.

Present (temporary) location: city garage, 2601 Falls Rd.

A bridge of extraordinary ingenuity, undoubtedly unique in the world, that provided dual service. Two traffic lanes were carried within three lines of 87-ft-span through trusses. The outer two are conventional Pratt-type of cast and wrought iron, while the center one is a bowstring truss with cast-iron top and bottom chords forming 30-inch water mains, bifurcated at the ends, that carried municipal supply. Engineer & fabricator: Wendel Bollman (see 1st Presbyterian Church, City Hall, and Bollman Truss, above). Recently replaced by a new span, the parts temporarily stored pending re-erection in the W Baltimore mill town Dickeyville, under a City-State-Federal preservation program sponsored by the Maryland Historical Trust. *NATIONAL REGISTER.*

53 CABLE-RAILWAY SHEAVES & PEDESTALS, Baltimore Traction Co. cal890

Grounds of Baltimore Streetcar Museum, Falls Road N of North Avenue.

Exhumed from a brick vault beneath Paca St N of Fayette, November 1974. Returned the cable at the end of the Druid Hill Avenue line, powered by the Druid Hill Avenue Power House. 11-ft diameter, cast in halves. A second sheave from same location (to be placed at the Constellation Pier, Pratt St; presently in a lot on Montgomery St between Charles & Light sts), returned the cable from the BTCo's Patterson Park line, powered by the East Pratt Street Power House.

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54 BALTIMORE STREETCAR MUSEUM

Founded 1966

Falls Road, N of North Avenue Bridge.

A non-profit volunteer organization dedicated to the preservation and operation of a collection of twelve Baltimore streetcars that operated between 1861 and 1963. The site is the former terminal property of the Maryland & Pennsylvania RR. By 1970 enough cars had been restored and enough track laid to start limited operation. The present track is about half a mile long.

The museum is self-supporting, the income derived from fares for the rides and from the gift shop.

The oldest car is a former horsecar, built cal861. It has, unfortunately, deteriorated to unservicability. At the other extreme is No 7407, of 1944, the car that in the early morning hours of November 3, 1963 terminated Baltimore's streetcar service. It has been restored to its original green, cream, and buff livery. Restoration work is ongoing, to continue until all the cars have been restored. With the exception of the horsecar all are in good mechanical and electrical condition.

55 NORTH AVENUE BRIDGE

1893-95

North Ave between McMechen (W end) & Howard (E end) Sts, crossing B&O and Penn Central railroads; Jones Falls; & Falls Road.

A handsome marble-faced, brick segmental arch bridge of three 130-ft spans, on a 35° skew. Total length 480 ft; width 100 ft. At W end are the portals of the Baltimore & Potomac RR's Baltimore Tunnel (1873) bringing its tracks from Washington, and the Northern Central (PC) and the B&O RRs' North Ave Tunnels (1895). The marble is from the Texas quarries, Baltimore County.

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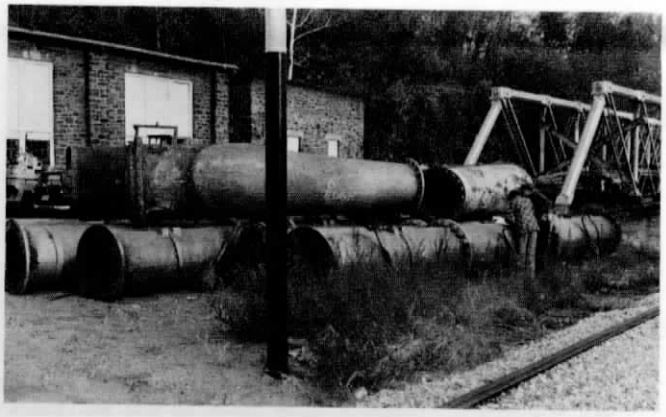

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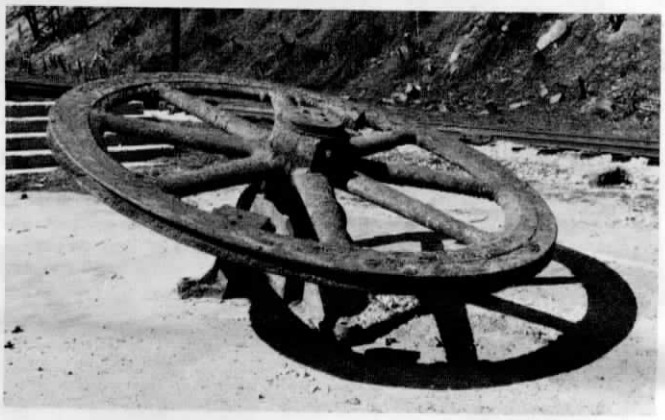

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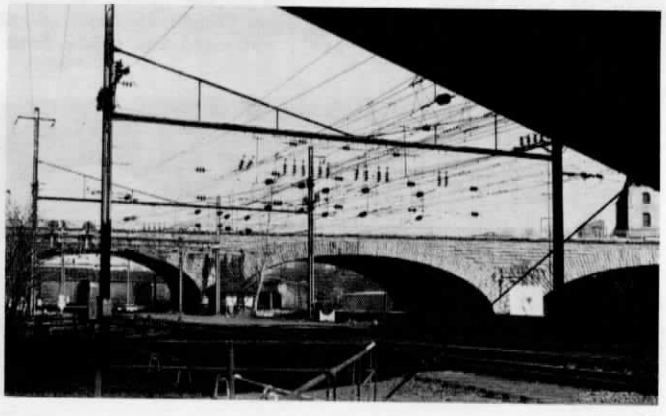

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56 PENNSYLVANIA (UNION) STATION, Pennsylvania (Penn Central) RR 1911

Charles St between Mt Royal Ave & Lanvale St; on Jones Falls.

A monumental neoclassical urban station that replaced--on the same site--the Union Station of 1873 serving the Philadelphia, Wilmington & Baltimore, Northern Central, and Baltimore & Potomac railroads (all ultimately absorbed by the PRR), and the Western Maryland. Occasionally still referred to as "Union Station." The station proper is at street level; PCRR offices above; the tracks below at the level of the Jones Falls Valley, protected by Bush-type trainsheds. The station is between the B&P's Baltimore Tunnel and the Union Tunnel, both contemporaneous with the first station, all part of the PRR's scheme for a through connection between Washington and Philadelphia/New York. Presently the only through passenger station in Baltimore, serving AMTRAK trains between Washington and New York.

57 CHARLES STREET (CABLE RY) POWER HOUSE, Baltimore City Passenger Railway cal893

Charles Street (E side) between Lanvale & Lafayette streets.

Decommissioned cal899 when BCP's lines were electrified; later converted to the Charles Theater; now barely recognizable. The adjacent car house to the N also has been transmogrified--into the Famous Ballroom.

58 WIESSNER (AMERICAN) BREWERY 1887 & later

1700 N Gay St at Lanvale St.

Built by brewmaster John Frederick Wiessner (1831-1897) to replace his older, smaller brewery of 1863 on the same site. The flamboyant brewhouse, the complex's overwhelmingly distinctive feature and a NE Baltimore landmark, is one of the finest surviving American examples of the Teutonic Brewery style, fondly referred to locally as "Germanic Pagoda." It has stained glass windows, three incredible towers, and an altogether commanding silhouette. Despite its distinction, however, no records have been found identifying the architect.

The brewery was operated by Wiessner, and later his sons, to 1920 when Prohibition dried up beer production. During the drought the plant was operated by the American Malt Co; after 1931 that firm resumed brewing. When erected, the new brewery was one of 21 in Baltimore and vicinity. Its production was 1000-1500 barrels per year, about .07% of the national production.

A sizeable complex of buildings surrounds the brewhouse on both sides of Gay Street, among them a boiler house and engine room (steam was used to heat the mash from an early date, when most brewers still were using direct heat); cavernous stock cellars, on four underground levels, of brick and stone with cast-iron columns and wrought-iron beams; a pub or beer garden (not a little of the product must have been consumed on the premises); bottling houses; a cooperage shop; and several office buildings. Across the street is a three-story townhouse surrounded by a brick and cast-iron fence, the residence of Wiessner and family. Its large size was strictly functional, for it housed not only the family but workers newly arrived from Germany.

The complex, known today as the American Brewery (the American label), has been out of commission since 1973 and presently is on the market, with considerable thought being given to its adaptation to some municipal function. Most of the equipment has been removed, except some large vats in the brewhouse. *EMB. NATIONAL REGISTER.*

59 MARYLAND PENITENTIARY 1893-99

Eager & Forest streets.

Forbidding in the best prison tradition, built of Baltimore and Harford County granite. The awesome pyramidal roof, framed in steel, covers the office and visitor areas. The adjacent building, on the Fallsway, is the City Jail.

60 MC SHANE'S BELL FOUNDRY founded 1856

201 East Federal St, between Calvert St and Guilford Ave.

The sole surviving bell founder in the U. S., with a modest work force casting bells in a variety of sizes by classical methods. At the present site--in a building of no historical consequence--since cal950.

PHOTO CREDITS

Baltimore & Ohio Collection, National Museum of History & Technology 1, 25, 26

The Peale Museum 5

Herbert H. Harwood, Jr 9, 10, 11, 15, 39, 40

Wm. Edmund Barrett for the Historic American Engineering Record 16, 30/31, 58

James E. Durrell, NMHT Collections 48

George F. Nixon 54

All others, the editor

COVER: The Druid Mill; wood engraving from Howard's The Monumental City, 1873

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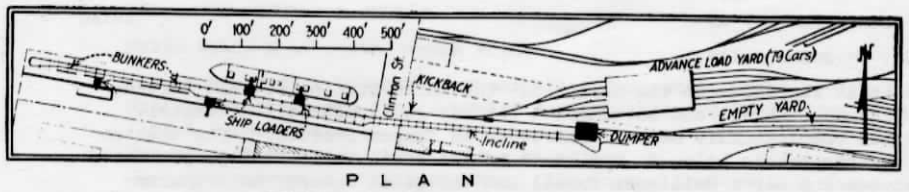
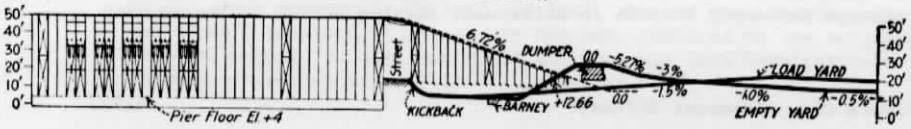


P L A N

PENNSYLVANIA LAYOUT



61

61 CANTON COAL PIER, Pennsylvania (Penn Central) RR 1916-17

Clinton Street at Keith Avenue, Canton.

The Coal Pier when built was radically different from any other on the Atlantic Coast, and has remained so until the present time. How many others of the type were built--if any--is not known, but it probably is unique today. It still is in full operation, unchanged in any substantial way from its original form, a materials-handling system of extraordinary interest.

A combination of four-ton cable-drawn dump cars that carry the coal out to the pier, and three traveling loaders on the pier that place the coal in the ships, are its outstanding features. When built, the plant's capacity was 800 tons per hour, since raised to 1000. It proved enormously effective and efficient as a unified system for transhipping coal from rail (originally) to coastwise vessels and (now) to export vessels for delivery throughout the world, and barges.

The plant actually is made up of four distinct elements: 1) a gravity/cable-haul system for getting the loaded cars to 2) a car dumper with storage hoppers; 3) the cable-car system; and 4) the traveling loaders. They operate in combination as follows.

In the "load" yard area to the east of the pier, the railroad hopper or "road" cars are pushed over a hump, and from that point no locomotives are required until time to remove the cars from the "empty" yard. With brakes released, one at a time the loaded cars run down to the foot of an incline, from which a cable propelled "barney" pushes them up to the car dumper. The empties run from there by gravity to the "empty" yard. As the "load" and "empty" yards are side by side there is a kickback to turn the cars back on themselves at the foot of the incline, before being picked up by the barney.

The 100-ton hopper under the car dumper automatically gravity feeds into the cable cars which travel on an endless narrow-gage track. The cars are hauled up a 6.72% grade to the high steel superstructure on the pier proper, passing to the outer end of the pier and back, and back down the incline to the starting point. In transit they can be made to deliver their coal to any of the three traveling loaders.

These loaders are machines that move along the 1000-foot pier on a two-rail track, carrying a hopper and a chute for delivering the coal into barges or the holds of vessels. There are two loaders on the north side and one (presently out of service) on the south.

The cable system is divided into two parts--one for the incline, the other for the pier superstructure. A tripping device at the top of the incline releases the car from the first cable, and if it is too close to the car ahead it can be held at will until the spacing is as desired. The aim is to have the 62 cars about 30 feet apart.

The emptying of the dump cars is centrally controlled from a headhouse at the top of the incline, so that it is impossible for loader No 1 to take coal intended for No 2. The operator in the headhouse designates where each car of coal is delivered.

The cable is driven by a 150 hp motor in a small powerhouse under the pier at the bulkhead line just west of Clinton Street.

The pier was erected to replace an 1887 facility of the "locomotive incline" type, in which the loaded hopper cars were pushed up a 2% incline onto the pier structure, from which they dumped through chutes directly into the ships. Its capacity was only about 500 tons per hour, and its entire operation was far less flexible. Just to the north of the present pier can be seen the ruins of the earlier one, as well as the brick piers that supported the incline over Clinton Street.

The 1917 coal pier survives today with little essential change from its original construction or method of operation. A series of storage bunkers at the end of the pier has been removed, and the discharge ends of the loader chutes have been fitted with "trimmers" for distributing the coal to all corners of the ships' holds. It is these that produce, when the chutes are in their raised position, the loaders' striking zoömorphic effect. Additionally, the dump cars have had their wood bodies replaced by ones of sheet steel and their friction journals by roller bearings, while in the interests of reducing air pollution, water sprays have been placed in the car-dumper hopper where the cable cars are loaded, to keep down dust.

Operation is steady overall if momentarily sporadic, dependent entirely upon the demands of ships and barges. A backlog of cars always is present in the load yard. A large amount of coal (as well as coke, occasionally) is loaded to barges for the short trip down harbor to Bethlehem Steel's Sparrows Point Plant.

The plant is efficient, excellently maintained, and in no apparent danger of replacement despite what is regarded as its considerable antiquity.

The entire equipment of the pier was built by the Mead-Morrison Mfg Co. of Chicago, installed under the direction of the PRR's chief engineer A. C. Shand.

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