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AREA INVESTIGATION REPORT

ON

THE SAUGUS IRON WORKS

Saugus, Massachusetts

By

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INTRODUCTION

The purpose of this study is to evaluate the site in terms of historical importance, present condition and upkeep and determine whether it would be a suitable and feasible addition to the National Park System.

Associate Director Hartzog had written to Senator Saltonstall on April 26, 1963, that the Regional Director of this Region would have a study made and a report ready for presentation to the Advisory Board in November, 1963.

In compliance with the above request the writers inspected the area on August 19 and 20, 1963, and conferred with Mr. J. Sanger Attwill, President of the First Iron Works Association, Inc. which is responsible for the operation and maintenance of the site, and with the architectural firm of Perry, Shaw, Hepburn and Dean who did the restoration.

This is the first report made by the National Park Service on the Saugus Iron Works as a prospective addition to the National Park System. The area is being studied under Theme XVII, Commerce and Industry, as part of the National Survey of Historic Sites and Buildings. This is the first time that the site has been placed on the Advisory Board Agenda. It should also be said that no legislation has ever been introduced in Congress authorizing the area as a National Historic Site.

HISTORY AND SIGNIFICANCE

The Saugus Iron Works (Hammersmith) of today is a careful (though partly conjectural) reconstruction on archeologically excavated foundations and traces of the major portion of what can be claimed as America's first well-sustained integrated¹ iron works, operational from about 1648 to about 1670. The original works was built under the direction of Richard Leader for the English partnership (the "Company of Undertakers for the Iron Works in New England") formed by the initiative of John Winthrop, Jr. in response to the legal "encouragement" (with accompanying special privileges) "to the discovery of mines", given by the Massachusetts General Court in 1641. Sited on the south bank of the Saugus River at tidewater, about ten miles north of Boston, the works consisted of blast furnace, associated casting house, forge (with two "fineries" and a chafery), and a rolling and slitting mill, the latter believed to be the first in America. The ore smelted in the furnace was bog iron from swamps as near as those on immediately adjacent farms in Lynn, or as far away as Reading and Hingham. The fluxing agent was gabbro, a dense igneous rock found in nearby Nahant. The charcoal used as fuel came from the dense forests of the immediate vicinity. There was a charcoal storage house a little distance above the furnace

¹"Integrated" is used in the sense of one "works" embracing the units described below and producing directly on a sort of assembly-line basis--the malleable wrought iron (as distinct from pig-iron and cast-iron) from which the tools and hardware needed in the furthering of colonial development could be produced; Saugus, additionally, was "integrated" even to the inclusion of a slitting mill, as noted below.

(site not included within present restoration area). Water-power for the integrated operation was secured by damming the Saugus River; a 1600-foot canal, still visible in places, ran from the resultant pond to a standby reservoir (site not included in present area) above the works from which wooden flumes carried water to the seven or eight water wheels of the enterprise. Down at the river's edge was a bulkhead and dock from which boats (some company-owned) carried away the products of the ironworks. West of the furnace on the bluff above the river stood the Ironmaster's house, which survives today as a most interesting restored original. The workers (many of them indentured servants, some royalist prisoners of war from the English Civil War period) lived in cottages nearby, none of which survive.

The Saugus Iron Works was immediate successor to the initial furnace and forge enterprise begun by the same company at Braintree (furnace site today in Hall Cemetery, West Quincy) under the direction of the younger Winthrop. Though the furnace that went into production at Braintree in 1645 was abandoned only two years later for lack of water and iron ore, it was for a time "integrated" with a forge which would continue on for several years as a dependency of the Saugus works. Both Braintree forge (1646) and furnace were operational before the Saugus Iron Works. If, then, the Braintree works was the first (of whatever dubious success) in the Bay Colony, it was not the first iron works, "integrated" or not,

in the 13 colonies. That honor undoubtedly goes to the works established in 1619 at Falling Creek (south of Richmond) in Virginia--even though the latter's apparent success was cut short by Indian attack in 1622. At the latter site recent "accidental"² archeology seems to confirm somewhat limited historical evidence that plans broached for an "integrated" iron works at this location were actually carried out, though for an unwittingly short period.

Though its position of "first" must be qualified (and even that owes much to accident of nature, including the Indian) Saugus can still make significant claim as the first well-sustained integrated iron works operation; as such, it was a suggestive 17th century prototype of a modern iron or steel plant, even a symbolic forerunner of American "big business". It was more than a blast furnace producing crude pig iron and cast ware. From its associated forge came the bars of wrought iron from which could be made the tools and hardware that were needed on colonial farms and in colonial enterprises--came directly even, some of those wrought iron tools (hoes, shovels, etc.), hinges, and other items of hardware. From its associated rolling and slitting mill (the first in this country, and one of the first dozen in the world), came the rod iron that could be shaped into the nails much needed in the colonies.

²"Accidental", because findings of (part of) blast furnace, other works, and artifacts came as result of landscaping for recreational park and other projects. See article by Charles E. Hatch, Jr. and T. G. Gregory, "The First American Blast Furnace . . .", in Virginia Magazine of History and Biography, July 1962.

Though financially Saugus was not a success (due as much to competition from imported iron as much as high costs and mismanagement), and though its later years were clouded with constant litigation, as owners, managers and creditors strove for operational control following virtual bankruptcy in 1653, Saugus produced an appreciable amount of iron and ironware. In August 1648 Governor Winthrop reported the works to be turning out seven tons a week; a month later he wrote "the Furnace runnes 8 tun per weeke, and their barre Iron is as good as Spanish". In the period 1650-1653 when the experienced (though somewhat controversial) John Gifford was the manager, the following was the estimated output: 96 tons of bar iron, 12 tons of rod iron and 20-25 tons of cast and hollow ware.

Following the somewhat fitful production of the years of litigation that followed the "bankruptcy" of 1653, production under the management of William Paine and Oliver Purchas reached the level of more than 300 tons of bar iron, cast ware and tools during the years 1658-1663. But after Paine's death in 1660 Saugus became smothered with debts, and production slowed, coming to an end sometime after 1665. Already, over the intervening years, many of its workers had left to help establish other iron works, such as those at nearby Taunton and John Winthrop, Jr.'s personal enterprise at New Haven.³

³The foregoing is based almost entirely on the most authoritative account by E. N. Hartley, the research historian for the Saugus project. Iron-works on the Saugus (Norman, Oklahoma, 1957, as supplemented by Arthur C. Bining, Pennsylvania Iron Manufacture in the Eighteenth Century (Harrisburg, 1938), and (re Falling Creek) the article by Charles E. Hatch, Jr., and Thurlow Gates Gregory, "The First American Blast Furnace, 1619-1622: The Birth of a Mighty Industry on Falling Creek in Virginia", in Virginia Magazine of History and Biography, Vol. LXX, No. 3 (July 1962).

THE RECONSTRUCTION

By the 20th century the Saugus Iron Works was effectively buried many feet underground. A city street passed directly over the main water wheel and part of the furnace stack. On one side of the street a grass, shrub and tree grown slope encompassed a pile of rough stone faintly recognizable to the knowledgeable as the slag pile of the iron works operation; on the other side of the street the old Ironmaster's house remained, but so altered as to be recognizable as such to only the most well informed. In 1915 the popularly known old house fancier, Wallace Nutting, restored the Ironmaster's house to its 17th century condition. When in 1941 a number of graduates of the Ford Trade School bought the house with a view toward moving it to Henry Ford's Greenfield Village at Dearborn, Michigan, the stage was set for the ironworks reconstruction of recent years.

Local residents led by Miss M. Louise Hawkes, whose ancestors lived in Saugus as far back as the active iron works period, won the fight to keep the structure in place. The Parson Roby Chapter of the Daughters of the American Revolution purchased the land on which the furnace, the slag pile and forge had stood and put up a memorial marker which still stands. A First Iron Works Association, Inc. was formed in 1943 to carry on the work of focusing public attention on the site. To one of its meetings came Quincy Bent, a retired steel executive and summer resident of nearby Cape Ann. Recognizing the prime significance of the iron works

he discussed the project with the Board of Directors of the American Iron and Steel Institute and the Institute was persuaded to give financial support to an investigation and probable reconstruction.

After preliminary archeological investigation by Roland Robbins proved the project to be practicable, a most thorough program of research was launched in 1949, which bore fruit in the finished reconstruction opened to the public in 1954. Professor E. N. Hartley, associate professor of history at the Massachusetts Institute of Technology, served as research historian for the five year period. Valuable consultant was Dr. H. R. Schubert, historical investigator to the (British) Iron and Steel Institute; research in pertinent English and European documentary sources was done by Brian W. Clapp, doctoral candidate, at the London School of Economics. Conover Fitch of the noted architectural firm of Perry, Shaw, Hepburn and Dean was the conscientious architect who pulled all the findings together in the actual reconstruction. Both the published historical study and interpretation by Professor Hartley (Ironworks on the Saugus, University of Oklahoma press, 1957), and the files of archeological and architectural drawings and notes and memoranda at the offices of Perry, Shaw, Hepburn and Dean, attest to the dedicated teamwork that produced the final result. Much of importance was found archeologically: one-third of the furnace wheel (enabling a completely accurate reconstruction of the wheel in place today), the 500-pound hammerhead for the forge hammer, the lower part of

the furnace stack, the foundation outlines for the forge building and the slitting mill, the pier bulkhead, casting beds, and six tons of relics.⁴ When this evidence, woven together with documentary evidence from extant company records and the voluminous court records, was not enough, resort was had to English and European precedents and "typical" technological data in such sources as Diderot's Encyclopedia, and common sense deductions in terms of the immediate scene. Significantly (in terms of final integrity) when enough evidence was not to be had for the reconstruction of the associated ore roaster, or blacksmith shop, these were not reconstructed.

The physical transformation in the area east of the Ironmaster's house is evidently most striking--in terms of street removal and rerouting, removal of latter-day houses, and excavation of the area east of former street line, apart from the physical recreation of the separate components of the old ironworks itself. In addition to this physical and topographical reconstruction (unfortunately marred today by marsh-grown silt around the reconstructed pier), the finished Iron Works Restoration includes a small frame museum structure behind the Ironmaster's house where many of the artifacts (including the waterwheel remnant and the forge hammer) archeologically excavated are on display and audio-slide presentations tell the story of ironmaking in America. Twice each week-day, and four times on Saturdays and Sundays, the waterwheels, bellows and forge hammer are activated in a dramatic recreation of historical technology. Guided tours are provided by a limited staff.

⁴One of the most important small items was a piece of flat wrought iron which had been started through the slitting gear in the Slitting Mill, and withdrawn. The partially-cast but still undetached "nails" left as part of this piece were most valuable evidence as to the spacing and number of cutting discs in the original slitting mill.

HISTORICAL EVALUATION OF THE SITE

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Though the Saugus Iron Works site is not to be claimed as the actual "birthplace" of the American iron and steel industry, and though it cannot be considered a "first" except in the qualified sense of the first sustained production record, it is not to be discounted on these grounds alone. If the Falling Creek site were to be excavated, preserved and developed as the very first harbinger of things to come, there is still room for memorialization of Saugus as a New England example of an iron industry prototype, telling a story as different in its details as the Puritan setting differs from that of Virginia. Apart from the technological detail, the stories of the interplay of government and business, the sociological relationship of imported ironworkers and Puritan agriculturalists are fascinating and instructive in themselves. And Braintree, New England, first that it (just barely) was, is hardly a serious local contender for parallel reconstruction and development.

Nor is Saugus to be completely discounted as a reconstruction by a Service which is basically (though not without such exceptions as Fort Raleigh, Fort Necessity, Fort Caroline, Mound City Group) committed to the preservation and interpretation of original remains. Apart from the fact that the reconstruction might conceivably be improved in detail as more historical evidence is secured, it stands now as without doubt the most nearly accurate

(its necessary conjectures the best) that the American Iron and Steel Institute could buy. Meanwhile, the site itself, archeologically proven, is genuine without question, and significant in that form alone as the site of the best-sustained "first" integrated ironworks in this country, and a real prototype for latter-day industrial development. Financially a failure (though with extenuating reasons), Saugus was a successful producer of iron needed in all aspects of colonial life, satisfying not only short-range needs for cast-iron ware, but the long-range potential symbolized by malleable bar iron and wrought iron tools and hardware. As such, it was a solid harbinger of American industrial self-sufficiency. The site and its well-done reconstruction is most worthy of preservation as a vehicle for telling the complete story (along with National Park Service-operated Hopewell Village, and other iron sites of varying vintage and significance) of one of the key factors in America's growth to industrial might: the American iron and steel industry. It should at least be recognized as a site of "exceptional value" in exemplifying the "broad . . . economic . . . history" of the nation, and as such be classified as a National Registered Historical Landmark.

PLANNING AND DEVELOPMENT ASPECTS

The Ironworks site is located in a residential neighborhood in the Town of Saugus, Essex County, Massachusetts. Saugus is about ten miles north of the downtown center of Boston via U. S. Route 1. It is conveniently reached by

automobile from Boston and most of the communities and towns in the metropolitan region. Public transportation from Boston is provided by Eastern Massachusetts Bus Service from Haymarket Square or by Boston and Maine Railroad from North Station in Boston to the Town of Lynn. Buses are available at Lynn to the center of Saugus. It is only a quarter-mile walk from the Town center to the site.

The site contains about 8 acres of land. It is not one continuous piece of land but is split into several parts by the Saugus River and local streets. Most of the area is flat, although the reconstructed portion is layed out on a side hill terrace and is connected by walks and foot bridges. The western half of the area containing the Ironmaster's house, the museum, entrance station and parking area, is on a flat piece of land about 40 feet above the river. Several acres of land lie east of the river. That portion of the river running through the area is subject to tidal action and at present much of the area is overrun with marsh grass and weeds. The site is also surrounded by private single residences. Two such residences are within the site boundary but are owned along with the entire area by the First Iron Works Association, Inc.

The Association operates and maintains the site, which is open from 9 A.M. to 4 P.M. daily except Mondays, from April 19 through December 1. Admission is 50 cents for adults and 25 cents for children. Trained guides are

available to explain how the works operated and to answer questions. Periodically, the forge and the waterwheels are activated for the benefit of visitors. The Ironmaster's house is also open to the public. An entrance station at the gate has books and souvenirs on sale. There is also a museum that houses a collection of archeological relics, paintings, charts and slides. Although most of the collection is contained within a temporary building, the exhibits for the most part are attractively displayed and offer a good presentation of iron making and the steel industry.

From a development standpoint there are still a few things that could be done at the site to make it more serviceable to visitors and to further complete the restoration. In general, a visitor center that would incorporate the now temporary museum would be desirable. Parking facilities should be expanded and made more permanent. Due to the limited amount of space to the west of the river, parking and visitor center facilities should be considered for development on the east side of the river. However, a new route through town should be explored first to determine whether visitor access would be facilitated.

It would be highly desirable to eliminate the residence that now intrudes into the scene at the present entrance and next to the Ironmaster's house. Thus eventually the grounds around the Ironmaster's house could be restored and made more spacious. The house directly opposite the parking area could serve temporarily as a superintendent's residence.

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Consideration should be given to the acquisition of additional land to the north, so that the charcoal pit and the water collecting basin for the water-wheels could be made an integral part of the area and complete the restoration. The river area at the dock should be cleaned of weeds and other debris. It has been suggested that a small boat be tied to the dock as part of the scene, as was the intention during the years of active restoration.

According to Auditor's Report for the First Iron Works Association, Inc. dated April 30, 1963, the total assets are listed as \$1,664,942.59. Of that amount, \$1,594,412.51 is listed as fixed assets, consisting of land and buildings (\$139,014.99), reconstruction (\$1,449,186.06), equipment (\$2,769.53), and furnishings (\$3,441.93). The remaining assets of \$70,530.08 are deposits in bank accounts, cash, and bonds. Income for the Fiscal Year ending April 30, 1963, totals \$13,106.11 and expenses total \$25,014.67. The report listed a deficit of \$2,730.26 as of April 30, 1963.

The properties now owned by the First Iron Works Association, Inc., with the exception of one parcel, are tax exempt. The only parcel that is taxed, according to the Saugus Tax Office, contains 28,000 square feet and has a house and garage. The total assessment for land and buildings is \$3,730 and the tax is \$292.07.

CONCLUSIONS AND RECOMMENDATION

The writers, having examined the Saugus Iron Works and having studied its historical background and importance in the development of the nation, conclude that the area merits recognition as a nationally significant historic site and that it might well make a suitable and feasible addition to the National Park System. However, final decision as to such action should, if possible, be delayed until the comprehensive thematic study of sites related to commerce and industry--now scheduled for completion in the spring of 1964--is at hand. Only then can the place of Saugus in a balanced grouping of historic sites in this important field of American history be properly determined.