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**VOLUME III**

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PART II

SURVEY OF HISTORIC SITES AND BUILDINGS

SECTION C

SITES OF EXCEPTIONAL VALUE LOCATED IN STATES EAST OF THE MISSISSIPPI RIVER
WILSON DAM, ALABAMA

Location. Muscle Shoals, Alabama, on the Tennessee River.

Ownership. Tennessee Valley Authority.

Significance

Navigation of the Tennessee River was seriously handicapped by difficult obstructions, especially the Muscle Shoals and Colbert Shoals at the "Great Bend" in northern Alabama. Projects for removing or avoiding these obstructions to navigation were proposed periodically and received attention from the federal government as well as from the states of Tennessee and Alabama. None of the canals built prior to the Civil War proved successful, however, nor did success follow renewed agitation for government aid in developing the potentialities of the river in the post-Reconstruction decades.

In the twentieth century the emphasis shifted from navigation to power production and flood control. A study of the water-power resources of the country made by the Bureau of Corporations during Theodore Roosevelt's administration determined that they were adequate, if properly harnessed, to turn all the wheels of American industry. Hydroelectric corporations, however, had already preempted some of the choicest sites and were after more. In 1903 Roosevelt strongly stated the view that water power was a public resource when he vetoed a bill that would have permitted private construction of a dam and powerhouse at Muscle Shoals. Roosevelt maintained that the ultimate effect of granting privileges of this kind should be considered in a comprehensive way, and a general policy adopted whereby these valuable rights would not be practically given away, but should be so disposed of as to best substantiate the public interest.¹

World War I led to the first step in the effective development of Muscle Shoals. The National Defense Act of 1916 provided for the construction of a gigantic hydroelectric dam and two nitrate plants for the manufacture of war supplies at Muscle Shoals. Actual construction of Wilson Dam and the nitrate plants did not start until late in 1918, and the war was over before the project could be carried out.

In the years following World War I, electric energy was assuming the importance of a major natural resource and the conservation question became urgent. President Wilson created the Federal Power Commission in 1920, but it provided little effective regulation.

Senator George W. Norris of Nebraska led a group in Congress who pressed for more decisive action by the federal government. Their efforts centered on their demand that the nitrate works and hydroelectric station at Muscle Shoals be operated under government ownership. To them, Muscle Shoals seemed to offer an ideal opportunity for cheap power. Post-war administrations, however, were determined to eliminate government from competition with private business. Two bills providing for government operations of Muscle Shoals which were offered by the progressives were killed by vetoes. Congress was finally persuaded to offer the whole property for sale. The only bidder was Henry Ford, whose terms involved so heavy a loss to the government that they could not be accepted. A very small amount of power was leased to the Alabama Power Company for distribution to the surrounding territory, but for the most part the potentialities of the development remained unused until the time of the New Deal.

The demand for the conservation of hydroelectric power, and its use in the interest of the people as a whole had been thoroughly debated by the time of Franklin Roosevelt's first term. Roosevelt wished to go further than the regulation of water power provided for by the Federal Power Commission, and to experiment with actual ownership and operation by the government. The Tennessee Valley was singled out for the first great project. This region ramifying into seven different states—Tennessee, Kentucky, Alabama, Mississippi, Virginia, North Carolina, and Georgia—and embracing within its boundaries some forty thousand square miles, seemed to offer an ideal testing ground for the various New Deal theories on social and economic planning. A high proportion of its population were of the underprivileged classes whose status cheap power was expected to benefit; and it possessed vast natural resources, most of which were either inadequately exploited or were being allowed to degenerate. Since the government had already spent huge sums upon the Muscle Shoals development, it was believed that here, if anywhere, results might be speedily obtained.

In May, 1933, Congress authorized the President to appoint a board of three directors, known as the Tennessee Valley Authority, into whose hands control of the vast new project was to be placed. The TVA was authorized to construct dams for the improvement of navigation and the control of floods; to develop new forms of fertilizer and to promote their use; to build and operate hydroelectric plants and to distribute the power which they generated; and to take such other steps as it might see fit to promote the agricultural and industrial development of the region involved.

The TVA was quickly organized, and with the Muscle Shoals plant as a starting point was soon able to supply cheap electric power to a limited area. By 1940 TVA power was being generated at four dams, and was being used to carry forward new construction and to provide cheap power for residential and commercial consumers. It was not expected that complete operation would begin until 1944.
Because TVA is a government-owned industry operating in direct competition to private business, it has met with the most determined opposition. In February, 1936, the Supreme Court upheld the sale of power from the Wilson Dam, and three years later it refused to approve an injunction sought by private companies to prevent TVA from distributing power in competition with them. Neither decision rules finally on the constitutionality of TVA activities as a whole, but the friendly support of the Court seemed assured.

TVA's system of dams has regulated the river flows and thus checked floods on the Ohio and Mississippi as well as on the Tennessee and its tributaries. By 1944 an installed electric capacity of 2 million kilowatts was furnishing electricity for municipalities at low rates, with special stress upon electrification of rural areas and the development of new uses for electric energy. The program of fertilizer distribution, soil conservation, crop diversification, and reforestation was effectively advanced, as was the development of native industries and of recreational areas along the shores of the lakes behind the dams. Even in the dubious field of water transportation, the TVA made dramatic progress. Between Knoxville and the Ohio, 589 million ton-miles of water traffic moved in 1951 through an intricate system of locks and lakes where only 33 million ton-miles had moved in 1933. The achievements of TVA have been impressive; its programs were the first of the Nation's great regional experiments in conservation, navigation, flood control and power development.

Present Condition of the Site

By 1965 the TVA power system had grown to include 46 dams and 10 steam plants with a generating capacity of more than 13 million kilowatts. Twenty-nine of the dams and all of the steam plants are owned by the TVA. Twelve dams of the Aluminum Company of America on tributaries of the Tennessee River and five dams built by the United States Army Engineers in the Cumberland River Basin are included in the system.

The dams have converted the Tennessee River into a stair-step of slack water lakes. The lakes provide a year-round navigation channel with a minimum depth of 11' from the mouth of the river at Paducah, Kentucky, to Knoxville, Tennessee—a distance of 650 miles and for varying distances up the major tributaries. The Tennessee River is linked with nearly 10,000 miles of improved inland waterways connecting 20 states.

The TVA system generates over 65 billion kilowatt hours of electricity a year. Power is sold to cities and rural cooperatives for distribution to over 1 1/2 million consumers, five times as many as had electricity in the same area in 1933. Over 98% of the region's farms are electrified compared with 3.5% in 1933. TVA operates chemical and engineering laboratories for research in fertilizer technology in order to lower the cost of plant nutrients to farmers. TVA still operates one of the original nitrate plants for its research in phosphate fertilizers and more recently in mixed fertilizers. The other plant has in recent years been leased to private companies.

Wilson Dam, the first unit in the TVA system, is still a vital unit in its series of hydroelectric dams. Wilson Dam was begun by the U. S. Army in 1918 and completed in 1925. The first commercial power was produced on September 12, 1925. The dam is of concrete construction and is 137 feet in height and has a total length of 4,535 feet. A lake of 650,000 acre feet has been impounded with a shoreline of 150 miles. A new lock has been built to replace three small obsolete locks. The rebuilt original lock is kept on a standby basis. The new lock breaks a shipping bottleneck due to the increase of traffic at this point on the Tennessee River by 65 times since 1938. The practical capacity of the old locks was about 2 1/2 million tons; it is estimated the new one can handle 20 million. Construction on it was started in 1956; it was opened to traffic late in 1959. The new lock chamber measures 110 by 600 feet. A new high level bridge spans both the old and new locks and moves vehicular traffic over the dam without delay when a barge is being locked through.

Wilson Dam has 21 generating units with a capacity of 598,000 kilowatts. Although the oldest of the generating plants, Wilson's powerhouse still has the largest capacity of any TVA dam. Modern generators are being added to those of World War I which are still in operation.

Wilson Dam, Muscle Shoals, Alabama

N. P. S. Photo, 1965
THE CHARLES W. MORGAN, CONNECTICUT

Location. Mystic Seaport, Mystic, New London County

Ownership. Marine Historical Association
Mr. Franklin Cole, President (same address)

Significance

The venerable Charles W. Morgan is unique. One hundred and twenty-five years old, the blunt-nosed sailing vessel is the world's only extant nineteenth-century wooden whaling vessel. As such, the three-masted whaler is a valuable inheritance from both the great era of American whaling and the age of sail.

The Morgan was built in New Bedford, Massachusetts, America's major whaling port after 1840. Work on the ship began early in 1841, at the shipyard of Jethro and Zachariah Hillman. A strike by the yard's workmen on April 19 delayed the vessel's completion. The workers remained struck for almost a month, demanding, among other things, a ten-hour day. Finally, on May 5, they accepted a ten and one-half-hour day and returned to the ways on the following morning. The Morgan now became more and more a ship as each day passed. Constructed of live oak in her frame and plank, and yellow pine in her upper decks, she emerged the usual rounded-bow and square-rigged whaler of the period. When completed, she measured 105 feet 6 inches long, 27 feet 7 inches in the beam, and 17 feet 6 inches deep in her hold. When originally registered, the Morgan weighed 351 tons. She carried no cannon, but bore false gunports, painted in black on her sides, to scare off would-be pirates.

On July 21, 1841, the Morgan was launched. She bore the name of her principal owner, Charles Wain Morgan, who held a prominent position in the dominant mercantile group of New Bedford. Unlike numerous whaling vessels, which were owned by hosts of different owners, the Morgan had only seven different owners during her long career. Morgan retained his interest in her only until 1848. A later owner controlled the Morgan for a much longer time, from 1863 through 1912.

The Morgan completed her last whaling voyage in May, 1921. By that time, she had killed more than 2,500 whales, brought to port over 75,000 barrels of oil, and, it is estimated, earned about $2,000,000 for her various owners. Only two of her many voyages failed to be profitable. How many times her outlooks had sighted whales and caused the Morgan's whale boats to set out in pursuit of their prey! Then, after a successful pursuit, the crew began the laborious task of cutting away the blubber, cooking it down in the tryworks on the
top deck, and filling and storing barrels of oil in the lower parts of the ship. Captained in the course of her career by twenty-four different men, the Morgan usually carried a crew of nearly thirty. The "lay system," whereby each crew member received a certain percentage of a voyage's profits, usually allotted a 1/12 to 1/16 lay to the captain, and proportionately smaller lays to the rest of the officers and crew. The smallest lay was that of the cabin boy, 1/300.

The Morgan pursued whales for just short of eighty years. Captain Thomas Norton, thirty-four years old, took the ship on her first voyage. With a crew numbering thirty, twelve of whom were between fifteen and nineteen, the Morgan sailed from New Bedford on September 6, 1841. She returned on January 1, 1845. At her dock she unloaded 1,600 barrels of sperm oil, 800 barrels of right whale oil, and 10,000 pounds of whalebone. Out of the gross receipts of $69,591, the captain's lay amounted to almost $11,000. With that largess, he retired from the sea. Years of whaling followed for the Morgan. On her third voyage, which began on June 5, 1849, and ended on May 27, 1853, her crew beat off an attack in the South Seas by a group of man-eating natives. In 1887 the Morgan began to sail out of San Francisco and hunted whales off the coast of Japan. The whaler returned to New Bedford as her home port on August 11, 1906. After docking in New Bedford upon completing a voyage on May 10, 1911, the Morgan stayed in port for three years. Then, on September 5, 1916, the veteran vessel took to the sea on her next to last voyage, to hunt for sea elephants, and she returned later in 1917. She began her thirty-seventh and final whaling voyage in September, 1920, and completed it on May 28, 1921. When the last of her cargo of 700 barrels of sperm oil had been lifted from her hold, the Charles W. Morgan's future was uncertain. She sailed once more, when the motion picture, "Down to the Sea in Ships," was made in 1922, but then was forgotten.

Apparently left to rot, the Morgan's good luck saved her from becoming an abandoned hulk. Colonel E. H. R. Green, the wealthy son of Hetty Green, purchased the ship in 1925 and docked her at his estate at South Dartmouth, Massachusetts. Some years after his death, the present owners acquired her and in November, 1941, towed her to Mystic. Her restoration began in 1946, and as it has been completed, visitors may tour the re-born whaler, which for so many decades hunted the "Leviathan, ... the dragon that is in the sea."
Present Condition of the Site

The Morgan has been completely restored and is excellently maintained. Despite Colonel Green's rescue of the ship, the Morgan needed extensive repairs by 1941 because of years of neglect. Thus she has new masts, bowsprit, bow and other re-built sections. Furthermore, the vessel has been embedded in a gravel basin.

A visit to the Morgan greatly stimulates one's interest in whaling. A broad flight of stairs on one side of the ship leads to the upper deck. Of especial interest there is the tryworks. It was here that the blubber was cooked down over fires blazing in brick ovens. Also of great interest on the main deck are the Morgan's whale boats. Beautifully designed and fashioned small boats, their small size contrasts greatly with the huge bulk of their quarry.

The below decks are equally fascinating. The small and spare quarters for the crew are particularly interesting. One may also descend to the hold, where the barrels of oil were stored.

Even though hard aground, the Morgan offers an incomparable opportunity to gain additional insight into the world of Moby Dick.

References. Marion Dickerman, The Story of the Last of the Old Whalers: "Charles W. Morgan" (Mystic, Conn., 1949); The Log of Mystic Seaport, 13 (July, 1961); The Story of Mystic Seaport and the Marine Historical Association, Inc.; Giles M. S. Tod, The Last Sail Down East (Barre, Mass., 1965). Also, "The Charles W. Morgan" (Mystic, Conn., n.d.).
The Charles W. Morgan, Mystic, Connecticut

Courtesy Maritime Historical Association, Mystic, Conn.
Samuel Colt is as famous for his pistol as Henry Ford is for his Model T. In addition to their fame for their respective products, another similarity between the two men is their intuitive industrial perception and perseverance. Because of those attributes, each genius contributed to the world not only an improved product, but new manufacturing techniques.

Colt, unlike Ford, was born in a city and to an industrial family. His birthday was on July 19, 1814, in Hartford, Connecticut. A prosperous cotton-manufacturing father enabled the youngster to live in a comfortable home for several years. But before Colt was seven, his mother had died and his father's business had failed. For the next three years, Colt lived sometimes with his father and sometimes with an aunt, and attended school irregularly. By 1824, he was in Ware, Massachusetts, working in his father's new factory, a dyeing and bleaching establishment. His father sent him to Amherst Academy when he was thirteen, but removed him in 1830 because of his independent ways. A year's voyage as a seaman followed, Colt sailing to India and back.

Upon his return, Colt soon asserted his individuality. He worked for a brief time in his father's factory and then disappeared. Applying knowledge he had learned about chemistry, the young man travelled about the United States and Canada, lecturing on the mysteries of chemistry. He also demonstrated the effects of laughing gas. Billing himself as "Dr. Coult, late of New York, London and Calcutta," the brash youth apparently followed the lecture circuit in order to raise money to develop a practical revolver.

Colt's romance with the pistol began early and endured until his death. During his year before the mast, he whittled the prototype for his famous revolver. People for some 400 years had attempted to perfect such a pistol, and the American eventually succeeded where others had failed. In particular, the future Hartford tycoon finally produced a revolver that was light in weight and efficient in operation.

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1Harold Peterson, The Treasury of the Gun (New York, 1962), 211.
The inventor is of additional interest because he realized that he had to do more than just devise a good pistol. Colt understood that the more pistols he produced, the cheaper would be the cost of each firearm. He thus realized the efficacy of mass production. Throughout his career, he endeavored to refine the pistol’s design, reduce the number of individual manufacturing steps, and market a cheap and reliable weapon. Also, like other outstanding American industrialists, such as Andrew Carnegie and Ford, Colt possessed the ability to attract and use brilliant subordinates.

Colt’s first effort to manufacture pistols failed. By 1831, he had personally made two revolvers, one of which exploded without harming him. His first pistols had revolving barrels, which soon abandoned in favor of a single barrel and a chambered breech. A pistol in 1833, which he made while in Baltimore, incorporated the revolving chamber. Anxious to protect his firearm from imitation, Colt travelled to England in October, 1835, in order to obtain a British patent. Once that was accomplished, he returned home and secured an American patent on February 25, 1836. Colt, in the same year, raised $300,000 to begin producing his weapon. The State of New Jersey chartered the Patent Arms Manufacturing Company on March 5, 1836, and the concern began production in September of the same year. The new manufacturer struggled for almost six years to exploit his pistol, but had to close the plant in Paterson, New Jersey, in 1842. Despite the failure, the inventor had improved the pistol and designed production machinery during those difficult years.

For the next five years, Colt largely forgot the pistol. He turned to the development of an electrical submarine mine and an underwater telegraph. He succeeded in both endeavors. Then the Mexican-American War erupted.

In addition to extending the Nation’s boundaries, the war with Mexico made Sam Colt. But only because his salesmanship turned the Federal Government’s purchase of a thousand pistols to his own advantage. Colt, after receiving the $24,000-order, rented an armory at Eli Whitney’s factory near New Haven, Connecticut, and there produced the small order. Nevertheless, "... those few pistols, when Sam Colt got to spreading the story around the world, accounted for the defeat of the Mexicans." Once the initial contract was fulfilled, Colt transferred his operations to Hartford.

The rapid rise in the popularity of Colt’s pistol soon led to the development of one of Hartford’s largest industries. Colt, at first, rented a large building. There, he continued his efforts to simplify production. He produced in 1852, 55,000 pistols. Never forgetting the sales end of the business, Colt used every opportunity to promote his

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weapon, even travelling abroad just before the Crimean War to attempt to get orders. He succeeded in part, obtaining orders from Russia and Turkey, who opposed each other during the war. His expanding business soon required additional room, and between 1854 and August 30, 1855, he built a huge new factory in Hartford. In addition to the factory (most of which was later burned and rebuilt), Colt erected many brick houses just in back of the plant for his workers. By the outbreak of the Civil War, Colt's factory probably was without a peer in the world.

Colt did not live to witness the popularity of the pistol in the post-Civil War West. He died on January 10, 1862, when only forty-seven.

Present Condition of the Site

"Armsmear" stands a little southwest of Colt's factory. Built in 1855, it is a large, rambling Italianate house, which at first lacked a mistress. That situation, however, was remedied on June 5, 1856, when Colt married Elizabeth H. Jarvis.

Towers dominate the exterior of the house. A five-story tower on the south contained the original main entrance. Arched windows and deep overhangs at the third and fourth stories of the tower, plus a deep overhang at its top, emphasize the tower's heavy appearance. Today, a modern brick wing abuts on the south side of the tower. Just north of the preceding tower is a projecting three-story section. Between it and the twin-towered driveway at the north end is a recessed two-story section, whose central part is dominated by its arched windows and roof. At the far end are two three-story towers, separated on the ground floor by a passage way. The house is made of brick, which is plastered and painted a cream color. All of the heavy woodwork is painted a dark brown.

As on the exterior, the house has not suffered any major changes in the interior. The present main entry used to be the dining room. The room retains its original brick fireplace and woodwork, which, here and elsewhere, is dark. A passage leads from that room through a hall and small room into the drawing room. It is at the back of the house and is the building's most ornate room. An almost square room, it has oak woodwork in the ceiling, a marble fireplace, and floor to ceiling windows. Some of the furnishings in the room, such as the large, gilt-framed mirror over the fireplace, date from the 1850's. Southwest of the drawing room and just off to the left of the old main entrance is a large room that is now used as a chapel. The doorway in the tower contains the original tall and massive doors, which bear elaborately etched glass in their upper halves.

The second floor has been turned into apartments.

Colt must have derived much pleasure from his mansion. Earlier, in 1850, he had been greatly pleased when he became a colonel in the
Connecticut militia, even though his "... chief function seems to have been making sure that ... [the governor] got home from official parties not too drunk."3 Now, his elaborate house testified even more dramatically to a socially aloof Hartford that Sam Colt was a success.


“Armstrong,” Samuel Colt House, Hartford, Connecticut

N. P. S. Photo, 1965
ELEUTHERIAN MILLS, DELAWARE

Location: Hagley Museum, Greenville, Wilmington, New Castle County

Ownership: Eleutherian Mills -- Hagley Foundation, Mr. Walter J. Heacock, Director

Significance

E. I. du Pont de Nemours & Company was founded by Eleuthère Irenee du Pont in 1801 as a black powder manufacturing concern. From the first, the company manufactured a product of superior quality. Soon the manufactory dominated the American powder industry; it also gained a reputation for excellence that the duPont organization still possesses. It is apparent, then, that the early duPont buildings at "Eleutherian Mills," near Wilmington, Delaware, commemorate the beginning of an American industrial saga.

France was Irenee's homeland. Born on June 24, 1771, to Pierre Samuel du Pont de Nemours, a Huguenot, du Pont at sixteen became an apprentice to Antoine Lavoisier. Lavoisier was an eminent scientist and the director of France's powder industry. Under his tutelage, Irenee learned much about the manufacture of powder. A transfer to the arsenal at Essone followed the conclusion of his apprenticeship and Irenee completed his training there. On November 28, 1791, he married Sophie Madeleine Dalmas, despite the objections of his father and the anger of two other suitors.

Irenee probably would not have migrated to America if it had not been for the French Revolution. Both he and his father were political moderates; nevertheless, they suffered so from the passion of the extremists that in 1799 they decided to emigrate to the United States. Du Pont pere planned to establish a colony in the western section of Virginia. On October 2, 1799, he and a family group of thirteen boarded the ship American Eagle and on January 1, 1800, landed at Newport, Rhode Island.

Once in America, the elder du Pont soon abandoned his plan to establish a settlement in Virginia. The high cost of land, among other factors, turned him from his project.

But Irenee soon learned of the inferior quality of American powder. A hunting occurrence involving poor powder stimulated the young Frenchman to visit the Nation's largest powder factory in Frankford, Pennsylvania. The inspection convinced him of the low state of American powder manufacture and caused him to consider producing it himself. On January 5, 1801, Irenee and his brother, Victor, sailed from New York for France, hoping to obtain financial backing for a powder works. They were successful in their quest and a company was formed on April 21, 1801. While in France, Irenee also acquired powder manufacturing machinery and information about new manufacturing techniques.
Upon his return to America, Irénée quickly implemented his plans. He surveyed several sites for a powder factory and finally choose one on the Brandywine River in Delaware. Already the location of a great flour milling industry, the Brandywine offered an excellent source of waterpower. Furthermore, du Pont's site lay near Philadelphia. He paid $6,740 for 95 acres bordering the river, and on July 19, 1802, began the construction of his factory. By the winter of 1803 he had built a house, barn and completed a large part of the refinery. Sufficient building had been completed by the summer of 1803 to enable Irénée to begin to prepare saltpeter.

Irénée's assumption that America would welcome excellent powder was soon verified. He sent his first shipment of 25-pound sacks of powder to New York in the spring of 1804. The powder won instant approval. By the end of 1804 he had sold a total of 39,000 pounds. In 1805 he sold triple that amount. Within six years, du Pont owned the largest powder factory in America and garnered $44,000 in profits. The War of 1812 spurred Irénée to purchase in 1813 an adjoining tract, known as the Hagley property, for $47,000 and there he erected a new mill that doubled his factory's output.

Following the Treaty of Ghent, December 24, 1814, the du Pont works continually expanded, and sometimes exploded. Despite the explosions, the company supplied an ever-increasing supply of powder to meet the demands of a growing country. The founder's death on October 31, 1834, did not impede the subsequent expansion of the concern. During the Civil War, the company produced some 4,000,000 barrels of powder for the Federal government. In the decades following the Civil War, the company continued to grow and began to diversify its interests. Today, the concern is one of the Nation's major companies and maintains its early record for excellence and innovation.

Present Condition of the Site

The du Pont Company in 1952, on the 150th anniversary of the establishment of the concern, created the Eleutherian Mills — Hagley Foundation and gave it 135 acres, including the site of the original works. Since then, the Foundation has developed the Hagley Museum, which maintains and interprets this industrial site.

The most significant structure at "Eleutherian Mills" is the residence of Irénée du Pont. Completed by the summer of 1803, the two-story, dormer-windowed and gable-roofed building sits near the top of a ridge that overlooks the Brandywine. The house is constructed of stone that has been stuccoed a sand color. Its woodwork is cream colored. The house originally consisted of just a large central section, but a wing was added on either side about 1850. Each wing is two stories high and has a dormer window on their respective gable roof. Inside the house, a hallway runs through the width of the residence. Various rooms lie off either side of the hallway and at the back of it a handsome, winding staircase leads to the second floor. From the house's back porch one overlooks the site of the first mills, none of which now stand.
When Irenee lived, he could survey his plant from his house. Just below it and still some distance from the river was the refinery, where sulphur and saltpeter were prepared for use in making powder. Farther down the hill and on the river stood the powder mills. These buildings had very thick stone walls on three sides and light wooden fronts and roofs facing the Brandywine. Any explosion would thus be directed across the river.

Near the front of the residence is the company's first office building. The du Ponts conducted the business from the house until 1837, but in that year constructed the stone office that is just south of the house. Until 1890 the company conducted its affairs from this building.

As one leaves the residence on a museum-operated bus, he traverses the route that has been travelled since 1802. The road curves to the west of the residence as it descends the hill and then turns east at the foot of the hill and then follows the curving Brandywine. One passes by the site of the original mills and then by mills erected over a century ago. The remains of 21 of the latter still stand. One also comes to the old machine shop, erected in 1858, where working models and dioramas explain the manufacture of black powder. At the entrance to the "Eleutherian Mills" is a large three-story stone building that was erected in 1814 by Irénéé and some associates as the Hagley Cotton Mills. It now houses exhibits devoted to the industrial history of the United States.

The Hagley Museum is open from 9:30 a.m. to 4:30 p.m., Tuesdays through Saturdays. Sundays, 1:00 -- 5:00 p.m. The residence is only open from May 22 to June 5, and from September 21 to October 16. The tour of the grounds starts at the old cotton mill and then proceeds up the river.

The E. I. du Pont Residence "Eleutherian Mills," Hagley Museum Delaware

N. P. S. Photo, 1966
GEORGE B. CORTELEYOU HOUSE, DISTRICT OF COLUMBIA

Location. 2111 Bancroft Place, N. W., Washington, D. C.

Ownership. Mr. Raymond L. Poston, Jr., 2111 Bancroft Place, N. W.

Significance

As the first Secretary of the Department of Commerce and Labor, George Bruce Cortelyou organized and set broad policies for the new department. Formerly the private secretary to President Theodore Roosevelt, Cortelyou served on his cabinet in three capacities. He served as Secretary of Commerce and Labor in 1903 and 1904. Resigning to become chairman of the Republican National Committee, he managed Roosevelt's successful campaign in 1904. After Roosevelt's election, Cortelyou became Postmaster General. He left this post in March 1907 to become Roosevelt's Secretary of the Treasury. When William Howard Taft took office in March 1909, Cortelyou entered business as a public utility executive.

Cortelyou's path to success began when he became a stenographer to public officials. Born in New York on July 26, 1862, of an established family, his education was in the direction of teaching. Still in his twenties, Cortelyou came to Washington during 1892, as secretary to the fourth assistant postmaster-general. In 1895, the same year that he was appointed stenographer to President Cleveland, Cortelyou earned his LL.B. from Georgetown University. An LL.M. degree the following year from what is now George Washington University enhanced his usefulness. President Cleveland recommended him to William McKinley, and in 1900, Cortelyou became McKinley's assistant secretary. When Theodore Roosevelt came into the Presidency, he retained Cortelyou as his private secretary. In the years that followed, Cortelyou proved of great service to the President. Roosevelt was particularly impressed with the good sense and tact he displayed during the meetings of mine operators and union officials during the anthracite coal strike in the fall of 1902. A year later, as Secretary of Commerce and Labor, Cortelyou worked to expand government services to business, especially in the field of marketing information. He also advised Roosevelt on such domestic issues as the prosecution of the Northern Securities case, the miners' strike in Colorado, and the union-shop issue at the Government Printing Office. Throughout his public career, and after, Cortelyou showed high administrative ability and integrity.

Present Condition of the Site

During the years that Cortelyou achieved national prominence as a cabinet member, he occupied 2111 Bancroft Place, N. W. When the Cortelyous lived here, this 3 1/2-story stone and brick row house on a
raised basement overlooked the central part of the city. The row of 6 houses, of which this is the largest and terminal unit, was designed by the architects Francis and Schneider, and built in 1896 by James Lampton. The builder was the first occupant of 2111.

The imposing exterior of the structure is of rough hewn light grey stone, the rear of the house being brick. Both the front and side walls nearest Bancroft Place and the corner turret were capped with a steep tile roof, which was replaced with slate about 1950. Another minor exterior change was the enclosing of the small balcony on the side wall of the third floor, making it part of the adjoining room.

The interior appearance has undergone more changes by the successive occupants of the house. Between 1939 and 1949, the house was owned by a Doctor Dowling, who converted the basement into his medical offices. In so doing, he probably removed the basement kitchen which once shared this floor with servants quarters. On the floor above, reached by a flight of stone steps from the street, the house retains its original flavor. A front parlor, separated from the entrance hall by double doors, still overlooks Bancroft Place from a semicircular bay. The original mantel still frames the fireplace on the party wall of this room. The appearance of this room has changed little since Treasury Secretary Cortelyou entertained President Roosevelt here. From the entrance hall, a modest staircase with an oak handrail leads to the floors above. Elaborately embossed tin, painted white, forms the dado up the inside wall of the stairs and on the wall of the third floor stair hall. Door and window trim, baseboard, mantels, doors, windows, and walls are largely as they must have been when the Cortelyou family lived here. Electricity, plumbing, and other modern requirements have brought about further changes in the interior. The construction of a garage by another owner about 1950 entailed the excavation of the garden area behind the house. Still, on the north side of Bancroft Place, the immediate surroundings of this structure have changed very little over the past half century.

George B. Cortelyou House, Washington, D. C.
TEMPORARY WHITE HOUSE, DISTRICT OF COLUMBIA

Location. 736 Jackson Place, N. W., Washington, D. C.

Administration. Hon. Lawson B. Knott, Jr., Administrator
General Services Administration,
Washington, D. C.

Significance

This modest brick and stone row house on Lafayette Square was the temporary home and office of President Theodore Roosevelt during the renovation of the White House in the summer and fall of 1902. Here, on October 3, the leaders of the opposing sides in the anthracite coal strike met at the request of the President to attempt to resolve their differences. From this house, following the unsuccessful meeting, Roosevelt directed the moves which eventually solved the crisis to the advantage of the United Mine Workers and the American public. This was the first occasion on which the federal government intervened in a labor dispute without favoring the interests of the business community.

Towards the end of June 1902, Congress appropriated money for the renovation of the interior of the White House by the architects McKim, Mead, and White of New York. Included in the appropriation was $2,000 for temporary quarters for the President. Roosevelt selected a convenient location at 22 Jackson Place, since renumbered as 736 Jackson Place, N. W. Roosevelt occupied this building from June 23 until he moved back into the White House on November 12.

President Roosevelt had set a new precedent with his firm belief in the need for executive leadership in the federal government. As proof that he believed that supervision must develop with industrialization, he had instituted the suit for the dissolution of the Northern Securities Company. In May, 1902, the United Mine Workers, led by John Mitchell, and numbering nearly 150,000 miners in the anthracite coal mines of northeastern Pennsylvania, struck when the mine operators refused to discuss wage rates with union representatives. The strike lasted throughout the summer, and as fall approached the public began to experience the shortage of hard coal. As public fears mounted, President Roosevelt began to look for a solution to the crisis. He finally decided on intervening as a neutral party to encourage a settlement. Senator Hanna had tried to approach George F. Baer, president of the Reading Railroad, and one of the mine owners, but had been turned down flat.
Roosevelt searched for a solution. On September 30, he sent Secretary of War Elihu Root to New York to tell J. P. Morgan that he intended to invite the operators and the union representatives to Washington for a conference. On October 1, the invitations were sent for Friday, October 3, at the temporary White House at 22 Jackson Place. At 11 a.m. that morning, John Mitchell and three others of the United Mine Workers arrived at the house, and were ushered into Secretary Cortelyou's office on the first floor. Soon, six representatives of the mine operators arrived, led by George Baer. After all ten were assembled, they moved upstairs to Roosevelt's room. Despite the fact that he was recuperating from a leg injury received in a carriage accident a month before, Roosevelt addressed the representatives, and appealed to their patriotism to arrive at a settlement. After this short meeting with the President, Attorney General Knox, and Carroll D. Wright, the commissioner of labor who later investigated the strike, the representatives left to formulate their respective positions. About 3 p.m., they returned. Mitchell voiced the willingness of the workers to submit their cause to arbitration, but the operators denounced Mitchell, and refused to concede at all. Baer had previously stated that "unions were illegal and irresponsible, and that the miners' rights would be protected . . . not by the labor agitators, but by the Christian men to whom God, in His infinite wisdom, has given control of the property interests of the country."

In the face of this stalemate, Roosevelt received a letter from Grover Cleveland in Princeton, suggesting an interim period of mine operation to alleviate the fuel shortage. Roosevelt replied that he agreed with the suggestion, and that if work were resumed, he would appoint a commission to investigate the situation and arrive at a solution. Within the week, Roosevelt wrote to Cleveland asking him to be a member of the commission, to which he agreed. Assured that the Governor of Pennsylvania would request federal intervention to preserve order whenever Roosevelt desired, the President told Major-General John Schofield to prepare troops to act as receiver of the mines. Whether these secret preparations became known to the operators, or whether they were impressed by Cleveland's acceptance of a place on the President's commission, they backed down and agreed to the appointment of a commission to resolve the dispute. In order to save face, they asked that Cleveland not be on the commission, and that a labor representative not be officially included. Both sides acquiesced when the "eminent sociologist" appointed by Roosevelt was E. E. Clark, Chief of the Order of Railway Conductors. With the commission set up by October 15, work began quickly. The public acclaimed the solution, and the federal intervention and subsequent arbitration initiated here became one of the most important landmarks in American labor history. The Government remained a neutral party, and the public interest was served.
Temporary White House, 736 Jackson Place, N. W., Washington, D. C.

N. P. S. Photo, 1965
"THE WAYSIDE," HENRY DEMAREST LLOYD HOUSE, ILLINOIS

Location. 830 Sheridan Road, Winnetka, Cook County.

Ownership. Mrs. William Bross Lloyd (same address).

Significance

The incredible post-Civil War growth and consolidation of industry stimulated both praise and criticism. The paramount critic of the 1880s and 1890s was Henry Demarest Lloyd. Through his writing, speaking and other activities, he encouraged and stimulated a responsible criticism of America's industrial phenomenon. That criticism eventually contributed to industry's modification of some of its inelegant practices.

Lloyd was born into a happy family and he received a good education. Sixteen years after his birth on May 1, 1847, he entered Columbia University in New York City. By the time of his graduation in 1867, the young man possessed a sound basis for his future activities and he reflected a liberal enthusiasm. He then attended the University's law school and received his degree in 1869, at which time he was also admitted to the New York bar. Thus Lloyd, handsome, self-confident, and zealous, ended his formal education and moved into the work-a-day world.

He lost no time in becoming a reformer. Lloyd joined the American Free-Trade League, an organization dedicated to changing America's high tariff policy, and soon became the editor of the group's paper, the Free-Trader. Furthermore, he joined those attacking the Tweed Ring in New York City. He also supported the liberal element in the Republican Party in the election of 1872, but the failure of the liberals in the campaign turned him from politics for a time.

Disappointed at the outcome of the campaign, Lloyd settled in Chicago in 1872, having been attracted by a new job and a woman. Offered a position on the Chicago Tribune in 1872, he accepted it. At the same time, his fondness for Jessie Bross, the daughter of a former lieutenant-governor of the State of Illinois, led to their marriage in 1873.

Happily married, Lloyd over the next twelve years gradually emerged as a perceptive and worried commentator about certain industrial developments. At first, Lloyd was the editor of the paper's literary page. Required to review innumerable books, the editor read about revolution, evolution, social Darwinism, and current European philosophy. Generally speaking, his reading stimulated his liberalism. Then in 1874,
the Tribune made Lloyd its financial editor. During the next six years he became increasingly knowledgeable about the consolidation trend in industry. He grew less and less enchanted with big business and began to criticize trusts. The railroads received special attention as Lloyd wrote about their centralization and concentration of control. In January, 1880, he became the Tribune's chief editorial writer. From that time until June, 1884, he continued to discuss in his columns the rise of monopoly in a manner

...that has had few parallels in American journalism for range, persistence, and cumulative effect upon public attitudes and policy, if not upon the combination trend.¹

But not everyone approved of Lloyd's campaign. His own paper, increasingly conservative in outlook, evidenced a growing agitation about its editor. Thus Lloyd resigned in 1885.

Now independent, and blessed with an independent income, Lloyd became the David of the anti-monopolists in opposition to the Goliath of the American economy. Having published an anti-trust article in the Atlantic Monthly in 1880, Lloyd had attracted additional attention throughout the country. Following his separation from the Tribune, he travelled to Europe and met and talked with many prominent liberals. Resuming his reformist career after returning to the United States, he engaged in the defense of those accused of involvement in the Haymarket massacre of 1886. He helped to have two death sentences commuted, at the cost of personal social ostracism. Undeterred, Lloyd vigorously discussed the growth of monopoly and the dangers that industry's aggrandizement held for the public. He enunciated his ideas in public on February 5, 1888, at a meeting held in the Grand Opera House in Chicago. His talk was entitled "The New Conscience, or the Religion of Labor."

Labor's future had increasingly attracted Lloyd and he was to become more and more involved in labor's present. When an employers' lockout against coal miners in the Spring Valley in Illinois occurred in 1889, Lloyd espoused the cause of the miners. His interesting study of that affair appeared in the following year, it being entitled, A Strike of Millionaires Against Miners, or the Story of Spring Valley. Lloyd's advocacy of unionism was strongly expressed on December 12, 1893, when he spoke of the necessity for labor unions before the American Federation of Labor in Chicago. In the following year, Lloyd ran for Congress under the Populist banner, but was defeated.

But Lloyd's political defeat in 1894 is not remembered so much as is the publication of his notable book, Wealth Against Commonwealth. The author had begun the volume in May, 1889, intending to explain how trusts and monopolies arose. It took five and a half years to finish the work. He studied court records, forgotten government

¹Charles McArthur Destler, Henry Demarest Lloyd and the Empire of Reform (Philadelphia, 1963), 142.
reports and the ignored conclusions of legislative investigations. The information garnered from those, as well as other sources, appeared in Lloyd's 500-page probe into the concentration of industry. Written for those of education and position, Lloyd hoped that the volume would influence educated men and women, as well as the clergy, and perhaps journalists. Despite the book's failure to effect an immediate response, the volume remains a landmark in the history of antimonopolism.

The publication of Wealth Against Commonwealth climaxed Lloyd's career. Yet, in his last nine years he remained very active. Between 1897-1901, he travelled extensively and wrote quite a bit. He continued to participate in labor's struggle; and in 1903 supported the drive to have Chicago acquire the ownership of the street railways. In 1903 he also joined the Socialist Party. Only his death on September 28, 1903, ended his zealous service in behalf of reform.

Present Condition of the Site

The Lloyd House reflects the comfortable middle-class nature of Lloyd's background and family life. Never poor, Lloyd adopted reform because of conviction, not necessity.

A large, rambling brick building, the house faces the shore of Lake Michigan. A porch protects the front of the house and extends partway down both sides. And the stairs leading to the porch are protected by a porte cochere.

Inside the front door, one first steps into the hallway. Its two dominant features are a fireplace and the stairway that ascends to the third floor. To the left as you enter is a parlor, which also has a fireplace. A large window in front looks toward the lake. The furnishings in this room, as in the other rooms, apparently date from Lloyd's day. Just beyond this room is a huge dining room, perhaps twenty-five feet long and fifteen feet wide. A very large sofa rests against the east wall, a brick fireplace dominates the south wall, and a large dining table occupies the center of the room. The woodwork, as it is throughout the house, is dark. Two small rooms just north of the dining room apparently served as small reading rooms. West of the dining room is the kitchen and quarters for the housekeeper.

The second floor contains four bedrooms in the front section of the house and additional ones in the back wing.

Of the upper floors, the third is the most fascinating. The third floor was added in 1896 by Mrs. Lloyd and it contains Lloyd's study. Not changed since his death, the room contains his desk, a revolving bookcase, and wall bookcases that apparently hold many of Lloyd's books.
The room has a fireplace in the south wall and a sunporch on the north.

The Lloyd house is in excellent condition. It is not open to the public.


N. P. S. Photo, 1965
EUGENE V. DEBS HOUSE, INDIANA

Location. 451 North 8th Street, Terre Haute, Vigo County.

Ownership. Eugene V. Debs Foundation, Mr. Patrick E. Gorman, President, (same address)

Significance

As the influence of labor leaders constitutes an integral aspect of the history of American industry, Eugene V. Debs' life and career possess unusual significance in the Nation's industrial history. It is as the founder of industrial unionism in the country that Debs requires consideration. Whereas his espousal of Socialism accomplished little, his earlier efforts apropos of industrial unionism remain a landmark in the overall growth of American commerce and industry.

Terre Haute, Indiana, was Debs' birthplace and life-long home. Born on November 5, 1855, of parents who had migrated to America from Alsace, Debs acquired an early admiration and sympathy for the laboring class through reading Voltaire and Victor Hugo. The latter's novel, Les Misérables, remained Debs' favorite book, he reading and rereading it until his death.

It was fortunate that Debs acquired a taste for reading when quite young, because he began to work when fourteen. He worked in a factory, then as a fireman on a railroad, and then as a clerk in a wholesale grocery store until 1875. The job that he always proudly remembered was his work as a fireman. And it led to his becoming a railroad union officer.

Debs' charter-membership in the Terre Haute unit of the Brotherhood of Locomotive Firemen dates from 1875. Even though no longer a fireman, he also became the secretary of the lodge. In 1880, he became editor of the Brotherhood's national magazine and the order's secretary-treasurer. During the 1880s Debs at first opposed strikes and violence, placing greater hope in a cooperative approach to employers. His hopes proved unavailing, however. Furthermore, when he resigned from the union in 1892, Debs had also decided that craft unions could accomplish but little.

Dissatisfied with the efficacy of craft unions, Debs sought to create an industrial union for the railroad industry. Instead of having one union for the fireman, one for the engineers, and so on, and none for the unskilled workers, Debs wanted to bring all railroad laborers into one organization. Then, he believed, the working man could negotiate with the railroad industry.
Debs, acting upon his idea, succeeded, but his success led to failure. He initiated the organization of the American Railway Union in June, 1893. In April, 1894, James J. Hill announced a reduction of wages on the Great Northern Railroad. Debs' union struck. Eighteen days later Hill gave in. The victorious union gained national prominence, and by June, 1894, the union counted 150,000 members. But before the American Railway Union could consolidate its gains, it became involved in the strike against the Pullman Company that began in June, 1894. To aid the striking Pullman employees, the American Railway Union refused to handle Pullman cars. The new union thus proved its loyalty to the working movement, but speeded its own destruction. Unable to cope with the adamant opposition of the employers, the application of Federal injunctions, and the arrival of soldiers, the strikers finally collapsed. Debs, as a result of his defiance of the injunctions, was jailed for six months.

Jail proved no hardship, and Debs received a mammoth welcome when he returned to Chicago in November, 1895. Over 100,000 people acclaimed him. The amazing popularity of the labor leader failed to help resuscitate the American Railway Union, however, and Debs finally ended its career on June 18, 1897. Before the union disbanded, though, "...its spectacular success publicized and proved the virtues of industrial unionism."

The demise of the American Railway Union came a half year after Debs had proclaimed his support of socialism. A humane, sympathetic, moral, and just person, Debs sought comfort and justice for all Americans. Disappointed and disillusioned by his union work, he could now see no other way to improve conditions than through socialism.

As a socialist, Debs ran for the presidency in 1900, 1904, 1908, 1912, and 1920. He was a magnetic speaker and his sincerity impressed more than just the members of his party. Debs also adhered to his convictions. After America's entry into the First World War, he still spoke out for what he thought was right. On June 16, 1918, he denounced the arrest of those accused of sedition. Four days later he was indicted for violating the Espionage Act and on September 14, 1918, was sentenced to a ten-year term. Thus his last race for the White House in 1920 was made while in jail. The winner of the 1920-election, Warren G. Harding, pardoned Debs in 1921.

A free man, Debs returned to Terre Haute. He lived until October 20, 1926, but poor health troubled his last years.

Present Condition of the Site

The Debs house is a two-story frame building that is very much as it was when the Debs' lived there. Debs' wife, Katherine Metzel, whom he had married on June 9, 1885, apparently designed and furnished the new house according to her desires.

On the outside, two easily corrected changes have occurred. First, the clapboarding has been covered with brown shingles. Second, the original wooden front and side porch has been replaced by a brick one. The owners of the house plan to restore the exterior in the future.

Inside, most of the eight rooms have been restored. The living room is a pleasant, irregularly shaped room that is dominated by an elaborate fireplace of tile and wood. Above its mantle is a mirror. Also on the first floor is the library. And again a fireplace of tile and Honduras mahogany first catches the eye. Just to the right of it is a book case that contains some of the reformer's books. Of especial interest on the second floor is the Riley Room, named after Debs' close friend and frequent guest, James Whitcomb Riley. There is also an upstairs study, which contains an old desk used by Debs at his office in Chicago.

After the death of Debs' widow, the house passed through various hands. On May 22, 1962, the Debs Foundation purchased it for $9,500 and undertook its restoration as a memorial to Debs.

The house is open to the public. At the moment, the visiting hours are irregular, but a notice on the front door informs the visitor whom to apply to for admission.

Eugene V. Debs House, Terre Haute, Indiana

N. P. S. Photo, 1965
The Boston Naval Shipyard, one of the Nation's oldest naval dockyards, has for over 150 years built, repaired and serviced vessels for the navy. The installation, furthermore, has established several precedents, some of which possess both national and international significance.

Since its birth near 1800, the yard has expended over a large section in the historic Charlestown section of Boston. A Congressional resolve of January 25, 1797, recommending an appropriation for a shipyard in Boston is apparently the first action taken concerning the installation. About three years later, the United States purchased twenty-three acres of land on the waterfront in Charlestown. The purchase of 1800 cost $19,350 and included Moulton's Point, where General William Howe and his troops had landed on June 17, 1775, before the Battle of Bunker Hill. The development of the yard was underway by March, 1801. By the end of the first commandant's tenure, 1811, the commandant's quarters, a brick storehouse, a marine barracks and several other structures had been completed. The navy bought additional land after 1811 and by 1840 had acquired most of the installation's present-day natural land. Subsequently, new land was made by filling adjacent parts of the harbor. Today, the yard covers 201 acres of land and includes 161 buildings, 21 miles of railroad, and numerous docks, piers, and shipways.

During its existence, the dockyard has been commanded by a number of naval heroes, all of whom have lived in the commandant's quarters. The first three commanding officers deserve special mention. Captain Samuel Nicholson, who supervised the yard between 1800 and his death on December 29, 1811, as its first commandant, had earlier served as the initial commander of U. S. S. Constitution. Captain William Bainbridge succeeded Nicholson. The new commanding officer, whose first term as the yard's commander ran from 1812 to 1815, also was in charge from 1822 to 1824, and from 1832 to 1833. Bainbridge's fame stemmed from his victory over H.M.S. Java on December 29, 1812, when he commanded the Constitution. It was this combat that produced the sobriquet "Old Ironsides" for the Constitution. As he lay dying on July 27, 1833, in the Naval Asylum in Philadelphia, the brave sailor suddenly sat up and cried out for his men to board the enemy. Then death felled him.
During Bainbridge's intermittent supervision, Captain Isaac Hull, who had conquered the Guerrière on August 19, 1812, while commanding the Constitution, acted as the yard's commandant. He served there in 1812-1813, and again between 1815 and 1823. Because of these officers' association with the Constitution, it is especially appropriate that the warship is now docked at the Boston Naval Yard.

During the years of the first three commandants, as well as, in the following decades, the Boston yard built and fitted-out many ships for service. On June 26, 1803, the yard rang with nine booming cheers as the workmen celebrated the recoppering of the Constitution. Paul Revere, incidentally, had supplied the copper. Just over ten years later, on September 11, 1813, the yard launched her first ship, the eighteen-gun sloop Frolic. Subsequently, when the seventy-four gun Independence, slid into the water, the workers enjoyed a feast in the rigging loft "...and spent the day in hilarity." She was the yard's second ship, and was built and launched between August, 1813, and June, 1814. During the War of 1812, master carpenters received a daily wage of from $3.50 to $4.00, while ordinary laborers got $1.00 a day. Regardless of wage, all the men labored from sunrise to sunset. About forty-four years after the completion of the Independence, the yard launched the Hartford, which served as Admiral David G. Farragut's flag ship during the Battle of Mobile Bay. Because the yard's commandant detested spiritous beverages, "...he would not allow the heathen custom of breaking a bottle of wine over the [Hartford's] bows, as a libation to the Gods of Neptune and Bacchus." During the Civil War, the yard was extremely busy, constructing numerous vessels and outfitting many others for the Union. Following the war, a slower pace returned to the navy yard. In 1874, the commandant received orders to demolish a ship, the Virginia, that had been on the stocks since 1824, but that operation remained uncompleted as late as 1881. During both of the World Wars, the yard constructed and repaired many vessels. Since 1946, it has been largely engaged in conversion and repair work.

In addition to the yard's decades of routine work, the installation is responsible for several innovations. On August 21, 1813, Bainbridge wrote to the Secretary of the Navy and suggested that shelters be constructed over the ways at Boston and at the Portsmouth navy yard. The idea received the Secretary's approbation on August 29, he ordering such houses to be erected in all navy yards. The first one built was at Boston, and it enabled work to progress despite ill weather. It stood until 1848. Bainbridge's idea was subsequently adopted by the British at their dockyards. The British were also impressed in 1856-57 when they saw the Merrimac. It was the American Navy's first screw steam frigate and had been launched at the Boston yard on June 14, 1855. She had cost $879,126. This was the vessel that the Confederacy later converted to an ironclad. In 1864, the yard launched the Monadnock, the first ironclad monitor to travel from the Atlantic to the Pacific Ocean. About ten years later, on March 5, 1874, the Intrepid was launched.

2Ibid., III, 363.
She was the navy's first iron-hulled torpedo boat.

Another important innovation at the yard was the construction of a stone dry dock. Loammi Baldwin designed and supervised the construction of two dry docks in the late 1820s, one at Norfolk and the other in Boston. The first load of stone arrived in Boston on August 23, 1827, and workmen began constructing the dock's walls the next day. By June 24, 1833, the dock was largely completed. On that day she received her first temporary tenant, the Constitution. With Vice-President Martin Van Buren and other notables present, the veteran ship became the second man-of-war to be dry-docked in the United States. When she emerged from the dock on June 21, 1834, only her design and dimensions remained the same. The dry dock has been lengthened since 1834, but the original section still remains in use.

Present Condition of the Site

Within the yard at the present time one finds an interesting mixture of the old and new. The oldest structure stands at the yard's entrance and was erected in 1803. A three-story brick building, it first was used as a storehouse and sail loft; now modernized inside, the old building houses an officers' club and bachelor officers' quarters. About five years after the construction of the preceding building, work began on the commandant's quarters. Official records first refer to the house on July 28, 1808, when the Secretary of the Navy forbade the expenditure of any money on the building that had not been authorized. Reputedly designed by Charles Bullfinch, the house was finished in 1809. Outside of a sunporch that was added during World War II, the building's exterior has remained relatively unchanged. In contrast, the interior has been greatly altered over the years.

Among other extant early structures are the ropewalk and Dry Dock Number 1. The ropewalk was erected in 1836. The granite building parallels Chelsea Street for 1,360 feet. Twenty years after the ropewalk's erection, a second story, 746 feet long, was added. The building has a headhouse of three stories' height, it containing the machinery for rope manufacturing. All of the rope for the navy was manufactured here for over a century. The dry dock, as previously mentioned, has been in service since 1833. It and the dry dock at Norfolk, Virginia, were the first ones in the Country. At the head of the dry dock is an inscription that commemorates its construction.

Boston Naval Yard, Massachusetts. The yard is located above the elevated road. Dry Dock No. 1 on right and ropewalk is long structure parallel to elevated road in center.

Courtesy, U. S. Navy
Location: South Market Street, Boston

Ownership: City of Boston, Mayor John F. Collins

Significance

Less than 150 years ago the City of Boston, Massachusetts, erected one of the most notable urban markets in the United States, the Quincy Market. Still used for marketing purposes, the market buildings, which are also outstanding examples of commercial architecture, illustrate a formerly vital aspect of the distribution of foodstuffs in large cities.

The market bears the surname of the man who erected it, Josiah Quincy. Quincy, a man of means, culture, and public dedication, won the mayor's chair in 1825 and remained Boston's chief magistrate until 1830. During his mayoralty, Quincy accomplished many reforms. His success was such that for over a half-century after 1825 his administration remained the standard by which subsequent mayors were judged. One of his most enduring accomplishments lay in the construction of the Quincy Market.

Quincy understood the need for a new city market when he became mayor, but encountered opposition when he proposed building one. By 1823, the Faneuil Hall Market, which dated from 1742, endangered the people's health because of unsanitary conditions among its stalls and irritated would-be customers because of the difficulty of getting to it through the crowded, twisting and dirty streets that led to Faneuil Hall. Nevertheless, many prosperous and influential citizens denounced Quincy when he announced his plan for a new market. The vigorous and resourceful mayor, undeterred by criticism, sponsored a public meeting to consider his scheme on January 13, 1824. At the well-attended gathering, Quincy stressed the social and economic advantages of a new market. And his explanation satisfied a large majority, for as he later wrote, "...neither the talents, nor the respectability of those who resisted the proposition,..." defeated his scheme. Shortly after the meeting, the legislature of the Commonwealth approved the plan.

When the new market was opened in 1825, it contrasted sharply with the original plan. At first, Quincy conceived of a market house similar to the still-standing New Market in Philadelphia, which consists of a long roof supported by brick columns. But that simple design disappeared in time as Quincy and his city council realized the need for a larger market. That realization, plus the retention of the architect Alexander Parris to design the market, resulted in a much grander project. Parris produced a plan that called for a long market house that would be flanked on either side by two large store buildings. His design was accepted and construction began in the spring of 1825.

Josiah Quincy, A Municipal History of the Town and City of Boston During Two Centuries (Boston, 1852), 64-65.
An elaborate ceremony accompanied the laying of the cornerstone. On April 27, 1825, the mayor, the city council and a mass of people gathered at the site, just east of Faneuil Hall, and either witnessed or participated in the placing of the cornerstone. But the most intriguing aspect of the day is how Quincy succinctly and accurately summarized what the new market would mean to Boston, he stating that it would be

"...an ornament to the city, a convenience for its inhabitants, a blessing to the poor, an accommodation to the rich, and an object of pleasure to the whole community."  

A little over a year later, on August 23, 1826, the public first used the new market house, and the market's initial customer purchased a leg of lamb.

The Quincy Market was both a useful and handsome addition to Boston. In 1826 the market faced directly upon a part of the harbor that is now filled. The market house was 535 feet and 3 inches long, 50 feet wide, and was built of granite. The building was two-stories high, except for a higher central section which measured 74.5 feet by 55 feet and was topped by a dome. A portico embellished either end of the market, both porticos consisting of four Greek Doric columns that supported a pediment, above which was a circular window. A four-story and gable-roofed store or warehouse paralleled the market on its both north and south sides. The building on the north was 520 feet long and 55 feet wide, the one on the south 530 feet long and 35 feet wide. The fronts and ends of both of these buildings were of granite.

The handsome group of buildings, technically a part of the Faneuil Hall Market, quickly became known as the Quincy Market and proved the efficacy of its namesake's prediction about it. The 123 stalls in the market house purveyed a vast array of food products, and the market became a food center for not only Boston, but for most of New England. Modern distribution methods have lessened the significance of the market, but it still fulfills something of its original purpose.

Present Condition of the Site

The Quincy Market continues to serve Boston. The east end of the building is vacant, but the west end contains stalls in which butter, eggs, meat and other products are sold. The second floor is largely empty, except for some offices.

Ibid., 41c.
The Boston Redevelopment Authority includes the Quincy Market and its twin store buildings in its plans for the renewal of the area around Faneuil Hall. The renewal of that section of Boston envisages the continued use of the Quincy Market as a market.

References: City of Boston, Final report on the extension of Faneuil hall market, (Boston, 1923); Bowen's Picture of Boston, or the Citizen's and Stranger's Guide to the Metropolis of Massachusetts, and its Environs (Boston, 1829); D. A. B.; Samuel Adams Drake, Old Landmarks and Historic Personages of Boston (Boston, 1907); Josiah Quincy, A Municipal History of the Town and City of Boston During Two Centuries (Boston, 1852); Walter M. Whitehill, Boston, A Topographical History (Cambridge, Mass., 1853); Justin Winsor (ed.); The Memorial History of Boston (4 vols.; Boston, 1881).
The Quincy Market, Boston, Massachusetts in 1852. From Josiah Quincy’s *Municipal History of the Town and City of Boston During Two Centuries*, (Boston, 1852).
LONG WHARF AND CUSTOM HOUSE BLOCK, MASSACHUSETTS

Location: Foot of State Street, Boston

Ownership:

Significance

Long Wharf and the Custom House Block, Boston, Massachusetts, are outstanding inheritances from the long and vital mercantile history of a major American port. The original Long Wharf dated from the early eighteenth century and thrived for decades as Boston's busiest and most imposing pier. Many years after independence had been won and Long Wharf had been rebuilt, the Custom House Block on Long Wharf was erected. Completed in 1848, the large structure reflects Boston's period of greatest mercantile prosperity. It is also perhaps the best of the numerous granite commercial structures that arose in Boston's extensive dock area in the decades before 1861.

Long Wharf retained its importance throughout the eighteenth century. Begun in 1710 by Captain Oliver Noyes and his partners, the wharf was completed by 1721. It, in effect, extended King (now State) Street some 800 feet into the harbor. Crowded with warehouses on one side, the wharf could dock 50 ships at a time. A 1740-extension lengthened Long Wharf to almost half a mile. During the British occupation of Boston in 1775-76, much military activity centered on the wharf, some troops, for example, being rowed from it to near Charlestown as General William Howe prepared for the attack on Bunker Hill on June 17, 1775. Following independence, Long Wharf again flourished with commercial activity and during the eighteenth century's last decade remained pre-eminent among Boston's 80 wharves, docking and dispatching ships of all nations.

As glorious as Boston's mercantile business had been since Long Wharf's original construction between 1710-21, the city achieved its acme of commercial prosperity in the decade beginning with the year 1814. Boston merchant houses especially thrived on the China trade. Probably many of them appreciated Oliver Wendall Homes' lines about the Long Wharf:

Strong right arm of Boston, stretched out o'er the bay,  
May the winds waft the wealth of all nations to thee,  
Any thy dividends flow like the waves of the sea.

Quoted in Moses King, King's How to See Boston (Boston, 1895), 202.
During her commercial zenith, Boston's dock area became dominated by numerous granite commercial structures. Advances in quarrying and cutting techniques in the granite industry in the early decades of the nineteenth century enabled builders to use huge blocks of granite in structures. Thus, some of Boston's notable granite warehouses appeared as early as the 1820's. By 1844, enough of the massive buildings stood near the docks to cause a visitor from New York City to record his praise of them.

Of the granite warehouses that are extant, such as those on Lewis and Commercial Wharfs, the Custom House Block on Long Wharf is probably the most noteworthy. The building was completed in 1848. A five-story central section, which rises one story above either four-story wing, distinguishes the structure from the granite warehouses on both nearby Lewis and Commercial Wharfs. Furthermore, the massive quality of the granite is more apparent in the Custom House Block than in the other warehouses. Especially noteworthy is the building's central doorway, which consists of cyclopean granite blocks. The overall effect of the facade is similar in its impressiveness to the massive wall of the citadel at Mycenae, both structures reflecting the determination of the builders and the durability of the structures.

Despite the decline of Boston's trade after 1860, the Custom House Block continued to house commercial businesses and Long Wharf continued to receive and send off ships. But the ships were mostly packets, sailing between Boston and New York, Philadelphia, and Richmond. Now, even they have disappeared. And miscellaneous businesses currently occupy the offices in the Custom House Block. Nevertheless, the building and the wharf teem with memories of Boston's former commercial pre-eminence.

Present Condition of the Site

Both Long Wharf and Custom House Block have been changed over the years. No vestiges of the colonial wharf remain, except that the present wharf apparently occupies the site of the first wharf and bears the same name. The warehouse originally comprised 14 stores, but during the construction of Atlantic Avenue in the 1860's five of them were removed from its eastern end. Otherwise, the Custom House Block remains the same as when erected.
The Custom House Block, Long Wharf, Boston, Massachusetts

N. P. S. Photo, 1966
NEW BEDFORD HISTORIC DISTRICT, MASSACHUSETTS

Location: From corner of Front and Commercial Streets, west on Commercial to Water Street and then north on Water to Union Street, west on Union to Acushnet Avenue and north on Acushnet to Elm Street, east on Elm to Water, then south on Water to Rodman and east on Rodman to Front.

Ownership: Various.

Significance

New Bedford, Massachusetts, supplanted Nantucket, the birthplace of American whaling, as the Nation's major whaling port around 1840. The industry and the wealth it produced are reflected in the historic district in New Bedford, where public and private buildings of the whaling era still stand.

New Bedford experienced a rapid rise as a whaling port after the town's establishment in the 1760's. Joseph Russell, who is regarded as the town's founder, promoted New Bedford's birth because of his extensive land holdings in the general area. Several ship builders, a blacksmith and other skilled workers soon settled at the mouth of the Acushnet River. In 1765, Joseph Rotch, a leading Nantucket whaling merchant, moved to New Bedford. He and Russell soon took advantage of the deep harbor, something Nantucket lacked, and spurred the development of whaling by the young settlement. A ship, the Dartmouth, soon slid from the ways at New Bedford, the first locally constructed whaling vessel. The ship carried the first load of New Bedford whale oil to London in 1767. Within eight years, New Bedford and the nearby area claimed fifty whaling sloops.

The American Revolution led to the near destruction of New Bedford. Angered by the depredations of New England privateers, the British raided the coast of Connecticut and southeastern Massachusetts in the fall of 1778. Two thousand redcoats attacked New Bedford early in September. The inhabitants, alerted to the danger, had already fled, leaving their homes unprotected and many vessels unmanned. Smoke soon told the tale. Purposely set fires leveled eleven residences; destroyed 76 shops, 26 storehouses and two ropewalks; and consumed 34 ships. Thus did the British leave their mark on New England's second largest whaling port.

Despite the devastation suffered during the Revolution, New Bedford rapidly recovered and within half a century after 1783 had become America's greatest whaling port. She dispatched the Rebecca on a voyage in September, 1791, and the vessel became the first American whaler to fill her hold with oil taken from the Pacific Ocean. The precedent-breaking ship returned on February 23, 1793. Further proof of
the town's growing affluence and activity lies in the erection of a lighthouse by New Bedford's merchants by 1797. Burned in the next year, the tower was rebuilt in 1799. War again disrupted New Bedford's whaling industry when Great Britain and the United States joined in battle during the War of 1812. But as after the end of the Revolution, New Bedford rapidly recovered from the effects of the second war. By 1823 New Bedford's whaling fleet equalled that of Nantucket in tonnage. Both towns strove for dominance during the next several years, with New Bedford finally edging beyond her island competitor. In 1827 Nantucket recorded a total catch of 33,063 barrels of sperm oil, while New Bedford posted a total of 38,752. And in 1828 New Bedford sent out forty-nine vessels, twenty-four of which sailed for the Pacific. The town continued to develop the industry in the 1830's, and by the end of the decade had superseded Nantucket as America's whaling center.

New Bedford reached her zenith as a whaling port in the 1840's and 1850's. In 1841 she employed about 10,000 men in the industry and had at least $12,000,000 invested in ships and equipment. New Bedford owned half of the Nation's whaling ships by 1857. In the same year, her fleet accounted for 48,108 barrels of sperm oil, 127,362 barrels of whale oil, and 1,359,850 pounds of whalebone.

New Bedford's eminence in the whaling industry is explained by several reasons. First, she possessed an excellent harbor. Located on the mainland, unlike Nantucket, the town also benefited from the rise of the railroad. Second, the demand for whaling's products increased during the first half of the nineteenth century. But most important was the enterprising and vigorous nature of the merchants engaged in the industry. Mostly Quakers, the New Bedford whale oil merchants concentrated on their business and availed themselves of every opportunity to exploit the industry.


They/the whale oil merchants/ were as tight-fisted, cruel and ruthless a set of exploiters as you can find in America, these oil kings of New Bedford.1

The people who suffered most from their rapacity were the crews. A sailor might earn only from $285 to $428 for a three or four-year voyage. That sum, moreover, was usually subject to various deductions by the owners. New hands would often return home in debt to the ship.

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The poor pay complemented the harsh discipline aboard American whale ships. Seldom did a whaler return to New Bedford, or Nantucket, with all of its original crew, so heavy was the rate of desertion. To combat that, whalers eventually unloaded cargoes of oil at Hawaii and then continued whaling in order to cut down on the opportunities for desertion. Merchant vessels carried the oil to the United States.

New Bedford reached its peak in 1857, then the industry gradually declined. The rise of the petroleum industry in the late 1850's and thereafter doomed the American whaling industry. Once the Civil War had ended, during which New Bedford lost many ships, whaling continued, but at an ever slower pace. Natural disasters during the last three decades of the century also hurried the industry's ruin, many vessels being caught and crushed in ice packs in northern waters. New Bedford's last whaling voyage ended on August 20, 1925. With that, New Bedford's whaling era ceased.

Present Condition of the Site

Although the docks of New Bedford are no longer crowded with fullmasted whaling ships, many of the buildings in the historic district help to recall the whaling era. Prominent among those structures is the Custom House, at the southwest corner of Second and William Streets. Robert Mills, the designer of the Washington Monuments in Baltimore and Washington, designed the structure in 1835. It is a square, stone building done in the Greek Revival style. A hipped roof is topped by a cupola. The main entrance is protected by a portico. Inside, a groined vaulted ceiling is a distinguishing feature.

Two bank buildings in the historic district also date from New Bedford's prosperous whaling era. The first, the Mechanics Bank and the Merchants Bank, stands at the foot of William Street. Russell Warren, an exponent of the Greek Revival style, designed the building in 1831 and it was constructed between 1831-35. The building's facade contains eight ionic columns; but as different carpenters worked on the north and south parts of the building, the four southern columns have less entasis than the four northern columns. Inside, a central wall divides the building into two sections. The second bank building is the one that was erected for the New Bedford Institution for Savings in 1853-54. It stands on the northeast corner of William and Second Streets. The structure reflects the Victorian idea of Italian Classic design. It has a brownstone front and brick sides and rear. The interior has been completely altered, while the exterior is largely unchanged.

Two interesting structures on Johnny Cake Hill help to emphasize the former importance of whaling to New Bedford. One is the Mariner's Home, originally the residence of one of New Bedford's early major whale oil merchants, William Rotch, Jr. When erected in 1790, the house stood
on William Street, but it was subsequently moved to its present location. The house is a nice example of early Federal architecture and has handsome interior paneling and other woodwork. The other significant structure on Johnny Cake Hill is the Seamen’s Bethel. Originally erected in 1832, the church was reconstructed after a fire in 1866. The tower in front of the church was added at that time. Herman Melville’s novel, Moby Dick, helped to make the church famous.

Just across the road from the preceding structures is the Whaling Museum. The Museum contains manuscript, printed and artifact material pertaining to the history of whaling. Of unusual interest in the Museum is a model of the bark Logoda. The model is sixty feet long and visitors can tour the vessel.

Throughout the historic district are many other buildings that were associated with whaling. Some of the old stone warehouses are especially interesting. Many of the other commercial buildings are generally rectangular and have gable roofs. Some of brick, some of stone, and some of wood, these buildings date from the 1790’s to the 1870’s.

The Waterfront Historic Area League (WHALE), in cooperation with New Bedford’s Urban Renewal program, is sponsoring the effort to preserve the historic district discussed in this report.

The Custom House, erected in 1835, in New Bedford Historic District, Massachusetts

N. P. S. Photo, 1964
MAIN STREET, NANTUCKET, MASSACHUSETTS

Location: West on Main Street from its intersection with Centre Street to Monument Square, Nantucket, Nantucket County.

Ownership: Various

Significance

The American whaling industry originated on Nantucket Island, Massachusetts. Many of the island's inhabitants profited immensely from hunting the whale, and the numerous handsome houses on Main Street attest to the riches that whaling brought to Nantucket.

Men from Nantucket began whaling late in the seventeenth century. As early as 1672, some islanders attempted to create a whaling company for offshore whaling. Nothing came of that endeavor, or of whaling in any degree until 1730. In that year several Nantucket men invited Ichabod Paddock, of Cape Cod, to move to Nantucket and serve as an instructor in whaling. He apparently went to Nantucket, presumably taught the islanders, and stimulated the growth of whaling. As a result, the industry grew rapidly in the 1730's and first years of the eighteenth century. The island acquired its first whaling sloop in 1734 and by 1712 owned five whaling vessels. That fleet had grown to nine by 1714. In the following year Nantucket whalers brought home 300 barrels of oil and 11,000 pounds of whale bone, all of which sold for $1,100. Twelve years later Nantucket had twenty-eight vessels engaged in offshore whaling.

The growth and rapid expansion of Nantucket's whaling industry involved several factors. First, almost all on the island participated in the industry. Because most boys learned various nautical skills at an early age and then went to sea when about fourteen, because almost all adults were involved in the whaling business in some manner, and because the people on the island were a remarkably homogeneous group, the industry thrived on the united and enthusiastic endeavor of the entire island. That unity also stimulated a boldness amongst the captains that led to a constantly expanding hunt for whales. Nantucket ships discovered one new hunting area after another, to the initial benefit of the island and dismay of her competitors. Another cause of the island's success was that her sailors developed new techniques. It was the Nantucket whaler that first carried two whale boats instead of one and employed brick tryworks on the whalers' decks to extract the whale oil.

The vigor and dash of the Nantucket whalers won them leadership in the colonial industry. When Nantucket began to build her own ships in 1730, she sent out twenty-five whalers that returned with cargoes that sold for a total of £2,200. By 1740 the island owned sixty ships and handled a catch worth $23,000.
Until the American Revolution, Nantucket's whaling industry flourished. In 1765, 118 ships sailed from the island and returned with a total of 11,939 barrels of oil, valued at $129,983. The monetary value of the island's catch in 1771 exceeded £150,000. Of the 250 New England ships engaged in whaling in 1774, Nantucket claimed 150 of them, and those whalers in the same year brought in a total catch worth $500,000. Before 1745, Nantucket had sold most of its oil in Boston, then she began to ship it to London. Her ships would return from there with goods of all kinds. Thus her entire economy received a smashing blow during the Revolution. Aside from the hardship of being blockaded during 1777 and 1778, she lost 134 ships during the conflict. Most important, Nantucket lost many of her sailors. Over 1,200 of her sons were killed or captured during the war.

Nantucket regained her old supremacy in whaling after the Revolution and retained it until the early 1840's. Despite economically difficult times for the industry between 1783 and 1812, the island remained the world's major whaling center until the War of 1812. That war cost the island much, she losing thirty-eight ships during the conflict. Remarkably resilient, Nantucket soon recovered from the war's destruction and controlled over eighty vessels by 1822. Five years later the Sarah left on a record-breaking voyage that began on May 26, 1827, and ended on April 19, 1830. She unloaded 3,497 barrels of sperm oil upon her return, the greatest number ever realized from a single voyage from Nantucket. The oil sold for $89,000. Nantucket's industry continued to flourish in the 1830's, even though her great rival, New Bedford, counted more whalers than the island did. But that was a disquieting augury for the future. Indeed, after 1843 Nantucket's whaling industry dwindled.

Several factors underlay the demise of Nantucket's whaling industry. In 1846 a fire demolished the town's center and wharves; in 1849 the discovery of gold in California lured some 400 young men away from the island; and in 1861 the Civil War broke out. But sand, probably more than anything else, destroyed the island's industry. Sand bars in the harbor made it impossible for the increasingly heavier American whaling ship of the early nineteenth century to dock at the town. The island sought Congressional aid in order to dredge the harbor in 1803 and 1806, but met indifference. Thus Nantucket's whalers were forced to use the docks at Edgartown, on Martha's Vineyard. Desperate, Nantucket in 1839 built a steam "camel" to conquer her sand blocked harbor. The camel was a floating dry dock that could pick up a loaded whaler and carry it into the harbor. An ingenious machine, but it failed to overcome the sand bars.

The bark Oak sailed from Nantucket in 1869. She was the last whaler to put out from America's oldest and once greatest whaling port. In 1874 Nantucket's name ceased to be listed among the names of America's whaling ports.
Main Street, between Centre Street and Monument Square, could be named "Whalers' Street" because of the great number of handsome homes that possess associations with Nantucket's whaling era. The beauty of the tree-lined, cooied, and curving street, and the pleasing effect of the well-maintained houses recall Nantucket's affluent days.

Just as soon as one proceeds west on Main Street past the Pacific Bank the aura of the whaling years is discernible. Both the brick house on the right, number 32, and Wallace Hall on the left, number 72, were erected by wealthy whale oil merchants. The latter was built in 1830, the former in 1834. Farther west are two brick houses that face each other: numbers 75 and 76 were the homes of Henry and Charles Coffin respectively and were erected in the early 1830's. Owners of Nantucket's leading whaling ships, candle makers, and merchants, the Coffin brothers erected almost identical houses. Near the Coffin homes is number 31, a house that dates from 1730. Captain Christopher Burdock, who supposedly first identified Antarctica as a continent while on a sealing voyage, once lived there. Additional attractive houses catch the eye as one continues up Main Street and approaches the famous "Three Bricks."

Joseph Starbuck built the "Three Bricks" for his three sons. Starbuck, a very wealthy oil merchant, erected the houses in 1833-37, and the Federal style residences are exactly alike. George, the eldest son, occupied the "West Brick," number 37; Matthew, the second son, lived in the "Middle Brick," number 95, and William, the youngest, resided in the "East Brick," number 96.

Just across the street from the preceding houses are two neo-classical residences that were erected around 1845-46. William Hadwen, a whale oil merchant and candle maker, married Eunice Starbuck, daughter of the builder of the "Three Bricks," and they lived in number 93. The house's twin, number 94, was built by Hadwen for his adopted daughter.

One continues to pass whaling merchants' homes until Monument Square is reached. Privately owned, most of the homes are not open to the public.

This street and its houses form part of the historic Nantucket District created by the Commonwealth of Massachusetts.

Wallace Hall, 1820 home of wealthy whale oil merchant, Main Street Historic District, Nantucket, Massachusetts

N. P. S. Photo, 1964
ST. MARYS FALLS CANAL, MICHIGAN

Location. Sault Ste. Marie, Chippewa County

Ownership. Department of the Army-Secretary Stanley R. Resor, Washington, D. C.

Significance

The St. Marys Falls Canal, Sault Sainte Marie, Michigan, possesses a threefold significance. Originally built and operated by the State of Michigan Canal in Illinois as one of the most successful of the numerous ante bellum State built waterways. The first locks also exemplified how Eastern capital underwrote the development of the West, as money from the Atlantic seaboard financed their construction. Finally, the canal enabled the various resources of the Lake Superior area to be exploited for the Nation's benefit. From the first, it carried a huge tonnage; and it now carries more cargo than any other canal in the world. In 1964, 93,670,342 short tons passed through the waterway.

The twenty-two foot difference in elevation between Lake Superior and Lake Huron necessitated the construction of the canal. The St. Marys River connects the two lakes, but rapids block navigation on the link between the lakes. In 1797 the Northwest Fur Company constructed a lock on the Canadian side of the St. Marys River to bypass the obstacle, but that benefited only fur trappers' boats and canoes. In 1844 the Country's first copper boom occurred in Michigan's Upper Peninsula and the need to eliminate the obstruction to cheap transportation between the two lakes became imperative. The construction of a tramway around the rapids in 1851 failed to solve the problem.

The State of Michigan's first attempt to build a canal at Sault Sainte Marie failed. Stimulated by the internal improvements passion of the early 1830s, the two-year-old State in 1837 approved of a survey for a canal between Lakes Superior and Huron. Two years later laborers began work on a canal, but were soon stopped because of their infringement on the operation of Fort Brady. That ended the project. By 1850, little had been accomplished apropos of internal improvements in general. Thus the State's new constitution, adopted in 1850, contained a proscription against new public projects. Unless, that is, a Federal grant made possible"...an improvement of lasting importance."1

Michigan's leaders had not been oblivious to the possibility of Federal aid before 1850. A Michigan Senator, John Norvell, introduced a bill in Congress in 1839 that would grant public lands to the State for canal purposes. But the bill failed. Not until about thirteen years later did Congress approve of such a land grant for Michigan. President Millard Fillmore on August 26, 1852, signed an act that authorized the transfer of 750,000 acres of mineral and timber lands to Michigan to back the construction of a canal at the St. Marys River.

The Federal land grant spurred a quick response. The State's solons approved of a bill in February 1853 that authorized the construction of a canal and empowered the governor to appoint five canal commissioners. The act also stated that the grant of 750,000 acres be given to the company that built the waterway, providing it was completed within two years. A group of Eastern capitalists, which had organized the St. Marys Falls Ship Canal Company in the State of New York in May, 1852, won the job. The company and the State signed their agreement on April 5, 1853.

Operations at the site of the canal shortly began. Charles T. Harvey, who had interested the financiers involved in the project, became the superintendent of the canal. Early in April he went to Detroit, where he bought supplies and tools and rounded up a work force. By early June, he and 400 laborers were at Sault Sainte Marie. On June 4 the superintendent turned the first dirt for the canal. Subsequently, operations encountered numerous difficulties. Dysentery in the summer of 1853 prostrated many workers and a cholera epidemic in 1854 killed some 200 laborers. Moreover, fifty saloons near the canal catered to the needs of men who worked over eleven hours a day in both summer and fall. A great disappointment occurred late in 1854 when it was discovered that the canal's depth would have to be increased by a foot. Furthermore, the laborers encountered mostly rock in constructing the canal. When completed, the waterway had cost almost $1,000,000, whereas the early estimates had run from $260,000 to $403,500.

The instantaneous success of the canal eased the pain of its excessive cost. The company transferred the canal to the State on May 31, 1855, it receiving a mile-length waterway that had two 350-foot long locks. On June 18, 1855, the steamer Illinois inaugurated the canal, passing from Lake Huron to Lake Superior. In the same year, the canal handled 1,449 tons of ore; in 1860, it handled 114,401 tons. The waterway collected $4,374 in tolls in 1855 and $24,660 in 1860.

From its opening day, the canal has been one of the Country's most important waterways. The Federal government assumed control of the original locks in 1881 and eliminated tolls. Only winter's icy grip has halted the flow of traffic through the St. Marys Falls Canal since then.
Present Condition of the Site

The original locks have disappeared. When the United States began to operate, the waterway, a new lock, the Weitzel Lock, was opened. Subsequently, another lock, the Poe Lock, was built on the site of the original locks. Now, the Poe Lock has been demolished in order to make way for a new lock, which is under construction. During the second decade of the present century, the canal received two additional locks, the Davis Lock and the Sabin Lock, completed in 1914 and 1919 respectively. In 1943 the Mac Arthur Lock replaced the Weitzel Lock.

Despite the disappearance of the original locks, the St. Marys Falls Canal possesses exceptional value. The importance of the site apropos of the development of the entire Lake Superior area cannot be doubted, and that significance transcends the loss of the first locks.

The MacArthur Lock, St. Mary's Falls Canal, Sault Ste Marie, Michigan

Courtesy, Michigan Historical Commission
"FAIR LANE," HENRY FORD ESTATE, MICHIGAN

Location. Dearborn Campus, The University of Michigan, 4901 Evergreen Road, Dearborn, Wayne County.

Ownership. The University of Michigan, Ann Arbor, Dr. Harlan Hatcher, President.

Significance

There are probably many in the United States who are more familiar with the work and career of Henry Ford than the labor and life of George Washington. The impact of the Model-T revolution continues to grow, while that of the other revolution recedes.

The man whose genius helped to transform America from a rural to an urban nation was raised on a farm. Born on July 30, 1863, in his father's farm house at Dearborn, Michigan, Henry developed a strong personal aversion to farming. Fortunately, his father accepted his enthusiasm for machinery and acquiesced as his son spent many hours repairing watches. While attending the local school, Ford read and absorbed the McGuffey Readers, which he republished after achieving fame and fortune. The youngster also never forgot seeing a steam engine propelling itself along a country road in 1876, as he and his father were going to Detroit. Henry saw the lumbering vehicle when almost 13. Some three years later, he left his father's farm.

After leaving his family on December 1, 1879, Ford lived an uncertain life for over a decade. Shortly after reaching Detroit, he obtained a job that paid $1.10 a day. But he left his employer after six days. He remained in Detroit until 1882, apparently working as a mechanic in several different shops. He then earned a living in and out of Detroit in various ways until late in 1886 or early 1887, when he accepted a forty-acre tract of land at Dearborn from his father. Still not a farmer, Ford passed most of his time at his sawmill or in his shop. Then, on April 11, 1888, he married Clara Bryant. Over three years after his marriage, Ford moved back to Detroit on September 25, 1891. He had apparently spent many months thinking about internal combustion engines, and by the time he was back in the future motor city, he was convinced that he could make a car.

The second move to Detroit marks not only a turning point in Ford's life, but the start of a long period of persistent effort to develop a practical, inexpensive automobile. Obtaining a job with the Edison Illuminating Company, Ford worked on his project at night. By late 1893 he had built his first engine, which he tested in his wife's kitchen on Christmas Eve. Between two and four A.M., June 4, 1896, he completed his first car. He had to demolish part of the
front brickwall of the shed in which he had built the car in order to free it for a drive that rainy morning. By June or July, 1899, he had produced a second car. That success induced him to resign from the Edison Illuminating Company on August 15, he having organized the Detroit Automobile Company on August 5. But the company lasted only until November, 1900. The indomitable Ford then produced some racers, the most famous being the "999." With Barney Oldfield at the wheel, "999" won a five-mile race on October 25, 1902. That victory established an American record and generated reams of publicity for Ford.

Stimulated by the victory of the "999," Ford resumed the manufacture of commercial cars. This time, successfully.

Between 1903 and 1907, Ford organized a new company and evolved his revolutionary automobile. The Ford Motor Company was formed on June 16, 1903, and Ford's intuitive engineering skill, persistence, and drive soon enabled the concern to offer to the public the Model A. Simple and efficient, the car attracted many buyers. By the fall of 1906, Ford had presented to the country the Model N, a refinement of the Model A. Most important, the Model N was the immediate ancestor of Ford's most famous automobile, the Model T.

The Model T appeared in 1908. An ugly duckling to many, the car possessed mechanical reliability, incorporated several innovations, and sold for a moderate price. The public's reaction was instantaneous and enthusiastic. By the fall of 1908, orders for cars were pouring into Ford's main office. And the Nation's acceptance of the "Tin Lizzie" continued for years. In 1914, for example, about 250,000 of the cars were sold, and Ford's company earned a profit of $30,338,000.

Ford's success with the Model T stemmed from his own genius. Although aided by some brilliant men, Ford evolved the industrial concept that made the Model T possible. The concept consisted of three aspects. First, Ford predicated his business on stimulating an ever-increasing demand, so that prices could be constantly lowered. Second, he insisted on producing a mechanically simple and reliable car. Third, he used mass production techniques in manufacturing his automobile. The result of the union of the preceding principles in Ford's factory was that cars which had sold for $950 in 1909 sold for $550 in 1913. And widespread imitation of the concept also attested to Ford's amazing success.

Despite the rise of competition, the Ford Motor Company prospered mightily in the second and third decades of the present century. By 1928, Ford's vast River Rouge plant employed more than 100,000 people and sprawled over 1,100 acres of land. Because of the decrease of sales in the Model T, Ford introduced a new car in 1928, the Model A. So much publicity preceded the unveiling of the vehicle,
that "... more than one newspaperman referred to it as the 'Second Coming,'..."1 The Model A was another outstanding success, and sold well for several years.

Up until the day of his death, April 5, 1947, Ford dominated the vast concern that bore his name. Since his demise, his company has continued to help perpetuate the revolution that he largely began.

Present Condition of the Site

The Fords lived at "Fair Lane" from 1915 until their respective deaths, Ford dying in 1947 and Mrs. Ford in 1950. Six years after Mrs. Ford's death, the Ford Motor Company presented the house and 210 acres of the estate's grounds to the University of Michigan. The University uses the home as a conference center for its Dearborn campus.

Ford began purchasing land near Dearborn in 1900 and erected a summer residence on his new estate in 1909. Some five years later, in February, 1914, he began the construction of the present house. It was completed in 1915 and cost $1,032,000. Despite the cost, the house reflects the simplicity of its builder. He abhorred pretense. There is nothing grand about the house, either inside or out.

The house is essentially the same as when the Fords lived in it. The structure is two stories high, 200 feet long, contains 56 rooms, and is made of Indiana limestone.

Inside, the first floor is dominated by several large rooms. The library, living room, and music room are all attractive ones. Perhaps the richest note in the house is in the Music Room, where there is an ornate Italian marble and walnut fireplace. It is 12 feet high and 10 feet wide and bears, surprisingly enough Robert Herrick's admonition, "Gather ye rosebuds while ye may." Ford's favorite room was the sun porch, in the back of the house. He had a telescope there and enjoyed watching birds. On the floor beneath the ground floor, there is a large room, which was Ford's "Field Room," or recreation room. Its massive stone fireplace bears a quotation from Henry David Thoreau, "Chop your own wood and it will warm you twice," that seems to be more in keeping with Ford's personality than Herrick's line. The second floor contains many bedrooms. One of them was reserved for Ford's friend, Thomas A. Edison, and is still known as the "Thomas Edison Room."

A tunnel from the house runs to the powerhouse. The cornerstone for it was laid by Edison in August, 1914, and the building was completed in 1915, having cost about $344,000. The powerhouse contained an emergency steam generator and had an emergency line to utility lines. But the night of Ford's death in 1947, a flood knocked out all systems in the powerhouse. Ford thus died as he had been born, by candlelight.

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RINGWOOD MANOR, NEW JERSEY

Location. Ringwood Manor State Park, off State Route 23, Passaic County.

Ownership. State of New Jersey, Governor Richard J. Hughes, Trenton.

Significance

An eminent American historian suggests that Ringwood Manor, situated in Ringwood Valley in northern Passaic County, New Jersey, "...might well be called the birthplace of the American iron industry." Included in Ringwood Manor State Park is the site of the mansion of Peter Hasenclever, the promoter of the American Company, colonial America's largest industrial enterprise; the tomb of Robert Erskine, the last resident manager of the American Company; and the mansion that housed Martin Ryerson, an early nineteenth-century ironmaster, and Abram S. Hewitt, one of the Nation's leading post-Civil War ironmasters. Nearby, but outside the park's limits, are iron mines that supplied Ringwood's colonial furnace, and other ironworks until 1931.

Iron manufacturing began at Ringwood in an important fashion in the early 1740s. A forge, apparently erected in 1739, was the first iron works on the site, but it was soon superseded by an iron furnace. Colonel Josiah Ogden and family, of Newark, New Jersey, purchased the forge and sixteen acres of land in 1740 for L 63. The next year they established the Ringwood Company and in 1742 built a furnace. Using ore mined in the area, the company prospered for the next twenty years. Then in March, 1764, the Ogdens offered the company's land and improvements for sale. Included in the sale were an iron furnace, two forges, several workers' houses, a saw mill, iron mines, and additional appurtenances. On July 5, 1764, a purchaser bought the preceding for £ 5,000.

The Ringwood works now became the center of an amazing industrial undertaking. In England, Peter Hasenclever, a Prussian who had moved to England in 1763, had spurred the formation of the American Company. The concern's purpose was to exploit America's iron ore resources. Authorized to expand L 10 to £ 40,000 in developing the enterprise, Hasenclever, also known as the "Baron," landed in New York in June, 1764. And it was certainly he who purchased the Ogden's Ringwood estate on July 5, 1764.

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1Allan Nevins, Abram S. Hewitt (New York, 1935), 120.
The Baron quickly implemented his grand design. He immediately repaired the works at Ringwood and was producing iron there by November, 1764. New houses sheltered workers, new canals carried water to the furnace and forges, and new roads, some blasted out of rock, led from the works to the mines. At the same time, Hasenclever acquired additional property. He purchased some 50,000 acres and began to construct ironworks at Pompton, Long Pond, and Charlottenburg. The furnace at the last named was built in 1767 and the one at Long Pond was in blast by 1768. He probably erected a furnace at Pompton, and all three new works had one or more forges. To operate these works, the promoter imported about 535 workers from Germany, some of whom ran away from the various ironworks. All of the preceding accomplishments required an expenditure of some $250,000.

Finances finally defeated the Baron. Some iron was made and shipped to England, but the too-rapid expansion of the American Company dismayed Hasenclever's partners. Thus Hasenclever was sacked in 1769. Undaunted, the Baron returned to Germany and developed a successful linen manufacturing business in Silesia.

Hurt, but not mortally wounded, the American Company struggled on until overwhelmed by the American Revolution. John Jacob Faesch, who had been brought to America by the Baron, became the local manager. He remained so until 1771, although it is said that he managed his own interests better than those of his employers. Nevertheless, Faesch was an excellent ironmaster, and his association with Ringwood is of importance. In the summer of 1771 Faesch was supplanted by Robert Erskine, a Scot and a mathematician. Erskine did not let the company's failure to supply additional funds discourage him, and before sailing to America he visited and studied as many ironworks in Great Britain as he could. After arriving at Ringwood, he labored valiantly for the company. But with the outbreak of the American Revolution, Erskine sided with the United States. He eventually became George Washington's Geographer and Surveyor-General. The Scot failed to survive the war, he dying on October 2, 1780. He was buried at Ringwood.

The ironmaster's mansion at Ringwood and the ironworks endured a difficult period after 1780, the estate undergoing a number of sales. Finally, a new purchaser appeared in 1807, and he revived the fortunes of the iron manufactory.

Martin Ryerson, an ironmaster of long experience, bought Ringwood in 1807. He resumed the manufacture of Ringwood iron, which was carried on by his sons after his death. It was during this era that the original mansion and furnaces at Ringwood were demolished. In 1853, Peter Cooper, the great industrialist, purchased Ringwood from Ryerson's heirs. He paid $100,000 for it and 22,000 acres of ground.
It was because of Cooper that Abram S. Hewitt, an outstanding ironmaster, became associated with Ringwood. Hewitt and Cooper's son, Edward, operated the Trenton Iron Works. When Hewitt foresaw the exhaustion of the ore supply for those works, he purchased Ringwood from Cooper in the same year that Cooper had bought the estate. Hewitt's main interest lay in the ore mines, not the estate's ironworks. The Hewitt and Cooper firm prospered in later years, especially because of its pioneering work in manufacturing steel.

The Hewitts used the manor house as their summer residence. It remained in the Hewitt family until 1936, when the property was deeded to the State of New Jersey.

Present Condition of the Site

The principal structure at Ringwood Manor Park that is associated with the long history of iron manufacturing in the area is the manor house. The original house, that of the Baron, probably was burned during the Revolution. A new one was subsequently erected near its site, only to be demolished by Martin Ryerson about 1810, who then built a three-story wood and brick structure near the site of Hasenclever's house. The interior woodwork for Ryerson's home was brought from New York and the tiles for the fireplace came from Europe. Subsequent to the Hewitt's purchase of Ringwood, Mrs. Hewitt effected numerous changes in the house. On the outside, she covered the walls with whitened cement and added several houses to the original Ryerson structure, which is at the west end of the present structure. Also, a single roof was eventually placed over the entire assemblage of buildings.

Of the rambling house's 78 rooms, only a few can be commented on here. Perhaps the most interesting and attractive are the two ground floor rooms of the Ryerson house. The front one was a parlor, the backroom a drawing room. The woodwork in both is very fine, as are the fireplaces, which have lovely tiles. Just east of the preceding rooms on the ground floor are two other attractive rooms. In front is a lovely room, with a bay window, that is done in the French style. Copies of Fragonard paintings are placed in panels in the walls, which are painted white, and the woodwork is gilded with gold. A handsome fireplace dominates the north end of this salon. Just north of the French room is an exceedingly large room, and it is appropriately called the "Ball Room." In this room, as well as elsewhere, the furnishings are those of the Hewitt family. Another handsome room on the ground floor is the dining room, which has dark panelling. In the center of the room is a very long table.

The upper two floors contain a large number of bedrooms. Most attractive is that of Mrs. Hewitt, which is furnished in a light and feminine style. In startling contrast to it is the room of Peter Cooper, which is dominated by a huge four-poster bed.
Outside, there are several out buildings. One of them, the dairy built by Mrs. Hewitt, is supposed to stand on the site of the Ogden furnace.

The park also includes 579 acres of land. Picknicking is allowed.

WATERVLIET ARSENAL, NEW YORK

Location. South Broadway, Watervliet, Albany County.

Ownership. Department of the Army, Stanley R. Resor, Secretary.

Significance

The history of the Nation's armed forces during the nineteenth century constitutes an integral part of the explanation of how America became a world power. The army's arsenals thus possess a great, though often overlooked, significance. Of outstanding importance is the Watervliet Arsenal in Watervliet, New York. Near the end of the nineteenth century it became the armed forces cannon factory and assumed an even greater significance than it had had in the past.

The War of 1812 stimulated the establishment of the Watervliet Arsenal. Twelve acres of land for the post, now in the northeast corner of the arsenal, were purchased for $2,585 on July 14, 1813, and the construction of buildings began shortly after that. The main structures were of brick and were arranged in a square. Over a century later, all of the original buildings were demolished. Some seventy or eighty soldiers formed the arsenal's complement during the last months of the war, and those men completed the installation. They also manufactured some ammunition. In 1821, the Federal Government permitted the State of New York to run the Erie Canal through the arsenal's grounds. The State, in turn, allowed the arsenal to divert some of the canal's water for water power.

A glimpse of the life at the new installation is afforded by reviewing the years between November, 1816, and April, 1824, when Major James Dalliba commanded the post. The men rose at reveille, a half hour before sunrise in summer and at sunrise in winter. They dressed and reported to the shops, where they lit fires and prepared their work, ate breakfast at 7:00 a.m. and then began to work. They produced ammunition and small arms, made infantry equipment, and repaired artillery carriages. Taps were blown at 10:00 p.m. Dalliba enforced discipline as best he could, but even the ducking of men in the Hudson River because of drunkenness did not have its desired effect. The soldiers continued to drink, just as they continued to desert and be insolent to officers. On Sunday, the men marched to church, and all had to attend the same place of worship.

After Dalliba's departure, the arsenal experienced some enlargement. By 1846, seventy-acres had been added to the post's original grounds and seventeen new buildings had been erected. One of the most impressive of them was a stone arsenal that had been erected in 1826. It had cost $30,000 and could store over 200,000 muskets.
It stood until 1889. Also of interest is that by 1835 the arsenal employed ninety civilian workers in addition to the forty-five enlisted men attached to the post. During the war with Mexico, both employed and activity greatly expanded. The arsenal kept twenty-three forge fires constantly going and hired 200 boys to help roll paper rifle cartridges. The return of peace in 1848 ended that frenetic activity.

After the Mexican conflict, only the Civil War disturbed the routine of the arsenal until the cannon factory was established in 1889. The arsenal, until 1861, performed two basic functions, storing and repairing arms, and changing small arms from flint to percussion. With the fall of Fort Sumter, the arsenal greatly increased its manufacturing abilities. At its peak during the war years, the armory employed about 2,000 people, a fourth of whom were children. The arsenal consumed 10,000 pounds of lead on some days and sometimes shipped as many as 10,000,000 cartridges to the Union armies in one shipment. Following the peace, the arsenal resumed its basic peacetime function, the storing of arms. Little production occurred in those years of Watervliet.

Twenty-two years after Appomatox, Watervliet became the government's cannon factory. A Board of Ordnance Officers recommended in 1887 that the arsenal be selected as a cannon factory because of the post's spaciousness, good labor supply, excellent transportation qualities and safety from attack by hostile naval fleets. Washington in 1888 directed a Gun Factory Board to study the manufacture of cannon, and it first met in October of the same year. The board's report of 1889 was so detailed that it specified the dimensions of the links in a hoisting chain for the cannon factory and stipulated that copper bath tubs should be used in the new quarters which were to be erected at the arsenal.

The cannon factory, the most impressive building at Watervliet, was erected following the report of the Gun Factory Board. Still the outstanding structure at the arsenal, the gun factory was begun in 1889. The north wing, 400 feet long, was completed in 1890, as was the 166-foot-long central section. The south wing was completed in 1891. The total length of the building, including a World War I addition, is 1,300 feet.

The production of seacoast cannon began in July, 1889. Two years later, the Ordnance Department reported that an eight-inch gun had cost $15,646, a ten-inch gun $30,592, and a twelve-inch weapon $47,227. Despite many production problems, the cannon factory continued to perfect its techniques until hampered by a reduction of funds. By 1896, one-half of the employees had been dismissed and the plant operated at only a half of its capacity. Only the outbreak of the Spanish-American War in 1898 stimulated production. Employment rose to a peak of 634 by June, 1898. In 1899, the arsenal produced 134 cannon of all kinds.
With the return of peace, the arsenal resumed work on the large cannon that had been interrupted by the war. It returned, for one thing, to the production of America's first sixteen-inch gun. Begun in 1898 and completed in June, 1902, the huge gun weighed 385,400 pounds, measured 49 feet long, and fired a projectile that weighed 2,370 pounds about twenty-one miles. The massive piece cost $91,816. Although larger cannon had been made in Europe, the American rifle outperformed all rivals. Before the first World War, Watervliet also produced a number of fourteen-inch seacoast cannon for the defenses at the Panama Canal and Manila Bay.

America's entry into the first great war again stimulated tremendous activity at Watervliet. In 1918, the arsenal manufactured 465 cannon.

Since 1918, the arsenal has continued to develop and produce weapons. She now contributes not only the usual artillery pieces, but many new battle items. It was here that America's first atomic cannon was produced.

Present Condition of the Site

The arsenal is still an active production center. Of all of the post's buildings, the great gun factory is the most significant. Practically unchanged on the outside since it was completed, the interior has been adapted to current production needs. Nevertheless, the huge brick structure is a remarkable inheritance from the era of America's emergence as a world power.

Some earlier buildings are also of interest. The commanding officer's quarters were completed in 1842. The house is a large stone structure whose limestone walls are backed with brick. A similar building was erected in 1848 for additional officers' quarters. In 1843, a barrack made of limestone was completed and it served as a barrack for almost a century before it was adapted for office use. The arsenal also possesses the Nation's first all metal building. Erected in 1859 of prefabricated plates that had been cast in New York City, the structure is currently used as a warehouse.

Watervliet Arsenal, New York. The cannon factory is the long structure in the center.

Courtesy, U. S. Army
"LYNDHURST," JAY GOULD ESTATE, NEW YORK

Location. Tarrytown, Westchester County

Ownership. National Trust for Historic Preservation
Mr. Gordon Gray, Chairman
815 17th Street, N. W.
Washington, D. C.

Significance

Jay Gould, a post-Civil War financial condotiere, elicits strong opinions from American historians. One states that "...he loved power—the realities of power rather than its vestments."; and another claims that Gould, James Fisk and Daniel Drew were called "...the men of disaster."1 John Chamberlain's The Enterprising Americans, which first appeared in large part in Fortune and sought to present an objective business history, characterizes Gould as being "vampirish," and a man who "...made money by sucking many an enterprise dry,..."2 Professor Thomas C. Cochran writes in his book, The Age of Enterprise, that Gould

...knew his instrument /The market/ like a virtuoso, knew every permutation and combination of its possibilities, knew how to exploit them till he hovered again and again on the very brink of failure but never once fell over.3

A biographer, Robert I. Warshow, labels Gould one of "...the greatest financial freebooters of all time...."4 Even a recent and more friendly biographer, Julius Grodinsky, declares that "Gould possessed a cold-blooded unscrupulousness...."5 Furthermore, while insisting that Gould's rate-wars benefited the Nation by lowering rates, Grodinsky admits that Gould

...accomplished nothing in the raising of railroad service standards or in reducing costs. His roads during his lifetime and for two generations thereafter had an unsavory reputation."6

2Page 141.
3Page 147.
6Ibid., 598-99.
Gould suggests Iago. A small, frail person, the financier exuded shrewdness and cunning. He was also ruthless. By his death, the sickly Gould could claim no friends. After all, he never spared anyone in his manipulations. Little wonder then that he derived his greatest pleasure from his green house, where he grew 8,000 orchids and 2,000 azaleas.

The orchid grower was born in Roxbury, New York, on May 27, 1833. Acquiring what education he could, he became a surveyor in his late teens. Then, between the ages of 18 and 21, he surveyed in New York, Ohio, and Michigan, and helped to produce maps of various counties in those States. In turning from surveying, Gould acquired a tannery in his home State. That accomplishment enabled him to establish an office in New York City—and to begin speculating in railroads.

Railroads attracted Gould throughout his career. His first important association with a major line concerned the Erie Railroad. Gould, along with his allies, Fiske and Drew, attempted to end Cornelius Vanderbilt's control of the line in 1867-88. To that end, he printed new Erie Stock, impressed several judges with his point-of-view, and persuaded some members of the New York legislature of the validity of his argument. When Gould became president of the Erie, he apparently had won his point. But he was forced to resign in 1872. Upon leaving the Erie, Gould left it with a funded debt of $64,000,000. The railroad did not grant a dividend on its common stock for the next 69 years.

While engaged in the Erie affair, Gould had also attempted to corner the Nation's gold supply. He had entertained President Ulysses S. Grant several times by August 31, 1869, and had developed an intimate relationship with Grant's brother-in-law in New York. And as he sought to prevent the Federal Treasury from putting gold on the market, he purchased gold. The price of the metal steadily increased. But Grant's uneasiness by September about his brother-in-law, gold and Gould spurred a change in Gould's plan. Learning that the President had ordered the Treasury to sell gold, Gould disposed of his hoard. A panic ensued. And September 24, 1869, became known as "Black Friday."

As he grew older, Gould's peculiar genius made him richer and others poorer. Here is an example of his methods. The Union Pacific Railroad counted Gould as one of its directors by 1874. Indeed, he almost dominated the line. To the railroad's surprise, Gould undertook the development of a line that would compete with the Union Pacific. The Union Pacific's other directors protested. Gould then suggested a merger of the two lines. Happily, the Union Pacific agreed. Gould thus received $10,000,000 for his stock in the Kansas Pacific, the prospective rival to the Union Pacific.

Gould also concerned himself with business developments in New York City. The New York World, which Gould owned from 1879 to 1883, suddenly began attacking the Western Union Company and praising a new telegraph concern, The Atlantic and Pacific Company. Gould owned the later. The World's criticism of Western Union only stopped when it purchased the new telegraph company, supposedly for $10,000,000. But shortly the World wrote glowingly of another new concern, the American Union. Again,
Western Union purchased that Gould inspired organization. Then Gould forced down the stock of Western Union and by 1831 owned it. Shortly after transferring his office to the Western Union building, Gould declared a dividend of 33 1/3 per cent and increased the company's capitalization to $30,000,000.

In much the same manner Gould became the owner of New York's first two elevated railways. He then raised the fare from 5 to 10 cents.

About the only thing Gould could not manipulate to his own advantage was his own health. It finally led to his death on December 2, 1892.

Present Condition of the Site

"Lyndhurst," is a Gothic Revival mansion that is very like it was when occupied by Jay Gould. The structure is the result of several periods of construction, the first two of which were the most important.

The original section of "Lyndhurst" dates from 1838. General William Paulding, a former mayor of New York, commissioned Alexander Jackson Davis and Ithiel Town to design a rural estate for him at Tarrytown. The house they produced is now the southern half of the present elaborate structure. The Davis and Town house was essentially cruciform in design and was built of marble. The designers included turrets, bays, crenellation and other attributes of Gothic style. Inside, the Gothic tone also prevailed, especially in the ceilings with their rib vaulting.

Paulding's estate was purchased by George Merritt in 1865 and he gave it its present name. He also enlarged the house. A wing on the north was added, as was the four-story tower. An especially interesting room of the additions is the dining room, which is just north of the tower.

Fifteen years after naming of "Lyndhurst," Jay Gould bought the estate. He lived there from 1880 until his death in 1892. Gould effected no basic change in the house, nor did his daughters who lived there after his death. His youngest daughter, Anna, Duchess of Talleyrand-Perigord, left the estate to the National Trust upon her death in the early 1960's.

The author has not visited "Lyndhurst."

ANDREW CARNEGIE MANSION, NEW YORK

Location. 2 East 91st Street, New York City.

Ownership. Columbia University in the City of New York, 
Dr. Grayson Kirk, President.

Significance

The "King of the Vulcans," Andrew Carnegie, concluded a satisfactory sale early in 1901 when he disposed of his iron and steel properties to a syndicate headed by J. P. Morgan for $492,000,000. In the same year, the once-penniless immigrant erected his elaborate mansion on 91st Street in New York City. It sheltered Carnegie in comfort for the next eighteen years, while he dispensed of much of his fortune in numerous philanthropic undertakings.

Almost eighty-four years before 1919, Margaret Morrison Carnegie bore a son, Andrew, on November 25, 1835, in Dunfermline, Scotland. The future American grew up in and benefited from an intellectual home environment. William Carnegie, a weaver, instilled a love of reading in his son; and his grandfather a political liberal, gave to the boy an understanding and appreciation of radical points-of-view concerning the British political and social scene.

By the time he was thirteen and set out for America with his family, Carnegie possessed all of those attributes, physical and personal, that impressed friend and foe in later years. He stood about five-feet-four inches tall, and had a strong constitution, blue eyes, high cheekbones, and a thin-lipped mouth. People enjoyed his pleasant personality and his fund of good stories. They also appreciated his courage, but perhaps feared his intensity. Despite his yearning for success, Carnegie always retained a zest for reading and writing. Ever optimistic, he eschewed formal religious beliefs. He relied on his own abilities, feeling that an individual, through unending effort, could achieve his goals.

Impoverished when he landed in America in 1848, Carnegie enjoyed an income of $47,860 by 1863. He had sailed with his family from Scotland in May, 1848. Following their arrival in the United States, the family settled in Allgheny, Pennsylvania, where Andrew first worked in a cotton mill for $1.20 a week. He shortly exchanged that job for one as a messenger in a telegraph office, where he learned telegraphy. Carnegie's skill as a telegrapher impressed Thomas A. Scott, the superintendent of the Pennsylvania Railroad's new Pittsburgh division, who employed Carnegie as his private operator at $35 per month. The young immigrant availed himself of his good fortune and steadily rose in
position as his patron, Scott, achieved greater responsibility. When only twenty-three, Carnegie became the superintendent of the Pittsburgh division. Furthermore, Scott recommended investment opportunities to Carnegie, the success of which accounted for $45,460 of the $47,860 that Carnegie earned in 1863. The difference between the two sums consisted of his $2,400-salary from the railroad. The perspicacity of Carnegie is further indicated by the fact that by 1863 he also owned interests in an axle company and a railroad-bridge company.

The success of the railroad-bridge company caused Carnegie to turn from railroads to iron. He left the Pennsylvania Railroad in 1865, when thirty, and organized the Keystone Bridge Company. The young promoter's energy and winning personality secured many contracts for his concern, which built numerous iron railroad bridges as replacements for wooden ones. Beams from Carnegie's concern were also used in the Statue of Liberty, as well as in the Eads and Brooklyn Bridges. At the same time that Carnegie prospered in the iron business, he realized handsome profits as a seller of bonds in America and Europe. And it was while on a bond-selling trip abroad in 1872 that he became convinced of the future of steel.

Like a doubtful suitor, Carnegie's conversion to steel manufacturing needed strong stimulation. Before 1872, he had opposed its production in his company, disliking the difficulty of producing the metal. But while in Europe in 1872, he became fully familiar with steel making and decided that steel would supplant iron. His meeting and talking with Henry Bessemer had helped to convince him. With his new insight, Carnegie sailed home and invested in a firm that had been founded, in part, by his brother to manufacture steel. The new adherent of steel then formed a separate firm and began to construct, in the midst of the depression of 1873, a huge plant. The works began production in September, 1875. They were tactfully called the J. Edgar Thomson Works, after the president of the Pennsylvania Railroad, a large user of steel products.

Carnegie's rise as the mightiest Vulcan of all after 1875 sprang from several eminent characteristics. His attention to manufacturing details was not one of them. He never knew much about the technique of either iron or steel manufacturing. But he knew men, and his own suggested epitaph was well chosen: "Here lies the man who knew how to get around him men who were cleverer than himself." Carnegie selected astute lieutenants and then stimulated them to perform brilliantly. Thus Captain "Bill Jones," Charles M. Schwab and Henry Clay Frick contributed significantly to the rise of the Carnegie empire. Driving his subordinates as he drove himself, Carnegie used any and every opportunity to expand. Thus he enlarged and modernized his works during depressions. During the depression of 1893, he so improved his plants that when business revived he produced steel more

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cheaply than any of his competitors. Such boldness was responsible, in part, for the fact that Carnegie's interests returned a profit of $40,000,000 in 1900.

The turn of the century also witnessed the triumph of the banker-capitalist, as opposed to the industrialist-capitalist of Carnegie's ilk. Now sixty-five, Carnegie disliked the rising influence of the banker, and he decided to sell. Before selling, however, he so upset the bankers interested in forming a steel trust by threatening to expand his interests that he spurred their leader, J. P. Morgan, to agree to a price of $492,000,000 in bonds and stocks of the proposed United States Steel Company for the Carnegie Company. Following the consummation of the sale in January, 1901, Carnegie kept $225,000,000 in 5 per cent gold bonds, distributed the remainder among his associates, and felt no regret that the formation of the United States Steel Company had ended his days as an active steel manufacturer.

In his remaining years, Carnegie gave away $350,000,000 a major part of his fortune. His generosity arose not from a charitable sense, but from a desire to stimulate others to develop themselves. Thus he gave library buildings to many communities, but left it up to the recipients to fill them with books and readers. His many other contributions were also intended to stimulate the improvement of man. And his philanthropy continues to benefit individuals, if not mankind in general, many years after his death on August 11, 1919.

Present Condition of the Site

The Carnegie mansion is a sixty-four-room and brick structure that has been described as being "sumptuous but not ornate." Presently occupied by the Columbia University School of Social Work, the structure is essentially the same as it was during Carnegie’s occupancy of it.

Carnegie built the house in 1901, at a cost of $1,500,000. The hallway possesses two unusual attributes, beautiful Scottish woodwork and a large Aeolean organ. The oak panelling and stairway reflect Carnegie’s continuing attachment to Scotland, the organ his love for music. Apropos of the latter, he gave nearly $7,000,000 for 8,000 organs in America and Great Britain, maintaining that "You can't always trust what the pulpit says, but you can always depend upon what the organ says."2

In addition to the notable ground floor hallway, there are several other outstanding rooms on the first floor. A picture gallery and music room, conservatory, and handsome dining room still retain much of their original elegance. The Carnegies entertained numerous

prominent people in their house, and urged their guests to autograph the table cloths used in the dining room. Carnegie's study is also on the first floor and his personal desk is still in the room. The second floor was used only by the Carnegie family. Included in the floor was a library, paneled with teakwood, and a billiard parlor.

The third and fourth floors were used by guests and servants respectively. A gymnasium was also on the third floor, and Carnegie practiced his golf in it.

The Andrew Carnegie Mansion, New York City

Courtesy, Columbia University
HENRY CLAY FRICK MANSION, NEW YORK

Location. 1 East 70th Street, New York City

Ownership. Mr. Franklin M. Biebel, Director,
The Frick Collection (same address)

Significance

Henry Clay Frick, a dominant figure in the coke and steel industries between the 1870s and early 1900s, erected his large and handsome New York City home near the end of his life. Upon his death in 1919, the former colleague of Andrew Carnegie's willed the mansion to the public. Numerous visitors since then have enjoyed the beauty of the house and the richness of the art collection that Frick had collected before his death.

Even as a youth, Frick possessed artistic interests. Born on December 19, 1849, in West Overton, Pennsylvania, to parents of German and Swiss extraction, Frick experienced a normal childhood. But he had to forego further education when 17, when he began to work. And for many years he had to sublimate his interest in art to his business career.

Coke, not art, produced money and power for Frick. After working at several different jobs, Frick, when 21, borrowed $10,000 from Judge Thomas Mellon of Pittsburgh. He then erected 50 coke ovens in the Connellsville, Pennsylvania, region. His entrance into the coke industry came in 1870, just a short time before the Panic of 1873. But even during the depression engendered by the panic, he managed to purchase additional coal lands and acquire more ovens, largely because of the continuing financial support of the Mellons. By 1879, the emerging industrialist controlled eighty per cent of the coke production in the Connellsville area. Furthermore, he was shipping almost 100 railroad cars of coke daily to Pittsburgh, making a net profit of $3 on each ton sent to the iron city. Little wonder that at this time, when he was 30, he was worth $1,000,000.

Frick's success arose from more than just the burgeoning demand for coke by the iron and steel industry. His intelligence, perspicacity and resourcefulness enabled him to perceive opportunity; and his drive, determination and courage enabled him to transform opportunity into striking accomplishment. A small man, with a slight frame and delicate features, Frick ignored his disabilities, such as rheumatism, and seldom settled for less than he had decided upon. Hard work and concentration upon his career did not prevent Frick from noticing the fair sex, and on December 15, 1881, he married Adelaide Howard Childs.
Dinner with Carnegie while on his nodding trip brought Frick and the Scot into a close relationship. The imaginative Carnegie, not lacking prior knowledge of Frick, observed and appreciated the coke king's attributes. Subsequently, the steel maker invested in the H. C. Frick Coke Company. And in 1883 the Carnegie and Frick companies began to cooperate closely. But Frick never became the steel emperor's toady. When Carnegie expressed his opposition in a letter to Frick's plan to increase the capitalization of the coke company by $1,000,000, Frick answered, "I do not like the tone of your letter," and proceeded with his plan. Also, Carnegie and all others in the Scot's empire paid Frick the unique compliment of addressing Frick as "Mister Frick."

Despite Frick's refusal to truckle, Carnegie eventually enthroned the Pennsylvanian as the general manager of all of his properties. That occurred in 1889, when Frick was only 39. Under Frick, the loosely organized Carnegie empire became a highly organized vertical trust, controlling the sources of raw materials as well as the means of producing iron and steel. Whereas Carnegie exemplified the promoter and salesman, Frick personified the organizer. And he brooked no interference in the operation of his organization. Thus he detested labor unions.

Frick's insistence upon the untrammeled prerogatives of management helped to provoke the Homestead strike of 1892, one of America's notorious industrial disputes. Learning of the possibility of a strike at the Homestead plant near Pittsburgh, Frick made his preparations. He transferred orders from the endangered plant to other Carnegie mills, erected dirt ramparts about the factory, and hired 300 Pinkerton guards. On June 24, 1892, Frick informed the workers at Homestead of a wage cut. The men's union refused to accept Frick's fiat and struck. When the Pinkerton guards attempted to reach the factory of July 6, a violent and bloody riot ensued. The mob remained unchecked until July 12. Eleven days later a would-be assassin, Alexander Berkman, shot and stabbed Frick, who, after the assailant had been removed, remained at his desk despite his wounds for the remainder of the day. As Frick recuperated from the effects of the attack after July 23, the strike continued until the workers surrendered on November 20. The next day Frick wrote to Carnegie who was in Scotland, saying, in part, "We had to teach our employees a lesson, and we have taught them one that they will never forget."

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Eight years after the Homestead affair, Frick and Carnegie parted company. Their basic incompatibility had grown through the 1890s, with Frick resenting Carnegie's attempts to frustrate his leadership of the Carnegie organization. A strong enmity gradually developed between the titans, causing Frick to resign as general manager in 1900. Both Frick and Carnegie lived until 1919, but neither ever spoke to the other again.

The last years of Frick's life were not inactive ones. He contributed importantly to the formation of the United States Steel Company in 1901 and subsequently served as a director. The Pennsylvania Railroad also felt his influence, he holding a strong position apropos of it. Death ended his career on December 2, 1919.

Present Condition of the Site

The Frick mansion is a large granite structure that was built in 1913-14 and occupies the block frontage between 70th and 71st Streets on Fifth Avenue. Designed by Thomas Hastings, the house's exterior is of Indiana limestone and suggests the French domestic architecture of the eighteenth century. The mansion has more than 100 rooms in its three residential floors and two below ground service floors.

The interior of the house shows the influence of English architecture of the eighteenth century. The living hall is a spacious and handsome chamber in the northeast corner of the ground floor. A marble mantel and rich woodwork enhance the beauty of the room. Some of the treasures of the Frick Collection also contribute to the room's elegance. Similarly, the dining room and Boucher Room contain paintings and objets d'art from the Frick Collection, as well as exceptional panelling and lovely furnishings. The Fragonard Room contains paintings by Jean Honore Fragonard.

The art collection in the house stems from Frick's abiding interest in art. That interest strongly reasserted itself about 1895, when he began purchasing paintings, he eventually creating a collection that cost from $30,000,000 to $40,000,000. When he died, he left the house, the art collection, and an endowment of $15,000,000 to the public.

The house and collection were opened in 1935. Some minor changes had been made in the house by 1935, but the mansion is largely the same as when built.

Unbeknownst to the inhabitants of the Gobi Desert, a smallish, thin and dark-complexioned American considered building a railroad across their barren, wind-swept homeland about 1905. This man was Edward Henry Harriman, one of America's railroad moguls. The Gobi railroad never materialized, but Harriman's thinking of it as part of his scheme for a world-wide transportation system certainly attests to the boldness and enterprise of the owner of "Arden," a man who still ranks as one of the Nation's pre-eminent organizers and builders of railroads.

Harriman was born on February 25, 1848, in Hempstead, Long Island, New York, the son of a minister, and even as a young man he displayed an aptitude for business. He left school when fourteen and obtained a job as a messenger on Wall Street. By 1863 he had become the managing clerk in a brokerage house. The young financier purchased a seat on the New York Stock Exchange two years later; and by 1883 he had become the owner of his first railroad, which he sold at a handsome profit in 1884.

Harriman's initial railroad venture established a precedent for the businessman's subsequent career. The Illinois Central Railroad had made him a director on May 30, 1883, and on September 28, 1887, the line elevated him to a vice-presidency. Due largely to Harriman's improvement of the railroad's physical plant and shrewd financial direction, the Illinois Central survived the Panic of 1893, even continuing to pay dividends as one railroad after another failed during that economic maelstrom. The depression following the panic enabled Harriman to undertake an even greater task, the reorganization of the bankrupt Union Pacific, which he acquired control of between 1897 and 1900. Under this direction, the line was transformed from but "two dirt ballasted streaks of rust" into a highly profitable enterprise.

Harriman's astounding rehabilitation of the Union Pacific added to his already highly regarded stature, and to his wealth. But the Union Pacific served merely as a stepping stone. In 1901 Harriman gained control of the Southern Pacific Railroad. With the subsequent merger of the Union and Southern Pacific Railroads, the Nation beheld its greatest combination of railroad properties. Not content to stop there, Harriman, along with James Jerome Hill and J. P. Morgan, formed

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1Robert E. Riegel, The Story of Western Railroads (New York, 1926), 311.
the Northern Securities Company in November, 1901, which created a
gigantic combination out of the Harriman lines, the Northern Pacific
and the Great Northern. The consolidation was short lived, however,
and in 1904 the Federal Government forced the dissolution of the
concern. Harriman remained very active during the remaining five
years of his life, showing especial interest in creating a world-wide
transportation system, but his great deeds had already been accomplished.

Harriman's success stemmed not only from his financial acumen,
but from his remarkable interest in the practical side of railroading.
Realizing that the greatest volume of traffic hauled by as few trains
as possible would produce the largest profit, he thoroughly rehabilitated
most of the lines with which he was associated. As the driving force
in the Illinois Central Railroad between 1882-1892, he added 1,500 miles
of track and built or bought 234 new passenger and 8,401 new freight cars.
These improvements helped to increase the line's annual gross revenue
from about $9,000,000 to just over $20,000,000. When Harriman became
the paramount individual in the Union Pacific, he first travelled over
5,000 miles on the system in order to inspect the condition of the rail-
road. He then spent $174,000,000 in the following years to improve the
railroad bed, to lay over 4,000 miles of heavier track, and to install
safety devices. Harriman, after acquiring the Southern Pacific, spent
$20,000,000 within two years on improvements. As a result of his in-
sistence upon excellence, the Southern Pacific in 1909 carried 10,000,000
more freight-tons than it had in 1901, but with the drop of 3,400,000
freight-train miles run.

Present Condition of the Site

The railroad magnate, near the end of his career, built the
great house at Arden. He had first purchased land in the area near
Tuxedo in 1885, and by 1900 the original 7,863 acres had grown to 20,000,
or 30 square miles. Deciding in 1905 to erect a home on the top of the
1,300-foot high ridge that rises from the Ramapo River, Harriman set his
men to blasting out granite for a site for the house and lawn. By the
summer of 1909, the house had been completed, only American-made materials
having been used in its construction. But on September 9, 1909 Harriman
died.

"Arden" is in excellent condition. Now owned by Columbia
University, the original building remains very much as Harriman built it.
None of the original furniture, however, is in the building. The beautiful
garden and lawns are well kept. The visitor will also enjoy the mag-
nificent view from the house.

References. John Chamberlain, The Enterprising Americans
(New York, 1963); Stewart H. Holbrook, The Age of the Moguls
(New York, 1953); George Keenan, E. H. Harriman (2 vols.; Boston, 1922);

N. P. S. Photo, 1962
John Pierpont Morgan continues to impress Americans. If in his era his Wall Street colleagues referred to him as "Pierpontifex Maximus," is it unseemly that today he is compared to Lorenzo de' Medici, or spoken of as a "Renaissance prince."?

The erstwhile prince had something of a princely background. He was born on April 17, 1837, in Hartford, Connecticut, a son to Junius S. Morgan, a millionaire. Nevertheless, the future colossus of Wall Street was both thrifty and religious as a child. His first hobby, apparently, was collecting the signatures of bishops of the Protestant Episcopal Church.

Because of ill health, Morgan began in 1852 an almost continuous five-year period of residence in Europe. He sailed for the Azore Islands in November, 1852, and subsequently joined his family in England in 1853. Upon concluding the "Grand Tour" in July, 1853, he returned to America. But when his father settled in England in 1854, Morgan returned to the Continent. He attended foreign preparatory schools, and studied at the University of Gottingen during his last two years abroad. By the time he returned to the United States in 1857, he had acquired a European "patina" that he retained until his death.

Morgan between 1857 and 1871 achieved a solid position in the financial world, married became a widower, and remarried. The large and burly young man worked for a while in his father's firm in London, where he acquired his first lessons in commercial banking, before returning to the United States. Upon his landing in America he quickly established himself, and during the Civil War concluded several profitable undertakings. By 1864 his income was $53,286. He joined the firm of Drexel, Morgan and Company on July 1, 1871, thus becoming a member of one of the country's leading banking houses. About a decade before, he had married Amelia Sturges, on October 7, 1861, who succumbed to tuberculosis less than five months after her wedding. Morgan remarried on May 31, 1865, exchanging vows with Frances Louisa Tray.

Fourteen years after his second marriage, Morgan effected a financial transaction of notable importance in the history of American banking, and of great significance to his own career.
By 1879, American industry had reached a point in its trend toward consolidation that forced industrialists to turn increasingly to banks for capital and credit to underwrite the growing number of mergers in industry. That development thus stimulated the rise of investment houses, which assumed greater and greater control over industry as they financed the rise of trusts. One of the first instances of the new process occurred in 1879, when Morgan sold 250,000 shares of New York Central Railroad stock. That financial coup enabled the Vanderbilt family to retain control of the railroad. But Morgan, in addition to earning $3,000,000 from the sale, demanded and received a seat on the railroad's board of directors. Morgan thus emerged from the transaction enriched, empowered to help control the New York Central, and enthroned as a power in American capitalism.

Morgan's New York Central triumph ushered in the "era of Morgan." Concentrating on railroads, the financier as a historian observes, "... essayed the role of a private Interstate Commerce Commission." Whenever Morgan turned his attention to a railroad, he became the dominant voice in its management. He not only insisted on certain financial remedies affecting the line, but retained sufficient influence in order to enhance the beneficial management of the railroad. The panic years in the early 1890s witnessed one Morgan reorganization after another—the Erie, New Haven, Reading, Southern Railway System, Norfolk and Western, and Baltimore and Ohio, all felt the hand of the master. By 1900, it is estimated that Morgan controlled about 100,000 miles of track. Only the Federal Government curbed Morgan's power when it prosecuted a mammoth combination of railroads that was dominated by the New Yorker. As a result, the Supreme Court ordered the dissolution of the combine on March 14, 1904. Although restrained by the government apropos of railroads, Morgan had already fathered a mighty steel organization. In 1901, Morgan, then 65 and the leader of a syndicate, paid Andrew Carnegie $492,000,000 for the Carnegie Steel Company and then organized the United States Steel Company. The new company had all the legality of many smaller concerns, was capitalized at $1,402,000,000, and controlled 70 per cent of America's iron and steel industry.

Could "Jupiter," as some named Morgan, ascend to greater heights? It seemed impossible. But three years after Washington had forced the demise of the giant railroad complex, Morgan averted a national panic. His marshaling of New York's leading bankers and financiers in his new library on November 2, 1907, led to an agreement to raise $25,000,000 in order to support weak financial institutions in New York. The success of Morgan's move helped to restore confidence in the country's financial state, and calm replaced terror in the market place.

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Six years remained for Morgan after 1907. During them, he paid less and less attention to business. His interest in art remained strong, though, as it had been for years. For decades, Morgan had spent much time in Europe, frequently sailing across the ocean on his yacht, the Corsair, a 165-foot steam yacht that he had bought in 1882. Through those trips, as well as through dealers, Morgan amassed an outstanding art collection. When he died on March 31, 1913, he had an assured position in history as both a financier and collector.

Present Condition of the Site

Morgan commissioned the famous New York architectural firm of McKim, Meade, and White in 1900 to design and erect a library. The building that the firm completed in 1906 has been described as "... one of the Seven Wonders of the Edwardian World."²

A Renaissance-style structure, the marble and rectangular building is guarded by two stone lions. The library's portico has a vaulted ceiling, which is supported by two Ionic columns on either side of the doorway. A great bronze door leads into a domed and marble entrance that is richly decorated. A doorway on the right leads to the East Room, which has a high and beautifully decorated ceiling and houses part of the Morgan library. A huge carved stone fireplace dominates the east wall of the room.

Across the entrance hall from the East Room is the West Room. Here Morgan played solitaire as he directed the effort to avert a general financial collapse early in November, 1907. His massive desk site near the north wall, across from a large, elaborately carved fireplace. Still on the desk are Morgan's silver letter opener, his magnifying glass, and leather-covered letter holder, as well as other of his personal desk objects. This room also contains many artistic treasures. Nevertheless, the room's unique aspect is its reflection of Morgan. The room bespeaks power, wealth, taste, and elan, i.e., Morgan.

Today, the library and the annex that was erected in 1927, house unique literary and artistic collections dating from ancient to modern times. Morgan's son, John Pierpont, endowed the library with $1,500,000 and conveyed it to a board of trustees in 1924.


²Quoted in Walter Muir Whitehill, Independent Historical Societies (Boston, 1962), 442.
The Pierpont Morgan Library, New York City

GEORGE EASTMAN HOUSE, NEW YORK

Location. 900 East Avenue, Rochester, Monroe County

Ownership. George Eastman House, Inc. - Mr. Beaumont Newhall, Director

Significance

George Eastman, who built "George Eastman House," Rochester, New York, as his residence in 1905, created popular photography. He developed the film and invented the camera that carried photography to the people. The omnipresent Kodak still testifies to the triumph of his ingenuity.

It first seemed that Eastman would become a banker. He was born on July 12, 1854, in Waterville, New York, but moved with his parents to Rochester in 1860. The death of his father soon forced him to leave school and take a job. He initially worked in an insurance firm, at $3 a week. When twenty, Eastman became a junior clerk in the Rochester Savings Bank. His salary was $1,400 annually by 1876, and it appeared that he would remain in banking. But banking soon lost out to photography.

Eastman's interest in photography stemmed from his purchase of a camera in 1877. After acquiring the camera, he paid $5 for lessons in its use. A trip to Santo Domingo not only convinced him of the attractions of photography, but impressed him that the bulky equipment and difficult developing processes of the day could be simplified. Once home, he set out to do that.

The young man first concentrated on the film. He had learned of the invention of the gelatin dry plate in Great Britain and conceived of devising an inexpensive dry plate camera. While still a banker, he pursued his project. By 1879, he had produced a dry plate film and began to manufacture it. He left the bank in 1880 and moved his production to larger quarters, as he did again in 1881. Eastman was making $4,000 worth of dry plates a month by early 1882. Some two years later the dry plate business collapsed because of the rise of so many competitors.

Despite the decline of business in 1884, Eastman's enthusiasm for photography remained strong. Furthermore, he had already extracted four business principles from his experience. He believed that success would result from large production by machinery, low prices, sales abroad as well as in America, and the widespread promotion of his products.

Conscious of the opportunity inherent in the mass market, Eastman in 1884 concentrated his efforts on the task of making photography easy. He first sought to make a simpler film. By March 1885 he had patented a flexible film that had a paper back. Shortly, he marketed the first roll film. Eastman then turned to the development of a simple camera. That
effort resulted in the Kodak camera, which originally appeared on the market
in June, 1880. The box camera contained a roll of film with 100 exposures,
took round pictures and had to be returned to the factory for the development
of the exposed film. The camera sold for $25.

In presenting his innovation to the public, Eastman also unleashed
an extensive selling campaign. The inventor had fathered the name "Kodak." The label met his desire for a strong tradename and for one that would defy copying. He also devised the slogan, "You press the button, we do the rest." And that is just what occurred in thousands of instances.

Eastman continued to simplify photography in the 1890's. His firm
produced a transparent film, turned out a small Kodak and in 1896 marketed
a $5 camera. Those innovations stimulated an amazing growth in Eastman's company.

The "Kodak King," as Eastman was called, dominated the industry. In 1890 he organized the Eastman Company, capitalizing it at $1,000,000. Two years later he changed its name to the Eastman Kodak Company and capitalized it at $5,000,000. Another reorganization occurred in 1893, this time at $8,000,000. Alert to competition, Eastman bought patents, entered into marketing agreements and forced uncooperative people out of business. He thus acquired control of about eighty percent of production in the United States. A federal anti-trust suit in 1915 forced the sale of some units of his company, but left his organization really unharmed.

Many times a millionaire by 1900, Eastman gave away vast sums. The Massachusetts Institute of Technology, Boston, Massachusetts, and the University of Rochester greatly benefitted from his generosity. All told, he distributed over $100,000,000 while alive and left an additional $12,000,000 in gifts upon his death.

Eastman took his own life on March 14, 1932. Beset by old age, his last written words were, 1

"My work is done; why wait?"

Present Condition of the Site

Eastman's residence probably reflects as much of the inventor's desires as it does the architect's design. A local architect, J. Foster Warner, supervised the house's construction, but Eastman choose the design and insisted upon the inclusion of numerous details.

The house is constructed of concrete and is two stories high. A portico, with Corinthian columns, dominates the house's front. The front roof has dormer windows, a balustrade near its peak and a platform on its top. The house is completely fireproof.

The main entry is among the most impressive of the mansion's rooms. The floor is of marble and a handsome stairway leads to the second floor. Many of the building's other rooms contain some original furnishings, such as in the large East Room. The library, with its floor to ceiling bookcases and fireplace is an especially attractive chamber.

The George Eastman House became a photographic museum in 1948-49. Some alterations were made at that time, but only of a minor nature. The museum contains photographic exhibitions and historical material apropos of photography.

Admission is free, 10:00 a.m. to 5:00 p.m. every day of the year.

No pharaoh thought more highly of his pyramid than Frank W. Woolworth regarded the skyscraper that bears his name. The pioneer chain-store merchandizer dreamed of such a building long before it was completed in 1913 and hugely enjoyed his multi-million dollar and personally-owned tower until his death in 1919. The Woolworth Building thus is an appropriate memorial to its namesake and the rise of the chain store in American business.

Poverty beset the early years of the man who eventually paid $13,500,000 in cash for the Woolworth Building. Born on April 13, 1852, on a farm in Rodman, New York, Woolworth moved with his family to Great Bend, New York, when he was seven. It is said that during these years he owned only one pair of boots and never possessed an overcoat. When sixteen, he left public school. He had also decided to escape from the rural life. Apparently always interested in stores, he attended two winter sessions of a commercial college in Watertown, New York, after leaving public school. Woolworth thought that the courses in business would aid a mercantile career. He then worked for about two years as a clerk in a village store. During that time his only pay was "experience."

Between 1873 and 1879, Woolworth's income continued to consist largely of experience and little money. He secured a job with Augsburg and Moore, dry goods merchants in Watertown, in March, 1873. He earned nothing for the first three months, and then began to receive $3.50 a week. About two and a half years later, he had advanced to $6 a week. He then joined another store, at $10 a week. He also married, taking Jennie Creighton as a partner on June 11, 1876. Shortly after Woolworth's marriage, his employer reduced his salary to $8 a week, thereby causing Woolworth to suffer a nervous collapse. A brief attempt at farming ensued, but by 1877 he had returned to his first firm, now Moore and Smith. That firm's several successful sales of five-rent items in 1878 aroused Woolworth's interest. So much so, that Woolworth accepted Moore's support in opening a nickel store in Utica, New York.
Woolworth, already inured to disappointment, refused to allow several failures in his new undertaking to discourage him. His Utica store lasted for only three months. Still certain that a 5¢-store was possible, he tried again in Lancaster, Pennsylvania, in June 1879. His fourteen by thirty-five foot store on North Queen Street opened on June 21 and sold $127.65 worth of its $410 inventory of goods. That store's continued success caused the young business man to open two new stores, one in Harrisburg and one in York, but both failed. He then established a store in Scranton, and by 1882 it and the Lancaster store had a total gross income of $24,125. Within about four years Woolworth owned seven stores, whose sales in 1886 totalled $100,000.

Several factors lay behind the success of the once-poor youth. Perhaps foremost was Woolworth's indomitable character. He refused to abandon what he considered a sound idea. Also, he never paled before work, and he never ceased learning. Thus he realized by the time of his success in Scranton that only a chain would enable him to sell the best variety of goods at the cheapest prices. And as the number of his stores grew, he increasingly appreciated the need for excellent managers. As he remarked during his speech at the opening of his New York tower in 1913,

"I do not wish to be egotistical, but if I have had any ability it has been in the selection of good generals as managers of the little business that I have started." 

Woolworth also emphasized the customer. He should not only be offered the best bargain, but should always be treated with courtesy and honesty.

The customer responded to Woolworth's merchandizing, and his business continued to grow. By 1895 he had 25 stores and their total sales totalled more than a $1,000,000 for the first time. By 1900 he had 59 stores and a gross sale of over $5,000,000. He opened a chain in England in 1909 of "3d and 6d" stores and it was highly successful. Two years later, Woolworth's merger with some similar stores raised his company's (incorporated in 1905) chain to 596 stores. Further mergers increased the number of stores to 1,050 by spring, 1919. And when the company's founder died on April 8, 1919, he left an estate of $27,000,000.

1 Quoted in John K. Winkler, Five and Ten, The Fabulous Life of F. W. Woolworth (New York, 1940), 194

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The former clerk who had once worked only to gain experience also left the Woolworth Building, then the world's tallest edifice. That structure resulted from long years of desire on Woolworth's part. His admiration of the Gothic style architecture of the British Houses of Parliament influenced his choice of style, which was translated into actuality by the celebrated architect, Cass Gilbert. When the 792 foot-high building was completed, President Woodrow Wilson at 7:30 p.m. on April 24, 1913 pressed a button in Washington, D. C., that lit 80,000 electric bulbs. The 60-story structure glowed like an enormous sparkler.

Woolworth's construction of the tower involved more than just personal vanity. His reply to one who asked why he had invested so much in the building indicates that. "Did you know," he asked in turn, "that children's schoolbooks tell them about the world's highest building?"

Present Condition of the Site

Although no longer the highest building in the world, the Woolworth Building's esthetic merit continues to attract attention and arouse admiration. Artistically, the structure remains a unique application of the gothic style to modern commercial architecture. Graceful and light in appearance, the structure also possesses a richness of detail that the most modern buildings spurn. Flying buttresses, spires, gargoyles and lace-like traceries enliven the exterior and soften the dominant vertical line. Little wonder that a New York minister christened it the "Cathedral of Commerce," an appellation that remains popular.

The interior of the cathedral is just as striking as is the exterior. That is immediately apparent as one passes through the main entrance on Broadway and moves into a three-story high hallway. Its walls are of golden colored marble from the Greek island of Skyros and its vaulted ceiling dazzles one because of its flashing glass mosaic work. Broad marble staircases lead to the second floor and its balconies with their large frescoes of "Commerce" and "Labor." The cornices resemble lace work and are covered with pure gold leaf.

The richness of the entrance is not repeated in its entirety throughout the Woolworth Building. But on every floor there are terrazzo floors and Italian marble wainscoting. Also, gilded ironwork brightens every floor. Each elevator bank is fronted by an elaborate cast iron and gilded facade. An additional characteristic of the building is its high ceilings, which add to the enjoyment of the structure. If it had not been for the high ceilings, the building would have had 79 or 80 stories.

The general richness and style of the Woolworth Building is epitomized by Woolworth's office. Located on the twenty-fourth floor, the 30-foot square chamber looks to the south and east. Its walls are a richly veined dark marble. Molded cornices and a decorated ceiling originally enhanced the beauty of the office, but they have been removed. When Woolworth used the office, it contained furniture of the Empire period. A huge desk dominated the room. Some of the original furniture is now displayed in the receptionist's area on the twenty-fourth floor. The chairman of the Woolworth Company's board now uses the office.

The Woolworth Building has been designated as a City Landmark.

OLD SALEM (HISTORIC DISTRICT), NORTH CAROLINA

Location. Winston Salem, North Carolina.

Ownership. Old Salem, Inc. Mr. James Gray, President.

Significance

The emphasis of their church on foreign mission work led Moravians to form congregational settlements in America as early as 1735. Pennsylvania soon became the center of Moravian work and settlement. A visit to North Carolina in 1753 impressed the Moravian bishop Augustus G. Spangenberg with its possibilities as a place for colonization by the Brethren. The church, therefore, purchased 98,985 acres of land which Spangenberg named Wachovia.

The Moravians began settling their purchase that same fall. The first group of settlers set out from Bethlehem, Pennsylvania, on October 8, 1753. On November 17 they reached the spot on their Wachovia lands where they soon began the village of Bethabara. Before the end of the following year they had in operation a carpenter shop, a flour mill, a pottery, a cooperage works, a tannery, a blacksmith shop, and a shoe shop.

When the Wachovia tract was bought, it was planned that a town would be built at its center. Careful planning and inspection preceded the selection of a site for the central town. On a bitter cold January day in 1766, twelve men went to the new town site and began cutting logs for the first house. Tradition says that the name Salem, meaning peace, had been selected by Count Zinzendorf, the Moravian leader, before he died in 1760. By the fall of 1771, Salem had several family houses and community buildings.

As the Piedmont region of North Carolina began filling up after 1750 with the influx of thousands of Scotch-Irish, Germans, and others, there was an increasing need for markets for their surplus goods as well as a considerable demand for goods which they could not produce. Salem, with its professional men and craftsmen, filled an important need in the back country. It soon became the chief commercial center for Piedmont, North Carolina, and probably its largest town. Two hundred miles inland and far from a navigable river or existing road, the town served as a stopping point and trading center for the frontiersmen moving westward. The whole town in its secular life was geared to producing either trade items or supplying the needs of visiting tradesmen.
Present Condition of the Site

Old Salem, Inc., a non-profit and educational organization, was established by local citizens in 1950 in order to restore and preserve original structures which still stand. Their goal is to return buildings and land authentically to their early appearance and early purpose. Many of the older buildings are being used today for contemporary versions of their original purposes. The Girls School, opened in 1772, continues today as Salem Academy and College. On the Campus the Inspector's House, built in 1811 as the home of the principal, is now the college president's office. The Sister's House, completed in 1786, is now a college dormitory. Visitors to Old Salem can still shop in the Community Store which was constructed in 1775. Homes which were built as early as 1768 continue as private residences. More than half the original buildings in Salem are standing and in use. Certain key properties have been restored as exhibition buildings which are open to the public. These illustrate for the visitor life in the early Moravian Congregational town.

The craft and commercial activities of Salem are well represented in surviving structures. The Community Store at 626 S. Main Street, erected in 1775, was the trading center of the village and the home of the storekeeper. It has been restored externally to its original story-and-a-half appearance and offers goods to present-day visitors.

The Miksch Tobacco Shop was the first one in Salem to be occupied as a family dwelling. Matthew Miksch carried on his tobacco business here as a home industry.

Salem Tavern at 736-800 S. Main Street was operated as a necessary adjunct to the town's development as the trading center for all of western Carolina. As a place for traders and travelers to shop, the Tavern played a vital role throughout the early history of the village. Inventories of the tavern were used in completing an authentic refurnishing. Many items peculiar to tavern usage are highly effective in completing the setting.

The home and shop of the clockmaker and silversmith, John Vogler, has been refurnished. The shop and forge rooms of the house illustrate home industries of the period and reveal John Vogler as an extraordinary craftsman.

The Brother's House at 600-04 S. Main Street is now being restored. The half-timbered section of the building was constructed in 1769 and the brick in 1786, making it the second oldest structure still standing in Salem. The unmarried men of the community lived here from the age of 14, when they were apprenticed to master craftsmen to learn their trades. It was long the community's industrial center.
In addition to its interest as a trading center and a congregational town, Old Salem is valuable for its architecture. One architectural historian has described it as perhaps"...the most extraordinary instance of a transplanted architecture." The town plan is the familiar one of land laid off in regular rectangles around an open square. Near the head of the square is the great Moravian church. Along the streets are neat red brick houses, schools and community buildings. In their plan and structural details their German antecedents can be seen.

The Church, Salem College grounds and the five blocks immediately around Salem Square constitute the center of the restored historic area. This district provides an excellent example of an eighteen century trading village of the interior.


\[1\] Thomas T. Waterman, The Dwellings of Colonial America (Chapel Hill, North Carolina, 1950), 46.
Old Salem, Winston-Salem, North Carolina. From left: House and Shop of Christoph Vogler (1797), gunsmith; John Vogler House (1819), craftsman; and Community Store (1775)

Courtesy Old Salem Restoration Hdgrs.
DUKE HOMESTEAD AND TOBACCO FACTORY, NORTH CAROLINA

Location. Approximately 1/2 mile north of the Durham city limits on Guess Road and then east on State Road 1025 in Durham County.

Ownership. Duke University.

Significance

Following the Civil War, Washington Duke returned to his home in Orange (now Durham) County, North Carolina, to find that the farm had been raided and practically all of the supplies carried away. Duke brought with him two blind army mules and half a dollar in sound money. On the farm, he found a quantity of leaf tobacco which the raiding forces had overlooked. He gathered his children from relatives and turned to processing the tobacco, his only commodity for sale or barter. Benjamin and James helped their father pound the tobacco out with hickory sticks in a small log barn on the farm. This was sifted, packed into bags and labeled "Pro Bono Publico." They loaded the tobacco into a covered wagon drawn by the two blind mules and set out for the southern part of North Carolina where tobacco was scarce.

The trip was so successful that the Dukes decided to go into the tobacco manufacturing business. They bought more leaf tobacco, built a larger structure for its manufacture and prospered. In 1872 the Dukes sold 125,000 pounds of tobacco, and their business was as substantial as any in the local industry.

The family business rose to prosperity with, and provided leadership for the growing bright-tobacco industry which grew to maturity during the years 1860-1929. Formulas for the production of this new type of leaf had appeared almost simultaneously with the outbreak of the Civil War. The way was cleared for the development of an industry based on this leaf when the war years brought stagnation to the existing marketing and manufacturing interests centered in Richmond, Virginia, and based on the old dark, fire-cured leaf. Radical and far-reaching changes were introduced into the tobacco industry with the development of bright tobacco. Almost every major mechanical device used in the mammoth tobacco factories of the United States--the cutting machine for smoking tobacco, the Lester-Adams plug machine, the cigarette machine, the Proctor redryer, the automatic packing and labeling machine, and others--appeared on a wave of enthusiasm inspired by the bright-leaf.¹

In 1874 the Dukes moved their factory from the farm to Durham where Blackwell's Bull Durham Smoking Tobacco had provided the cornerstone for the future leadership of Durham in the manufacture of tobacco. The difficulty of competing with Bull Durham and the vital energy of James B. Duke led the Dukes to begin the production of cigarettes in 1881. Immediately the family bent every energy to gain a lead in the cigarette industry.

Sales expanded rapidly for the firm as a result of a decisive move made by James B. Duke in 1883 when the revenue tax on tobacco was drastically cut. According to a contemporary advertisement, the Dukes reduced their prices by the full amount while the majority reduced prices only a small portion of the tax reduction. In addition, the Dukes used advertising vigorously. The firm installed the Bonsack cigarette machine in the spring of 1884. James B. Duke, working with William T. O'Brien, perfected this new device and used it as the chief means to move his company into a position to dominate the entire cigarette industry after 1885.²

After a final bitter "tobacco war" among the five principal cigarette manufacturers, James B. Duke brought them all together in 1890 under his leadership in the American Tobacco Company. In 1895 the company began aggressively to absorb firms making other tobacco products. In 1898, a combination of plug manufacturers was formed, the Continental Tobacco Company, with James B. Duke as president. The two combinations were controlled by the same interests. Other mergers and combinations followed until Duke's combinations controlled 150 factories with a capitalization of $502,000,000.³

Prolonged litigation was an inevitable result of such sweeping consolidation. After almost five years of litigation, the Supreme Court in 1911 ordered the American Tobacco Company dissolved as a combination in restraint of trade. James Duke bore the chief responsibility for setting up the constituent elements in the merger as competitors once more.

In December of 1924 the Duke endowment of $40,000,000 was announced. James B. Duke died the following October and by the provisions of his will the endowment was increased to $80,000,000. It has been estimated that the fund will eventually amount to considerably more. The Duke Endowment was directed principally to the creation of Duke University in North Carolina and for hospitalization in the two Carolinas, with as subordinate objects aid to Methodist Churches and ministers, and the care of orphans.

²Tilley, Bright-Tobacco Industry, 557, 575, and 594.
Present Condition of the Site

The Duke Homestead was built in 1851—shortly before Washington Duke's marriage. For nearly twenty-five years this was the Duke family home. By renting the land of his neighbors and carefully tending his own, Washington Duke gradually added to his holdings until at the beginning of the Civil War he owned three hundred acres. To raise money for his immediate family needs at the end of the war, Washington Duke sold his farm and then rented a part of it back. He and his sons, Ben and Buck, slept in outbuildings and launched their tobacco venture. The purchaser was, however, unable to make the payments, and the property soon reverted to the Dukes.

The house is a six-room building built of hand-dressed, heart pine boards. The unpainted, paneled walls are characteristic of the period. After the family had increased, a kitchen was added to take the place of the log cook house located some distance to the rear. The first tobacco "factory" is a small log structure to the northeast of the house and outside its enclosure. It could perhaps be saved, but is in bad condition with its roof collapsing. The second "factory" burned. The third is a large two-story, unpainted clapboard structure to the front of the house. It is in reasonably good condition. It is presently used to store artifacts associated with the early history of the industry, and the owners plan to maintain it.

When the Duke family moved their business to Durham, the farm was sold. In 1903 the home and 146 acres were sold to a buyer who subsequently resold them to the Duke family in 1931. Duke University now owns the property and has restored the house. Some of the original furnishings are being replaced and others characteristic of the period are being donated by friends. The property is open to the public except in the winter months.

JAY COOKE HOUSE, OHIO


Ownership. Ohio State University, Columbus, Ohio.
Dr. Novice S. Fawcett, President.

Significance

One of Jay Cooke's popular sobriquets, the "Napoleon of Finance," aptly describes the man. Like the Corsican in his military campaigns, the Ohioan displayed brilliance and daring in his bond-selling campaigns during the Civil War. And Cooke's efforts raised millions of dollars for the Federal Government, enabling it to pursue the war until the Union achieved victory.

Cooke entered the financial world at an early age. A native of present-day Sandusky, Ohio, where he was born on August 10, 1821, he attended public and private schools until he turned fourteen. The ambitious youth then became a clerk in a dry goods store in Sandusky, but soon left that position and journeyed to St. Louis, where he obtained employment in a store. The Panic of 1837 ended that job, as it caused the failure of the emporium. Cooke, now sixteen, returned home. He soon acquired a new position, this time as a clerk with the Washington Packet and Transportation Company that operated in the Philadelphia, Pennsylvania, region. Then that business collapsed, and Cooke returned to Ohio in the fall of 1838, only to resume life in Philadelphia shortly. Cooke, while east, had impressed a member of the Philadelphia banking firm of Enoch W. Clarke and Company, and that concern offered Cooke employment in 1839. He accepted the offer, and moved to Philadelphia when nineteen.

Although Cooke never lost his love for Ohio, Philadelphia became his business seat. In his new job, he served as an expert concerning bank notes. That meant he knew bank notes so thoroughly that he could distinguish between acceptable and counterfeit ones. He soon began to write a daily "money column" also, it appearing in the Philadelphia Daily Chronicle. By 1843, the firm regarded the twenty-one-year-old employee so highly that it made him a partner. The new partner during the Mexican War helped to sell bonds, an experience that proved useful between 1861-65. In the years following the Treaty of Guadalupe Hidalgo, which ended the Mexican War in 1848, Cooke acquired increasing stature as a financier. He resigned from Clarke and Company in 1857 and four years later organized his own firm, Jay Cooke and Company, which soon became a major banking house in the United States.
Cooke now began his most successful years. He was, as one historian has observed,

...the typical American pioneer of his time, a tremendous optimist, a great employer of the benefit of friendship in high places, a sort of financial P. T. Barnum, who exploited the government's securities and later his own.\(^1\)

The Civil War enabled Cooke to display his multifarious talents most effectively. For various reasons, the Union found itself in a financial crisis soon after April 12, 1861. The United States faced bankruptcy. A monetary disaster was only averted because the Secretary of the Treasury, Salmon P. Chase, who was a friend of Cooke's family, found in Jay a superlative salesman. Through Chase, Abraham Lincoln invested Cooke with authority to sell $50,000,000 worth of bonds in the summer of 1861. And Cooke did just that. Cooke then established an office in Washington in February, 1862. Not surprisingly, Chase turned to the financier in 1863 to handle a $500,000,000 loan, the "Five-Twenty" loan. This subscription consisted of twenty-year bonds, which certificates could be redeemed in gold after five years. The interest rate was six per cent. Almost a million citizens made the loan a success by subscribing to it. Like Napoleon, Cooke moved from one victory to another. He next handled the "Seven-Thirty" loan of $400,000,000. The loan was so-called because each $100 invested received $7.30 in interest. So successful was Cooke's promotion of the loan, that at times about $1,000,000 worth of bonds were sold a day. Probably more than 3,000,000 people subscribed to the "Seven-Thirty" issue.

How did Cooke, who was also referred to as "Our Modern Midas," sell nearly a billion dollars worth of bonds? Aside from inducing financiers and financial institutions to invest heavily in the bonds, he persuaded the ordinary American to buy through his salesmanship. Cooke spurned no means in promoting his product. When pushing the "Seven-Thirty" loan, he employed a regiment of about 2,500 agents to promote the loan. He supported them by marshalling battalions of newspapers to aid the bond campaigns, providing 1,800 newspapers at a time with material. One of his earliest and most successful newspaper pieces was entitled, "The Best Way to Put Money Out at Interest." The article consisted of twelve questions about money, supposedly asked by a Pennsylvania farmer, that were succinctly and pointedly answered by Cooke. In striving to appeal to the farmer, the laborer, and others, Cooke also propagated such stories as the one that began by remarking how a member of the Federal Senate had observed while in France a huge Parisian crowd before a national loan office, clamoring to subscribe to a national loan. Then came this comment and question:

This was for the support of a despotic government that may be changed any day. ARE WE LESS PATRIOTIC THAN THE FRENCH?\(^2\)

\(^2\)Quoted in Harry Stack, The Jay Cooke Story (Sandusky, Ohio, 1947), II.
Cooke's overall success certainly answered that leading question.

After Appomatox, Cooke, expanded his firm and continued to prosper until disaster struck in 1873. He organized a branch in New York in 1866 and one in London in 1870, and involved his concern in numerous post-war undertakings. He, like many others, invested heavily in railroads. A leading proponent of the Northern Pacific Railroad, he found it impossible to discharge many financial obligations in September, 1873, and his company had to close its doors on September 18. The failure of the concern caused the Panic of 1873.

In the decades that followed, Cooke recovered something of his former fortune, largely because of investments in silver mines. But new men and techniques now controlled the financial world, and he played a minor role in it in his last years. Having married Dorothea Elizabeth Allen on August 21, 1884, he delighted in his last years in his family of two sons and two daughters. He died on February 16, 1905.

Present Condition of the Site

Although only his summer home, Cooke's Gibraltar Island estate meant more to him than his Philadelphia residence. The island retreat attested to his affection for the area in which he had grown up and afforded him vastly enjoyed vacations from the financial world. He began his customary visits to Gibraltar in 1865 and continued them until 1904, except for the period between 1873 and 1880, when the island was in other hands. The failure of his concern in 1873 had forced him to sell the property. Aside from that unhappy interregnum, Cooke generally visited the island for three to six weeks in the spring and for a similar visit in late summer. Cooke's hospitality sometimes accounted for as many as 25 guests on the island.

Cooke's long delight in the beauty and peace of his island home is summed up by his May 12, 1904, and final entry in the house's record book, "God be praised for the happiness we have enjoyed here."

Cooke's summer home on Gibraltar Island, which he acquired for $3,001 in 1864, stands on the highest part of the eight-acre, rocky island in Lake Erie. The building was begun in 1864 and completed in 1865, and is built of stone shipped from Sandusky. It is a three-story structure that has 15 rooms and is dominated by a tall octagonal tower in front.

The building is largely the same as when built. Perhaps the most interesting room is on the ground floor of the tower. It was there that Cooke had his library, and two wall book cases are still in the octagonal room. The wood work of the cases is elaborately carved in the

Gothic fashion, and both cases have large glass fronts. In the case on the right is a pull-out desk that Cooke used. The library faces to the east, and just behind the room is the main hallway, which runs across the width of the house. The dining room is off of the hall­way on the north and the parlor on the south. The former room has its original woodwork, as do all the rooms, and a high ceiling. In the middle of the dining room's ceiling is a cast-iron decorative piece, bearing corn and grapes. French doors open upon a porch. In the parlor, a marble fireplace dominates the room. There is also an elaborate cast-iron decorative piece in the center of this room's high ceiling. French windows on either side of the fireplace look to the south.

The upper two floors contain bedrooms. The master bedroom is above the parlor and it contains its original marble washstand.

The Ohio State University has conducted since 1925 the Frank Theodore Laboratory on Gibraltar Island. A summer field biological laboratory, the school uses the Jay Cooke house as the men's laboratory.

Jay Cooke House, Gibraltar Island, Put-in-Bay, Ohio

N. P. S. Photo, 1965
CORNWALL IRON FURNACE, PENNSYLVANIA

Location. Follow State Route 72 north from the Lebanon-Lancaster Interchange on the Pennsylvania Turnpike until it intersects with U. S. Route 322; turn left, or east, to Cornwall, Lebanon County.


Significance

The charcoal iron industry produced most of America's iron between the founding of the colonies and 1865, and Cornwall Furnace is a superlative example of a charcoal iron furnace. This ironwork made pig iron from 1742 to 1883 and only ceased operating because of the development of better fuels and improved techniques. Still in excellent condition, Cornwall Furnace enables one to see the kind of ironwork that dominated the iron industry for decades.

The iron ore laden hills in the South Mountains five miles south of Lebanon, Pennsylvania, stimulated the rise of a flourishing iron industry in that region. The industrial exploitation of that area began when Peter Grubb, son of an immigrant from Cornwall, England, learned of the ore deposits in "Big Hill," "Middle Hill," and "Grassy Hill" in 1732. Over the following decade, he acquired title to those hills and began mining about 1740, which was not too difficult because the iron bearing rock lay on the ground's surface.

Assured of a rich and huge supply of ore, Grubb soon began to manufacture iron. Thus Cornwall Furnace began its 141-year career.

Grubb's Cornwall ironworks became one of the most famous and profitable in the East. He signed an agreement providing for the furnace's construction on Furnace Creek on September 22, 1739, and by 1742 the furnace had been completed. It stood about thirty feet in height and was built of sandstone. After the furnace's completion, Grubb added a forge to the ironworks. Upon the builder's death in 1754, Grubb's sons, Curtis and Peter, Jr., inherited the works. The value of the inheritance is shown by the fact that in 1763 Cornwall Furnace was assessed at £7,074 and realized a net profit of £1,839. The furnace's worth is also attested to by Robert Coleman's paying £8,500 for a one-sixth interest in it, as well as a one-third interest in the Grubb's Hopewell Forges, in 1786. Coleman acquired sole ownership of the furnace in 1798, and after his death in 1825 it was valued at $62,000 upon the settlement of his estate. Cornwall Furnace remained in the Coleman family, who modernized it in 1856-1857 in order to make its operation more efficient. Its final blast occurred in 1883. Nevertheless, it remained a Coleman family property until presented to the Commonwealth in 1932.
The furnace produced and profited from the usual items made by charcoal iron furnaces. During the American Revolution, it made cannon and shot for the navy. Its first cannon was cast on July 6, 1776, but was not acceptable. The workers learned rapidly after that failure, and by August 25 had begun to produce well-cast guns. Between October, 1776, and January 31, 1777, the furnace produced and sent twenty-four twelve pounders to Philadelphia. With independence won, the furnace returned to peaceful products. Much of its pig iron was sold to forges in the surrounding area. But Cornwall itself made stoves (up until 1821), fire backs, kettles, pans, skillets, and pots. A glance at some of the works’ annual profits substantiates the lucrative nature of the enterprise.

<table>
<thead>
<tr>
<th>Year</th>
<th>Profits</th>
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<tbody>
<tr>
<td>1840</td>
<td>$20,819</td>
</tr>
<tr>
<td>1842</td>
<td>13,796</td>
</tr>
<tr>
<td>1845</td>
<td>18,048</td>
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<tr>
<td>1847</td>
<td>$20,207</td>
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<tr>
<td>1850</td>
<td>4,673</td>
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<tr>
<td>1860</td>
<td>3,226</td>
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Note the sudden and drastic fall in profits in the decade of the 1850s. That was due to the rise of anthracite coal furnaces, which operated less expensively than charcoal furnaces. And it was the anthracite furnace that finally caused the end of Cornwall Furnace’s long productiveness in 1883.

Throughout the furnace’s operation, many different laborers worked at Cornwall. Hessian prisoners cut wood for charcoaling in 1777. Slaves formed about one-third of the furnace’s work force in 1780. Thereafter, there number gradually declined. Free labor certainly supplied the greatest number of workers over the years. Some of the free workers, those who chopped wood for charcoaling, received 25 cents a cord in 1850 and as much as 65 cents a cord in 1865.

Present Condition of the Site

The buildings at Cornwall Furnace combine functionalism and esthetic appeal. The latter is apparent when one stands before the furnace and observes the large stone structures that almost hide the furnace’s stack. Gothic-style windows in the casting house and in the long wing to the right of the stack contribute a lightness and elegance to otherwise heavy and monotonous stone walls. Two dormer windows on the gable-roofed wing also add a refinement to the ironworks.

The functional aspect overwhelms the esthetic when one steps into the ironworks. The visitor begins his tour in the charcoal house, which sits behind the furnace. The charcoal house is a long stone structure that is divided into four sections by stone walls. Charcoal was dumped into each section from the roof and stored there until used. Two-wheeled carts were used to carry the charcoal from there and under a covered passageway into the charging house at the top of the stack.
Once a worker had pushed a cartload to the stack, he lifted his end and dumped the cart's load into the top of the furnace. A bowstring roof covers the charging house and it is supported by huge curved wooden beams.

In leaving the charging room, the visitor descends into the wing that is on the right as you face the casting house. The stairs lead past the blowing tubs, in effect huge bellows, and down to a platform beside a gigantic gear-wheel. It is 76 feet in circumference and actuated the blowing tubs as a steam engine turned it. The wheel sits in the original water-wheel well and is mounted on the shaft that was made in 1742 for the furnace's first water-wheel. In the room in front of this section is the steam engine that subsequently supplanted the water-wheel in driving the gear wheel. The West Point Foundry Company of New York produced the engine in 1839.

In continuing on the tour, the visitor leaves the engine room and descends a flight of steps into the casting room. With its pointed windows, stone walls, and high ceiling, the room possesses a castle-like air. But the huge furnace, made of large dressed sandstone blocks, is the room's most impressive construction. Heavy iron rods, supposedly made in England, give added strength to the furnace's walls. A Revolutionary cannon, one of the furnace's incorrectly cast ones, lies in front of the stack and beside a reconstructed casting bed. As the tour ends, the visitor leaves by a side door in back of the furnace.

Cornwall Furnace's significance is complemented by the nearby Cornwall Mine and "Miners Village." The ore banks, in use from Grubb's time, are the oldest continuously used iron mines in the Nation. Just east of the furnace is the "Miners Village," a group of two family houses that was constructed for miners in the 1860s. Miners who work in the Cornwall ore banks still inhabit them.

The admission is free and the visiting hours are as follows:

May 15 - October 15: 8:30 a.m. to 5:00 p.m.
weekdays except Mondays;
12:00 noon to 5:00 p.m.
Sundays.

October 16 - May 14: 8:30 a.m. to 4:30 p.m.
weekdays except Mondays;
12:00 noon to 4:30 p.m.
Sundays.
Cornwall Iron Furnace Casting House, Cornwall, Pennsylvania

N. P. S. Photo, 1966
Location. Elizabeth Farms, R.D. #2, Lititz, Lancaster County

Ownership. Mrs. G. Dawson Coleman, 415 Caversham Road, Bryn Mawr, Pennsylvania

Significance

The William Henry Stiegel-Robert Coleman House, Lititz, Pennsylvania, is associated with two of the Country's early and significant industrialists. Stiegel achieved fame as both an iron manufacturer and glass maker before the American Revolution; and Coleman amassed as an ironmaster probably the largest fortune in post-revolutionary Pennsylvania. Coleman stimulates additional interest because he exemplifies the individual entrepreneur who dominated the iron industry until its consolidation after 1865 made him superfluous. The Pennsylvanian's attraction is even greater because he presaged to some degree the era of the trust, as by his death Coleman controlled not just one ironworks, but many.

The Stiegel-Coleman House stands in an estate that was associated with iron manufacturing for over a century. In 1746, John Jacob Huber acquired 400 acres of land in Lancaster County and shortly after built a small stone house, which still stands near the Stiegel-Coleman residence. Huber, reputedly Pennsylvania's first German ironmaster, erected a furnace about 1750, and, among other products, manufactured five-plate stoves. But Huber is especially remembered because Stiegel married his daughter.

Little is known about Stiegel's earliest years. He was born on May 13, 1729, perhaps in Manheim, Germany. The eldest of six children, he apparently visited England sometime before travelling to Pennsylvania. He migrated from Europe in the summer of 1750, arriving in Philadelphia in August on the ship Nancy with his mother and younger brother.

A man of energy and ambition, the immigrant soon became an important colonial industrialist. He obtained employment at Huber's furnace about 1752 and subsequently married his employer's daughter, Elizabeth. Around 1756, Stiegel and several partners purchased Huber's furnace. The young ironmaster then built a new furnace and named it "Elizabeth" after his wife. Business boomed for the German. By 1763 he had decided to manufacture glass, so he erected a glass house at Elizabeth Furnace, and its success caused Stiegel to concentrate on glass making. Although retaining an interest in Elizabeth Furnace
for several years, he by 1765 had established the village of Manheim as a glass producing center. But the "Baron," as he became known because of his expansive mode of living, ultimately failed and died in poverty on January 10, 1785.

Unlike Stiegel, Robert Coleman died a rich man. Born near Castle Finn, Donaghmore, County Donegal, Ireland, on November 4, 1748, he emigrated to the colony of Pennsylvania in 1764. He was sixteen, and supposedly landed in Philadelphia with three guineas in his purse. He also had some letters of introduction to friends of his father. He obtained a job in a store in Philadelphia, but soon moved to Reading, where he worked as a clerk for a legal official for two years. A better opportunity then arose and in 1766 Coleman became a bookkeeper at nearby Hopewell Forge at £100 a year. Within six months he had left that forge and had taken a job at Quitapahilla Forge, near Lebanon, Pennsylvania. This forge was owned by James Old, whose daughter, Ann, Coleman married on October 4, 1773. Shortly after his marriage, he rented Salford Forge near Norristown. While operating it during the next three years, he learned the art of cannon casting.

Near the end of his tenure at Salford Forge, the American Revolution began. It resulted in independence for the United States and a boom in the iron industry, and Coleman benefited from both.

The young ironmaster unhesitatingly supported the American cause. After leaving Salford Forge, Coleman first rented and then gradually became the sole owner of Stiegel's Elizabeth Furnace. Under Coleman's direction, the furnace concentrated on the production of war material during the Revolution. In order to enable the furnace to continue manufacturing shot, shells, and cannon as the labor supply dwindled, the Second Continental Congress permitted Coleman to use Hessian prisoners at his works. In 1783, the ironmaster counted seventy German captives at his furnace.

Following independence, Coleman's iron empire expanded dramatically. He purchased Speedwell Forge on Hammer Creek in 1784. This forge had been erected by Coleman's father-in-law in 1760. In 1791, he erected a furnace on Conewago Creek in Lebanon County. It cost £2,600 and in its first year of production, April, 1791 - April, 1792, was called Mt. Joy Furnace. In 1792, it was renamed "Colebrook Furnace." Six years later the affluent Coleman acquired historic Cornwall Furnace. This ironworks had been built in 1742 by Peter Crubb and was located on Furnace Creek in Lebanon County. The year 1798 is also significant in Coleman's career, because by June of that year he owned five-sixths of the rich Cornwall iron ore mines near Cornwall Furnace. The oldest continuously exploited iron mines in the United States, they furnished Coleman with high grade ore for his various ironworks.
As Coleman expanded and prospered, he used his sons to manage his forges and furnaces. They were initiated to the practical side of the business at some of their father's forges, usually at Hopewell or Speedwell Forge. If a son performed successfully at a forge for several years, he was then promoted to a furnace. As a result of his business acumen and his sons' skills, Coleman's works by 1809 annually manufactured about 2,000 tons of pig iron and 1,100 tons of bar iron.

The ironmaster also had an active public life. A member of the Pennsylvania militia, Coleman fought in the Battle of Brooklyn in September, 1776, and continued to serve until 1781. He sat as a member of the Commonwealth's General Assembly in 1783-1784; voted as a delegate to ratify the Federal constitution; and acted as a member of the Pennsylvania Constitutional Convention of 1789-1790. Other public services included an associate judgeship in Lancaster County between 1791 and 1796.

When Coleman died in 1825, he owned three furnaces, four forges, a rolling and slitting mill, and 22,000 acres of land. That large and valuable estate was inherited by his four sons, who continued to operate the various works for many years.

Present Condition of the Site

A low stone wall, topped by an iron fence, encircles the front of the Stiegel-Coleman House. Huge old trees also surround the residence, partially blocking it from view from a distance. Little changed since the eighteenth century, the mansion is much as it was when it was the center of an industrial empire.

Stiegel built the southeastern section of the residence, which is on the right as you face the house, sometime between 1756-58. It is a two-story, gable-roofed stone structure. A long stone wing extends to the north behind the east end of the Stiegel House. A wood belfry sits on the south end of the wing, which ends in an icehouse. The wing also included the ironmaster's office.

The Coleman addition to the Stiegel House was erected sometime between 1776 and 1790, probably nearer the latter date than the former. The addition projects forward from the west end of the Stiegel section and is a two-story stone building that has been plastered. It has a gable roof, with one dormer window in front. A porch protects the front and two sides of the house.

Inside, the Coleman wing has been changed only by the addition of bathrooms. As you enter from the front, one can move into a parlor on the right from a hall that runs through the width of the building. The parlor is distinguished by its original handblocked French wallpaper.
Also, the room, as do the house's other rooms, retains its original woodwork. The dining room is behind the parlor. Across the hallway from the parlor is the living room and behind it is a room that presently contains exhibits concerning Stiegel and Coleman. On the second floor there are three bedrooms, plus a bath that has been made out of a bedroom. The third floor contains additional rooms, probably servants' room originally.

A lovely terraced garden, dominated by ancient boxwood, sits behind the house. The garden was probably laid out between 1800-1810.

In addition to the Stiegel-Coleman House, there are several other buildings that date from the estate's active iron producing years. Huber's small one-story stone house is just east of the main house, and a large charcoal house is just beyond Huber's residence. In back of the Huber residence is a large stone stable. Unfortunately, Elizabeth Furnace has disappeared.

The preceding buildings may be visited only by special permission.

William Henry Stiegel-Robert Coleman House, Lititz, Pennsylvania

Courtesy, Mrs. G. Dawson Coleman, Bryn Mawr, Pa.
"ANDALUSIA," NICHOLAS BIDDE ESTATE, PENNSYLVANIA

Location: 1.4 miles northeast on State Road from the Torresdale Railroad Station, then right on a private lane marked "Andalusia," Bucks County

Ownership: Mr. Charles J. Biddle, 1100 Philadelphia National Bank Building, Broad and Chestnut Streets, Philadelphia

Significance

As President of the Second Bank of the United States between 1823 and 1836, Nicholas Biddle clashed with President Andrew Jackson in an epochal political-economic struggle. Biddle's defeat assured the triumph of Jacksonian democracy, and his humiliation remains a major event in American History.

Biddle's background and early career did little to prepare him, in a technical sense, for the presidency of the Second Bank. Born in Philadelphia on January 8, 1786, to parents of old Quaker stock and of social position, he was named after his father's brother, a naval hero of the American Revolution. Biddle entered the University of Pennsylvania when only ten and was ready for graduation when thirteen. The University thought him too young to be graduated, so he did not receive a degree. Present-day Princeton University, then known as the College of New Jersey, did not demur at Biddle's youth, and accepted him as a student in 1799. At his graduation in 1801, he spoke as the valedictorian.

About three years after leaving the College of New Jersey, Biddle spent several years abroad. He sailed for Europe in October, 1804, after his appointment as the private secretary to America's minister to France. Biddle was now about five-foot-seven inches tall, had chestnut eyes and hair, and a fair complexion and handsome visage. A keen intelligence completed a winning personality. After reaching Paris, he quickly became very useful to Minister John Armstrong and handled many negotiations for him. The following year saw Biddle begin his extensive travels, he visiting Switzerland and southern France in 1805. Biddle in 1806 continued his travels, traversing the ancient roads of Italy, Sicily and Greece, and visiting the classical ruins of those areas. The first American to tour the home of the ancient Greeks, Biddle measured temples and transcribed inscriptions. After his return from Greece, he became the secretary of the legation in London, which position he filled until July, 1807, when he returned to America.

Once back in Philadelphia, Biddle seemed destined for a combined literary and political career. He completed his legal studies and was admitted to the bar on December 11, 1809. In the following year he began writing his account of the Lewis and Clark expedition, which he completed in 1812. About two years later the work, History of the Expedition of Captains Lewis and Clark, appeared in print. It is still an outstanding history of that amazing expedition. By the time the book had appeared, Biddle had been
editor of the *Port Folio*, America's leading literary periodical, for almost two years. A rising political career, however, induced him to leave the *Port Folio*. Having served a term in the Pennsylvania House of Representatives in 1810-11, Biddle won a seat in the state senate in 1814. There he interested himself in many matters and served most capably until he gave up his seat in 1817. He subsequently ran for the Federal Congress, but was twice defeated.

Defeat at the polls did not demolish Biddle's political hopes. When he began his association with the Second Bank, the ambitious Biddle regarded his position, in part, as a move toward higher office. In January, 1819, he became one of the five governmental directors of the bank. Ill-equipped to perform his duties, he studied banking assiduously and soon exhibited an amazing knowledge of financial theory and practice. And on January 6, 1823, he was elected president of the Second Bank of the United States.

Biddle, as the chief officer of the bank, succeeded as a banker but failed as a politician. His shrewd leadership had transformed the once-shaky institution by 1830. An indefatigable worker, Biddle dominated his bank and successfully applied the policies he thought best. Thus, the Second Bank came to control state banks, regulate currency, and protect the commercial operations of the Nation. By the end of 1829, both Biddle's and the bank's position appeared secure, almost impregnable.

But success frequently spawns danger. As the Second Bank became dominant, enemies arose. The numerous state banks abhorred the stringent control of the Philadelphia institution. New York City, hoping to supplant Philadelphia as the Nation's financial center, disliked Biddle's accomplishment. Most important, a political phenomenon was occurring. The eastern seaboard's control of politics had been broken by Jackson's election in 1828 and the victors intended to consolidate their triumph. That meant the extension of both financial and political democracy, which implied the death of the Second Bank.

The contest that erupted between the pro and anti-bank factions centered about the renewal of the institution's 1816-charter. Biddle, at the suggestion of Henry Clay, interjected the charter into the presidential campaign of 1832. Legislation for the bank's continuation was approved by Congress before the election, but Jackson vetoed the bill. His vigorous veto message, according to Biddle, had "...all the fury of a chained panther biting the bars of his cage."¹ Despite Biddle's indignation, Jackson won the election. The bank appeared to be doomed.

Not to Biddle, though. Displaying his namesake's courage and his own foolhardiness, Biddle engaged in a campaign to force Jackson to recharter the bank. The Philadelphian demanded that state banks redeem

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¹Quoted in Thomas P. Govan, *Nicholas Biddle, Nationalist and Public Banker, 1786-1844* (Chicago, 1959), 202-03.
their notes in specie, but most of those institutions could not and many failed. That did nothing to increase Biddle's popularity among a very vocal and politically influential group. Biddle, by that and similar acts, appeared to substantiate Jackson's argument about the dangers inherent in a strong central bank. Furthermore, he failed to cause Jackson to reverse his decision. The bank's charter expired on March 1, 1836.

Biddle, following the expiration of the charter, caused the bank to be reorganized as the Bank of the United States of Pennsylvania. He remained with the new institution until March 1839.

Following the end of his banking career, Biddle retired to "Andalusia." There he occupied himself with social and intellectual pursuits until his death on February 27, 1844.

Present Condition of the Site

"Andalusia" lies on the Delaware River in Bucks County, about sixteen miles north of Philadelphia. The beautiful grounds and handsome residence jointly attest to the taste, culture and manifold interests of Biddle.

The main house consists of the original structure and additions erected by the banker. John Craig, a Philadelphia merchant, purchased the land at "Andalusia" in 1794 and then erected the north section of the present house. His wife still retains the honor of having designed the north front, an outstanding example of the Regency style in the United States. The front's semi-octagonal east and west wings stir especial admiration for Mrs. Craig's design.

Biddle's association with "Andalusia" began with his marriage to Jane Craig October 4, 1811. Ten years later he made the house his permanent residence and in the early 1830's he made a number of additions to it.

Employing Thomas U. Walter, who supervised the enlargement of the Capitol in Washington, D. C., over 1851-65, Biddle added a south wing to the Craig house in 1834. The two men produced a handsome projection that reflected Biddle's long affection for classical Greece. The new wing resembled a Greek temple, its six well proportioned Doric columns in front looking toward the Delaware River. Although adding a new style to the house, the Biddle wing, facing in the opposite direction from the front, eliminated any conflict in architectural mode. Today, trees hide the wings of the front section and make the Biddle wing appear even more an individual entity.

The interior of the house has not been changed from Biddle's day. Furthermore, the furniture and furnishings also, for the most part, date from Biddle's era. All of the first floor rooms reflect elegance and taste. Of especial interest is the library. This room was added in 1834 by Biddle and still contains its original bookcases and much of his library. Paintings of the Biddle family throughout the ground floor also contribute to the presence of the most famous of the Biddles.
There are a number of outbuildings of interest at "Andalusia." Biddle's gaming house stands near the bank of the river. The first floor was the billiard room and the second floor was the card room. Up the river from it is another small building. It was Mrs. Biddle's "retreat." In back of the residence are the remains of Biddle's greenhouses. Only their back walls now stand, but those stone edifices attest to Biddle's great interest in horticulture.

"Andalusia," Nicholas Biddle Estate, Bucks County, Pennsylvania

Courtesy, Mr. Charles J. Biddle, "Andalusia."
THE NEW MARKET, PENNSYLVANIA

Location. Between Pine and Lombard Streets on South Second Street, Philadelphia

Ownership. City of Philadelphia, Mayor James H. J. Tate

Significance

Philadelphia's New Market established no precedent when erected in the 1740's. Nevertheless, it exists today as an important inheritance from the colonial era, especially as it illustrates one aspect of the distribution of foodstuffs in the eighteenth century.

The rapid growth of William Penn's city spurred the construction of the New Market. Founded in 1682, the city built its first market in 1709 on High, now Market Street. By 1740 the citizens of south Philadelphia found it increasingly onerous to travel to the High Street Market for provisions; and in 1741 the City Council considered building a market on South Second Street. About four years later, on July 1, 1745, the Council voted to do that.

When completed in 1745, the New Market resembled the one on High Street, which imitated the appearance of country markets in England and the Low Countries. Utilitarianism and simplicity characterized the market's design. Two parallel rows of brick pillars supported a gable roof that covered an arched and plastered ceiling. As built, the New Market had nine sets of piers and sixteen "shambles," as stalls were called in the eighteenth century. It stood on South Second Street, between Pine and Cedar (now South) Streets.

The immediate success and continued popularity of the market stimulated its improvement over the years. First, a growing demand for the city's operation of the market induced the City Council to end the private supervision of it on October 6, 1772. Concomitantly, the Council contended with calls for its enlargement. But no expansion of the market occurred until sometime after the American Revolution. By 1800, the market had been extended to the south and included 68 permanent stalls. Several further extensions had carried the building to South Street by 1811.

A fire house stood at either end of the market by 1811. The one at the southern terminus had been erected in 1799, and was demolished by 1860. The still standing engine house at the north end, also known as the "Head House," was built in 1804. Following the design of the earlier fire house, the new structure had a room for a fire engine on either side of its arched and open center. Above the first floor was a meeting room for fire companies. A cupola topped the brick building's gable roof.

In its heyday, the New Market was a bustling place. Tuesdays and Fridays were the market days. The stalls opened at daylight and remained so until 2 p.m. between April 1 and September 1, and from daylight
to 3 p.m. in winter. For sometime, the market was also open on Sunday. The local residents soon protested about the noise and high jinks that accompanied the Sunday markets and those complaints caused the closing of the stalls on the Sabbath.

Present Condition of the Site

The New Market escaped destruction upon the abandonment of street markets in the nineteenth century. Now restored, the market contains eight of its original pairs of piers.

The New Market, Philadelphia, Pennsylvania

N. P. S. Photo, 1966
DRAKE OIL WELL, PENNSYLVANIA

Location. Drake Well Park, on State Route 27, Southeast of Titusville, Venango County.


Significance

Edwin L. Drake, fortuitously, drilled for oil at the only spot in Venango County, Pennsylvania, where the black gold lay fairly close to the ground’s surface. After many setbacks, he struck oil on August 27, 1859. The petroleum boom that followed is with us yet.

Drake drilled the first oil well in the country, but he was not the first to be interested in petroleum. Even in the Titusville area, oil that seeped to the surface had been known by the Indians. Furthermore, oil gathered from seepage had been refined near Pittsburgh in the early 1850s. When Dr. Francis B. Brewer moved to Titusville from Vermont in 1852, he soon became interested in the tarry liquid and sent a sample to Dartmouth College to be analyzed. There, a New York lawyer and Dartmouth graduate, George A. Bissell, saw the sample, became interested in the possible exploitation of petroleum, and, with a partner, subsequently organized the Pennsylvania Rock Oil Company in 1854. The new concern employed Benjamin Silliman, Jr., a leading chemist, in 1855 to analyze some Titusville oil. The scientist spent almost six months on the analysis, in part because his still exploded, and charged $526.08 for what is regarded as a classic technical report. Hard put to pay for the report, Bissell and his partner, nevertheless, were further inspired by Silliman's enthusiastic statements about oil’s possible uses. Anxious to acquire more information about their company's lands near Titusville, they hired one of their stockholders in December, 1857, to travel there and inspect the concern's property. That man's name was Drake.

Until chance tapped Drake, he had led an ordinary life. Born on March 29, 1819, in New York, he lived with his family until he was nineteen. He then travelled to the present State of Michigan, where he worked for two years as a clerk in a hotel in Tecumseh. Upon his return to the East, he held various jobs, the last as a conductor on the New York and New Haven Railroad between 1850 and 1857. By the latter date, his first wife had died and he had remarried, Laura Dow becoming his second spouse in 1857. Newly married, the tall, bearded, thin-faced, black-eyed, and personable Drake found it necessary to retire because of poor health. He invested all his savings, some $200, in the Pennsylvania Rock Oil Company.
The results of Drake's trip to Titusville early in 1858 were momentous. His optimistic report on the company's possibilities spurred its founders to organize a new organization, the Seneca Oil Company. The former railroad conductor became its president, with an annual salary of $1,000. Drake also became the new concern's chief engineer, in effect, for it was his responsibility to produce oil for the Seneca Oil Company.

Persistence in his new and greatest challenge caused Drake to succeed. He and his family, his wife and two children, arrived in Titusville in May, 1858. Living at the American Hotel for $6.50 a week, Drake soon became known as "Colonel." His promotion-minded colleagues sent him mail addressed to "Colonel E. L. Drake."

The newly-commissioned colonel quickly implemented his responsibility. Having decided that only drilling would ensure quantity production, Drake sought to employ a driller who had worked on salt wells. Many disappointments in that endeavor delayed progress. It was only in May, 1859, that he employed William Smith, a short and laconic individual, who was generally known as "Uncle Billy." For $2.50 a day, the Colonel received the services of both Uncle Billy and his son.

Drake and his helpers made rapid progress. By early June, a derrick had been raised. It measured twelve feet square at the base and contained a steam engine that actuated a white oak battering ram. The ram drove Uncle Billy's drills, which he had made for $76.50, into the ground. As the drill went deeper and deeper, the presence of water caused the walls of the hole to collapse. In a brilliant move, Drake secured fifty feet of cast iron pipe and used it to prevent the collapse of the hole's sides. Then, at thirty-five feet, the drill struck rock. Meanwhile, the other officers of the company regretted the expenditure of $2,500 without having gained even a thimble full of oil. They ordered Drake to stop. But he had already borrowed $500 from a bank in Meadville, Pennsylvania, and ignored the command. On Saturday afternoon, August 27, 1859, the derrick's drill had reached its limit, sixty-nine and one-half feet.

On Sunday, Smith visited the derrick. He peered into the pipe and five inches from the top saw oil. He sped word to Drake. The Colonel, evidently a model of self-control, waited until Monday morning to visit the well.

Unlike Drake, many men lost all restraint when the news of the discovery spread, and the world's first oil boom followed. The original Drake derrick burned on October 7, 1859, but Drake rebuilt it within a month. And for the next quarter of a century, the Titusville region remained the oil center of the Nation.

Before Pennsylvania had lost its leadership as an oil producer, Drake had to be rescued from poverty. The Seneca Oil Company deposed him as president in March, 1860, and he then spent almost four
years in Titusville as a justice of the peace and as an oil commission merchant. Then ill health again interrupted his career, this time with cruel results. Drake went to New York in 1863 and invested his savings of $16,000. By 1866, he had lost everything and poverty shackled him. Some Titusville acquaintances subsequently learned of his plight and in 1869 raised $4,000 for him. The commonwealth of Pennsylvania also voted him a pension of $1,500 a year. Drake then settled in Bethlehem, where he lived until his death on November 8, 1880.

Present Condition of the Site

The Commonwealth has reconstructed the Drake oil well on its original site. The derrick is housed in a tall, steeple-like structure that is at one end of a one-story, gable-roofed shed. Both the tower and shed are covered with rough, ill-fitting clapboard, as was the original building. Inside, machinery like that which Drake had illustrates how the pioneer oil man drilled the world's first oil well. As befits the replica, everything reeks of oil.

In addition to the rebuilt well, the park includes a museum and library. Both of the preceding are housed in a modern one-story brick building. Exhibits in the museum illustrate not only the history of Drake's well, but the general story of petroleum. The library possesses an outstanding manuscript and printed collection concerning the oil industry.

The park's visiting hours follows:

Summer: 8:30 a.m. to 5:00 p.m. weekdays
         12:00 noon to 6:00 p.m. Sunday

Winter: 8:30 a.m. to 4:30 p.m. Monday to Friday
        10:00 a.m. to 4:30 p.m. Saturday
        12:00 noon to 4:30 p.m. Sunday

The Drake Well, Drake Oil Well Park, Pennsylvania

N. P. S. Photo, 1964
HORSESHOE CURVE, PENNSYLVANIA

Location. Kittanning Point, about five miles west of Altoona, Blair County.

Ownership. Pennsylvania Railroad--Mr. A. J. Greenough, Number 6, Penn Center Plaza, Philadelphia, Pennsylvania.

Significance

Horseshoe Curve, Kittanning Point, Blair County, Pennsylvania, is significant in two respects. First, it is one of the most amazing examples of ante bellum railroad construction in the Nation. Second, the completion of the curve joined the eastern and western divisions of the Pennsylvania Railroad and thus contributed to the rise of one of the Country's leading railroads.

The Allegheny Mountains long obstructed Pennsylvania's westward movement. When the State constructed the Pennsylvania Canal System between 1826 and the early 1840's, it conquered the mountains by a portage railroad between Hollidaysburg and Johnstown. But the portage railroad was never too successful. The Pennsylvania Railroad Company suffered from its limitations when it used that inefficient line in order to join its eastern and western sections after they were completed on December 10, 1852. But by that time the railroad had already decided to build its own line over the mountains.

John Edgar Thomson, later the president of the Pennsylvania Railroad and a major figure in American railroading, surveyed the route over the mountain wall. Appointed as the railroad's chief engineer in 1847, his search for a route east of the mountains led him into the Juniata River Valley. That valley provided an excellent route until it ended in a cul-de-sac in the mountains about five miles west of Altoona. Thomson decided that a curve, involving tremendous amounts of filling and cutting, would enable the railroad to surmount the obstacle. A fill over Kittanning Run would carry the road to the base of Kittanning Mountain, whose face could be cut away in order to lay a semi-circular track. Then another fill over Burgoon's Run would enable the railroad to double back on itself and proceed up an acceptable grade to a tunnel at the top of the Alleghenies. The construction of the curve began late in 1852 and was completed in February 1854. By 1855, the tunnel above the curve had been completed.

The curve still represents a great accomplishment. It is 2,375 feet long. The northern end of the curve lies at an altitude of 1,594 feet, the southern end at 1,716. The grade of the curve is 1.8 per cent. The curve was first laid with two tracks, but now has four.
Present Condition of the Site

A visit to Horseshoe Curve impresses one with the daring of Thomson and the immensity of the undertaking. Few railroad people ventured to use curves in Thomson's day and no earth moving machinery existed. Yet, the curve was built and has served since 1854.

The road from Altoona leads to a parking lot at the foot of Horseshoe Curve. Visitors may first see caboose Number 980901, which sits on a piece of track near the path that leads to the curve. At the top of the path one first sees a large steam locomotive, Number 1361, that is on permanent display. The steam engine covered 2,469,000 miles before becoming an exhibit. Behind the locomotive is the track. Because of today's long trains, it is possible to watch a train as it ascends or descends and see either end of the train going in opposite directions as its middle traverses the apex of the curve.

OLD SLATER MILL, RHODE ISLAND

Location. Roosevelt Avenue, Pawtucket, Providence County.

Ownership. Old Slater Museum Association (same address).

Significance

The Old Slater Mill in Pawtucket, Rhode Island, memorializes the beginning of the cotton spinning industry in the United States. Using British inspired machinery, the mill opened in 1793 and not only made its owners wealthy, but stimulated widespread imitation in America.

Samuel Slater was responsible for the mill in Pawtucket. Born in Duffield, England, on June 9, 1768, he received a good education. The young Slater learned to write well and to handle difficult mathematical problems with ease. The latter especially benefited him because of his mechanical bent.

Near his fifteenth birthday, Slater became associated with the industry that dominated his life, cotton milling. He accepted an apprenticeship with Jedediah Strutt, a cotton miller, on January 8, 1783. For the next six-and-a-half years, Slater worked in Strutt's mill and developed a thorough knowledge of Strutt's partner's (Sir Richard Arkwright) cotton manufacturing machinery. The apprentice also learned the secrets of the machinery of James Hargreaves and Samuel Crompton. Shortly after obtaining his majority, Slater completed his apprenticeship. But he remained at Strutt's, as a supervisor and the boss for the erection of a new factory. Despite his progress and apparently assured future in the English milling industry, Slater had begun to consider migrating to the United States.

America appealed to the shrewd Englishman for several reasons. First, Strutt spoke pessimistically about the progress of the cotton industry in Great Britain. Second, Slater had heard of alluring opportunities for the ambitious in the New World. Late in the summer of 1789, Slater acted upon his desire. He bade his mother farewell, telling her that he was going to London. In leaving home, he wore a disguise to evade detention because of his training, England attempting to protect her cotton industry by prohibiting the migration of mill workers. He escaped detection and sailed for America on September 1, 1789. Sixty-six days later he landed in the United States.

Once in the new republic, Slater effectively applied his aggressiveness and knowledge of cotton manufacturing. The new immigrant, after working for a while in New York City, wrote to Moses Brown, a wealthy Providence merchant on December 2, 1789, stating that he could reproduce the cotton machinery that he had worked with for almost eight years in England. Brown's reply on December 10 resulted in Slater's going to Rhode Island, he arriving in Pawtucket on January 18, 1790.
And on April 5, 1790, Slater signed an agreement that provided for, among other things, his making replicas of Arkwright's cotton machinery. Hardly had that agreement been concluded, before Slater, who forgot nothing, insisted that the carpenter who was to help him should be placed under bond not to tell others of the design of the machinery. Then Slater set to work. So good was his memory, that he failed in only one detail. But the problem, involving the carder, was soon solved. On Monday, December 20, 1790, the new machinery, set up in a fulling mill on the Blackstone River in Pawtucket, was successfully placed in operation. A major American industry had been founded.

Slater's reproduction of British cotton machinery stimulated the construction of America's first mill devoted to the spinning of cotton yarn. Work on the building began in 1793. When completed that July, the wood structure stood two-and-a-half stories high and measured 44 by 30 feet. Production began on July 12. In order to provide light for the workers, largely children, in the early morning and late afternoon, cotton-wick candles were used. But the children operating the machines worked in an unheated building in winter. And even Slater wrote on November 14, 1793, that "The children are quivering this morning at seeing it Snow and Cold and no Stoves." Cold or not, the mill continued to operate, with Slater retaining an interest in it until 1829.

The former Englishman's ingenuity transformed the once-poor mechanic into a wealthy and eminent American citizen. He had married Hannah Wilkinson on October 2, 1791, and they had nine children before her death in 1812. He subsequently married Esther Parkinson, a widow, in November, 1817. In addition to propagating children, Slater expanded his own interests in cotton manufacturing. In the years after 1793, he erected new mills near Pawtucket, and developed cotton factories in Massachusetts, New Hampshire, and Connecticut. He reached the height of his career in 1829. An uneasy period in the cotton industry in the same period forced some retrenchment and consolidation, but Slater never approached financial disaster. Indeed, when he died on April 21, 1835, he was a successful, prosperous, and highly admired innovator and industrialist.

Present Condition of the Site

The Old Slater Mill includes Slater's original mill, two additions made during Slater's lifetime, and a third addition added after Slater's death.

The original mill stands in about the middle of the enlarged mill. Slater's first building resembled a New England barn, having vertical sideboards nailed to its horizontal timbers. Clapboard formed the exterior covering, whitewashed plaster the interior wall. A bell tower projected upward from the front end. Since its construction, the original mill has been, it seems, largely rebuilt.

1(Footnote, see next page).
Two of the mill's subsequent enlargement and alterations occurred before Slater's death in 1835. An addition on the east had been made by 1817. It added 40 feet to the building, and is, apparently, the least altered part of the entire structure. The south wing, with a new bell tower, had also been added by 1835. Sometimes after Slater's demise, a north addition of almost 57 feet was constructed. Furthermore, a shed was attached to the south side of the earliest section sometime between 1835-1865. And by 1877 the mill's roof had been raised and a third story built.

Forty-four years after 1877, a group was formed to preserve the mill. The Old Slater Mill Association, which was formed in 1921, undertook the restoration of the mill in 1924-25, returning the building to the way it appeared around 1840. The shed on the south side was also removed. Now painted red, with white trim, the historic mill houses exhibits concerning Slater and the history of the cotton industry.


1 Quoted in E. H. Cameron, Samuel Slater, Father of American Manufactures (Portland, Maine, 1960), 75.
Slater's Cotton Mill, erected in 1793. Pawtucket, Rhode Island

N. P. S. Photo, 1964
GREGG COTTON MILL, SOUTH CAROLINA

Location. Graniteville, Aiken County.


Significance

The most influential promoter of the textile industry in the ante-bellum South was William Gregg of South Carolina. After successful business ventures in Columbia and Charleston, Gregg had accumulated a comfortable fortune by the late 1850s. In 1836 he acquired an interest in the Vaucluse Cotton Mill, a small and poorly conducted mill near Edgefield. In a short time he had reorganized it and put it on a paying basis, and in 1843, in partnership with his brother-in-law, acquired full possession of it.

It was after Gregg took up residence in Charleston—a focus of the state and the South in cultural, political and financial matters—that his public writings and influence began. His revolutionary role in the development of Southern cotton mills began in 1844 as a result of a tour of New England which he made to observe the operation of the textile industry in that region. On returning to Charleston, he wrote ten articles for the Charleston Courier, entitled "Essays on Domestic Industry," which were published in pamphlet form in 1845. In these essays he preached the new gospel of developing manufactures in the South by utilizing the great reservoir of poor white labor that had hereto been largely neglected. He advocated confining slave labor to agriculture and the reclamation of swamps. By bringing the poor whites into the factories, he maintained, not only would their labor be profitably employed, but their moral and social condition would be improved. The industrial progress of the North, he argued, should be emulated rather than disparaged. He insisted that if the South clung to its old patterns of cotton culture, it was inviting accelerating decline through action of the law of diminishing returns.

Gregg determined to build a model cotton factory to demonstrate the value of his ideas. Forming the nucleus of a company, almost entirely of Charleston capitalists, in 1845, he applied to the legislatures of South Carolina and Georgia for a charter of incorporation. Georgia refused a charter, but South Carolina granted one by a single vote and in 1846, Gregg began erecting the plant of the Graniteville Manufacturing Company in Edgefield District, near Aiken,

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on the same Horse Creek which operated the Vaucluse factory. The company began actual operation in 1848 with $300,000 capital. Gregg acted as president, and operated the plant. After difficulties in the depression of 1850-51, the company amply justified Gregg's theories and arguments, in the years from 1850 to 1866 paying average dividends in excess of 12 1/2% and in the last thirteen years of this time almost 15 1/2%.2

In the years immediately following the building of Graniteville, and in all probability influenced by its success, many cotton factories were erected in the South and public interest in the industry was stirred. Cotton mills were erected at Columbia, Charleston, New Orleans, Mobile, Petersburg, Richmond, Augusta, Columbus, Huntsville and Florence. Before 1860 several states boasted cotton mills, Richmond had flour mills, and rudimentary iron works dotted the Appalachian highlands. Still the conservatism of the South prevented any rapid shift of capital into industrial enterprises. The development of industry in the ante bellum South which William Gregg so strongly influenced was an anticipation of the "cotton mill campaign" which inaugurated the industry in the South on a great scale in the 1880s.

Graniteville weathered the Civil War and was completely refitted before Gregg's death in 1867 for a new course of accomplishment. For the section as a whole, however, the war was the end of an epoch in manufactures in the South. Graniteville and plants which followed its example were the swan song of the first South of industry mixed with agriculture.3

In a larger sense, William Gregg was the father of Southern cotton manufacture. The industry has realized, and particularly is achieving now, all that he had hoped for in a material way, and more than he ever anticipated. Gregg was the prophet of this era.4

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3 Broadus Mitchell and George S. Mitchell, The Industrial Revolution in the South (Baltimore, 1930), 69.
4 Broadus Mitchell, William Gregg, Factory Master of the Old South (Chapel Hill, North Carolina, 1928), ix and 259.
Present Condition of the Site

William Gregg determined to make his mill a convincing proof of his arguments for native industry. It was essential to Gregg's plan that his mill should be a native product—in inspiration, capital, in working people, and in actual building material as well. The blue granite, of which mill and dam are built, was quarried from beside the stream. The mill was two stories with an attic 315 by 55 feet. This was the largest cotton mill in the South before the Civil War, and it was more modern than many of its New England contemporaries.

To house the workers, approximately 85 cottages in the Gothic style were scattered along the hillside. Each cottage was provided with a garden and flowers were planted on the mill grounds. Gregg administered the town with benevolent despotism. Workers were required by their leases to their cottages to send their children to school and none under twelve could work in the factory. A boarding house sheltered single workers and a church and assembly hall were built. Gregg believed that only through such communities could the poor whites be returned to a decent standard of living; he was a pioneer in opening the door of social betterment to the poor whites through industrial employment.

Today, Graniteville still has the character of an isolated, self-contained village with all essential services and housing well provided. For example, the Graniteville Company in July of 1960 turned over title of the Leavelle McCamphell High School to the Board of Education of Aiken County. With the passing of this title, Graniteville Company was, for the first time since the days of William Gregg, officially out of the public-school business.

The Graniteville Company has kept its operations within the vicinity of Graniteville but has grown considerably. Plants are located in the towns of Graniteville, Vaucluse and Warrenville in South Carolina and in Augusta, Georgia. The original Granite Division is still operational; it is now flanked by two new divisions. Machinery has been brought up to modern standards with regularity, but the original granite structure is largely unchanged.

Gregg Cotton Mill, Graniteville, South Carolina

N. P. S. Photo, 1961
VIRGINIA

ALEXANDRIA (HISTORIC DISTRICT)

Location: Alexandria, Virginia.

Ownership: Various private and public owners.

Significance

John Alexander purchased the future site of Alexandria for $3,300 pounds of tobacco in 1639. A group of Scotch merchants who were agents of Glasgow firms came to Virginia in 1738 in search of a suitable port for the shipment of tobacco. The deep waters of the Potomac at Hunting Creek provided an attractive site. After the General Assembly authorized the building of a tobacco warehouse on the banks of the Potomac, these merchants built at West's Point and the little hamlet of Belhaven grew up. Growth was so rapid that in 1748 the General Assembly declared that a town should be erected on a parcel of land containing 30 acres. The authorizing act stated that the town "...would be commodious for trade and navigation, and tend greatly to the best advantage of Frontier Inhabitants." Thomas Lord Fairfax, Lawrence Washington, John Carlyle, William Ramsay and their associates served as trustees for the town and changed the name from Belhaven to Alexandria, for the Alexander family. The town was surveyed and laid off by Fairfax County Surveyor John West, Jr., assisted by his seventeen-year old apprentice, George Washington.

Tobacco grown in a wide area was brought here for shipment and in a few years the town was a flourishing port. In the year 1779, the Virginia General Assembly passed the first act of incorporation of the town of Alexandria, and in that same year it was made a Port of Entry. Alexandria became the leading port of northern Virginia and enjoyed a period of flourishing commerce.

The export of wheat through Alexandria eventually became even more important than tobacco. As Virginia pushed her settlement westward, grain growing increased and provided enough to make the colony self-sufficient in flour and meet the demands of an expanding market in England and the West Indies. By 1773 caravans of flour wagons were coming from as far as Winchester, and in 1781 Alexandria was first on Virginia's flour inspection list.

After the Revolutionary War, Alexandria grew in importance as a seaport with clipper ships from around the world loading and discharging cargoes on her wharves. Wealthy merchants and sea captains built gracious houses, schools, a library and churches, and the city became a center of commerce and culture. Alexandria continued as a flourishing port for over a century—until the beginning of the Civil War.
Present Condition of the Site

A number of residences, places of business and public buildings in the river front area of the city retain the character of the mid-eighteenth century. Prince Street in the 100 block is one of the most interesting of the streets running east to the river. The street is tree lined and has groupings of many-hued old homes. Most of the houses are brick, but there are two quite distinctive clapboard houses. Many of these old row houses were homes of sea captains when Alexandria was a thriving port; thus, it is often called Captain's Row. The street has much of the appearance of English and Scottish seaport towns. Cobblestone paving, which tradition says was laid by Hessian prisoners of war, has been left in this final block of Prince Street.

The old port section on the eastern end of King Street down to the Potomac River strongly suggests Alexandria's past merchantile interests. Cheouire House at 202 King Street and Gilpin House, 20G King Street, are typical eighteenth century merchant's houses where shops were located on the ground floor and living quarters were above. Bernard Chequire came from France and built his place in 1797. The lower floor was an office and warehouse while the upper floors were beautifully paneled and furnished family quarters. Colonel George Gilpin came to Alexandria from Maryland before the Revolution to handle the shipping business of the family. The Gilpin House was built in 1798.

John Fitzgerald's warehouses on the southeast corner of King and Union Streets are still in use. There are three early warehouses on the north side of the 100 block of King Street which have been little altered.

The Ramsay House at 221 King Street is the oldest house in Alexandria. It was built by William Ramsay, an influential Scotch merchant, who took a prominent part in the early period of the town. He was a founder, one of the first Trustees, and the first Mayor of Alexandria in 1749.

The Carlyle Mansion at 121 North Fairfax Street was built in the mid-eighteenth century by John Carlyle of Dumfries, Scotland. Carlyle was one of Alexandria's first Trustees and was in charge of the Commissary and Supplies for General Braddock's expedition in the French and Indian War. John Carlyle was a Scotch merchant and ship owner; the original house and its furnishings are today an unusual example of the home life of a well-to-do merchant of the eighteenth century.

Gadsby's Tavern at 12G North Royal Street was built at a time when Alexandria was a busy port and a center of social and political prominence. Gadsby's Tavern comprised two adjoining tavern buildings, the first of which was built in 1752. In the larger, three-story addition which was built in 1792, Alexandria architecture reached its highest expression. The two taverns were operated as one under John Gadsby, who spread the fame of its comfort and cooking throughout the country. These taverns played a central role in Virginia life of the eighteenth century.
Many other early and well-preserved structures can be found in the eastern river-front section of Alexandria. South Fairfax Street, South Lee Street and the intersecting east-west streets are particularly rich in early structures. The boundaries of the district within which most of the eighteenth century buildings are contained are outlined on the accompanying map. Alexandria provides a fine example of a colonial seaport town in its architecture and many of the port activities are suggested by surviving structures.

KAIULANI

Location. United States Ship Repair Facility, Subic Bay, Philippines.

Ownership. The National Maritime Historical Society serves as trustee for the American people.

Significance

The ship Kaiulani was designed as a merchant square rigger and built for the Hawaiian trading firm of H. Hackfeld & Company by Arthur Sewall & Company of Bath, Maine. She was expected to be the fastest sugar packet in the Honolulu-San Francisco trade. The bark was named Kaiulani in honor of the Hawaiian princess who had been the heir apparent to the Hawaiian throne, from the accession of her aunt, Queen Liliuokalani, in 1891, until Hawaii became a republic in 1893.

The Kaiulani measured 225.7 feet long, 42.3 feet in breadth, with a depth of 20 feet in the hold. She was designed to carry 2,400 tons of sugar, and grossed 1,570 tons, making her the largest three-masted bark ever built in the United States. Her hull was of steel.

A Honolulu newspaper described the Kaiulani in 1900 as a ship which presents a very fine appearance. She was said to be a splendid sailer and a great carrier that would prove to be a money maker.

From Honolulu to San Francisco raw sugar was the primary cargo; the Kaiulani also had accommodations for sixteen passengers in the poop. On the outward run from San Francisco canned goods, kerosene, flour and hay was the usual cargo, with a few cows or horses in the 'tweendecks and some passengers.

By 1910 steamers had put the sailing ships out of business on the Honolulu-San Francisco run, and on January 27, 1910, the Kaiulani was sold to the Alaska Packers Association of San Francisco and renamed the Star of Finland. The Alaska Packers Association operated the last large American square rigged fleet.

The Star fleet would depart from the Oakland Estuary each spring with cargoes of lumber, pilings, coal, tin plate and box shooks, for the salmon canneries of southern Alaska and Bristol Bay. The ships were manned by the fishermen, mostly Italians and Scandinavians, and carried in addition to the fishermen, Chinese and Mexican cannery workers, along with a few German cannery technicians. The poop deck on the Star of Finland was extended 48 feet in 1912 to provide greater accommodations for the fishermen and cannery workers. This increased her tonnage to 1,699 gross.
During World War I when the regular Matson steamers were requisitioned to serve as transports, some of the Alaskan Packers Star ships were chartered to haul the Hawaiian sugar crop. The Star of Finland returned to this old familiar route for one eventful voyage.

In the early 1920's the Alaska Packers Association began laying up the older wooden vessels, then the smaller iron and steel ships. Steamers began to replace the square riggers. The last voyage of an Alaska Packers Star sailing vessel was in 1930. Finally, only the Star of Finland was left.

During World War II when every vessel capable of carrying cargo became valuable, a San Francisco group purchased and refurbished the Star of Finland. The new owners restored the bark's original name and registered her under the Panamanian flag. The Kaiulani was chartered to load lumber from Grays Harbor, Washington to Durham, South Africa.

On September 25, 1941, the Kaiulani was towed to sea and sail was set. This was the last commercial cargo-carrying voyage of an American-built square-rigged merchant vessel. After she had sailed from Durham for Sydney, Australia, the captain heard on June 6 of the Japanese submarine attack on Sydney. The course was altered to head for Hobart, Tasmania, and the Kaiulani ended her voyage there on June 19, 1942.

The U.S. Army requisitioned the bark and put her into service as a storage collier for the fleet sailing between Australia and New Guinea. The Kaiulani served well as a coal barge in New Guinea and was towed along with the fleet following each landing as U.S. forces fought their way back to the Philippines.

After the war the Kaiulani was sold as surplus to the Madrigal Shipping Company of Manila. For the next seventeen years she worked as a log barge from Manila to Mindanao.

At White House ceremonies on October 5, 1964, the Kaiulani was presented by President Diosado Macapagal from the people of the Philippines to the people of the United States. The President of the National Maritime Historical Society formally accepted the deed as trustee for the American people in November of 1964.

Present Condition

During her service as a log barge, the Kaiulani had virtually no maintenance. The loading and unloading of the heavy Philippine mahogany logs badly battered her decks and bulwarks. She is now being repaired at the United States Ship Repair Facility at Subic Bay; she will be outfitted for a sail to the United States.
Sometime in 1937, a volunteer American crew will sail the Kaiulani from Manila to Washington, D. C., with a Philippine cargo, following the traditional China Clipper route through the South China Sea, past Java Head into the Indian Ocean, around the Cape of Good Hope, and up the east coast of the United States. She will be moored on the Maine Avenue waterfront of Washington, D. C. The Kaiulani will serve as a floating museum ship interpreting the life and service of a square rigged sailing ship.

References: "Kaiulani - The Last Yankee Square Rigger," Explorers Journal, XLIV, 1 (March, 1966); Specifications for the Kaiulani, Williams, Diamond & Co.
The Kaiulani, during her last voyage in 1941

Photo by Karl Kortum
1. Salem Maritime National Historic Site, Massachusetts.

Sailing vessels based on Salem plied the sealanes of the world, beginning early in the 17th century, building the commerce upon which New England prosperity came to rest. Salem and other New England ports engaged in the important "triangular trade" with Africa and the West Indies. During the Revolution, Salem provided a base for privateers that ravaged British shipping, and for nearly three-quarters of a century afterward, through the era of the great clipper ships, Salem continued to function as one of New England's most important ports.

The site preserves a group of structures surviving from the period of the town's maritime greatness. Among these are the Derby Wharf, constructed in 1762; the Custom House, erected in 1819, and the Derby House, built in 1761-62, home of a prominent shipping family of the 18th century.


Erected in 1842 on the former site of Federal Hall, this Greek Revival structure served as the New York Customs House until 1862, then as the U. S. Sub-Treasury, and later as the Federal Reserve Bank of New York. As custom house and sub-treasury, the building was the center of much of the Nation's financial activity in the 19th century.


Erected in 1896-98, this was the country home of Frederick W. Vanderbilt, a grandson of "the Commodore" Cornelius Vanderbilt who founded the family fortune in steamboating and railroading.


Established to preserve the scene of the adoption of the Declaration of Independence, the meeting place of the Continental Congress and of the Constitutional Convention of 1787, and the seat of Government of the United States from 1790 to 1800, the Park also preserves other buildings important in the financial history of the Nation. These latter structures are as follows:

a. The Second Bank of the United States, located on Chestnut Street between Fifth and Fourth Streets. A splendid example of Greek Revival architecture, the building was erected between 1819 and 1824. The Second Bank of the United States played an important part in establishing the young nation on a sound financial basis until its charter expired in 1836. From 1845 to 1934 it then served as the Philadelphia Custom House.
b. The First Bank of the United States, located on South Third Street, between Walnut and Chestnut Streets. Erected in 1795, this is probably the oldest bank building in the United States.

c. The Philadelphia Exchange, located on the corner of Third and Walnut Streets. Erected in 1832-34, for many years this building housed the Philadelphia Stock Exchange.


Hopewell Village, one of the oldest ironworks standing in the country today, is a symbol of industrial enterprise in colonial and early America and representative of the many furnaces of southeastern Pennsylvania.

Founded in 1770, the Hopewell Iron furnace was active until 1883. The site includes the ruins of an anthracite furnace built in 1853; still standing are a charcoal shed and house, charcoal hearth, water wheel and blast furnace, casting house, and numerous outbuildings and residences.


Here at the junction of the Potomac and Shenandoah Rivers and based on its ample water power, grew up one of the early and important industrial centers of the United States.

Here in 1801 the U. S. Armory at Harpers Ferry completed its first arms and by 1810 was turning out 10,000 muskets a year. Here at the U. S. Rifle Factory, between 1819 and 1825, the inventor John H. Hall produced his first 1,000 breach loading rifles and perfected the system of mass production based on the use of interchangeable parts. Here also on Virginianus Island in the Shenandoah, in the 1820s there emerged an industrial complex of merchant flour mills, sawmills, tanneries, and cotton mills, all powered by water. The sites and foundations of these former structures are now preserved in the monument.

7. Edison National Historic Site, New Jersey.

On this site, where he lived and worked from 1886 to his death in 1931, are memorialized the remarkable career and achievements of Thomas Alva Edison.

Here are preserved the original buildings erected by the great American inventor in the summer of 1887 as a laboratory fully equipped and staffed for speedy, systematic, inventive research. In these structures at West Orange Edison and his co-workers spent 44 years investigating, discovering, and developing many new things which have made life easier and better for millions of people. Edison's laboratory became the prototype for the great industrial laboratories that today serve the people of the world.
This "invention factory," erected in 1887, is a three-story brick structure 250 feet long and 50 feet wide. The laboratory also includes four other brick buildings, all one-story in height and measuring 25 by 100 feet in size.

Not far from the laboratory group, at Llewellyn Park, is preserved the country estate, Glenmont, which Edison purchased for his family residence in 1886. This three-story stone house has 23 rooms that are furnished with the original Edison furniture.

8. **Andrew Johnson National Historic Site, Tennessee.**

This site preserves important places associated with the 17th President of the United States. Among these is the tailor shop in which he worked at the beginning of his career, from 1830 to 1851. This small one-story frame building is now preserved in a brick building.

9. **Blue Ridge Parkway, North Carolina-Virginia.**

Mabry Mill, located at Mile 176.1, is a restored frame, water-powered grist mill. The mill and a blacksmith shop are still in operation.

10. **Jamestown National Historic Site, Virginia.**

On Glasshouse Point are the ruins of furnaces used in 1608 by artisans who came over to produce glass. Nearby is a glassblowing exhibit of a type that might have been used in Virginia and England three-and-a-half centuries ago.

11. **Christiansted National Historic Site, Virgin Islands.**

This site, located on St. Croix Island, preserves buildings associated with the important 18th century sugar trade. These include the Old Danish Customs House and the Old West India & Guinea Co. Warehouse, which now serves as the present Post Office.

12. **Hubbell Trading Post National Historic Site, Arizona.**

For four centuries the Indian trade was one of the dominant influences shaping the course of North American history. The Hubbell Trading Post, founded in 1878, was the most important single trading post in the history of Navajo trading. This long, stone trading post, built in the 1890s, with its wareroom, storeroom, office, and blanket room, appears much as it did in Hubbell's era. Also preserved are the traders' adobe house, stone barn, and utility buildings.
SITES ALREADY CLASSIFIED UNDER OTHER THEMES

BUT RELATED TO THEME XVII-b

1. **Cyrus McCormick Farm and Workshop, Virginia.**

   Here in 1831 Cyrus McCormick developed the mechanical reaper, which in two decades produced revolutionary advances in agricultural techniques. The workshop is a small log building on high stone foundations. Nearby is the two-story brick family home of the McCormicks. McCormick later (after 1847) became a large-scale producer bringing the reaper to a national market and he was one of America's most successful early manufacturers. This site was classified under Theme XVII-a, Agriculture.

2. **Santa Fe Plaza, New Mexico.**

   As the commercial and social center in Santa Fe, the former capital of Northern Mexico, the Plaza area may be considered as the end of the Santa Fe Trail, and it commemorates this early 19th century commerce. The site was classified under Theme XV, The Santa Fe Trail.

EASTERN SITES ALREADY CLASSIFIED UNDER THEME XVII-b

1. **Terrence V. Powderly House, Pennsylvania**

2. **Old Merchants House, New York.**

3. **Reed Gold Mine Site, North Carolina.**

4. **Aquia Creek Quarry, Virginia.**
Eastern Sites Already Classified as Eligible for
Registered National Historic Landmark Status
Which are Also Related to this Theme Study

1. John Deere Home and Shop, Illinois, Theme XVII-a, Agriculture
2. Illinois and Michigan Canal (locks and towpath at Channahon), Illinois, Theme XVII, Travel and Communication
3. Baltimore and Ohio Transportation Museum and Mount Clare Station, Maryland, Theme XVIII, Travel and Communication
4. Casselman Bridge, National Road, Maryland, Theme XVIII, Travel and Communication
5. Old Lock Pump House (Chesapeake and Delaware Canal), Maryland, Theme XVIII, Travel and Communication
6. Thomas Viaduct, B. & O. Railroad, Maryland, Theme XVIII, Travel and Communication
7. Boston Light, Massachusetts, XVIII, Travel and Communication
8. Saugus Iron Works, Massachusetts, Theme XVII-b, Commerce and Industry
9. Springfield Armory, Massachusetts, Theme XII, Political and Military Affairs, 1783-1830
10. Mackinac Island, Michigan, Theme XI, Advance of the Frontier, 1763-1830
11. Sandy Hook Light, New Jersey, Theme XVIII, Travel and Communication
12. Brooklyn Bridge, New York, Theme XVIII, Travel and Communication
14. Locust Grove, Samuel F. B. Morse Home, New York, Theme XX, Inventions and Scientific Discoveries
15. Jethro Wood Home, New York, Theme XVII-a, Agriculture
16. Thomas A. Edison Birthplace, Ohio, Theme XX, Inventions and Scientific Discoveries
17. Miami and Erie Canal (Deep Cut), Ohio, Theme XVIII, Travel and Communication
18. S-Bridge, National Road, Ohio, Theme XVIII, Travel and Communication
19. John Sherman Birthplace, Ohio, Theme XXI, Political and Military Affairs after 1865
20. East Broad Top Railroad, Pennsylvania, Theme XVIII, Travel and Communication
21. Robert Fulton Birthplace, Pennsylvania, Theme XVIII, Travel and Communication
22. Searights Toll House (National Road), Pennsylvania, Theme XVIII, Travel and Communication
23. Brick Market, Rhode Island, Theme IX, Development of the English Colonies 1700-1775
24. Sidewheeler, The Ticonderoga, Vermont, Theme XVIII, Travel and Communication
26. Cyrus McCormick Farm and Workshop, Virginia, Theme XVII-a, Agriculture
27. Administration Building, Carnegie Institution of Washington, District of Columbia, Theme XXII, Social and Humanitarian Movements
PART II

SURVEY OF HISTORIC SITES AND BUILDINGS

SECTION D

OTHER SITES CONSIDERED IN STATES LOCATED EAST OF THE MISSISSIPPI
Continental Gin Company

Location. Prattville, Autauga County, Alabama.

Daniel Pratt, a New Englander, came South in 1819 to begin his trade as a carpenter in Savannah and later Milledgeville, Georgia. Pratt soon recognized that with the growing need that existed for the cotton gin, there were great possibilities in its manufacture. In 1831 he began to manufacture cotton gins at a small plant in association with Samuel Griswold. With this first manufacturing effort he began a series of moves that led him in 1833 to purchase a large tract of land with fine water power on the Autauga Creek in central Alabama. There he founded the town of Prattville and began to utilize the water power first for a gristmill and a lumber and shingle mill. He soon was able to add a cotton gin plant. Pratt cotton gins established a reputation for excellence and became famous throughout the South. With sales growing steadily prior to the Civil War, Daniel Pratt amassed one of the South's largest fortunes.

Losses were heavy during the war years, but Pratt was able to continue the business in the post-war years. In 1899 a number of the country's larger cotton gin manufacturers entered an agreement to merge and create the Continental Gin Company. The Daniel Pratt Gin Company, at that time the largest producer of cotton gins in the world, was one of the dominant interests in this consolidation.

Expanding from the basis of his gin manufacturing interests, Daniel Pratt was a pioneer in the industrial development of the Birmingham District. He had been a large stockholder in a company formed during the Civil War to exploit the Red Mountain iron ore. Wilson's Raiders destroyed their furnaces. Following the war, Pratt believed that something should be done to develop the mineral resources of Alabama. In the spring of 1872, he and his son-in-law, Henry Fairchild De Bardeleben acquired controlling interest in the Red Mountain Iron and Coal Company and began reconstruction work. The war-wrecked furnaces at Oxmoor were put back into operation in the winter of 1873; they were blown in on a mixture of half charcoal and half coke. Daniel Pratt was in ill-health, but was deeply gratified by this reconstruction work which he hoped would bring new life and diversified industries to the South. De Bardeleben was to continue this development and become one of the prominent figures in Alabama's iron and coal history.

The modern main plant for the manufacture of gins by the Continental Gin Company is today at Prattville on the same site where the Pratt Company began operations.
**Gantt Quarry**

**Location.** Quarry Road, Sylacauga.

The crystalline marbles of Alabama are located in Talledega and the northern part of Coosa Counties in a continuous belt about 35 miles long with a maximum width near Sylacauga of about 1 1/2 miles. Alabama marble is usually described as a fine-grained white marble of a creamy whiteness rather than the blueish white which is the more common characteristic of the Italian marble. The Alabama marble is, moreover, unusually translucent. Its chief attractiveness is its life and warmth of coloring.

Alabama marble is of a fine grain and its crystals are also very much interlocked as a rule, giving toughness to the stone, but making it more difficult to saw.

The best of these Alabama marbles are in Talledega County, and the principal quarries are in the vicinity of Sylacauga and near Taylor's Mill. At a number of places in this area, marble was quarried prior to the Civil War and worked into monuments chiefly. A stone from Gantt's Quarry was presented by the Masons of Alabama to the Washington Monument Society in 1851 to be incorporated in the monument.

The Alabama Marble Company has worked Gantt's Quarry since the 1890's; it is now a division of the Georgia Marble Company. The present Alabama Marble Division produces structural or dimension stone. The Alabama Calcium Division produces material for terrazzo floors, roofing material and calcium for use in a variety of products.

**Woodward Coal and Iron Company**

**Location.** Woodward, Jefferson County, Alabama.

S. H. Woodward, a Wheeling, West Virginia ironmaster, transferred his operations to Alabama after an inspection trip convinced him of its potentialities. In 1869 he purchased 550 acres of ore land on Red Mountain in Jefferson County and soon bought other coal and iron lands. A son observed the successful production of coke iron from Alabama ores when the Alice Furnace was blown in at Birmingham in 1880. Up until this time, Alabama had been merely a minor charcoal iron producing State. The cost of charcoal iron was too high for it to compete with the cheaper Northern coke iron; charcoal iron was thus used only for specialized castings. With the building and successful operation of two coke furnaces in 1880, modern pig iron manufacturing began in Alabama.

After the death of their father, the two sons in 1881 organized the Woodward Iron Company. They broke ground early in the spring of 1882 for the first Woodward Furnace, and it went into blast on August 17, 1883. This was the first furnace in operation in the Bessemer area.
The Woodwards assembled all of the constituents of iron making with coal and ore mines, quarries, furnaces, and a railway under their own ownership. When over-expansion led to combinations and consolidations in the Alabama fields, the Woodward Company maintained its identity. Today, the Woodward Coal and Iron Company ranks as the largest independent and completely integrated manufacturer of merchant pig iron in the United States. While the Woodward Furnaces and other facilities have been modernized, they still occupy the original area.
ARKANSAS

Arkansas Diamond Mine Site

Location. 2½ miles south of Murfreesboro

On a section of his farm that yielded very poor crops, John M. Huddleston one day in 1908 picked up two crystals. A Little Rock jeweler identified them as diamonds, and Huddleston sold his holdings to a mining corporation. Geologists sent to the farm found that the land covered the pipe of an ancient volcano and that diamond-bearing peridotite had been formed. The existence of peridotite had been noted as early as 1842, but Huddleston was the first to discover diamonds.

A small plant began operations on the land in 1908. In 1919, the Arkansas Diamond Corporation was organized with a capital of 10 million dollars. After nine months and 18,000 loads of peridotite, the corporation gave up. In 1940, the Diamond Corporation of Arkansas acquired the land. In 1948, they set up a 2,000 ton washing and concentration plant, but were forced to shut down operations a year later.

Other efforts at commercial mining have also failed. During World War II, the United States Bureau of Mines sampled the area to depth, and recovered an average of 1 carat of low-grade diamond for each 50 tons of peridotite. This is a far lower rate of occurrence than is required for successful commercial mining.

Three of the four peridotite intrusions in the area have produced diamonds. Early very optimistic reports seem to have resulted from the first shallow surface mining where diamonds had been concentrated by the erosion and natural removal of surrounding softer materials. During the commercial operations, the average weight of the 3,000 diamonds taken out by the Arkansas Diamond Corporation and its predecessor, the Arkansas Diamond Company, was about 0.4 carats. Some large and remarkably pure stones have, however, been discovered. The Star of Arkansas, found in 1956, was valued at $15,000.

One of the peridotite exposures in the field is paying today. An 18-acre area is stirred up regularly with graders and bulldozers and advertised as the "Crater of Diamonds." Visitors pay for the privilege of digging for diamonds. Diamonds of 5 carats or less are kept without obligation. On those over 5 carats, a royalty of 25% of the valuation of the rough diamond belongs to the management. Diamonds up to 15.38 carats have been found under this operation. The "Crater of Diamonds" is privately owned and operated.
OTHER SITES CONSIDERED

CONNECTICUT

Barnum Institute of Science and History

Location. 804 Main Street, Bridgeport, Fairfield County

Phineas Taylor Barnum spoke in St. James' Hall, London, in 1858 on two subjects that he had mastered, how to make money and how to fool people. That he was able to lecture Britishers on "The Science of Money Making and the Philosophy of Humbug" indicated that people in Great Britain were just as interested in those subjects as were Barnum's American compatriots.

The American fascination with money and illusion had spurred Barnum's rise as the Nation's master showman. Born on July 5, 1810, to an old New England family, Barnum began his career as a showman in 1835 when he purchased the right to exhibit Joice Heth, a negress who insisted she had been George Washington's nurse. Unfortunately, Barnum's 161-year old nurse died shortly after he had begun his association with her. The next several years found him engaged in various activities, but tending more and more toward show business. He opened his American Museum in New York in 1842 and its exhibits, animate and inanimate, amused and pleased visitors for several decades. In addition to a Niagara Falls, the museum displayed a bearded lady, a "Feejee" Mermaid, and, most popular of all, a midget, General Tom Thumb.

Barnum's success with the General was followed by several other notable promotions. In 1850 he brought Jenny Lind to America and she thrilled vast audiences throughout the Nation. In 1882, about a year after his circus had combined with its leading rival to form the Barnum and Bailey Circus, Barnum imported Jumbo. He had purchased the elephant from the Royal Zoological Society and showed the huge animal throughout the Nation. After Jumbo had been hit by a train in the fall of 1885 and died, Barnum purchased Alice from the Royal Zoological Society and exhibited her as Jumbo's widow.

Despite the allure of his shows, Barnum himself always remained a top attraction himself. When he took his circus to England in 1889, he invariably received loud cheers as he travelled around the arena. About two years after first presenting his circus in England, the showman died on April 7, 1891.

The Barnum Institute of Science and History was given to the City of Bridgeport by Barnum. Work on the structure began in March 1891 and the building was completed in 1893, about two years after Barnum's death. It is a Romanesque structure, built of stone and brick. A heavy gable, dome, and tower dominate the Institute. A frieze just below the tiled roof of the dome depicts the history of the City of Hartford.
The building was used for cultural purposes for several decades, but was taken over by the city in 1934. It now houses city offices on the first two floors and a Barnum Museum on the third floor. Upon the completion of Bridgeport's new city hall, the various city departments in the building will be moved to the new building.

**Gurleyville Grist Mill**

**Location.** East of Gurleyville on Stonemill Road, Toland County

The Gurleyville grist mill was erected in the eighteenth century and was operated for almost two centuries. Although the date of the mill's construction is not known, it is believed that it was built before 1730. It passed under a succession of owners until 1794, when Ephraim Gurley purchased the mill. He operated it until 1830, by which time he had attached a saw mill to the grist mill. After a succession of owners between 1830 and 1848, the mill in the latter year was acquired by Lucius Gurley and Samuel Cross. Cross, who was the father of a future governor of Connecticut, Wilbur L. Cross, soon acquired full control of the mill and retained possession until 1872. In that year Cross sold it, and the mill was then operated by several different owners until 1941.

The gable-roofed stone mill sits near the bottom of a steep slope and just above a stream. A dirt road passes in front of the building, whose walls consist of unusually large and rather irregularly cut stone. A brick chimney rises from the middle of the roof.

The mill is in poor condition. Some effort has been made to preserve and maintain the mill, but much more effort will be required to save the structure from the usual fate of isolated and largely unattended buildings.

The saw mill addition was demolished in 1950.

**Colonial Warehouse**

**Location.** End of Main Street, Wethersfield, Hartford County

Wethersfield, Connecticut, was founded in 1634 on the Connecticut River and subsequently became a thriving port. Between 1631 and 1391, the town's inhabitants erected six warehouses near the village's landing, now at the end of Main Street. Merchants, for many years, stored goods from Europe and the West Indies in the warehouses. Today, only one of those buildings remains.

The extant warehouse sits high above the present course of the Connecticut River. The frame and gambrel-roofed structure rests on a stone foundation, which at the river end of the warehouse is quite high. When used as a warehouse, ships probably docked at that end and either received or unloaded goods through the doors on the first and second floors of the building.
The building is owned by the Wethersfield Historical Society. Outside of asbestos roof shingles, the interesting colonial commercial structure appears to be relatively unaltered.
OTHER SITES CONSIDERED

GEORGIA

Atlanta Constitution Office Building

Location. Corner of Forsyth Street, S.W. and Alabama Street, S.W., Atlanta.

In the post Civil War South capital released by the destruction of the slave-holding system was directed toward new enterprises. An insistent demand began to grow throughout the region for imitation of the North and its victorious industrial system. Henry W. Grady became one of the better known of the New South's industrial spokesmen. In his famous New York address in 1886 he used the phrase "New South" in describing the rise of manufactures and industry and the phrase stuck.

In 1876 Evan P. Howell gained control of the Atlanta Constitution and brought Henry W. Grady and Joel Chandler Harris to its staff. Both writers very early became convinced of the value of industrialization for the South and urged it in their writings. Cyrus W. Field loaned Grady $20,000 and in 1879 he bought a fourth interest in the Constitution. Grady had a zeal for well-ordered progress and an ability to plead and win support for a cause even when it was in advance of popular approval. With his writings and oratory, he did much to dispell the post-war despair which hung over the South, he pleaded convincingly for industrial and manufacturing growth, for the development of local resources, diversification of crops and for a logical adjustment of the Negro question. The dominant theme in all his writing and speaking was the rehabilitation of the South through industrialization. Grady became a popular hero because he strengthened Southerner's hopes of sharing the material prosperity enjoyed by the North without demanding an apology for past mistakes. It was said of Grady, "His influence in exciting hope and inspiring confidence in the ability of the South to cope successfully with her difficulties was immeasurable...."

"He did not tamely promote enterprise and encourage industry; he vehemently fomented enterprise and provoked industry until they stalked through the land...." 1

While historians have questioned the disinterested motivation of the Bourbon politicians, the businessmen and journalists who were the leaders of the New South, Henry Grady's sincerity was, in general, unquestioned.

An old Constitution building which dates to Henry Grady's period still stands in Atlanta at the corner of Forsyth Street, S.W. and Alabama Street, S.W. This building was built in 1883. It is of brick, painted yellow and is in poor condition. It is adjoined on the two sides off the street by Rich's Department Store which uses the building for stock rooms.

1Quoted in Broadus Mitchell, The Rise of Cotton Mills in the South (Baltimore, 1921), 112.
This old Constitution building is just one block north of the present Newspaper building at 10 Forsyth Street, S.W.

Henry Grady is well memorialized in Atlanta. Just east of the newspaper offices his statue stands in the center of Grady Square. Grady Memorial Hospital and other city institutions bear his name.

Henry Grady Boyhood Home

Location. 634 Prince Avenue, Athens

Henry W. Grady was born in Athens, Georgia, on May 24, 1850. He attended the University of Georgia in Athens and received his degree in 1868. During the succeeding two years he attended the University of Virginia where he studied law and won many honors for his oratory.

Grady returned to Georgia and began his newspaper career in Rome on the Courier. Following an unsuccessful venture as owner and editor of the Rome Commercial, he moved to Atlanta and began his newspaper work in that city.

Atlanta made a remarkable recovery from its Civil War devastation. Located at the southern spur of the Appalachians it became the center for a great railway system and a manufacturing and distributing metropolis for the Southeast. In 1880, Grady bought one-fourth interest in the Atlanta Constitution and made it a spokesman for the new industrial order. Grady died at a very young age in 1889, after less than ten years with the Constitution. He had, however, done much to make it a powerful force in the political, economic and social life of the South.

The large Greek Revival residence in which Henry Grady spent a part of his boyhood was built by General Robert Taylor in 1845. It is a large, two-story white frame building with flush-fitted boarding. The house is built on a full basement and has a two story veranda on three sides. The thirteen Doric columns are said to represent the thirteen original colonies. These columns are brick covered with white stucco. A section to the rear of the house is of clapboard and appears to be a later addition.

The house is now vacant and badly needs general repairs, especially on its exterior. The City of Athens has recently acquired the property. Plans envision the restoration of the house and use compatible with its architectural and historical values.

Columbus Iron Works

Location. Front Avenue, between Dillingham and 8th Streets, Columbus

The Columbus Iron Works was established shortly before the Civil War in 1853. During the war it was operated by the Confederate Government as a naval iron works; two gunboats, cannon, and other
Henry Grady Boyhood Home, Athens, Georgia
munitions of war were produced. This plant is credited with making the first breech-loading cannon. Captain William J. McAlister designed the gun which was made from the wheel shaft of the river steamer, John C. Calhoun. The cannon is now mounted in the corner of the factory's yard.

The iron works still operates in the old, three-story, red brick building. Today the company makes mill supplies, electrical supplies, plumbing, heating and building specialties. The Southern Plow Company is a department and manufactures agricultural implements.

Eagle and Phenix Mill

Location. Front Avenue, between 12th and 14th Streets, Columbus.

Just prior to the Civil War the textile industry in Georgia experienced a remarkable development. Georgia led the Southern states in the number of hands working in textile factories and came to be known as "the New England of the South." Macon, Augusta, Eatonton and Columbus were thriving cotton-mill towns in Georgia. The value of the product of the Southern cotton mills increased 43% in the decade 1850-1860.

The Eagle Mill, one of the pioneer textile plants of Columbus, was built in 1851 for the manufacture of both woolen and cotton goods. During the Civil War the mill manufactured such goods as grey uniform tweed, cotton duck for tents, cotton strips for army shirts, cotton jeans, osnaburgs, sheetings, rope and India rubber cloth. Federal forces burned the mill on April 17, 1865; it was rebuilt in 1866 as the Eagle and Phenix Mills.

The present plant consists of a series of mills, of which mills 1 and 2 in the interior of the complex are the oldest. These older mills of brick are well-maintained and with their cupolas are typical of textile mill architecture.

Price Memorial Hall

Location. North Georgia College, Dahlonega.

Until the discovery of gold in California and the great rush there beginning in 1849, North Carolina and Georgia were the chief gold-producing regions of the United States. The commercial mining of gold in the Southern states may be said to have had its beginning when a nugget was found on the North Carolina farm of John Reed in 1799. In 1803-1804, Reed began to search successfully for gold and the North Carolina rush began.

Gold was discovered in the Cherokee County of northeastern Georgia in 1828 and a rush began to that region. The influx of gold-seekers hastened the removal of the Cherokee. Even before their removal, the State divided some of their lands into 160-acre farms and 40-acre gold sites, which were distributed by lottery. Two gold-mining towns, Auraria and Dahlonega sprang up in 1831-32 and in 1838 the United States established a branch mint at Dahlonega.
The California gold rush of 1849 drew many of the restless prospectors from the Georgia fields. By 1855 men began to return and operations more complex than the early placer mining were undertaken. Then the Civil War halted mining activity. During the post-Civil War years mining was gradually resumed and newer scientific processes introduced. A pronounced but short-lived revival took place in 1900. From 1900-1906 the Dahlonega Consolidated Mining Company operated what is considered the largest gold plant ever constructed east of the Mississippi River. The plant, capitalized at $5,000,000, included a 120-stamp mill, a large chlorinator, a 550 foot tunnel and numerous small buildings.

The Dahlonega Branch Mint operated until 1861 and minted over $6,000,000 in gold coins. After the Civil War, Federal authorities offered the old mint building to the State for educational purposes, in accordance with the Morrill Act of 1862. The North Georgia Agricultural College opened in 1873 as a land-grant college and used the Old Mint Building until it burned in 1878. The administration building of the reorganized North Georgia College, Price Memorial Hall, was built on the foundations of the mint building.

Oglesby Granite Company Quarry

Location. Elberton, Elbert County

Georgia is one of the leading granite producing States. At Elberton, in northeast Georgia, the granite industry has been developed most extensively. Since 1832 when Dr. Nathaniel Long opened Elbert County's first commercial quarry, the industry has grown. Elberton is known as the "Granite Capital of the World." There are twenty-six granite quarries, and fifty manufacturing plants within a twenty mile radius. Elberton produces about 1,250,000 cubic feet of select blue-gray granite annually and ships it to all fifty States and many foreign countries.

The Oglesby Blue quarry is Georgia's oldest producing quarry of fine granite; it has been in continuous operation since 1893. It is now owned by Coggin's Granite Industries, Inc.

Factors Row

Location. East Bay Street, between Bull and Abercorn Streets, Savannah.

Factors Row was named for the cotton factors who made the nineteenth century a period of flourishing commerce for Savannah. The factor was a key figure in the foreign trade of the South and, in fact, of the Southern economy. He was the planter's agent who sold the staple crops, provided credit and sent supplies for the operation of the plantation. His services in the plantation economy were valuable.

The old, red brick buildings along the bluff of the Savannah River are two stories high on the Bay Street front but are four stories
in the rear where they reach to the wharf level. A network of iron and concrete bridgeways known as Factors Walk links Bay Street with the building entrances. Below this are streets and runways paved with cobblestones which lead to the river.

A distinctive building on Factors Row is the Savannah Cotton Exchange Building, which was completed in 1887 during the era when Savannah for a time ranked first as a cotton seaport on the Atlantic and second in the World. The Cotton Exchange was the center of activity in the staple which dominated Savannah's economic life. In 1952, the Exchange was acquired as the quarters of the Savannah Chamber of Commerce and completely restored.

Piedmont Park

Location. Piedmont Avenue, between 10th Street and the Southern Railway belt line

Atlanta and Birmingham, Alabama, were the outstanding examples of the "New South." The Atlanta Constitution urged the entire post-Civil War South to devote its energies to commercial and industrial development--to do the things that had made the North rich and powerful.

In 1881 under the stimulus of Henry Grady of the Constitution and Hannibal I. Kimball, Atlanta held an International Cotton Exposition which grew to present a survey of all Southern industry. Atlanta experienced significant industrial gains from the exposition.

The even larger Cotton States and International Exposition was held in 1895. A million and a quarter people attended this exposition to receive proof of the remarkable progress Georgia and the rest of the South were marking.

An outstanding feature of the 1895 exposition was the demonstration that it gave of progress the Negroes had made since the Civil War. The Negroes maintained a building in which they exhibited their workmanship. Booker T. Washington was invited to make a principle address and delivered a remarkable address embodying the "Atlanta Compromise," which urged vocational education for the Negro and the postponing of political and social demands.

Atlanta purchased the exposition lands in 1904 for a municipal park. Piedmont Park continues as a city park providing many acres of rolling, tree-covered land, landscaped grounds surrounding a lake, a golf course, and recreational area.
Old Market House

Location. Corner of Commerce and Troy Streets, Galena, Jo Daviess County.

Founded in 1819, Galena, Illinois, flourished as a lead mining and commercial center between 1828 and 1858. By the latter date, lead could no longer be profitably mined, a completed railroad had ended Galena's usefulness as a river port on the Galena River, and the Panic of 1857 had completed the city's economic ruin. Many buildings still stand in the town that attest to Galena's former affluence, and one of the most notable of them is the Old Market House, at the corner of Commerce and Troy Streets.

The market house stands in the center of a square that is close to the Galena River. Henry J. Stouffer built the Greek Revival structure in 1845. The ground floor was used as a market and the second floor was occupied by the city council. Various alterations were made in the building after its construction; and a Works Progress Administration project in 1936-37 resulted in some further changes. The State of Illinois acquired the building in 1947 and completed its restoration in 1955.

The market house consists of a two-story brick center section and two one-story wooden wings. The brick section is topped by a cupola. A wide front door opens onto a foyer, which contains the stairway to the second floor. Beyond the lobby is a large room, whose arches on either side lead to each of the wings. The entire first floor now houses exhibits. Upstairs, the large room that corresponds to the one on the first floor has been restored as the city council chamber.
OTHER SITES CONSIDERED

INDIANA

Spring Mill State Park

Location. On Indiana Route 60, near Mitchell, Lawrence County

Spring Mill State Park, Indiana, includes the restored Spring Mill Village, the center of which is a large stone grist mill. During the 1850's, the mill and the village prospered greatly, but the railroads' bypassing of Spring Mill Village doomed the community. Today, the restored village affords one an excellent opportunity to visit a typical nineteenth-century Indiana milling settlement.

The village's three-story grist mill dominated the community throughout its life. Erected by Cuthbert and Thomas Bullitt, of Louisville, Kentucky, about 1818, the mill immediately became profitable. Despite its profitable character, the Bullitts subsequently sold the mill to two brothers from Philadelphia. Additional buildings arose near the mill during their ownership, which ceased in 1825. In that year, Hugh and Thomas Hamer purchased the entire mill village. They and their descendants operated the mill until the 1870's. Ignored by the railroads, the village declined after the Civil War and was sold in 1872. Subsequently, the villagers moved away and the formerly busy community expired. The mill was operated until 1898, but only as a local one.

In the village's heyday, Spring Mill Village shipped many articles to Louisville and New Orleans. Flour, of course, was always a major product of the settlement. So was pork. And so was the whiskey produced at the village's distillery. "Old Hamer," as the distillery's product was known, satisfied many for years throughout the South.

Long after "Old Hamer" had disappeared from the market, the State of Indiana acquired the abandoned village. The area, whose first sections were purchased in 1927, now includes 1,209 acres. The old village has been restored and includes original, reconstructed, and moved-in structures.

The village's original buildings are dominated by the grist mill. Its sixty-foot high stone walls enclose a forty-foot square area. The building has been restored and on the outside is a reconstructed overshot water wheel. Water is carried to the wheel by a reconstructed flume, which is supported by stone pillars. Inside, the restored mill machinery enables one to see how grain was turned into flour. Other original structures include the mill office, erected about 1818, the apothecary, built about 1830, as was the extant nursery, and the spring house, which dates from 1840.
Many other buildings of the present village have either been re-constructed or moved into the site. The distillery, sawmill, barn, Thomas S. Hamer House, tavern, and post office and store are some of the interesting rebuilt structures. The Hugh Hamer House, Granny White House, and Sheeks House have been moved into the village.

Spring Mill State Park is open all year. Picnicing and recreational facilities are available in the park.
19th Century view of Spring Mill Village, Indiana. Stone Building, left, is grist mill.

Courtesy, Indiana Department of Conservation
OTHER SITES CONSIDERED

LOUISIANA

New Orleans Branch Mint.

Location. 420 Esplanade Avenue, New Orleans

Congress in 1835 authorized three branch mints to be established in 1838 in the South, one to be located at Charlotte, North Carolina, one at Dahlonega, Georgia, and one at New Orleans. The Charlotte and Dahlonega mints were located in the gold producing regions of their respective States. The fact that New Orleans was a center for domestic and foreign commerce and the greatest financial center of the ante bellum South dictated the location of a branch mint in that city.

Construction began on the New Orleans mint in September of 1835, and the building was completed and ready for minting operations in 1838. Coinage capacity of the mint was about $5,000,000 per month, but this capacity was surpassed at peak times. Between 1838 and 1861, over $40,000,000 in gold and $29,000,000 in silver was minted.

When Louisiana seceded from the Union in January 1861, the first Federal building seized was the mint. The State government and the Confederacy using the dies of the United States, coined $1,101,316.50. With the bullion on hand and what it hoped would be mined in Georgia and North Carolina, the Confederacy planned to establish its own coinage to be minted in the New Orleans and Dahlonega mints. The design for a half dollar was accepted and executed by an engraver of New Orleans. However, the die produced was of such high relief as to be impractical for use in a coinage press. Four pieces were struck from this die by a screw press. The scarcity of engravers and other skilled workers forced the Confederacy to drop its plans for coining money and reduced the New Orleans and Dahlonega mints to assay offices.

The New Orleans Branch Mint was the only one in the South to be reopened after the Civil War. The mint resumed operations in 1879 and continued until 1910, when coinage was concentrated at the Philadelphia Mint.

From 1910 to 1932 the building was used variously as an assayer’s office, a public health service station and a veteran’s bureau. Those activities used only a part of its vast space. The assayer’s office and laboratory were in the building until 1931. Also some six or seven million silver dollars were stored in a vault in one wing until 1931. In that year work was begun on remodeling the building for use as a Federal prison. Two cell blocks were installed in the end wings, but the appearance of the building was changed as little as possible. In 1943, all prisoners were transferred and the Coast Guard took over the mint building through the years of World War II for use as a receiving center. Since that time and until recently, the Coast Guard has used the building as a supply depot. The mint is now vacant.
The New Orleans Branch Mint was designed by William Strickland. It is a long, simple building in the shape of an E; it has a facade that gains importance through its slightly projecting central pavilion crowned with a pediment. In front of this is a portico of Strickland's favorite Ionic columns. It is one of the most distinguished of the earlier buildings in New Orleans. Repairs and alterations through the years have altered the basic design and exterior appearance of the mint relatively little. Although the building shows signs of serious neglect, it appears to be structurally sound.

French Market

Location. Decatur and N. Peters Streets from Barracks to St. Ann Street.

In March 1788 New Orleans suffered a disastrous fire in which a total of over eight hundred buildings were destroyed. Rebuilding began at once. In 1791 on the lower levee side in front of the Plaza de Armas the Spaniards erected the first market building, which was the beginning of the present-day French Market. This building was replaced in 1813 by the present remodeled meat market. Other buildings, providing space for the selling of fresh fruits and vegetables, were added at later dates to form the series of market buildings extending along the levee. Parts of the vegetable market below St. Philip Street date from 1823. These buildings were extensively remodeled in the 1930's.

The French Market still serves actively as a public market and the coffee stands at opposite ends make it a gathering place for both natives and tourists. The market is one of the oldest institutions of the French Quarter.

The Custom House

Location. The block bounded by Decatur, Iberville, North Peters and Canal Streets.

New Orleans is primarily a commercial city. Progress was negligible under France, owing in part to the fact that the colonists were permitted to do business only with the Mother Country. The city fared somewhat better under Spain, but restrictions confining trade to certain Spanish ports retarded expansion for many years.

As settlers crossed the Allegheny Mountains and developed the Middle West, New Orleans began to grow rapidly as the commercial port of the Mississippi. With the lifting of trade restrictions on Mississippi commerce following the Louisiana Purchase, and the appearance of the steamboat in 1812, New Orleans forged ahead commercially. By 1840 New Orleans was vying with New York for the position of first port in the Nation. With the increase of east-west traffic via the Erie Canal and the Great Lakes, and the completion of the country's rapidly expanding railroad system, New Orleans' commercial growth was arrested. The chaotic
years of the Civil War and Reconstruction caused the city to lose ground economically. It was not until the turn of the century that New Orleans regained its former commercial importance. Today it is one of the Nation's leading ports and serves as a clearing house for much of the trade of the Mississippi Valley.

The Custom House is an integral feature of the city's commercial life. The present custom house stands where the levee of the river was in earlier days and on the site of Fort St. Louis. The cornerstone was laid in 1849 and construction begun under the technical supervision of General P. G. T. Beauregard. Much remained to be done when the Civil War halted construction. Following Federal occupation of the city in 1862, General Benjamin F. Butler used an office suite on the Decatur Street side, and the unfinished upper portion of the building was made a military prison for Confederate soldiers.

The Custom House was built of granite from Massachusetts on a brick base of $5,000,000. Its exterior is Egyptian, while the interior is Grecian. The Marble Hall, the large business room of the Custom Department in the center of the building on the second floor, is considered one of the handsomest rooms and is of unusual construction—only marble and iron have been used as building materials. The building still serves New Orleans as its custom house.
Portland Observatory

Location. 138 Congress Street, Portland, Cumberland County

Clipper ships no longer return to Portland, Maine, after long voyages. But the Portland Observatory on Munjoy Hill recalls the era of sail, as well as the day when signal flags sped news over land and water.

For many years after its construction in 1807, the observatory announced the arrival of merchant vessels. Captain Lemuel Moody conceived of the tower and organized The Portland Monument Ground Association to promote its construction. A half-acre on the top of Portland's dominant hill, Munjoy Hill, was selected as the site and the building was soon completed. When it began service in 1807, men at the top of the tower observed the water to the east through a telescope. At the sighting of a vessel, the flag of the ship's owner would be run atop the observatory. In that way the arrival of vessels was announced hours before they actually docked. Thus was a valuable service performed for the business community. Only the development of modern communications ended the observatory's usefulness to Portland.

The observatory is as sound today as when erected. Eight white pine timbers, measuring 35 feet 4 inches in length and 14 inches square, are the basic members in the tower. They extend from the ground to the deck at the top. Because of the stiff northeast winds that race over the hill, the building is weighted down by 122 tons of stone. Steep stairs lead to the top. Each floor is at a different angle, a device used to strengthen the tower against the winds. Despite the pessimism about its permanence by some of Portland's citizens, the observatory still stands. Some restoration work was accomplished in 1939, but the structure is almost as it was when constructed.

The observatory now affords visitors a superlative view of the Portland area. Just as President James Monroe must have enjoyed the sea and land scapes visible from the tower in 1817, so do people today.

The observatory is open all year, 10:00 a.m. to 7:00 p.m. Admission: 10 cents.
The Portland Observatory, Portland, Maine

N. P. S. Photo, 1965
OTHER SITES CONSIDERED

MARYLAND

New Bremen Glass Manufactory.

Location. South of Frederick, near Flint Hill and Park Mills, Frederick County.

The New Bremen Glass Manufactory that Johann Friederick Amelung operated between 1785 and 1795 produced some of post-Revolutionary America's finest glass. Despite the brief existence of the works, Amelung's glass factory continues to attract interest not only because of its excellent products, but because of its significant position in the history of the American glass industry.

The scheme for the glass works originated in Germany. Several individuals in Bremen early in 1784 raised the equivalent of $10,000 and secured laborers to establish a glass factory in Maryland. Amelung became the leader of the group destined for America. He, his wife and four children, and 68 workers endured a sixteen-week voyage before landing in Baltimore, Maryland, in August 1784. On November 22, 1784, an agent and fourteen additional workers also landed in Baltimore.

Only forty-four, Amelung led his group to central Maryland and established the settlement of New Bremen. He purchased 2,100 acres of ground on Bennett Creek near the Potomac River and ten miles from the town of Frederick, Frederick County. Later, another thousand acres were added to the original purchase. After acquiring land, Amelung undertook the construction of a glasshouse. It, when completed, had two furnaces. Subsequent to its construction, a second glasshouse was erected between 1787 and 1790. A transplanted German village also arose, with the houses for the workers standing on the main street, which was named "Fleecydale." Sufficient housing for 135 people was built. Amelung also erected a large house for himself that overlooked Bennett Creek. By 1788, the factory employed 342 people. And when the village was offered for sale in 1795, New Bremen consisted of thirty one-and-two-story buildings, two glasshouses, two flattening houses, some warehouses and stables, and several additional structures.

New Bremen existed as a manufacturing village for ten years, from 1785 to 1795. In those years, the glass works produced a variety of glass products, such as window glass, table ware, and numerous individual pieces. Many of the latter achieved a distinction in the young republic. Producer of the first inscribed pieces in America, Amelung created beautifully engraved presentation pieces that are highly prized today. No two of the presentation pieces are alike.
Amelung, in spite of the excellent quality of his glass, could not avoid financial failure. By 1790 the New Bremen Glass Manufactory represented an investment of £22 or £23,000, but the indebtedness of the company had already forced Amelung to apply to the State for help. In 1785 Maryland had loaned him £1,000 and had exempted him from taxes for five years. In the next year the Federal Tariff Act of July 7, 1789, placed a tariff on imported glass, which aided Amelung. But not in sufficient degree. Thus on May 26, 1790, Amelung petitioned the Federal government for financial aid. A measure to that end in Congress was defeated, however. To avoid disaster, Amelung in 1793 mortgaged some of the concern's lands. He mortgaged additional lands in 1794. Collapse came in 1795, despite all of Amelung's attempts to avert that. As a result, the works were put up for sale. A purchaser appeared in 1797, but various complications arose and several years of legal jousting followed concerning the manufactory.

After the failure of the glass works, Amelung moved to Baltimore and lived with his son-in-law. He died in Baltimore in 1805.

Amelung's house is the only surviving structure of the New Bremen Glass Manufactory. Probably completed in 1789, the house is a large two-story brick structure. A gable roof covers the house, each end of which has a massive brick chimney. The house faces the site of the workers' houses and the glass factory.

Inside, the house is distinguished by large rooms and handsome woodwork. A hall runs through the building and contains an attractive stairway to the second floor. The first floor contains two parlors, each with handsome panelling, and four corner fireplaces. Upstairs and opposite to the top of the stairs was a ballroom, whose lovely panelling has been removed from the house. Furthermore, the once gracious chamber has been divided into several smaller rooms.

Although the mansion is the only extant structure at New Bremen, archeological investigation in 1962 and 1963 located the site of the glass works. The Corning Museum, Corning, New York, Colonial Williamsburg, Williamsburg, Virginia, and the Smithsonian Institution, Washington, D. C. backed the excavations. In 1962 a large double furnace, perhaps a pair of fritting ovens, was found. The next year's labor uncovered the remains of a structure that measured 112 feet by 65 feet. The preliminary study of the preceding indicated that it housed two glass furnaces, plus some additional manufacturing units. The site of one of the laborer's house was also discovered. Both seasons' work turned up an impressive amount of glass fragments. Since the conclusion of the project, the remains of the structures have been recovered.

There is no doubt that more remains to be done before the New Bremen site is completely identified. Which glass house has been found? The one erected shortly after the founding of the colony, or the one
erected between 1787 and 1790. Where stood the two flattening houses, warehouses and stables? Furthermore, the transportation of the glass-workers to America from Germany is a significant part of the story of New Bremen. Where did their houses stand and what did they look like?

At the moment, the ownership of the New Bremen sites discussed here involves three different parties. Two different owners control the excavated areas and a third owns the house.

Union Mills.

Location. On U.S. 140, six miles north of Westminster, Carroll County

Andrew and David Shriver established Union Mills in 1797 and their descendents still own the original house and grist mill. Like many other old homesteads in the United States, Union Mills has had but one-family ownership since its construction.

The construction of the residence and mill in 1797 stimulated the development of a little community at Union Mills. In addition to the grist mill, the brothers erected a saw mill and tannery. A blacksmith shop also became part of the various business operations at Union Mills. During the history of the settlement, all kinds of labor was used at Union Mills--slave, indentured and free. The economic prosperity of the center declined after the Civil War. For one thing, the tannery was abandoned when a storm caused its chimney to collapse. The grist mill remained in operation until 1942. During the Second World War, its machinery was sold for scrap.

The building at Union Mills with the longest history of continuous use is the house. In addition to serving as a residence, the two story, frame, and gabled-roof structure has been used as a stagecoach stop, tavern, post office, school and magistrate's office. The house has twenty-three rooms, nineteen more than than it first had. When built, the house really was two small houses, each of which measured fourteen by seventeen feet. They were connected by a ten-foot wide passage. Both sections of the building had but one room on the first and one room on the second floor. With the passage of time, succeeding generations of Shrivers enlarged the house, it finally reaching its present rambling nature. The original house is in the center of the present structure. The building is only in fair condition. The roof needs to be replaced, as does much of the clapboard at the back of the house.

Inside, the home is filled with all of the household items that one could have expected the Shriver family to have accumulated during the nineteenth century. Shriver furniture, china, kitchen ware and clothes abound. One of the most interesting rooms is the parlor, or "Dance Hall." In it are an old Steinway piano, and a barrel organ that dates from around 1800.
The house faces several other extant buildings at Union Mills. The most interesting one of them is the grist mill, a brick, two-story and gable-roofed structure. The first floor of the mill is used as a museum, and contains exhibits concerning the history of Union Mills. It also contains some very interesting material apropos of the Civil War.

The Union Mills Homestead Foundation, Inc. administers Union Mills, which is open to visitors from June 10 through September 10, 10:00 a.m. to 5:00 p.m. (Sunday, 1:00 p.m. to 5:00 p.m.). Admission: $1.00.

Principio Ironworks.

Location. Principio, Cecil County.

The Principio Company not only built one of the earliest iron furnaces in Maryland, but began an almost two-hundred year record of iron manufacturing at Principio, Maryland. Furthermore, the company became one of the most successful undertakings in the early American iron industry. Originally organized by British interests, the concern eventually included some Maryland and Virginia investors, one of the latter being Augustine Washington. The company, by 1751, owned four furnaces and two forges that were located in Maryland and Virginia, adequate proof of the concern's success since the construction of its first ironworks in Maryland.

Erected about 1715, Maryland's Principio Furnace profited the company until it was seized by the State during the American Revolution. In addition to the furnace there was a forge, and from the two works came pig iron, bar iron and blooms. The ironworks at first used nearby iron ore, but had to secure new ore lands when those deposits were depleted. Thus in 1727 the company leased Whetstone Point, the future site of Fort McHenry in Baltimore's Harbor, and that area served the company well for years. As was usual in that period, slaves performed much of the labor at the ironworks. Only the coming of the Revolution ended the profitability of Principio Furnace for its English owners, as when war erupted they lost control of the manufactory. The State confiscated the ironworks in 1780.

American independence caused a change in the ownership of the ironworks, but did not end iron making at Principio. Colonel Samuel Hughes, in conjunction with some partners, purchased the works in 1785 from the State. Instead of using the original furnace and forge, he built a new furnace and additional works. The new ironworks were destroyed by the British during the War of 1812 and Hughes only partially rebuilt them after the return of peace. Financial difficulties then forced him to abandon the furnace within two or three years. Only in 1837 was the manufacturing of iron resumed at Principio. A Philadelphia concern had purchased the land in 1836, erecting upon it a new furnace and ancillary
buildings. The third Principio furnace produced iron until about 1910, when the manufacture of pig iron ceased after 195 years of iron making at that site.

The site of the Principii ironworks is included in a 6,200 acre tract that is owned by the Whitaker Iron Company, Wheeling, West Virginia. Nothing remains of the original works, but the furnace that was erected in 1836-37 still stands near the stream that supplied water power for Principio's various furnaces and forges. The extant furnace is built of stone, has a twenty foot square base and is about thirty five feet high. Vines cover its sides, trees grow on its top and many stones have fallen from one it corners. Unless the preservation of the stack is soon begun, it will shortly be a complete ruin.

The site also includes several other interesting structures. Near the furnace stand two crumbling buildings, both of which presumably date from 1830-37. Upstream from the furnace and on the west side of the bridge over the stream is a stone dam. Here water was diverted from the creek for use at the ironworks. Halfway up the hill to the south of the dam and on the east side of the road leading up the incline are several buildings stemming from the nineteenth century ironworks. A large barn, a residence and the office building of the Whitaker Iron Company form a diverse group of structures. The most interesting of them is the office. Used by the Whitaker concern when it was located at Principio, the building is a one story structure that has a mansard roof. A cupola sits in the middle of the roof. Inside, the building is little changed. The original furniture, apparently, still is in the building, and a massive desk and large clerks' desk are especially noteworthy.

Farther up the hill from the preceding buildings and on the west side of the road is the ironmaster's mansion that was erected in 1837. It is a two and a half story, clapboard and flat roofed building. It contains fourteen rooms. The mansion has had no serious alterations.
OTHER SITES CONSIDERED

MASSACHUSETTS

Custom House

Location. Water Street, Newburyport, Essex County

No vessels from Guadeloupe, Madeira, Bilbao, Rotterdam, or St. Petersburg now dock at Newburyport, Massachusetts. The city's once prosperous international commerce no longer exists. Some buildings, however, stand as tangible reminders of Newburyport's mercantile era. The Custom House on Water Street is one such structure.

Robert Mills, the designer of the Washington Monuments in both Baltimore, Maryland, and Washington, D.C., planned the grey-stone Custom House in Newburyport. Born on August 12, 1781, in Charleston, South Carolina, Mills studied under Thomas Jefferson and Benjamin Latrobe. He emerged from such eminent tutelage as one of the leading proponents of the Greek Revival style in the United States. By 1830, he had moved to Washington, where he received numerous commissions for Federal buildings. President Andrew Jackson appointed him as the Architect of Public Buildings on July 6, 1836, and Mills' penchant for the Greek Revival influenced the design of numerous governmental buildings. The Old Treasury Building in the capital is an excellent example from this period of Mills' career. Mills retained his position as Federal architect for fifteen years. He died on March 3, 1855.

Aside from his most notable buildings and monuments, Mills designed several custom houses. New Bedford, Massachusetts, and New London and Middletown, Connecticut, came to have custom houses planned by Mills. So did Newburyport. All of these buildings exhibit Mills' aim of achieving a "...maximum of utility, durability, and economy."[1] The architect employed stone or brick in his custom houses and they usually had an interior dividing wall of brick.

The Newburyport Custom House conforms to Mills' general plan for such buildings. The land for it was purchased in 1833 and the cornerstone was laid on October 24, 1834. Completed in 1835, the building cost $23,200. Bronze doors led into the interior of the two-story, gable-roofed and granite structure. It is a tradition that the Custom House contained less than 24 feet of wood when completed.

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Custom House, Newburyport, Massachusetts

N. P. S. Photo, 1965
Like many buildings, the custom house suffers indignity because of old age—it now is a storage house for junk. Nevertheless, the exterior of the building is little changed. A large number of its windows are broken, but the strength of the Custom House's Greek Revival architecture minimizes that defect. Because the author could not visit the building's interior, its present state is unknown.

Captain R. B. Forbes House

Location. 215 Adams Street, Milton, Suffolk County

Boston throve on the China trade for decades, and Robert Bennet Forbes established himself as one of that city's eminent China merchants. The Forbes House, with its exterior Chinese motif and Oriental furniture and furnishings, vividly recalls Forbes' Asiatic business career.

Born to a mercantile family, Forbes became a sailor and merchant at an early age and followed both the sea and commerce throughout his life. Thirteen years after his birth near Boston on September 13, 1804, he joined his uncles' trading firm. They liked their nephew and encouraged him to devote his life to commerce. Thus he soon went to sea, and by his twenty-first birthday commanded one of their vessels. Late in the 1820's, young Forbes assumed responsibilities for his uncles' firm in China. He quickly succeeded, both to their and his benefit. Upon his return to Boston, he married Rose Green Smith on January 20, 1834. The Panic of 1837 seriously hurt his business, which caused him to return to China to regain his financial position. In 1839 he became head of the great China firm of Russell and Company, his uncles' concern having merged with it, in China. During the Opium War his business boomed because the Chinese refused to allow British merchants to continue their trading operations. Forbes in 1849 became the head of Russell and Company and led the concern in subsequent years.

The China trade did not keep Forbes from engaging in many other activities. He owned or had interests in numerous merchant ships; and was an early advocate of steam-driven and iron-hulled vessels. Moreover, he sailed as a sport. A very humane person, he promoted aid to Ireland during the great famine, urged the development of coastal life saving facilities, and supported homes for sailors. During the Civil War, he constructed some ships for the Union at his own expense. Forbes also wrote a great deal, authoring several interesting volumes. With all of the preceding in mind, it is understandable why he has been characterized as the most interesting and admirable Boston captain of his era. He died on November 23, 1889.

The Forbes House looks from the top of Milton Hill in Milton across Boston and out to Boston Harbor. Erected in 1833 by Forbes and his brother, John M., the three-story Greek Revival and clapboard structure is painted gray, except for its brown trim. The dark brown
pent eave on the second floor; small brown medallions on the pilasters just below the pent eave; and large framed wood medallions at the top of the pilasters lend the house a Chinese air.

Inside, the Chinese furniture and furnishings maintain the Oriental atmosphere. The Chinese Room is just to the left as one enters the front hall. It contains restored Chinese wallpaper and furniture brought from China, a striking piece being a marble-topped round table that seats twelve. Around the table are elaborately carved teakwood chairs. Across the hallway from the Chinese Room is the Document Room. In it is a fascinating and important collection of Forbes papers. The room also contains many Chinese items. Behind this room is the dining room and across from it is a parlor filled with Victorian furniture. A circular stairway from the first to the third floor. On the second floor, there are four bedrooms, two in front and two in back. A cupola tops the third floor, which has several small rooms, and from it one has an excellent view of Boston Harbor.

The house is open from March 1 to November 30. Admission 50¢.

Furnace Village

Location. End of Spring Street, Middleboro, Plymouth County

The Northeast Region's Survey Historian visited Middleboro, Massachusetts, on November 9, 1965, and could not find Furnace Village. Enquiries at the local newspaper office and elsewhere led him to a site at the end of Spring Street in Middleboro, but he could not identify anything at that location.

One informant stated that Mr. Paul Thompson, the originator of the Furnace Village project, had died since he had announced the undertaking. Nothing, apparently, apropos of the project has occurred since then.

Quincy Ironworks

Location. Hall Cemetery, Crescent Street, West Quincy, Norfolk County

The Company of the Undertakers of the Iron Works in America established the second ironworks in colonial America. A leading proponent of the company, John Winthrop, the versatile and engaging son of the first governor of Massachusetts Bay, sailed to England in August, 1641, in order to secure backing for the undertaking. He succeeded in raising £1,000 for the project. Upon his return in 1643, he brought back some workmen and materials needed for the ironworks. A search for a proper site resulted in the selection of some ground on Furnace Brook, in what was then Braintree and is now West Quincy. The presence of water and bog iron undoubtedly influenced the selection of that site.
Following the acquisition of the site, the company pursued matters vigorously. Of especial importance was the granting of a charter by the Colony of Massachusetts Bay. That document, in the light of current practice, was a very generous authorization. It reserved to the Company for twenty-one years the sole right to manufacture iron, enabled it to cut wood from vacant lands for charcoal, authorized it to mine iron ore on private property, and permitted its clerks and laborers to be exempt from militia training. Secure in its privileges, the concern began to construct a furnace and forge early in 1644 and had largely completed them by November of the same year. The furnace was in blast by May, 1645. The cost of the furnace, between £1,200 and £1,500, induced the company to offer stock to the public, as more money was needed to finish the forge. Thus in May 1645 the company offered shares at £100 each that could be purchased either by individuals or by groups. Furthermore, a share could be paid for in money, coal, wheat, or beaver skins.

Initiated with enthusiasm and optimism, the undertaking did not meet the expectations of its owners. Richard Leader arrived early in 1645 as the resident manager, he having been appointed by the English stockholders. He acted energetically, even starting a new ironworks at Saugus. But he apparently failed to satisfy the English partners' desire for profits. Thus in 1646 they despatched an individual to investigate the West Quincy ironworks. Just what that agent reported is not known. In 1650, John Gifford, a new manager, arrived. He displayed a talent for spending money, so much so that by November 1654 his creditors held him liable for £15,000 and had had him jailed. Even before that denouement, the works had been made inoperative in 1653 because of a three months drought. Thomas Savage, furthermore, had seized the works in September 1653 because of money owed to him. Further compounding a difficult situation was the exhaustion of the bog iron deposits near the ironworks. It therefore appears that the furnace went out of blast in 1653. Perhaps the forge continued to be used for a short period after 1653.

After the failure of the ironworks, the furnace and forge were eventually demolished. But the site of the furnace was partially excavated in December 1953 and the base of the furnace was discovered. When in use, the furnace apparently stood about twenty feet in height. All that is presently visible at the site is the furnace base.

**Rowley Mill**

**Location.** On the Newburyport Turnpike, Route 1, Rowley, Essex County

The Rowley Mill, also known as the Jewel Mill, stands on mill site that dates from the seventeenth century. But the present building was erected in 1942, almost three decades after a fire had destroyed an earlier structure. The mill's iron waterwheel is about seventy-five years old.
Today, the mill is used to polish stones.

The mill is a two-story, gabled roof and frame building that has a long rear extension. The waterwheel is located on a side of the extension.

The Alice Wentworth

Location. Berthed beside the restaurant, "Pier 4," at Pier 4, Boston

Built in 1863 to carry bricks on the Hudson River, the Alice Wentworth now helps to attract visitors to a restaurant, the "Pier 4," in Boston. She is tied to the wharf on which the restaurant sits, engaged in a more glamorous but less active role than she was in her first years.

Indeed, the vessel enjoyed a much more active life for most of her past than she does now. Constructed in a shipyard in South Norwalk, Connecticut, and launched as the Lizzie A. Tolles, the two-masted, broad bottomed and 73-foot long vessel could carry up to 55,000 bricks. A moderate centerboard enabled her to visit many of the shallow harbors on the Hudson as she transported bricks up and down that historic river. Then, when the brick trade declined, she became employed in the New England coastal trade. Her unusual centerboard again permitted her to sail into shallow harbors, carrying grain, lumber, coal, ice and other items. By 1905, Captain Sebulon N. Tilton owned part of the ship and he acquired complete ownership in 1924. He continued to sail her until 1943, although he no longer owned her after 1939. When Tilton retired in 1943, the Alice Wentworth ended her mercantile career. For some years, she lay inactive. Then, in 1948, she became a "dude" ship, carrying novice sailors on summer voyages. While at her winter berth in Woods Hole, Massachusetts, in 1962, she sank. Subsequently, she was sold at a public auction in April, 1965, for $13,500 to her present owner, a Boston restaurateur. The ship now serves as a nautical enticement for her owner's restaurant.

As is true of so many old vessels, the Alice Wentworth is not the ship that was built in 1863. She was so completely rebuilt in 1905 that the United States Bureau of Customs considered her a new vessel. Apparently, the rebuilding retained little more than her original outline. And it was in 1905 that she was given her present name. She now carries two masts, draws five and a half feet of water and measures 23.2 feet in the beam. When she entered the summer cruising business, cabins were put in her hold, toilets were installed, and a spacious galley was built. At the present time, her hull is painted black and her trim is painted yellow.
Charcoal ironworks in the eighteenth and nineteenth centuries operated alike and produced the same kind of iron. Similarly, villages arose around most of the ironworks and they resembled each other to an amazing degree. These manufacturing communities had largely reached their peak in the East by the 1850's, but the village of Fayette, Michigan, was founded after the Civil War and produced pig iron until 1892. Nevertheless, its function and arrangement largely duplicated the work and appearance of many long defunct Pennsylvania and Virginia ironworks villages.

The birth of Fayette followed the construction of a railroad to Escanaba, Michigan, in 1863. Iron ore could then be shipped to Escanaba by railroad, loaded on scows and hauled to the Garden Peninsula, on the east side of Big Bay De Noc. There, where hardwood and limestone abounded, ironworks could be built and pig iron produced. The iron could then be shipped south at a much lower rate than could iron ore. Thus the Jackson Iron Company, Cleveland, Ohio, purchased 18,000 acres of land on the Garden Peninsula in 1867 and founded the town of Fayette.

Where only a wilderness had existed, a community of some sixty structures and 500 residents arose. Workers began erecting the first furnace in May 1867, and by December 1868 it made its first pig iron. The second furnace was begun in the summer of 1869 and completed early in 1870. Both furnaces employed the hot blast in order to warm the air before it was blown into the stacks. When in production, the furnaces averaged between seventeen and thirty tons of pig iron a day. Just north of the furnaces were seven stone beehive charcoal ovens. The charcoal had first been made by burning wood where it had been cut, but a desire for more efficient charcoal production had led to the construction of the ovens. In addition to the preceding structures, the community included a sawmill, wagon shop, carpenter shop, blacksmith shop, and stone shop. There were also houses for the workers.

Fayette flourished until increasing competition forced the furnaces to go out of blast. The community produced 11,000 tons of pig iron in 1875, but output fell in the 1880's. A number of circumstances contributed to that, the most important of which consisted of a decrease in the price of iron and expansion of coke furnaces, which made iron more cheaply and efficiently. Also, the furnaces' need for charcoal was
exhausting the local supply of wood. Thus in 1892, after producing a total of 229,288 tons of pig iron, the furnaces ceased operating. Subsequently, most of the inhabitants moved away and Fayette became a deserted village.

Today, the extant buildings and furnace stacks form a State park, the State of Michigan having acquired the site in 1959. The most imposing structures are the ruins of the two furnaces. Built of stone, the stacks are fifty-five feet high and stand near the shore of the natural harbor that Fayette faced. Behind the stacks stood the hot blast ovens, only the bases of which now exist. Just north of the furnaces are the charcoal ovens. One of the ovens has been restored, the others stabilized. On the slope behind the furnaces are the remaining structures of the village. A stone and gable-roofed machine shop and the clapboard opera house serve as museums. The old hotel, a large two-story frame building, is now being restored. Several individual residences also stand in the park.

**Quincy Mine**

**Location.** Hancock, Houghton County

The history of American copper mining recognizes the Quincy Mine, Houghton, Michigan, as one of the Nation's most notable mines. Few mines, of any kind, are older; and it was one of the Country's most productive mines between 1860 and the early 1880's, when Michigan's Upper Peninsula produced most of America's copper. Then, in 1920, the largest steam hoisting engine ever made was installed at the Quincy. Neither hoist nor mine are presently operative, but both remain as a significant industrial heritage.

Michigan copper has been known and used by man from pre-historic to present times. The white man's initial endeavor to mine copper in Michigan occurred in 1770, but the company organized to conduct the business soon failed. Some seventy-three years later a copper boom attracted many to the young State, especially to the Keweenaw Peninsula in the northwest part of the Upper Peninsula. The Keweenaw Peninsula's copper riches subsequently supported a lucrative mining industry for decades, and even now the area still produces copper.

A combination of Eastern capital and amygdaloid rock accounted for the success of the Quincy Mine. The first Michigan copper boom of the 1840's failed to spur shaft mining because of the lack of sufficient capital to support the digging of deep mines. Boston capitalists remedied that lack in the late 1840's and in the 1850's and 1860's by investing in mining in the Keweenaw Peninsula. One group of Bostonians organized the Quincy Mining Company on March 30, 1848, naming the concern after the town of Quincy in Massachusetts. The new company purchased lands near Hancock that contained amygdaloid rock, which frequently holds pure copper in its amygdaloids or cavities. Fortunately, the Quincy Mine's
amygdaloid rock held pure copper and the subsequent history of the mine substantiated the statement that "A good amygdaloid mine is something to bring joy to the hearts of both mining engineers and stockholders."\(^1\) By 1860, the concern had invested over $900,000 in the mine; in the same year the mine's output achieved the profitable nature that was long maintained.

The Quincy Mine, or "Old Reliable," as it became known because of its heavy and constant production, operated continuously until 1931. Six years later the mine renewed production and continued operating until 1945. By 1945, the mine had earned $27,000,000 in dividends for its owners. "Old Reliable" had especially rewarded its investors in 1923 when it had produced a 700% stock dividend.

Eleven years prior to the first closing of the mine in 1931, the world's largest steam-hoist began working at the Number 2 shaft of the Quincy. The First World War had delayed the completion of the giant engine, but in 1920 it began to hoist mine cars from over two miles below the earth's surface. The near 1,000-ton machine stood 60 feet high and consisted of a cross-compound steam engine and a huge drum. The latter was of the cylindroconical kind, with a maximum diameter of 30 feet. The drum carried 10,000 feet of wire rope.

That powerful behemoth, when operating, pulled a skip, or mine car, loaded with 10 tons of rock to the ground's surface from a depth of 2.5 miles at a speed of 40 miles an hour. Little wonder that mining men from all over the world came to see the hoist.

Today the hoist house is the most impressive reminder of the past glory of the Quincy Mine. It is eighty-two feet high and is made of reinforced concrete and brick. Most of its numerous windows are now broken, but it still houses the great, but long unused steam-hoist.

\(^{1}\)Angus Murdock, *Boom Copper. The Story of the First U. S. Mining Boom* (New York, 1943), 43
Henry Ford's Greenfield Village, Dearborn, Michigan, contains many buildings of relevance to American commerce and industry. All of them have been moved from their original to their present sites.

Of the various structures in Greenfield Village, three possess unusual significance for the current theme—the Wright Brothers Cycle Shop, the Heinz House and the Hanks Silk Mill.

Wilbur and Orville Wright produced the motor and other parts for their famous airplane in their cycle shop at 1127 West Third Street, Dayton, Ohio. That airplane made the world's first powered flight on December 17, 1903, at Kill Devil Hill, near Kitty Hawk, North Carolina. Orville's flight of 12 seconds ushered in the air age.

The cycle shop is a two-story, brick structure. Much of the machinery used by the Wright's in producing their first airplane is in the building.

The Henry John Heinz House stands across the street from the Wright's Shop. It was in that house, which originally stood in Pittsburgh, that Heinz began his cannery business. The success of his undertaking eventually made the H. J. Heinz Company one of the largest canning firms in the United States.

The Heinz House is a two-story, brick building that has a gable roof. Inside, it contains displays concerning the early years of the Heinz Company.

On Main Street in the village and some distance away from the Heinz House is the Hanks Silk Mill. The mill was the first silk mill to use power to manufacture silk. When built in 1810, it stood on a stream in Mansfield, Connecticut. The builders, Rodney and Horatio Hanks, drew water from the stream to operate the mill's machinery.

The silk mill is a one-story, frame and gabled-roof structure. As the original machinery has been destroyed, reconstructions of it are displayed in the mill.
OTHER SITES CONSIDERED

MINNESOTA

Phelps Mill

Location. Near Phelps, Otter Tail County.

Phelps Mill was built in 1889 on the Otter Tail River by William E. Thomas. It filled an important area need and was kept extremely busy in season. During its early years, farmers purportedly drove all night to get to the mill, only to find a long line-up of teams ahead of them. A contemporary newspaper, the Fergus Falls Journal for December 21, 1895, recorded:

... The mill has a capacity of about sixty-five barrels but during the past season an addition of 25 x 36 feet and three stories high has been built. This will be used for grinding rye and buckwheat... During the year he [Thomas] ground 44,000 bushels of wheat and about 25,000 bushels of feed...

In about 1908, a concrete dam replaced the earlier wooden one for water power. Thomas later sold the mill to a cooperative and moved to California. The cooperative, however, was not a success so in 1927 the stockholders forced it to liquidate. As a result, the mill was sold to a single owner who operated a feed mill for several years and then closed the plant entirely. The mill has been idle for about 30 years.

The mill is in a very dilapidated condition and has been standing vacant for some time. Gaping holes are in the old structure. However, some of the machinery remains. Despite its condition, the mill is very picturesque. During the summer months, many tourists as well as local people visit the mill.
John Goffe's Mill

Location. Bedford Interchange, Manchester, Hillsboro County

John Goffe erected a small saw and grist mill on Bowman's Brook in Bedford, New Hampshire, in 1744. Descendents of the builder operated the mill for decades after the demise of Goffe. In 1844, the mill was rebuilt. At that time, a water turbine replaced the water wheel. Today, the mill has been incorporated into the Wayfarer Motor Inn and is used as a souvenir shop.
NEW JERSEY

The Society for Establishing Useful Manufactures

Location. West side of Spruce Street, between Market Street and McBride Avenue, Paterson, Passaic County

A two-story brick structure near the Falls of the Passaic, Paterson, New Jersey, is the only extant building of the several erected by The Society for Establishing Useful Manufactures, one of the young republic's earliest industrial concerns. It, plus the raceway that carried water from the Passaic River, are the only tangible reminders of a bold scheme by one of America's most successful immigrants, Alexander Hamilton.

Hamilton, a West Indian by birth, a patriot by choice and a politician by nature, conceived of The Society for Establishing Useful Manufactures, or the "S.U.M.," to promote industry in the United States. Opposed to the agrarianism of Thomas Jefferson, Hamilton sought to stimulate manufacturing through national and personal effort. Having been initially impressed by the latent power in the Falls of the Passaic during the American Revolution, he, by the early 1790's, had developed a plan for creating an industrial community near the falls. He envisioned a manufacturing complex that would produce a wide range of items and would be the dominate industrial center of the country.

The organization that was to implement Hamilton's plans, the S.U.M., received a charter from the State of New Jersey on November 22, 1791. Already, some $100,000 had been invested in the concern. Shortly after the company's incorporation, its Board of Directors met and elected Colonel William Duer as its governor. Hamilton had influenced the choice of Duer, who at the time languished in a debtor's prison in New York. Eventually, as the imprisoned governor inspired little confidence in the S.U.M., he was replaced in October, 1792.

By the time of Duer's fall, the City of Paterson had been founded. Agents of the S.U.M. had visited the Delaware and Raritan Rivers, as well as the Passaic River. They finally choose a site on the south side of the Falls of the Passaic, which decision the concern's board approved on May 19, 1792. Land near the falls was then purchased for $3,293 3s. 3d.; and, at Hamilton's insistence, Major Charles Pierre L'Enfant was selected to plan the new town. Like Duer, L'Enfant proved to be a mistake. His grand designs appalled the leaders of the S.U.M. Thus in 1793 the board discharged the Frenchman and hired Peter Colt, of Hartford, Connecticut. With the town aborning, the S.U.M. tactfully named it after New Jersey's governor, William Paterson.

Governor Paterson must have been pleased with his namesake as it developed. The town's industrial buildings were most impressive. A four-story stone structure housed the country's largest cotton mill. Near it stood
The Society for Establishing Useful Manufactures' Carpenter Shop, Paterson, New Jersey

N. P. S. Photo, 1965
a printworks of three stories. A third notable structure was the spinning mill, which measured 64 by 36 feet and had two stories. Nothing remains of those factories.

Grandly conceived and poorly managed, the S.U.M.'s manufacturing enterprises soon failed. The reasons were several. First, the leaders of the company were always faced with a paucity of funds. Also, the concern's governors unwisely handled what funds they had. Then, just as the S.U.M. began, the Panic of 1791-92 complicated the efforts to achieve a sound basis for the undertaking. So low in funds was the concern by 1794, that it could not pay the salary of the treasurer. Moreover, labor troubles harassed the S.U.M. When the calico workers agitated for better working conditions, the company locked them out and forced their submission. But probably most damaging was the accomplishment of another brilliant immigrant, Samuel Slater. By 1796, he had reproduced English textile machinery in Pawtucket, Rhode Island. His small plant not only helped to end the S.U.M.'s manufacturing career, but introduced the Industrial Revolution to the United States. The S.U.M. abandoned its mills in 1796 and hence forth existed only as a property owner.

As previously stated, only the carpenter shop and raceway remain from the S.U.M.'s 1790-era. The carpenter shop is in a deplorable state, with its roof almost gone and walls crumbling. It is also obvious that the shop has been quite altered since the 1790's. The raceway (which leads from the river just above the falls, parallels Spruce Street and then doubles back on itself and cuts off to the east along McBride Avenue, near the end of which it turns north and at the end of Mill Street turns east; it then parallels Van Houten Street until it reaches Prospect Street, where it turns north and empties into the river), although also altered, is still used.

Just to the north of the carpenter shop, across McBride Avenue, the City of Paterson has created a park, "Overlook Park," which affords one an excellent view of the falls and the gorge below it.

The Deserted Village of Allaire

Location. Allaire State Park, Monmouth County

Allaire, New Jersey, throve for almost a quarter of a century after 1822 as an iron-manufacturing village. Then the rise of more efficient ironworks in other States caused Allaire's ironworks to fail. After 1848, the village's inhabitants gradually moved elsewhere. Now, only the buildings that the workers lived, labored and worshipped in remain to suggest the Allaire of over a century ago.

Monmouth Furnace preceded the rise of the Allaire works. Erected early in the nineteenth century, Monmouth Furnace used iron ore gathered from nearby beds of bog iron. If in blast for a full year, the furnace could produce 700 tons of pig iron. Financial difficulties struck the furnace's owner after the War of 1812, causing the furnace to be put up for sale in 1817.
The advertisement for the property not only listed the furnace, but a forge, slitting mill, saw mill, and workers' houses. It is not known who purchased the furnace, but in 1821 Benjamin B. Howell leased the property. His association with the ironworks caused it to be known as the Howell Works, or Howell Iron Furnace.

One year after Howell had leased the furnace property, it entered its most prosperous period. Not under Howell, but James Peter Allaire.

Allaire, who was born in 1785, was a leading manufacturer of steam engines and boilers in New York. His mechanical ability led to his establishing a brass foundry in New York City in 1813. The quality of his foundry's work spurred Robert Fulton to purchase a brass air chamber from Allaire for the Clermont. The success of that steamship benefited Allaire's business, which soon became famous in the country. And at the renowned "Allaire Works," iron was in increasing demand as Allaire received more and more orders for engines and boilers.

The need for an assured supply of iron led to the rise of Allaire at the old Monmouth Furnace. Allaire, having heard of bog iron in New Jersey, investigated several sites and finally purchased about 8,000 acres of land in New Jersey in 1822. The purchase included Monmouth Furnace. Under Allaire's direction, the old ironworks were rebuilt and enlarged. In addition, a completely new village arose, containing houses, shops, and stores, as well as a school and church. At the height of the enterprise, the village counted about 500 residents. In addition to making pig iron, the works produced caldrons, pans, pots, kettles and some iron pipe. But even as Allaire prospered, iron manufacturers in western Pennsylvania were turning to anthracite coal, which made better iron at less cost than did charcoal. At the same time, Allaire, as well as other charcoal iron manufacturers, found the cost of charcoal rising. As a result, Allaire, in the early 1840's, steadily lost business. The end came in 1846, when the furnace shut down. The future gone, the residents of Allaire gradually moved away. Deserted, Allaire remained ignored for years.

The State of New Jersey acquired the village from its last private owner in 1941. Because funds for restoring the property were lacking for many years, Allaire's rebirth began only in 1957. Today, many of the original buildings have been rehabilitated and are open to the public.

Batsto

Location. Batsto, State Route 542, Burlington County

Batsto, New Jersey, is but one of numerous deserted industrial villages in the Nation. Largely local in significance, the former iron and glass-manufacturing community now under restoration, is a representative site from the Nation's industrial past.
Located on Batsto Creek, the Batsto ironworks arose in the colonial period and prospered greatly during the American Revolution. In conjunction with several partners, Charles Read, of Burlington, New Jersey, erected the first iron furnace at Batsto between 1736-68. He also built three additional furnaces elsewhere and acquired thousands of acres of land. But his debts forced him to sell Batsto in 1770 to Colonel John Cox and his partner for £2,350. Despite the profitability of the works during the Revolution, Cox sold the Batsto property in 1778 to another ironmaster, Thomas Mayberry. Then Mayberry sold the ironworks to Joseph Ball in 1779. Near the end of the Revolution, Ball expanded the works. In 1784, Batsto included a furnace, a forge, a slitting mill, some dwelling houses and a large orchard. Most important, by 1784 William Richards had become part owner of the works.

Richards dominated Batsto during its most prosperous period. A large, vigourous man, who fathered a daughter when 77, Richards had first been associated with Batsto in 1768. Then he probably was a founder. Later, between 1773-75, he managed the works. In 1784 he acquired a one-third interest in the property, and within six years he had gained complete control. During his era, he rebuilt the furnace and manufactured the usual ironworks' products. He lived in the mansion house, from where he dominated the lives of workers as much as he dominated the furnace's operation. He retired in 1809 as one of those rare creatures who had succeeded financially as an ironmaster.

Despite the continuing prosperity for Batsto for several decades after 1809, it failed in the 1850's. William Richards' son, Jessie, was the paramount figure at the works for many years after 1809. When he realized that the rise of anthracite iron doomed ironmaking at Batsto, he sought to revive the establishment's prosperity by introducing glass making. He opened his first glass house in 1846 and a second one in 1848. Under his leadership, the glassworks prospered. Batsto's window glass became popular, and quantities of it were shipped to Philadelphia and New York. His death in June 1854, however, removed the vital force from Batsto, and in a short while all activity had ceased. By 1868, Batsto was largely deserted. Some six years later, a fire swept through the village, burning seventeen houses, the glass houses and the furnace buildings.

In 1876, two years after the fire, Batsto became part of the Wharton Tract. Joseph Wharton, a wealthy Philadelphia business man, purchased some 100,000 acres in the Jersey Pine Barrens, hoping to use them in a business undertaking. Thwarted in that scheme, he retained control of the land and used the ironmaster's house at Batsto as a summer home.

The State of New Jersey acquired the Wharton Tract between 1950-55. The Batsto portion of the tract is now being restored as a historic site.

Time has dealt harshly with Batsto. The village's most important industrial structures have disappeared. Neither the furnace nor glassworks stand. The next most significant structure, the ironmaster's house, may include a part of the eighteenth-century ironmaster's house, but only research
Batsto Mansion, Batsto, New Jersey

N. P. S. Photo, 1966
can prove that. The front portion of the house was built during the Richards' era and the entire building was completely remodeled by Wharton in 1876. He spent $40,000 in altering the structure. The village's other buildings include a company store, gristmill, sawmill, mule barn, blacksmith's shop, icehouse, horse barn, threshing barn, water tower, cattle barn and 17 workers' homes. None of the preceding buildings was associated with the Revolutionary ironworks. Furthermore, almost all of those buildings were erected in the nineteenth century.

The grounds are open to visitors, but guides must accompany visitors through the houses. Information concerning guide service follows:

Memorial Day to Labor Day 10 A.M. to 6 P.M. daily.
Balance of year: Weekdays 12 noon to 5 P.M.; Saturdays, Sundays and Holidays 11 A.M. to 6 P.M.

Rates: Adults $1.00; children 12-18 years of age 25¢; children under 12 years of age 10¢.

Colt Factory

Location. On Van Houten Street, Paterson, Passaic County.

Samuel Colt first manufactured his famous firearm in Paterson, New Jersey. His factory there failed, but not before he had further improved his pistol.

From his youth, Colt displayed an inventive nature. Born on July 19, 1814, in Hartford, Connecticut, Colt at the age of ten was at work in his father's dying and bleaching works in Ware, Massachusetts. Not too interested in formal schooling, the young man left Amherst Academy in 1830 and sailed to India. He, during the return voyage, carved a model of a revolver. After his return, Colt travelled about the country, giving lectures on chemistry and demonstrating laughing gas. His lecturing, apparently, helped him to raise money to enable him to continue to work on his pistol. He had made two of them by 1831. These firearms had revolving barrels. But by 1833 he had made a pistol with a single barrel and a revolving chamber. It was for this weapon that he secured English and American patents in 1835 and 1836 respectively.

Colt, with his invention protected by patents, began his initial attempt to manufacture the pistol in 1836. He managed to raise $300,000 in capital, and on March 15, 1836, received a charter from the State of New Jersey for the Patent Arms Manufacturing Company. Production began in September, 1836. For the next six years, Colt struggled to overcome internal difficulties in the concern and to popularize his pistol. He succeeded in neither instance. As a result, his first factory closed in 1842.
The First Colt Factory, Paterson, New Jersey

N. P. S. Photo, 1965
The Mexican War of 1846-48 made Colt's pistol famous. Following that conflict, he knew only success. He died in Hartford, Connecticut, on January 10, 1862, famous and rich.

The Colt factory in Paterson is an old two-story stone building that has been altered since 1842. The building's south end has especially been changed, there being quite a bit of cinder block construction at that part of the building. Interior alterations have also occurred.

Because "Armsmear," the Hartford, Connecticut, home of Colt has been recommended for classification, it is not felt that the Colt factory in Paterson should also be recommended for classification.

Van Doren Mill

Location. 5 miles south of Morristown, U.S. Route 202, Morris County.

The Van Doren Mill or "Old Mill," about five miles south of Morristown, New Jersey, stands on the site of a mill built in 1768. That mill is supposed to have ground flour for the Continental Army during its encampment in the winter of 1789-90 near Morristown. In 1842 the first mill was replaced by the present structure.

The Van Doren Mill is a four-story, stone and gambrel-roofed structure. The arches at the west end of the ground floor of the structure distinguish the mill from many others. Currently owned by the Basking Ridge Historical Society, the mill is in good condition.

Oxford Furnace

Location. Corner of Belvidere Avenue and Washington Avenue, Oxford, Warren County.

The ironworks at Oxford, New Jersey, produced iron for some 142 years. Jonathan Robeson erected the original furnace in 1742, a thirty-eight foot high stone stack. It produced its first iron in 1743, and during the French and Indian War manufactured cannon balls. The furnace achieved such importance during the American Revolution that the British sought to destroy it, but never succeeded in that endeavor. In the nineteenth century the ironworks were operated under a succession of owners and benefited from various improvements. The furnace stack was completely rebuilt in 1882. Two years later it went out of blast for the last time.

All that remains of the ironworks proper today is the furnace stack. Made of stone, it stands about twenty-five feet high and is approximately twenty-five feet square at the base. The remains of a brick structure stand on top of the stack.
Van Doren Mill, New Jersey

N. P. S. Photo, 1965
The furnace is in very poor condition. Unless immediate steps are taken, it will soon be but a pile of stones.

Across Belvidere Avenue from the furnace is the Shippen Mansion, the home of Joseph and Dr. William Shippen. The Shippens, who built the house in 1754, had acquired full ownership of the furnace by 1753.

The furnace is a New Jersey State Historic Site.
OTHER SITES CONSIDERED

NEW YORK

"Americana Manse"

Location. 39 South Street, Belmont, Allegany County

The "Americana Manse," Belmont, New York, was erected by Charles S. Whitney. Born on February 12, 1824, Whitney worked at several occupations before migrating to California in 1850. But he stayed there for only a short time, returning to the East in 1851. He settled in Belmont, New York, in 1851, married the daughter of a local man and operated a store.

Subsequently, he developed business interests in Bradford, Pennsylvania. He died on April 1, 1900.

Whitney built what is now called the "Americana Manse" in 1870. It is a two-story, brick Italianate structure that is dominated by a three-story tower in front. The house is in a deplorable state of repair. The front porch is gone, the brick and woodwork are in poor condition, and the back of the house is about to collapse.

Custom House

Location. Garden Street, Sag Harbor, Suffolk County, Long Island

Sag Harbor, Long Island, was designated as the State of New York's first port of entry on July 31, 1789. Several months after that date, Henry Packer Dering was appointed as the Collector of the Port, and his house became the Custom House. Dering and then his son held the position of Collector or Deputy Collector a total of some sixty years, during which time the Dering home served as their office. A shed-like addition at one end of the house served as a post office in 1794, the first on Long Island.

The two-story, gable-roofed building was moved to its present location in September 1948. Two-brick chimneys serve fireplaces in almost every room in the house. Each room is attractively furnished, although not always with colonial furniture. The parlor, for example, contains Victorian furnishings.

The house is owned by the Old Sagg Harbour Committee, Inc., and is open daily, 1:30 p.m. to 5:00 p.m.
Donald Mackenzie Home

Location. Behind the Mayville Central School, Mayville, Chautauqua County

Donald Mackenzie's peaceful last decade in his Mayville, New York, home contrasts sharply with his many years in the fur trade. One of the outstanding individuals in the fur trade, Mackenzie experienced all kinds of dangers before settling in Mayville in 1851 and developing an apple orchard.

Born in Scotland on June 15, 1783, Mackenzie escaped the ministry by going to Canada. He joined the North West Company, a fur company, and remained with it until June 23, 1810, when he joined John Jacob Astor's Pacific Fur Company. As an employee of Astor's, he led a group to Fort Astoria, Oregon, by the overland route, reaching the fort early in January, 1812. He subsequently led several expeditions from Fort Astoria in search of furs. At the outbreak of the War of 1812 he sold his interest to the North West Company, fearing the capture of the post by the British.

It was after the War of 1812 that Mackenzie gained his greatest fame. Rebuffed by Astor when he asked for work in 1814, Mackenzie joined the North West Company. He quickly made his mark in that organization as a skillful and valiant fur man. When his company and the Hudson's Bay Company merged, he became the governor of the new company's Red River Colony. He administered his large province with wisdom and courage, bringing peace and progress to its inhabitants. Mackenzie possessed an intuitive understanding of the Indians, which in combination with his strength and 300-pound weight, enabled him to gain their cooperation. He also married an Indian, by whom he had 13 children. After eight years as governor, Mackenzie retired in 1833.

Mackenzie settled in Mayville in the same year that he retired. No one knows why he chose that town. Nevertheless, he erected a brick house on the top of a hill that overlooked Lake Chautauqua and planted an apple orchard near his house. Late in 1850, the old fur trapper was thrown from his horse, and he died on January 20, 1851. He was at first buried near his house, but subsequently his body was interred in the Mayville Cemetery.

Mackenzie's house is a two-story, brick structure that was erected in 1833. The interior has been gutted and the first floor serves as a store house.
Remington Homestead

Location. On Barringer Road, about four miles south of Ilion on State Route 51, Herkimer County.

Remington firearms have long been praised because of their excellent quality. The founder of the Remington company, Eliphalet Remington, began the tradition of quality when he made his first rifle by hand shortly after the end of the War of 1812.

The originator of the Remington rifle was born on October 27, 1793, in Suffield, Connecticut. In 1799 Remington's family moved to Herkimer County, New York, where his father operated a farm. The young Remington grew up on the farm, and married Abigail Paddock on May 12, 1811. The new couple lived with Eliphalet's family for several years after their marriage.

Some two years after his marriage, the bridegroom produced the rifle barrel that began his gun-making career. Eliphalet had not only inherited his father's mechanical ability, but had studied rifles and had decided that he could make a superior rifle barrel. In 1816 he fired the forge in back of his father's house and set to work. He completed his first barrel probably in about a week. His work quickly received two accolades. When he asked a gunsmith in Utica to rifle the barrel and make a stock for it, the craftsman praised Remington's work. Then in October, 1816, Remington's rifle aroused interest at a county shooting match. After the winner of the contest ordered a barrel from Remington, the young man soon received additional requests for barrels.

The merit of Remington's rifle barrels soon spread throughout the East. He and his father now devoted all of their time to producing them, each of which Remington insisted on testing himself. The young manufacturer, by 1820, offered either long barrels for rifles or short ones for fowling pieces, charging $3.00 for iron barrels and $6.00 for steel ones. Because of the rising demand, Remington by 1821 was making two or three hundred rifles a year.

Remington's adherence to quality remained steadfast as he became a major firearms manufacturer prior to the Civil War. Following the death of his father, Remington in 1829 erected a factory on the Erie Canal in Ilion. The new factory's business grew as the years passed. When Remington placed a new pistol on the market in 1847, the firearm sold heavily. Further expansion of the business occurred in 1856, when Remington began manufacturing agricultural equipment. On August 12, 1861, Remington died.
Eliphalet's home when he made his first rifle barrel in 1816 was in his father's recently erected stone house. Begun in 1809 and completed in the summer of 1810, the house's two-feet thick walls are of stone. An arch over the front door is occupied by a fan light, perhaps the outstanding exterior embellishment. Inside, the first floor has two spacious rooms, one on either side of a central hallway. The kitchen extends across the back. The house has been altered somewhat inside, all of the fireplaces having been removed. The second floor has been turned into an apartment.

The house is privately owned and is not open to the public.

Weighlock Building

Location. Erie Boulevard East, Syracuse, Onondaga County

The Weighlock Building in Syracuse, New York, is another interesting tangible inheritance from the Erie Canal. For years, canal boats were weighed at the building and then paid the tolls commensurate with their weights. Now used as a canal museum, the building memorializes "Clinton's ditch."

The Weighlock Building was completed in 1850 and remained in use as a weighing station until 1883. It had been preceded by two earlier structures, the first having been erected in 1824, the second in 1834. The development of larger canal boats necessitated the construction of the present building, which was begun in 1849. In the spring of 1850, boats began to be handled at the new installation, it having cost $17,516.77. When a boat entered the weighing lock, the water was drained from the lock and the boat came to rest on a cradle suspended from an overhead balance beam. Thus was the boat's gross weight determined. Then, the registered empty weight was subtracted from the gross weight and the toll was based on the net weight of the load. Many boats passed through the lock in the following years and each of them was weighed and charged the appropriate toll. But in 1883 all tolls were abolished on the canal. The Weighlock Building continued to be used for canal offices, but its real usefulness had ceased. In 1906, the scales were removed from the building.

Several other changes have occurred to the Weighlock Building in addition to the removal of the scales. As built, the building was two stories high, made of brick, and had half of its first floor devoted to the lock. A portico, supported by eleven columns with (Doric) capitals, covered the lock. In 1906, when the scales were removed, the second floor was extended over the lock; and thirty years later the portico was enclosed.
Weighlock Building, Syracuse, New York

N. P. S. Photo, 1965
The eastern anthracite coal miner of the 1890's idolized John Mitchell. As a union leader, he greatly improved the miners' lot. Because of that, Mitchell remains an outstanding figure in the history of American labor.

Mitchell became acquainted with coal mining at an early age. He was born on February 4, 1870, in Braidwood, Illinois. Two and a half years after his birth, his mother died. When six, his father, a coal miner, died. Six years later, the young boy began working at a coal mine.

Instead of becoming a miner for life, Mitchell became an outstanding union organizer. When fifteen, he joined the Knights of Labor, which was then America's most powerful labor organization. A strike at some mines in Illinois in 1888 precipitated Mitchell's leaving the Knights. He now felt that an all-inclusive union, such as the Knights, lacked the effectiveness of a union of just coal miners. In 1890 he joined the United Mine Workers of America, which caused him to lose his job during a strike in 1894. After that strike, Mitchell became increasingly active in union affairs, and in 1898 was elected as the organization's national president. He held that office until 1908.

Mitchell, as president of the union, won his most notable victory in 1902. In that year, he led the United Mine Workers to a triumph that benefited the labor movement in general and the anthracite coal miners in particular.

The strike in the anthracite fields in 1902 sought to gain some improvement in the miners' working conditions. At that time, the average miner earned $300 a year and faced constant danger below ground. Some 1,411 miners died as the results of accidents in 1901, for example. But when the miners struck, the owners of the mines, principally railroad companies, refused to negotiate. One of the railroads' presidents, George F. Bear, of the Reading Railroad, wrote that the welfare of working men should be left not to union people, but to "...the Christian men to whom God in his infinite wisdom has given the control of property interests." Thus the agents of the Deity and of the miners reached an impasse. But, due to Mitchell's restraining hand, the union avoided violence and acted as a responsible, law-abiding organization. The adament attitude of the owners finally angered

President Theodore Roosevelt and he threatened to use the army to mine coal. That threat induced the owners to accept arbitration. As a result, an agreement was reached which provided for an eight-hour day, an increase in wages and greater recognition of the union's rights.

That triumph, which increased general union prestige and gained some benefits for the United Mine Workers, was largely due to the effective leadership of Mitchell. His insistence upon negotiation, rather than riot, assuaged the public and finally overcame an obdurate attitude on the part of the mine owners.

Six years after 1902, Mitchell retired from the Union's presidency because of opposition to his policies. He then held various jobs until his death on September 9, 1919.

Mitchell lived in his Mount Vernon, New York, house from 1910 until his death. It is a two-story frame house that is now covered with asbestos shingles and has a cross-gable roof. A one-story room has been added on the right and a room has also been attached to the back since Mitchell's demise.

Inside, the original house is largely unchanged. The first and second floors are used as apartments, as is the attic. On the first floor, the rooms are characterized by high ceilings, moulded cornices, heavy doors and attractive woodwork. This was the only floor that the writer could visit.
OHIO

Buckeye Furnace State Memorial

Location. Off of Route 124, ten miles southeast of Jackson, Jackson County.

In the last decade before 1851 and for many years after the Civil War, the Hanging Rock region in southeastern Ohio possessed a flourishing iron industry. Iron furnaces produced pig iron in Lawrence, Scioto and Vinton Counties. Ironworks in Jackson County also made iron, and that county's Buckeye Furnace contributed to the Hanging Rock district's total iron production for many years.

Today, Buckeye Furnace is one of the Hanging Rock area's few extant furnaces. T. Price erected the furnace stack in 1851, building it into the side of a cliff. One of three furnaces in the region in the early 1850's, it produced in forty-two weeks in 1855 1,840 tons of pig iron. When it operated at such a rate, the ironworks employed about one hundred workers and fifty teams of oxen. In 1862 a purchaser paid $50,000 for the furnace, which in 1867 was sold to another owner. The furnace was subsequently acquired by the Buckeye Furnace Company. The ironworks operated almost constantly between 1870 and 1882, but suffered from a declining business in the next three years. Finally, it went into blast for the last time in 1885.

Only the stack of the ironworks remains today. It is unusual because it is made of dressed stone. The limestone blocks were quarried on the spot. The lintel across the hearth is also unusual because it bears an inscription, which reads "Buckeye Furnace, T. Price Builder 1851." In fair condition, the furnace is an interesting remnant of once important charcoal iron industry of the State of Ohio.

The Buckeye Furnace State Memorial includes the furnace and 267 acres of land. The memorial is open to the public throughout the year.
OTHER SITES CONSIDERED

Pennsylvania

Alliance Furnace

Location. Fayette County

Pennsylvania's iron industry leaped over the Allegheny Mountains after the American Revolution. The first furnace erected west of the Alleghenies was Alliance Furnace, the forerunner of innumerable furnaces in the western part of the Commonwealth.

Three merchants erected Alliance Furnace. William Turnbull, John Holker and Peter Marmie, who jointly conducted a mercantile business in both Philadelphia and Pittsburgh, purchased some land along Jacob's Creek in Fayette County after the Revolution. The construction of the furnace began in the spring of 1789. A forge was built at the same time. The works evidently began operating in the fall of 1790.

If the Alliance Furnace was the first furnace west of the Alleghenies, then it probably was the first ironworks in that region to fail. The company produced pig and bar iron, as well as various castings, and in the winter of 1792 made shot for General Anthony Wayne's expedition against the Indians. Five years later Turnbull withdrew from the concern, turning over his interests to John Holker. Holker and Marmie operated the works, now known as Colonel Holker's ironworks, until 1802. After that, the furnace never resumed production.

A local legend maintains that Marmie forced his dogs to jump into the stack and then followed them. But as that story is associated with other ironworks, it is suspect. In any event, the ironworks were soon a ruin. The remains of the Alliance Furnace were still visible in 1882.

The author has not visited this site.

"Avendale," Thomas Leiper Home

Location. Avondale Road, Wallingford, Delaware County.

"Avendale," Wallingford, Pennsylvania, was the home of Thomas Leiper, a business man, industrialist and politician. Leiper exemplifies the eighteenth-century man who succeeded in various economic undertakings and pursued a multitude of other interests.
Born in Strathaven, Lanark, Scotland on December 15, 1745, Leiper migrated to America while still a youth. His parents afforded him a fine education in schools at Glasgow and Edinburgh. They hoped he would enter the ministry. The young man disagreed about that, and sailed to Maryland after his father's death in 1763. Once in Lord Baltimore's colony, he stayed until 1765.

A cousin's invitation brought Leiper to Philadelphia in 1765, but his own ability eventually made him one of the city's outstanding citizens. When Leiper first arrived in Philadelphia, he worked for some time in his cousin's tobacco business. Then he left and established his own tobacco house. He became a major tobacco and snuff merchant, which success enabled him to engage in other businesses. One of those enterprises concerned quarries near Philadelphia. Leiper sold stone from them for construction purposes in and around Philadelphia.

Leiper's quarries led to the construction of one of the Nation's early tramways. He first constructed an experimental tramway in Philadelphia in September 1809 and its success encouraged him to enlarge on what the United States Gazette on September 29, 1809, termed a "patriotic enterprise." By early 1810, Leiper had constructed a tramway from his quarries on Crum Creek to a landing at Ridley, Delaware County. He carried stone on the three quarter of a mile long tramway to barges. The innovation was used until 1828.

Leiper made his mark as a soldier, politician and supporter of cultural development, as well as a business man. As a soldier, Leiper unhesitatingly supported the American fight for independence and became one of the first troopers of Philadelphia's famous First Troop, Philadelphia City Cavalry. He fought in the Battles of Trenton, Princeton, Brandywine and Germantown. He retained his association with the troop after the Revolution, but also devoted much time to politics. An admirer of Thomas Jefferson, Leiper vigorously opposed the Federalists in Pennsylvania. He attained political prominence in Philadelphia and was a member of the Common Council of Philadelphia for most of the time between 1801 - 1814. Leiper, just as he supported business or political propositions with vigor, endeavored to improve Philadelphia's cultural life. He was one of the founders and original officers of the now famous Franklin Institute. The year after he had helped to organize that institution Leiper died, he passing away on July 6, 1825.

Leiper erected "Avendale" in 1785. The estate, which now includes 11 acres of land, is located on the side of a hill on the west side of Crum Creek. One approaches the main house by turning off of a road that lies beside the creek and then stopping at the estate's barn. As one looks north, he sees the mansion at the end of a tree-bordered path. The path leads to a flight of steps, which carry one up to the front door. A handsome portico shelters the front door, which has a beautiful fan light above it. A large porch is on the east side of the house and it is supported by nine or ten-foot tall stone pillars. A drive passes under the porch and around to the back of the house.
The mansion is a two-story, stone structure. The walls have been stuccoed and are of a light mustard color. The gable at either end of the front section of the house has not been stuccoed and each gable has twin chimneys. A back wing extends the house to the rear, and the wing has a gable that meets the main house's gable at right angles.

In addition to the preceding building, the estate includes several other structures. Behind the house is a stone necessary. Near it stands a handsome small building, a fireproof vault. A stone wagon house is behind the necessary and vault. A smoke house also stands near the back of the mansion. Across Crum Creek from the house is the site of Leiper's Quarry.

Eagle Ironworks

Location. Curtin, Centre County.

The small village of Curtin in Centre County, Pennsylvania, was named after Roland Curtin, its founder and an early ironmaster in that section of the State. Curtin, who was born in Ireland of Scotch-Irish stock and educated in Paris, prospered in moderate fashion after sailing to America. By 1797 he owned a store at Milesburg, Pennsylvania, and was elected as the sheriff of Centre County in October 1806. About 1810, he and Moses Boggs erected a forge, which apparently became Curtin's entirely when Boggs withdrew from the undertaking in 1815. Three years later, Curtin erected Eagle Furnace somewhat to the south of the forge. A village arose about the Eagle Ironworks and it bore the name of the ironmaster.

After Curtin's death, his family continued to operate the iron business until early in the present century. But the original Eagle Furnace was abandoned in 1836 and the existing one erected in 1848. The ironworks used about 3,500 tons of iron ore annually and 300,000 bushels of charcoal. The furnace had an annual capacity of about 2,000 tons of pig metal. It ceased operating in 1922.

The present village of Curtin is dominated by several structures. First, the furnace. It is made of fieldstone and is in very poor condition. One side has a serious crack and appears to be in imminent danger of collapsing. South of the furnace is the ironmaster's mansion, which was erected about 1830. It is a two-story building that has a front porch and a gable roof. Between the house and the furnace are some workers' houses. The remains of the village's grist mill also stand. The mill was burned in 1922 and some of its walls were recently dynamited because of their dangerous condition.

"Gentilhommière," Stephen Girard House

Location. 20th and Shunk Streets, Philadelphia.
Stephen Girard's influence extended far beyond his adopted city of Philadelphia. One of America's leading post-Revolutionary merchants, Girard's mercantile and banking operations in the late 1700's and early 1800's not only made him rich, but contributed to the commercial and financial development of the United States.

France, America's ally during the Revolution, was the country of Girard's birth. Born on May 20, 1750, in Bordeaux, the young Girard lost his mother when 12. Although probably born blind in his right eye, Girard went to sea as a cabin boy when 14. Before he had celebrated his twenty-fifth birthday, he had been licensed as a captain.

Apparently assured of a future on the sea, Girard subsequently turned from it to commerce. In January 1774 he sailed to Haiti as a mate on a vessel and with goods in the ship's hold for disposal in that rich island. Once in Haiti, he found little demand for his merchandise. Instead of admitting failure, Girard remained there and waited for the market to improve, which it finally did and the neophyte merchant sold all of his wares. Henceforth, Girard seldom sailed because "His genius lay in accurate understanding of the market...and an almost intuitive anticipation of future needs."1

Girard, after his success in Haiti, sailed to New York in 1774. He never returned to France.

The merchant's subsequent career paralleled the rise of his new country. First employed by a commercial firm, Girard soon acquired sufficient capital to become a half-owner and the master of a ship, La Jeune Babe. Following a difficult voyage to St. Pierre in the summer of 1776, Girard dropped anchor in Philadelphia. The Revolution's disruption of commerce slowed Girard's rise as a merchant until the British evacuated Philadelphia early in the summer of 1778. A boom then stimulated commercial activity in the city, and Girard participated actively in the rising business cycle. He opened a mercantile house soon after the Americans had regained Philadelphia; and on October 27, 1778, swore allegiance to the State of Pennsylvania.

The new American soon became a prominent merchant. Not just because of the return of peace in 1783, but because of his calculation and daring. Girard fully understood the speculative aspect of commerce and he seldom failed to employ all necessary means to assure success in his undertakings. He never neglected to study the economic and political conditions of those areas with which he traded. That knowledge enabled him to take advantage of various situations, and the detailed instructions of his captains reflected Girard's perception and judgment. Sometimes voyages failed. But more often they succeeded. By 1794 Girard had decided the

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greatest opportunity lay in the European trade. Thus by 1807 his European business was thrice that of his West Indian trade, which between 1783-93 had been three times as great as his European trade. Girard abandoned the West Indian trade completely in 1812, he realizing the more lucrative opportunities beckoning in Asia and Africa, as well as in Europe.

As he became more successful, Girard became more of an American. His cultural and culinary outlook remained very French, but he favored democracy. It is true that he also believed that those of power, such as merchants and bankers, should really rule, but he abhorred anything that smacked of an aristocracy. A firm believer in laissez-faire, he never hesitated to break any regulation which he thought to be an unnatural one. Despite his rise, Girard suffered a tragic loss when his wife became insane and he finally committed her to the Pennsylvania Hospital. That burden did not kill his innate kindness, and he especially aided members of his family and friends who needed help in educating their children. The man's philanthropic spirit is, of course, notably proven by the existence of Girard College, which he provided for in his will.

Successful as a merchant, Girard also pursued real estate, insurance, and banking interests. His banking activities are of especial interest. Girard strongly supported the First Bank of the United States and cooperated with those who struggled for its re-chartering in 1811. When Congress refused to continue the bank, Girard purchased its building and opened the Bank of Stephen Girard. His bank acquired such strength that it helped to maintain the financial security of the United States during the War of 1812. Upon the return of peace, Girard actively backed the establishment of the Second Bank of the United States and for a while served as one of its directors.

After Girard withdrew from the Second Bank, he concentrated on his private affairs. An accident in December 1830 enfeebled him but he still carried on as best he could. Then in December 1831 pneumonia attacked him, and he died on the day following Christmas 1831.

Girard established "Gentilhommiere" as his country estate when he was about fifty. When he purchased two parcels of land in 1797-98 in Passyunk Township for his farm, the center of the present house was standing. Probably erected near 1750, that part of the house is of brick and is two-stories high. A gable roof tops the section and a front porch protects the front door. Girard, evidently, built the east and west wings, both of which are two stories high and have stuccoed walls. The entire house makes a unified appearance, and that must be due to Girard's remodelling of the center to make it conform to the wings.

The center section is the most interesting part of the house. A handsome ground floor room, a parlor, appears to be the least changed chamber in the building. At its west end is a fireplace, which is flanked by a door on south and a cupboard in the north. The rest of the west wall is panelled.
Outside of the parlor, the building is in a poor state. The exterior of the house is losing plaster on either wing and most of the interior has been adapted to modern living.

Girard farmed with the same dedication that he engaged in business. He worked on his farm in the late afternoon and evening, setting an excellent example for his employees. A scientific approach complemented his physical labor, and he relied on his large agricultural library to guide his farming. He also used the best seed. As a result "Gentilhommière" became both a profitable and enjoyable undertaking.

Menges Mills

Location. Just south of Spring Grove, York County.

The gristmill used to be to a village what the gas station now is. Service stations are now numerous, but operating gristmills are becoming increasingly rare, especially ones dating from pre-Revolutionary days.

The gristmill at Menges Mills was erected in 1740. It is a two-story stone building that has a gable roof. The building is an unusually large one for a mill and has handsome lines. A few additions or alterations have not basically changed the building, and it looks much the same as it did when built.

The mill still grinds corn. The original mill race carries water to the waterwheel, a metal one added in the nineteenth century. Once the wheel begins to turn, it sets the grindstones in operation, grinding corn in an age-old fashion.

A sawmill is attached to the gristmill. It is a long, narrow and one-story wooden structure that stands on the millrace side of the gristmill. Constructed in 1782, the up-and-down sawmill still cuts wood.

Near the grist and sawmills is the farmhouse. It was built in 1783 and is a two-story stone building.

The Menges family owned the gristmill and house for generations. Descendants of the family recently sold the homestead to a group of men in the area who are interested in preserving the old farm. A corporation was formed, Colonial Valley, Inc., to administer the site and Menges Mills is now open to the public. The farm may be visited from April 1 to November 30; adults $1.00, children $.75.

Pennsylvania Railroad Test Block

Location. At 17th Street, Altoona, Blair County
The Pennsylvania Railroad Company laid out the original railroad yards at Altoona, Pennsylvania, in 1849, and began their construction in 1850. Eventually, the world's largest railroad repair and maintenance area came into being at Altoona. Although somewhat reduced in size today, the installation is still a vital part of one of the Nation's great railroad systems.

A little over half a century after the Altoona yards had been begun, the Pennsylvania Railroad erected the world's first locomotive test block. It was first operated in 1905 and continued in service until 1949. When in use, the test block would have a locomotive run onto it. The engine's wheels during the test would run on revolving wheels, "...which, in turn, .../had\ had\ braking equipment so that operating conditions with trains of \textit{varying} length and tonnage \textit{could} be simulated."\textsuperscript{1} The test block enabled the company to save both time and money in testing its locomotives.

The test block is housed in a brick building that is two stories high and has a gable roof. A large door at one end enabled engines to enter and move onto the test block. Huge hoods above the block drew off smoke when steam engines were tested. Various recording instruments stood at the head of the block.

The City of Altoona has considered establishing a railroad museum. Part of it would be in the Altoona yards of the Pennsylvania Railroad and the test block building would be part of the museum. So far, the museum remains only a proposal.

"Pottsgrove"

Location. West of Pottstown on U.S. 422, Montgomery County.

Just west of Pottstown, Pennsylvania, stands "Pottsgrove," a handsome eighteenth-century residence that is associated with the descendants of Thomas Potts, one of Pennsylvania's first ironmasters.

Thomas Potts, in partnership with his cousin, Thomas Rutter, established the first forge in William Penn's colony and became a leading colonial ironmaster. The two Thomas' erected Pool's Forge in 1716 on Manatawny Creek, not too far from "Pottsgrove." Two years later, the partners undertook the construction of Colebrookdale Furnace and it went into blast in 1720. That furnace continued to produce iron until a short while before the Revolution. Potts, upon the death of Rutter in 1730, became the major owner of the forge and furnace. The alliance with the Rutters continued after 1730, however, because of the numerous marriages between the two families. Thus the two clans eventually controlled not only their two original ironworks, but also Mount Pleasant Furnace and Forge, Amity Forge, and several other ironworks. Thomas Potts died in 1752, after thirty years' association with the manufacture of iron.

\textsuperscript{1}Edwin P. Alexander, The Pennsylvania Railroad, A Pictorial History (New York, 1947), 134.
“Pottsgrove,” Pottstown, Pennsylvania

N. P. S. Photo, 1964
It was Potts' son, John, who built "Pottsgrove" and laid out the town of the same name. The town is now known as Pottstown.

During the Revolution, Colonel Thomas Potts, the son of John, is supposed to have been host to George Washington while the Continental Army camped nearby for five days in September 1777. Indeed, local tradition avers that Washington installed his headquarters in "Pottsgrove" at that time. Tradition also claims that while the army lay at Valley Forge, Washington paid more than one visit to "Pottsgrove."

John Potts, after several years work, largely completed his house in 1752. It is a two-story, stone and gabled-roof building. The front is of dressed stone; the sides and back of fieldstone. The east wing of the house was burned in the 1870's and has been reconstructed. Similarly, the kitchen wing in back has been reconstructed.

Inside, most of the rooms have been restored and are furnished with period furniture. The hallway runs through the first floor, and, doors open from it to the various rooms on the ground floor. Each of the floor's four rooms has a corner fireplace. The living room is in the southwest corner and the dining room in the southeast corner. Behind the latter room is the children's room.

Upstairs, the floor plan is the same as on the ground floor. The master bedroom is in the southeast corner. Each room, as on the first floor, has a corner fireplace.

The cellar has been modernized and contains the necessary utilities and the attic is used for storage.

The house contains only one original piece of furniture, a chest on the second floor.

"Pottsgrove" is administered by the Pennsylvania Historical and Museum Commission and is open to the public. Its visiting hours follow:

Summer: 8:30 A.M. to 5:00 P.M. weekdays; 12:00 noon to 6:00 P.M. Sunday.

Winter: 8:30 A.M. to 4:30 P.M. Monday to Friday; 10:00 A.M. to 4:30 P.M. Saturday; 12:00 noon to 4:30 P.M. Sunday.

Rittenhouse Paper Mill Site

Location. Paper Mill Run, near the junction of Wissahickon Drive and Lincoln Drive, Philadelphia.

William Rittenhouse began the paper manufacturing industry in the United States in 1690 by erecting the first paper mill in the colonies.
The small mill on Paper Mill Run, Philadelphia, Pennsylvania, retained until 1710 its uniqueness as the colonies' only paper factory.

Rittenhouse apparently emigrated to America with the idea of manufacturing paper. Born in 1344 in Mühlheim-am-Ruhr, he learned how to make paper from his family. He moved to the Netherlands prior to 1678 and produced paper at Arnheim. In 1683 or early 1689 he boarded a ship for the New World and subsequently landed in New York, having brought his family with him. Because he found no printer who needed paper, he shortly moved to Philadelphia.

The new immigrant soon found in Philadelphia a printer who needed paper and some people interested in backing a paper mill. William Bradford was the printer. Robert Turner and Thomas Tresse were the investors. Those three, plus Rittenhouse, formed a company to make paper. Within a brief time, the concern had leased 20 acres for 990 years on Monoshone Creek, now Paper Mill Run. Rittenhouse began to construct the mill in September 1390. No illustration of the building is known, but it probably was a small log structure.

Richard Frame mentions the mill in a poem that he wrote in 1392. He says that "A Paper-Mill near German Town doth stand...." If he had been more specific, he would have stated that a flourishing paper mill existed close to Germantown.

The profitable character of the mill soon became evident. Bradford consumed most of the output for a number of years. A year's production totalled between 1,200 and 1,500 reams of paper, all of which--print paper, writing paper, blue and brown papers, and pasteboard--was of excellent quality. Even after Bradford had angered the authorities in Philadelphia and moved to New York, he continued to use Rittenhouse paper. He paid for it in part by sending rags to Rittenhouse.

Only a temporary halt in production occurred when rain-swollen Paper Mill Run swept the mill away either in 1700 or 1701. Even William Penn, who was in his colony on his second visit, encouraged the mill's restoration by urging people to aid Rittenhouse. The proprietor himself contributed £25. Such support aided the building of a new mill, which probably had been accomplished by early 1702. That mill seems to have been erected a little downstream from the site of the original one. Some £17.14.4 worth of material from the first factory was used in constructing the new plant.

Having founded an American industry, William Rittenhouse encouraged his son, Nicholas, to carry on the business. William had bought out his partners by 1705, purchased the mill land in 1705, and in 1705-3 gave Nicholas a three-quarter interest in the business. On William's death on February 18, 1708, Nicholas inherited the other quarter. Nicholas, already experienced in the business, easily assumed direction of the factory.
Because of the increasing demand, he subsequently erected a second mill near the standing mill, but on the other side of the creek. Nicholas remained active in the business until his death on May 24, 1734.

After Nicholas' death, his son, William continued the business in the new mill. Indeed, paper was made in it until around 1820. That building stood until 1891, when it was torn down.

Today, a plaque marks the site of the 1390 mill. The house that William and Nicholas erected in 1707, some distance downstream from the first mill, still stands. David Rittenhouse, the noted astronomer and mathematician, was born there.

Glen Burn Colliery

Location. Shamokin, Northumberland County.

The Glen Burn Colliery, Shamokin, Pennsylvania, is perhaps the last operating deep mine in the anthracite coal region around Shamokin. It is also an old mine, having been worked for about 130 years. Today, coal is mined from a vertical depth of around 700 feet.

The Susquehanna Coal Company, Nanticoke, Pennsylvania, owns the colliery. In the late 1950's, a slump in the coal market induced the concern to consider closing the mine, but a subsequent upturn in business enabled it to abandon that idea. Now, the colliery is in daily operation.

During the recession in the coal industry, several individuals in Shamokin conceived of the scheme of transforming the Glen Burn Colliery into a tourist attraction. Even the Susquehanna Coal Company, apparently, considered the plan. But the improvement of business in the 1960's caused the company to end its consideration of the idea. And as the colliery is active, the company now has no interest in creating a tourist site out of the mine. Thus the plan of the Shamokin group is dead.

Nay Aug Park

Location. Between Arthur Avenue and Roaring Brook, Scranton, Lackawanna County.

Nay Aug Park, Scranton, Pennsylvania, includes the Brooks Coal Mine, a small mine created to illustrate mining techniques for the general public. The mine was established about 1830 and consists of a horizontal tunnel cut into a rocky slope in the park. Inside the tunnel, excavating rooms show how coal mining is conducted.
OTHER SITES CONSIDERED

SOUTH CAROLINA

Piedmont Manufacturing Company

Location. Garrison Shoals, Piedmont.

Henry Pinckney Hammett was born in Greenville County in 1822 and gained valuable experience in the textile industry prior to the Civil War. He learned the business from his father-in-law, William Bates, who had worked in the Pawtucket factory of Samuel Slater before he came South and established his own mill near Greenville. Hammett was taken into partnership with Bates and remained at Batesville until the mill was sold in 1862. He then purchased Garrison Shoals on the Saluda River, but the Civil War intervened and he did not build on the site for another ten years.

In 1870 he determined to build a great cotton mill. Not only did he possess the imagination to foresee a great industry at the shoals, but events proved that he was capable of wringing the means for its construction from a war-blighted South. In April of 1873 the Piedmont Company was organized with $75,000 capital subscribed from Greenville and Charleston. The following February a charter was obtained and the capital fixed at $200,000. The Panic of 1873 halted construction, but Hammett was indomitable and in 1875 work was resumed. Operations began in 1876 with 5,000 spindles and 112 looms. The first mill was more than doubled in capacity and two others were built before Hammett's death in 1891. The Piedmont, with almost 50,000 spindles and 1,300 looms, was one of the great cotton mills of the world.

Henry Hammett emerged as an important industrial leader in the interval between the collapse after the Civil War and the industrial upsurge about 1880. Piedmont was the nursery of the industrialization in the South.

A principal idea of Hammett in building a mill was to make it of service to the poorer whites of the region. He was determined to make the community liveable, decent and orderly. His was a wise paternalism, and the village which he built became a pattern for others in the Southern Piedmont.

The Piedmont Manufacturing Company by its excellent profits refuted the widespread argument that the South should keep away from what was a Northern industry. The Piedmont not only inspired others by its successful example, but it trained and sent out many men to become superintendents and foremen of other mills. Hammett succeeded in a crucial experiment upon which, in a real sense, the mills of the South depended.
The Piedmont Mill is still in operation in the small town of Piedmont.

Charleston News and Courier Building

Location. 134 Columbus Street, Charleston.

In the years following the Civil War the South obviously faced an economic as well as a political and social reformation. Prophets of a new industrialization appeared, and material interests began to command the respect and energy politics had once received. As early as 1868, Francis W. Dawson, editor of the Charleston News and Courier declared that the disasters of war "have taught the Southern planter that he cannot live by cotton alone," and diversification of industry was needed.

Dawson made the News and Courier highly influential in the campaign to rebuild the South after the war. He was the first conspicuous figure in the post bellum movement "to bring the cotton mills to the cotton fields." He urged agricultural diversification also, particularly through the introduction of tobacco culture into his adopted State. In his advocacy of a New South of industrialization, Dawson was original, resourceful and successful. Dawson was not the orator that Henry Grady was and his attack was more direct and concentrated.

The two decades following 1880 were the most sensational in the industrial history of the South. A campaign to build cotton mills became a crusade undertaken with a spirit and zeal akin to a religious revival. Until his death in 1889, Dawson continued to fight hard for the industrial awakening of the South.

Francis W. Dawson began work in Charleston on the Charleston Mercury on November 10, 1866. A year later with two others he purchased the Charleston News. Acquiring the much older Courier in April, 1873, they combined the two papers as the News and Courier, of which Dawson became editor.

From 1873-1923 the News and Courier was published at 19 Broad Street. The paper moved to 134 Meeting Street in 1923 and was published at that location for twelve years. This building still stands and houses business offices. In 1940 a modern publishing plant was completed on Columbus Street.

Bennett's Rice Mill

Location. Near the eastern end of Wentworth Street on Cooper River Waterfront, Charleston.
Intensive rice cultivation was begun in South Carolina very early in the eighteenth century. The growing and export of rice offered one of the best opportunities for profit which eighteenth century America afforded. After a temporary decline following the American Revolution, the industry was revived, and by the time of the Civil War it was the basis of a wealthy aristocracy of a few hundred planters along the coast of South Carolina and in the adjoining areas of North Carolina and Georgia.

Rice milling was done on the plantations until the introduction of steam mills about 1820. Milling was then done in the towns. In the ante bellum period, the Carolina planters began to process their rice at mills in Charleston. They also developed "Carolina Gold Rice," which was superior both to the oriental and the Mediterranean rice. Bennett's Rice Mill was constructed in 1844 by Governor Thomas Bennett. It was operated by steam and was one of three great rice mills in Charleston serving the Carolina Low Country.

During the Civil War many of the rice plantations were ruined. Rice culture on the Atlantic seaboard never fully recovered, partly because of the competition of rice lands in Louisiana, Arkansas, and Texas. A series of tropical storms, especially the great one in 1906, destroyed surviving rice plantations. The last commercial crop planted in 1911 was totally destroyed by a hurricane.

After Bennett's Rice Mill ceased operation, the building was converted to use as a peanut mill. In the late summer of 1938 the mill roof was torn off by a tornado. Estimated repairs were so great that the owners considered demolishing the building. Preservation groups succeeded in a campaign to save it and, with minimum repairs, it was converted to office and storage use.

Preservation groups have on subsequent occasions worked to preserve the mill. In 1958 it was condemned as unsafe and a fire hazard. All interior woodwork was ripped out and the walls stabilized by means of steel girders. The Historic Charleston Foundation leases it annually from the State Ports Authority, which now owns it. Charleston's other two surviving rice mills have been modified for non-industrial uses.

Bennett's Mill is one of the earliest examples of an American building designed expressly for industrial use. It is 19th century Georgian-Colonial; the name of the architect is not known. An architectural historian has said that the unknown architect did not simply express its purpose behind a screen of copied details. Somehow, he breathed a glamor of romance over a structure built for storage, mechanical power and production. The brick structure is monumental in design and resembles a handsome residence or public building.

Charleston Public Market

Location. Market Street from Meeting to East Bay Street.

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Charles Cotesworth Pinckney and others deeded this site to the City in 1788 for use as a public market. Market Hall, facing onto Meeting Street, is a two-story stuccoed building in a Roman Doric style which was built in 1841. It was leased by the United Daughters of the Confederacy in 1903 and serves as a small museum exhibiting rare Confederate relics.

Behind the hall six blocks of market sheds extend eastward to East Bay Street. The present sheds, which were erected in 1841, are the second city market. Although it long ago lost its importance as a place for the sale of fresh foods, the market is still used to a degree to sell produce from the country. Enclosed areas housing such activities as small sandwich shops occupy the sheds immediately behind the Market Hall. Produce from nearby farms is sold at stalls in the remaining sheds.

Both the hall and market sheds were severely damaged by a tornado in 1938. Repairs were made and the market continues in use.
Other Sites Considered

Tennessee

Appalachian Marble Company Quarry

Location. Asbury Road, Knoxville.

Two Tennessee Counties, Hawkins and Knox, have been the center of Tennessee marble production. Hawkins was the county of original production with the industry there dating from the 1830's. The first systematic effort to develop the marble industry in the State came with the formation of the Rogersville Marble Company in 1838. The company quarry was located about seven miles north of Rogersville and operated for several years. Hawkins County marble came to the attention of building committees in Washington and was selected for finishing material in the National Capitol. The marble was transported by river to Chattanooga and then by rail to Washington.

In the late nineteenth century the quarrying center shifted to Knox County. On Asbury Road the Appalachian Marble Company has one of the largest marble quarries in East Tennessee. This quarry was opened in 1839 by the Federal Government to provide material for the old Knoxville Post Office and Custom House.

The Appalachian Marble Company was established in 1910 and is still owned by the founding family. Marble quarried and finished by this company is shipped to all parts of the United States and many foreign countries. In addition to their polished marbles the company produced a variety of by-products such as terrazzo chips, agricultural lime, and calcium products for use in paper and glass manufacture. The company has opened a newer quarry in the Bluegrass section of Knoxville, but continues to operate its Asbury Quarry.
OTHER SITES CONSIDERED

VIRGINIA

Mathieson Alkali Works

Location. Saltville, Smyth County.

Colonel James Patton in 1748 led a party to explore and survey the land around the present Saltville and as far west as Kentucky. One of the party, Charles Campbell was granted 330 acres in the lower end of the Saltville Valley in 1753.

Campbell heirs undertook to develop the salt properties around the Salt Lick on the land. In 1781 Arthur Campbell, an executor of General Campbell's estate, began this development. General William Russell, who had married General Campbell's widow, moved to the Salt Lick in 1788 and undertook further development. He sank a well on the edge of the flat and built a furnace and salt houses. In 1790 Colonel Thomas Madison, newly-appointed guardian of the Campbell heiress, came to the Salt Lick, built a log cabin and further expanded the salt making operations. Three years later Sarah Campbell married General Francis Preston. General Preston built an addition to the log cabin in 1795 and two years later retired from Congress to settle at Salt Lick with his family.

Competition entered the area in 1795 when William King acquired land that had been patented several years earlier at the upper end of the valley. Both the Preston and King lands were operated under a number of arrangements by a variety of lessees throughout the first half of the nineteenth century.

During the Civil War Saltville was the main source of the supply of salt for the Confederacy. Forts were dug on the tops of the hills surrounding the valley and breastworks for riflemen were thrown up on both the outer and inner slopes of these hills below the forts. A small garrison was kept at Saltville most of the time and a number of efforts were made by Union troops to capture the place. Finally, in December 1864 General Stoneman captured Saltville and destroyed the salt works.

In 1863 George W. Palmer and William A. Stuart purchased the Preston estate and in 1864 a corporation under the name of the Holston Salt and Plaster Company acquired title to both the King and Preston estates. This company operated the salt works until 1893 when the property was acquired by the Mathieson Alkali Works.

Mathieson was interested in utilizing the vast salt deposits of Saltville in combination with abundant limestone in the immediate area to establish a supply of soda ash and bleaching powder. In 1892 construction
began on the first plant of Mathieson Alkali Works, and three years later the first commercial shipments of soda ash left Saltville. Shortly after the original plant had been in operation it was realized that its English equipment was inadequate to compete with other American manufacturers of soda ash. Over a period of several years, therefore, the plant was virtually remodeled and rebuilt.

The Saltville Works is one of the parent plants of the present-day Olin Mathieson Chemical Corporation. Utilizing the salt and limestone from the surrounding area, the plant today produces a variety of basic chemicals used by other industries in manufacturing a wide range of consumer products. The following basic chemicals are produced by the Saltville Works: liquid CO₂, dry ice, P.H.⁺(R), Purite + (R), caustic soda, bicarb, dense soda ash, light soda ash, liquified chlorine, and hydrazine.

The physical plant has undergone many changes through the years. A hydrazine plant built in 1961 to furnish fuel for space vehicles, for example, bears little resemblance to earlier plants. However, the basic resources of the area, salt and limestone, are still utilized. One small, unused brick building on West Main Street near the edge of town provides a physical link with the early days of salt making. The Holston Salt and Plaster Company used it as an office after the Civil War. For some years it was a store building. It is now unused and in poor condition.

**Tredegar Iron Works**

**Location.** South end of 6th Street between the Canal and the James River, Richmond.

In the 1830's when the entire country was alive with schemes for building the new steam railroads a number of men saw the possibility of making Richmond an iron center. In 1835, just a few years after iron was first puddled and rolled in Pittsburgh, the rolls of the Belle Isle Manufacturing Company began work just above the falls of the James River. In the next year the Tredegar rolling mill began production of bar rails, which were then in great demand. A machine shop and foundry were soon organized in Richmond. One of Tredegar's organizers began a movement to unite his mill and forge with the foundry of the Virginia Foundry Company. Stock sold well and in January 1838 the Tredegar Iron Company began its career.

The organizers of the Tredegar Company saw the opportunity for the development of the iron industry in Virginia, but were unable to bring it to full realization. Joseph Reid Anderson, as agent for the Company from March 1841 to November 1843, boldly entered the Northern markets and competed successfully with English and other American iron masters. His success rescued the Tredegar and put it on the way to realizing its potential. From 1843 until 1848, Anderson leased the works; after January 1848 he became owner of the Tredegar Works. Tredegar became an immediate financial success under Anderson's leadership and Tredegar iron was widely recognized as one of the leading American Charcoal irons.
The Tredegar Works supplied the Federal Government with a wide range of arms and munitions before 1860. After 1850 Tredegar increasingly found its markets in the South. Southern railroads began a rapid expansion, and Tredegar built locomotives and other railroad necessities. By 1830 Tredegar Works had expanded to two rolling mills supplying Southern railroads; in separate foundries cannon, car wheels, and iron piping were cast; a blacksmith shop had a steam hammer and twenty five fires; in the locomotive shops engines were under construction; also constructed were marine, stationary, portable, and hoisting engines, sawmills and sugar mills. The machinery was of the latest design.

Five days before South Carolina seceded, Anderson sent a circular letter to the Governors of ten Southern States offering them his foundry and twenty years of experience. Tredegar soon began supplying cannon and munitions to Southern States. In March of 1861 Anderson signed the first of many contracts with the Confederate government. Tredegar played a vital role in establishing by 1863 a line of ordnance works from Richmond to Alabama. Until the shops at Selma, Alabama, began to produce cannon in 1863, Tredegar cast practically all the heavy guns made in the Confederacy. Between April 1861 and 1865 it had supplied nearly 1100 cannon to the Confederacy. Tredegar also served as a laboratory for Confederate military and naval experiment, and a reservoir of munitions. Throughout the war the Tredegar Works never stopped furnishing supplies to the railroads and to a number of private customers, most of whom were engaged in government work. Tredegar made the defense of Richmond mandatory.

An especially dramatic job of these works in the first year of the war was the creation of one of the first American iron plated vessels to go into action. Tredegar made the plates for the Merrimac and four of the vessel's ten guns were Brooke rifled guns which were also cast at the Tredegar.

The mills ceased to run on April 3, 1865, but the Tredegar Works were not destroyed when Richmond was evacuated. The plant was confiscated by the Federal Government after the war, but was soon released. In 1867 General Anderson reorganized the corporation as the Tredegar Company. The new company played a significant role in rebuilding the South. Anderson continued to direct it until his death in 1892.

In 1957 operations were discontinued on the original site and resumed in Chesterfield County. The Richmond site was bought and is now owned by the Albemarle Paper Company.

The general impression on entering the plant area is one of destruction and disuse. Fire has seriously damaged several of the buildings. While a large number of the old brick buildings and sheds still stand, their condition is generally very poor. Most are used for storage of scrap paper.

The brick building which was the main office building for Tredegar still stands. It was marked by the Confederate Memorial Literary Society in
1910. The Research and Development Division of the Albemarle Paper Company uses it today. A large modern wing was added to the rear for their use.

Newport News Shipbuilding and Dry Dock Company

Location. The plant extends for 1 ½ miles along the James River in Newport News and covers 250 acres.

The Newport News Shipyard is one of the largest shipyards in the world and has the capacity to build any size nuclear or conventionally powered surface vessel or submarine. The company has built over 400 ships. The first was a 90-foot tug in 1890; in 1960 the nuclear-powered aircraft carrier Enterprise, then the world’s largest ship, was launched.

Colis P. Huntington established the company in 1886 as the Chesapeake Dry Dock and Construction Company. The official opening of the first dry dock was held in April, 1889, and soon afterwards it was decided to add shipbuilding on a large scale to the repair work. The first work comparable to shipbuilding was the rebuilding of the former British steamer Kimberly. This job required work in practically all shipbuilding trades and furnished the start of the organization and training of a shipbuilding force. The first two shipbuilding contracts were for two tugs in 1890. The yard was awarded its first naval contracts in 1893.

There were heavy losses on most of the early contracts that undoubtedly would have put the new shipyard out of business had it not had the financial resources of Huntington behind it. After Huntington’s death in 1900, the yard began to build ships at a profit. The famous battleships Kearsarge, Kentucky, Illinois, and Missouri were built profitably and were among the seven Newport News-built ships of the Great White Fleet of 1907. Admiral Dewey remarked in 1903 when inspecting the Missouri that everybody in Washington—from the President on down—looked upon the Newport News Yard almost exclusively for building warships.

From 1904 until the beginning of war in Europe in 1914, the Shipyard continued to expand and became less dependent on Naval construction in its operation. With the outbreak of war an extensive program of plant expansion began. In the years after the war the company diversified its activities much more widely, but shipbuilding remained its primary function.

Even before the attack on Pearl Harbor in 1941, the Shipyard was already heavily engaged in Naval construction. During the actual war period it delivered forty-six ships to the Navy. Altogether a total of 165 Newport News-built ships participated in World War II.

The wide range of present-day facilities, as to function, type and capacity, make the Newport News Shipyard not only the most fully integrated shipyard in the world but also a highly diversified industrial plant.
Administration Building, Newport News Shipbuilding and Drydock Co., Virginia

N. P. S. Photo, 1965
Foundries, machine shops and fabricating equipment are available for the production of many items of heavy industrial equipment, such as hydraulic turbines, paper making machinery and many others.

Several of the original beam sheds of wooden construction are still in use in the yard as are blacksmith shops and other structures. The original brick administration building, which was completed in 1890, still houses offices. Two additions have been added to the west. The first addition duplicates the original; the second is a very large building of modern design. The older administration buildings are three stories in height. Their first floor is below street level and a bridge from the street provides entry at the second level.

Chiswell Lead Mine

Location. Austinville, Wythe County

The lead mines along the New River in southwestern Virginia were first developed by Colonel John Chiswell, who discovered deposits there in 1753. By the end of the eighteenth century numerous small industrial developments, including lead and zinc mines, furnaces and forges had been developed in the area, which became particularly important during the Revolution. The Lead Mines, as the area came to be known, and Fort Chiswell nearby were garrisoned for the protection of the mines.

In 1784 Moses Austin established a branch of the Philadelphia dry goods business with which he and his brother were associated in Richmond, Virginia, under the name of Moses Austin & Company. By 1789 the Richmond firm had acquired the Chiswell lead mines, and Moses Austin soon moved to the mines.

There is no authentic history of these mines, though they are known to have been an important asset to the patriot cause during the Revolution. There are no figures for their output either before or after the Austins operated them. A reference to the accumulation of slag, which they were resmelting in 1801, indicates that the output was large. Stephen Austin wrote then that sufficient slag remained for your children and grandchildren. The Austins worked the mines with slave labor and cultivated adjacent farms to provide the necessary food.

During the winter of 1796-97 Moses Austin made a reconnaissance of the lead fields in southeastern Missouri and concluded that the mineral there was plentiful and of a better quality. He formed a partnership with two local officials and received a grant of land. Austin then moved to Missouri and developed extensive holdings there.

The lead mines at Chiswell are still worked today and are owned now by the New Jersey Zinc Mines.
Falling Creek Ironworks

Location. About one-half a mile from the Point where the Richmond-Petersburg Turnpike crosses Falling Creek eastward to the James River, Chesterfield County.

Iron mining began in Virginia as early as 1608 and the first full-scale ironworks in English America began operation no later than 1619. The surviving manuscript material on this ironworks is fairly meager. Recently, however, metallurgists using specimens of iron unearthed at the site have added considerably to the information about the early furnaces and operations there. This information in conjunction with the documentary history seems to establish the basic facts regarding the Falling Creek Ironworks.

The initial surviving Virginia Company entry of the activity that produced the first iron manufacturing plant is dated 1619 and notes under the entry, Iron, that 150 persons are sent to set up three iron works since proof had been made of the extraordinary goodness of that iron. This was a project to which the people were directed "principally to apply."

Captain Blewett led a company of 80 very able workmen with all manner of provisions for setting up an iron work in Virginia. The death of Blewett shortly after his arrival, however, handicapped the work seriously. Still there had been progress in the selection of a site and additional money was soon to come from the company.

From contemporary records, it appears likely that the Blewett party of 80 workmen reached Virginia first and that the 150 mentioned as sent in 1619 were actually those who arrived in the spring of 1620. These would have been reinforcements and replacements although it is possible that they may not have been so intended initially.

Subsequent entries in the records of the Virginia Company speak of the 150 workmen who were sent to set up three ironworks and of masters being sent over for these works. When these chief men died at sea, three replacements were sent in 1620. In that year it was also reported as an achievement that the ironworks were "in some good forwardnesse, and a proofe is sent of Iron there made." Thus the works had reached the point of production by 1620.

In 1621 John Berkeley was sent to Virginia with a group of workmen; the workmen specified clearly show that the integrated operation with which he would be associated included a blast furnace, a refinery forge, and a chafery.

The number of iron projects reported as being underway has been a matter of some concern to writers. As already mentioned the initial reference was to three ironworks, yet the records tend to support a single major enterprise and a single site. If we accept the considered opinions of historians and the thrice repeated statement in the Company records that an integrated
iron center, with its three components of blast furnace, "finery" and "chafery," was the objective, then the explanation becomes relatively simple. This is very definitely indicated by later developments and further substantiated by site findings. This would account for the Blewett project which the reinforcements of 1620 continued.

It was to the Falling Creek site that Berkeley took his men. It was described as 'The falling Creeke.' Berkeley went right to work on arrival. Company records note that Berkeley's letters assured them that by the spring of 1622, they might rely on iron made by him. The words "made by him" are significant since iron made at Falling Creek by others had been sent to England as early as August or September 1620.

Without warning the great Virginia Indian Massacre struck on March 22, 1622. The devastation hit the iron making community on Falling Creek particularly hard. The destruction there was complete and the project was ended in sudden death and wreckage. The ironworks were demolished, the machinery broken and the tools dispersed. It is said that the Indians dumped much of the wreckage into the river. The Virginia Company at first determined to rebuild the ironworks, but this proved to be impossible. Bitter controversy revolving around the entire Virginia Company operation led to the dissolution of the Company itself in 1624. A further explanation for the failure to rebuild the Falling Creek works is suggested by a report of the Governor, Council, and Assembly in 1623. This report to the Crown noted that until the massacre iron and glass works were in great forwardness, but are now interrupted, and the people are forced to grow tobacco to enable them to sustain their continued wars with the Indians, and to support themselves.

In 1957 a quantity of material taken from the Falling Creek site was deposited with the Virginia Historical Society. Unlike materials found much earlier at the site, this was supported by affidavits, analyses, and documentation. This material, taken with the documentary record, allows some very definite and positive conclusions.

The chemical and metallurgical tests made on these objects and workings found on the site, for example, show that both cast iron and wrought iron of the necessary early types were made at Falling Creek. It is well established that cast iron can come only from a blast furnace.

The discovery of these artifacts was rather accidental. In the fall of 1955 the owner of the area undertook some construction operations. A bull dozer digging in the area uncovered, in addition to artifacts, part of a furnace. This was covered over for protection and its location noted. The owner stated at that time that he had uncovered other ruins as early as 1925, some of which he believed to be the remains of the 1619 ironworks. The various findings along Falling Creek in 1925 were examined by others and received considerable newspaper publicity at the time.
In summary, the observed and noted findings on the site include:
(1) the walls and foundations of an iron works some ten feet below the present ground surface, (2) a sizeable charcoal pit containing a large amount of charcoal, (3) a considerable quantity of iron relics, (4) a circular stove construction believed to be part of a blast furnace, (5) abundant samples of both cast iron and wrought iron, (6) large quantities of slag, and (7) the remains of an old pier or wharf. In 1955 well over a ton of material was removed. One of the most interesting of the relics was an iron-coated triangular stone which was of the type used to block the top hole of a blast furnace until the liquid iron was ready to flow.

The analyses of the specimens prove the existence of the Falling Creek site of both wrought and cast iron, as we have seen. Further evidence yielded by the specimens tested definitely shows that they were of the Falling Creek period of production.

Documentary evidence and scientific analysis of specimens from the site thus support an impressive priority list for the Falling Creek Iron-works: (1) the operation of the first integrated ironworks in English America, (2) the construction and operation of (a) the first blast furnace and (b) the first refinery forge in the same area, and, (3) the production of the (a) first cast iron by the English in the New World as well as (b) the refinement of the first wrought iron from cast iron.¹

In 1963 the State Archaeologist of Virginia undertook an excavation to define the area of the ruins of the ironworks. The site owner planned large-scale residential and commercial construction in the area, but would protect the ironworks site if it could be given a specific location. These excavations led to the elimination of the creek bottom and localized the site of the ruins to an approximate area with a 100 foot radius. This area was covered to a depth of about 1\(\frac{1}{2}\) feet with slag. A sampling of artifacts was taken. The excavation did not uncover the ruins of the blast furnace, but an auxiliary furnace—a chafery—was located. The State Archaeologist expressed the belief that the ruins of the blast furnace lie beneath a road in the area. This road will remain for several years and offer protection. When the road is removed it is hoped that the furnace can be located. The owner plans to develop the site as a landscaped playground in such a way as to protect it.

Washington's Grist Mill

Location. On Virginia Route 235 near its intersection with U.S. 1 north of Woodbridge in Fairfax County.

In 1735 Augustine Washington moved his family from his Bridges Creek plantation to Epsewasson, the estate on the Potomac later called Mount Vernon. Augustine lived here from 1735 to 1739 and during this period he built the mill on Dogue Run.

George Washington came into possession of the mill in 1752. He ran the mill rather regularly and made excellent flour according to records. In a letter dated September 6, 1783, Washington described the mill and its operation. He wrote that he employed two pairs of stone in the merchant business. The mill house was of stone, large and commodious; the miller's house was within thirty yards and had an enclosed garden adjoining. A cooper's shop was also nearby, and there was a wharf across from the mill where flatboats and small schooners were loaded with flour. Corn and other grains were ground as well as wheat. Washington's Mill did much grinding for the neighborhood and exacted a toll of one-eighth.

The Dogue Run Mill continued to run for many years after Washington's death. It gradually deteriorated, but was still in existence shortly before the Civil War. The stone was taken away for other buildings until only the foundation remained. The millrace and millpond filled up until there was little surface indication of the mill remaining.

As plans began to develop for the Washington Bi-Centennial Celebration, the State of Virginia purchased the Dogue Run property and began a careful research project leading to the restoration of Washington's Mill. Careful documentary research was made utilizing all of Washington's papers that were available. After other sources of information were exhausted, excavations of the mill site were made and a number of very helpful discoveries resulted. The excavations also recovered many artifacts. The mill and the miller's cottage were restored over a period from 1932 to the early 1940's.

The mill is a four-story stone structure built against a bank so that ground level entrances were made on both the first and second floors. A sixteen-foot diameter pitch-back or breast-type waterwheel is located within the building. The headrace enters the upper ground level and the tailrace leaves the building through an arched opening at the lower ground level. The two pairs of stones are on the second floor.

The reconstructed miller's cottage is now used as a caretaker's house. The cooper's shop was not rebuilt. A cooper's tools and examples of his work are exhibited on the third floor of the mill.
Beverly Mill

Location. On U.S. 55 just east of Thoroughfare Gap, approximately five miles west of the junction of U.S. 55 with 15.

Beverly Mill was erected in the mid-eighteenth century by Jonathan Chapman on lands he had purchased in 1742 along Broad Run in the Thoroughfare Gap of the Bull Run Mountains. The Chapman family owned the mill for seven generations.

In colonial America the miller frequently became one of the wealthiest and most influential men in the community. The son of one of the Chapman millers, Dr. Nathaniel Chapman, was the first president of the American Medical Association; another family member was the artist, John Gadsby Chapman. Nathaniel Chapman, the second generation owner, was a charter member of the Ohio Company and ventured into iron making in Maryland and Virginia. Nathaniel served as executor of the estates of Augustine and Lawrence Washington; his daughter married Samuel Washington, brother of George Washington.

Broad Run, the source of power for the mill, flows with an 87-foot waterfall through Thoroughfare Gap. It provided sufficient water power to enable the Chapmans and others to grind approximately 100,000 bushels of grain annually.

The original mill was considerably enlarged in 1757-58. A hundred years later the mill was remodelled and its stone walls were raised two floors. This is the six story building which is still standing. In the 1870's the mill was acquired by the Beverly family.

Beverly Mill continued in use until 1950. This large stone building is now vacant. Although it shows many signs of a lack of maintenance, such as missing windows and a rotting wooden lean-to, the mill has a good tin roof and appears to be structurally sound. A large crack in the southern wall has been pulled together by tie-rods. Water is no longer turned into the millrace; the large metal overshot wheel is still in place, but badly rusted.
Beverly Mill, Thoroughfare Gap, Virginia

N. P. S. Photo, 1965
OTHER SITES CONSIDERED

WEST VIRGINIA

Dickinson Salt Works

Location. Malden, on the banks of the Kanawha River.

Malden was the center of an extensive salt industry during the first half of the nineteenth century. The salt came from springs known to early settlers as the Big Buffalo Licks, near the mouth of Campbell's Creek just west of Malden.

In 1794 Joseph Ruffner bought over five hundred acres around the springs, but leased the springs. About 1806 the Ruffner brothers, Joseph and David, began to refine salt on a large scale and put salt making on a paying basis. By 1814, a number of furnaces dotted the valley on both sides of the river, and Malden boomed. A stretch six and one-half miles long, the "Salines," was given over to salt making. Kanawha salt came into general use throughout a large section of the Ohio Valley.

The substitution of coal for wood as fuel for the furnaces increased production. From a small beginning in 1808, production had increased to more than 600,000 bushels annually in 1814. Two thousand to 2,500 persons were employed in the building and operating of boats, digging coal, making barrels and in the numerous other services necessary to keeping the various salt making establishments in operation.

Cutthroat competition among the salt makers, a limited market and no protection from outside importations threatened the future of the industry. To resolve their difficulties, in 1817, producers pooled their interests in a trust which was to become operative as of January 1, 1818. This was one of America's first trusts.

Further difficulties threatened in the 1850's with the opening of salt wells in the Ohio Valley, where the brines were stronger and the costs of operation less. Salt makers turned to the exploitation of coal, timber, oil, and gas in the valley. After the Civil War, salt makers attempted to resume operations, but found that producers in other fields had captured the market. By the late nineteenth century, all but one of the furnaces, the Dickinson Salt Works, had closed down.

The Dickinson Salt Works continued to produce salt into the 1940's. In later years the salt was produced with only a marginal profit, but the family continued the business. In 1945 a crippling fire devastated the works and the production of salt came to an end. Most of the existing plant was destroyed. The company continues, however, to produce bromides.
OTHER SITES CONSIDERED

WISCONSIN

Tower Hill State Park, Wisconsin

Location. Near Green Spring, Iowa County

Tower Hill State Park, Iowa County, Wisconsin, includes an unusual kind of shot tower. Instead of being a tall, chimney-like structure, the shot tower in the Park is a 120-foot hole bored through a rock cliff on the south bank of the Wisconsin River. Nature supplied the height, man the hole.

The shot tower was erected by a group of Detroit businessmen. In establishing a shot factory, they selected the site on the sandstone bluff on the Wisconsin River and had the shaft bored in 1831. Drilled by hand, the shaft dropped for 120 feet below the top of the bluff and then extended horizontally for about ninety feet. The top of the bluff also held buildings in which the lead was smelted, while at the bottom stood structures in which the shot was graded, polished, and packaged.

The plant operated for about thirty years. Waggoners carried lead from nearby mines to the top of the bluff. There it was melted and dropped through sieve-like ladles. Upon passing through the ladles, the molten metal fell the distance of the vertical shaft and landed as spherical balls in cold water. Then the shot was polished and prepared for shipping, most of it being carried to Green Bay and then shipped to the East. Some of the factory's buildings were torn down by militia in 1832 during the Black Hawk War in order to make rafts to cross the river. Nevertheless, the shot factory recovered from that loss and produced shot until May, 1861. The increasing scarcity of lead caused the plant's demise. With production stopped, the plant's machinery was sold and the buildings were demolished.

Today, only the shaft remains. The top of the bluff is bare of buildings. Situated in a state park, the shot tower is an interesting inheritance from Wisconsin's early industrial history.
Cornish Miners' Houses, Wisconsin

**Location:** Shake Rag Street, Mineral Point, Iowa County

Several attractive stone houses on Shake Rag Street, as well as elsewhere in Mineral Point, Wisconsin, attest to the impact of the boom in lead mining in Wisconsin in the 1830's and 1840's. They were built by immigrant miners from Cornwall, England, who had been attracted to Mineral Point because of the opportunities in lead mining.

Many years of mining lead preceded the sudden expansion of the industry in Mineral Point. Indians, for long decades before the arrival of the white man, had used surface deposits of the mineral. The white man resumed mining in the area early in the nineteenth century. But the first three settlers of what is now Mineral Point appeared only in 1827, just about a year before extremely rich lead deposits were found at Mineral Point. Reports about that discovery spread with rapidity, and by 1829 several small smelters were in operation.

News of the successful exploitation of the lead deposits in the Mineral Point region soon reached Cornwall, England, and induced many to emigrate. Cornish miners had dug for tin for years, but the tin mines had almost been depleted by the early 1800's. Thus tales of the Wisconsin strike arrived at an opportune moment. Beginning about 1830, a large number of Cornish families left England for the lead district in the Wisconsin Territory. Some 7,000 people from Cornwall settled there between 1830 and 1850, with the largest number arriving before 1835. The men quickly proved their mining ability. Especially adept at hard-rock mining, the Cornish diggers displayed an amazing knowledge concerning lead bearing rock formations and exhibited an unusual skill with blasting powder. As a result, they transformed abandoned surface mines into profitable deep mines.

The Cornish, as well as the other miners in Mineral Point, enjoyed their most prosperous years prior to 1847. Then mining began to decline. Subsequently, the lure of California gold drew many miners away from Mineral Point. Lead mining in the district revived somewhat in the Civil War, but its most profitable era was over.

Despite the demise of mining at Mineral Point, the Cornish settlers left a tangible reminder of their presence in the houses they had built for themselves. Those buildings duplicated the homes the miners had lived in in Cornwall. Built of stone, the houses usually had a parlor and dining-kitchen room, and perhaps a bedroom, on the first floor. There could also be a summer kitchen in a rear addition. Upstairs was a children's bedroom. The stone walls were about two-feet thick, which added to the houses' snugness in winter and coolness in summer.
"Pendarvis House" (Left) and Trelawny" (Right), Mineral Point, Wisconsin
N. P. S. Photo, 1965
Some of the State of Wisconsin's finest stonework is in several of the restored miners' homes. A restoration movement began in 1935 and it has resulted in the preservation of a number of the homes. Two excellent examples are on Shake Rag Street, "Trelawny" and "Pendarvis House," both built around 1830. The latter is a one-story and gable-roofed building that has a dressed limestone front. The front door is in the center of the facade and a window is on either side of it. "Trelawny" has two stories, a gable roof and a dressed limestone front. The interiors of both houses have been restored and furnished as of the proper period.