Historic America: Buildings, Structures, and Sites: America's Cast-Iron Heritage

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America's Cast-Iron Heritage
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Cast iron was a gift of the eighteenth century to the nineteenth, and one of vast potential. The expansion of the world's modern cities was aided by it, as were the development of land and sea transportation and the creation of new systems of manufacture and production on an unprecedented scale. Cast iron also made beautiful architecture and landscape decoration democratically available at modest prices. It was strong, durable, and easily handled. As the nineteenth century opened, the age enjoyed a heritage made possible by this gift of eighteenth-century technology and invention. In the same sense, steel may be said to have been the gift of the nineteenth century to the twentieth.

Cast iron is a high carbon alloy, steel a low carbon alloy, and wrought iron an alloy with so little carbon that it is very close to pure iron. Other materials may also be included in these alloys by nature or added by man, but the carbon content is crucial. Each of these iron alloys has markedly different characteristics. The alloy cast iron can be melted and then cast with the aid of patterns and cores, or by lost wax methods, into almost any shape that man can devise. It will hold that shape forever unless remelted. It has tremendous strength in compression but virtually no elasticity, and hence it is brittle and has little tensile strength. Wrought iron cannot be cast but it can be forged, hammered, anork. It is an outstanding case of early prefabrication, yet is surprisingly ornamental. Erected in the summer of 1859, its iron sections had been designed and cast in the big iron foundry of Badger's Architectura Ironworks over the winter and were ready to ship up the Hudson when the ice melted in the spring. The foundation was prepared and waiting and the iron parts could be immediately assembled and bolted together at the site.

The arsenal was surveyed by HAER staff especially trained to recognize and record this nation's technological triumphs. Iron bridges are another example of technology recorded. None are more picturesque than the bowstring truss bridges based on Squire Whipple's inspired design, patented April 24, 1841. The truss bridge is a small work of art, so directly conceived with a top arched chord of cast iron tied at the base with square wrought iron tie rods and floored with wooden planks. Whipple, a civil engineer in Albany, was meeting the need for the road crossings over the new Erie Canal. Although scores of these bowstring truss bridges were built over the canal and other New York waterways by Whipple and his licensees, very few survive today. The one recorded in 1969 by HAER was originally constructed in 1867; it was moved about 1900 to carry a private road over a ravine near Albany.

he final all cast-iron structure we shall mention, Maine's Portland Breakwater Lighthouse, does not figure largely in any great cycle of technological evolution. It is simply quite lovely, representing the dignity and durability of which one of the most versatile of American building materials is capable. First built in 1855 and rebuilt in 1875, this iron essay in Corinthian architecture was abandoned in 1943. Its 1962 HABS record includes photocopies of the original architectural drawings discovered in the district office of the U.S. Coast Guard, its owner. It is one more example of the role played by the Historic American Buildings Survey in recognizing and recording the role of cast iron during and since the nineteenth century. Continuing survey projects by HABS, together with those of the Historic American Engineering Record, enlarge our understanding of the forms and technology of America's remarkable cast-iron age.

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