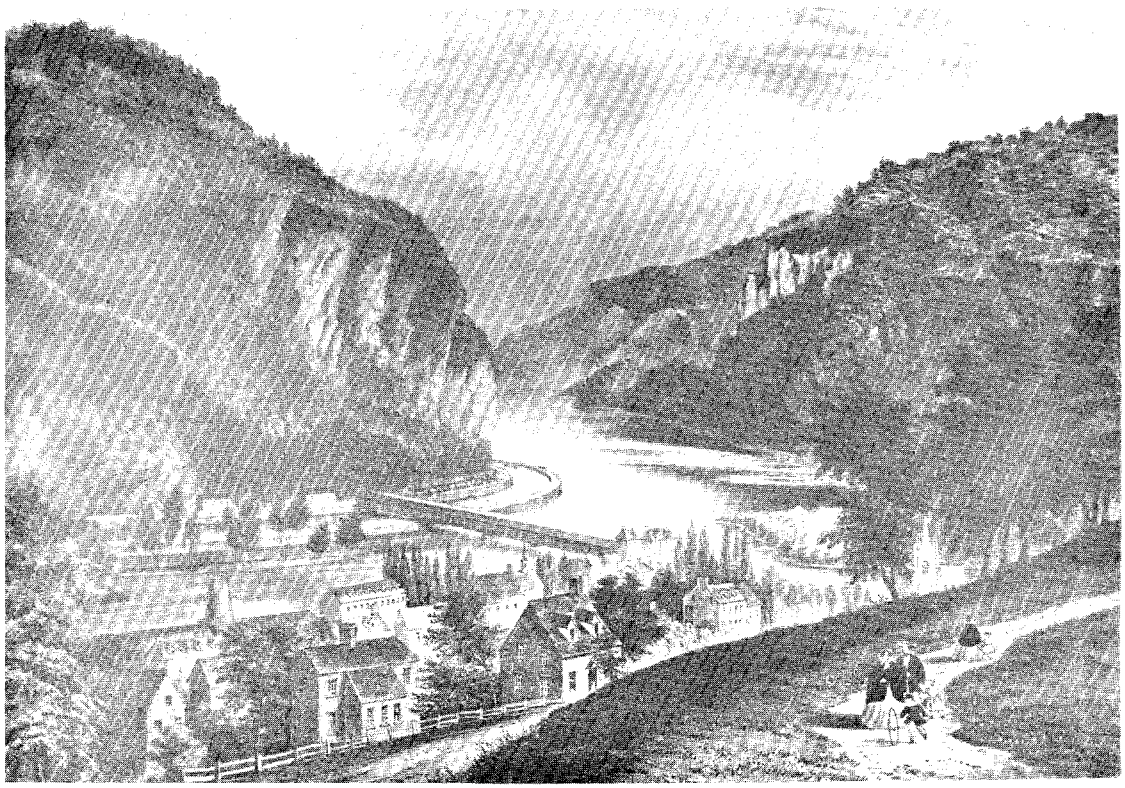
Travel and Communication



National Survey of
Historic Sites and Buildings

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The National Survey of Historic Sites and Buildings

Theme XVIII

Travel and Communication

1963

United States Department of the Interior
Stewart L. Udall, Secretary

National Park Service
Conrad L. Wirth, Director

(a.2)

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Preface

The National Survey of Historic Sites and Buildings is a resumption of the Historic Sites Survey begun in 1937, under the authority of the Historic Sites Act of 1935. During World War II, and the emergency following, it was necessary to suspend these studies. The Survey has now been resumed as part of the National Park Service MISSION 66 Program.

The purpose of the Survey, as outlined in the Historic Sites Act, is to "make a survey of historic and archeologic sites, buildings, and objects for the purpose of determining which possess exceptional value as commemorating or illustrating the history of the United States." In carrying out this basic directive, each site and building considered in the Survey is evaluated in terms of the Criteria for Classification, which are listed in the appendix of this report.

When completed the Survey will make recommendations to the Director of the National Park Service and the Secretary of the Interior as to the sites of "exceptional value." This will assist the National Park Service in preparing the National Recreation Plan, including sites which may be administered by the National Park Service to fill in gaps in the historical and archeological representation within the National Park System. It will also recommend and encourage programs of historical and archeological preservation being carried out by state and local agencies.

This study is a joint product. Historian Charles W. Snell, Western Region, San Francisco, wrote the historical narrative and coordinated the theme study. Historians Ray H. Mattison, Midwest Region, Omaha; William Brown, Southwest Region, Santa Fe; Horace J. Sheely, Jr., Southeast Region, Richmond; and S. Sydney Bradford, Northeast Region, Philadelphia, contributed the material on the individual sites in their respective regions that appears in this study.

After completion, the study was presented to the Consulting Committee for the National Survey of Historic Sites and Buildings. The Committee consists of Dr. Waldo G. Leland, Director of the American Council of Learned Societies; Dr. S. K. Stevens, Executive Director of the Pennsylvania Historical and Museum Commission; Dr. Louis B. Wright, Director Folger-Shakespearean Library; Mr. Earl H. Reed, Chairman Emeritus American Institute of Architects; Dr. Richard H. Howland, Head Curator, Civil History, Smithsonian Institution; Mr. Eric Gugler, Member Board of Directors, American Scenic and Historical Preservation Society; Dr. J. O. Brew, Peabody Museum of Archeology, Harvard University; Mr. Frederick Johnson, Curator, Robert S. Peabody Foundation for American Archeology, Phillips Academy; Mr. Robert R. Garvey, Jr., Executive Director of the National Trust for Historic Preservation; and Dr. Ralph H. Gabriel, Sterling Professor of History Emeritus, Yale University, and Professor of American Studies, American University.

The over-all Survey, as well as the theme study which follows, is under the general direction of John O. Littleton, Chief, National Survey of Historic Sites and Buildings, who works under the general supervision of Herbert E. Kahler, Chief, Division of History and Archeology, of the National Park Service.

Conrad L. Wirth
Director

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I

Travel and Communication in the Colonial Era (1600-1783)

The most important means of travel and communication in the British Colonies of North America in the seventeenth and eighteenth centuries was by water. Indeed, the lifeline of the thin strip of settlement that stretched along the East Coast was the Atlantic Ocean which gave the colonists access to Europe. Thus while the English colonies could probably have existed on a primitive and simple economic level without a foreign trade, the high degree of comfort and material development that was achieved so rapidly in this period was due to the development of a large foreign commerce that enabled the colonies to specialize in the products most suited to their particular resources. With the development of this foreign trade, their natural resources were quickly exploited and shipped abroad in cruide or semimanufactured form to be exchanged for the manufactured goods of Great Britain and Europe.

The mercantilist policy adopted by Great Britain included the American colonies within the British colonial empire and granted the colonists the same economic privileges as possessed by Englishmen in the great market thus created. Encouraged by the British Navigation Acts (1650-1733) and protected by the British navy from the competition of the Dutch, French, and Spanish empires, the Americans rapidly constructed a merchant marine to carry on a foreign trade. The cities of Baltimore, Boston, Charleston, New York, and Philadelphia were built upon this foreign commerce.

While the southern colonies had an important foreign commerce, they relied upon vessels from England or other colonies to transport their products. It was the northern colonies that built and owned the merchant marine that carried much of the colonial commerce. The first large ship built in the English colonies, the 30-ton sloop, Blessing of the Bay, was launched in 1631 on the Mystic River near Boston.

The resources of the American Colonies encouraged shipbuilding. Magnificent forests abutted on the ocean's edge. Here were readily available the white oak used for planking of the lower parts of the vessels, and the white pine that formed the decks and superstructures, as well as the timber needed for spars, yards, bowsprites, and masts. Manufactured ironwork, cordage and sailcloth were largely imported during this period.

Soon after the establishment of the Massachusetts Bay Colony skilled English shipwrights emigrated to New England; consequently the standards of colonial shipbuilding were high. The golden age of colonial shipbuilding was the first half of the eighteenth century. So low were the prices per ton that New England-built vessels were sold all over the world, and it is estimated, by 1775, that 30% of all the vessels engaged in British commerce had been constructed in American shipyards. Although Philadelphia and New York had their shipyards, it was New England which truly dominated this industry. Almost every New England port and stream had its own yard. Boston, Gloucester, Salem, Ipswich, Newburyport, Haverhill, Durbury, Hingham, Scituate, all built ships in large numbers.

The deep-sea vessels built during the seventeenth century were small. The Mayflower, for example, a three-masted, double-decked vessel, about 100 feet in length, was large for its day but was only about 120 tons in gross register; many colonial ships were much smaller. The shallop used in the fishing and coasting trades, was about 10 tons. The ketch, also used in the same trades and for sailing to the West Indies as well, ranged from 24 to 60 tons. By the end of the eighteenth century vessels had increased in size, but even then the average gross register of ships entering England from America was only 176 tons, while the average register in the West Indies trade was 68 tons. The small size of these vessels was not due to technical difficulties in constructing larger ones, but rather to the methods and organization of world commerce in that period. The perils of unmarked coasts and pirates and the uncertainty of markets dictated that shipments should be prudently made in small quantities.

The hulls and riggings of these American-built vessels followed the English and Dutch models with which the shipwrights had been acquainted. But some modifications, which reached their height in the eighteenth century, were introduced to meet the peculiar conditions of the New World. By 1770 ships were square rigged and had three masts; sloops had one mast, schooners two, and both carried only fore and aft sails; brigantines, brigs, and snows were two-masted vessels with a combination of riggings.

The greatest thoroughfare of the colonial era was the route leading across the Atlantic to England, but a direct trade also

developed between the colonies and Portugal, Spain, and the Mediterranean. By 1770, the greatest commercial city in the American Colonies was Philadelphia, followed in importance by New York and Boston.

Ministering to this foreign commerce was the considerable coastal traffic conducted among the 13 colonies. This traffic collected the various colonial products at many small ports and transported them to a few large ports for shipment to Europe or the West Indies; on their return voyage these coastal vessels then redistributed the European manufactured goods that had been collected at the large ports along the coast. By 1769 this coastwise trade employed a tonnage that gave it a high rank in the branches of colonial commerce, and it was the largest single item in colonial domestic commerce.

The main arteries of internal travel and transportation in the seventeenth and eighteenth centuries were also water routes -- the great network of rivers with which the American colonies were most fortunately blessed. In this respect, however, New England was poorly endowed, for on her main rivers the fall line interrupted navigation only a short distance inland from the sea. The Merrimac and Connecticut Rivers could therefore not be utilized as important channels of communication between the coast and the interior without considerable improvements first being made. The middle colonies, on the other hand, were well provided with navigable rivers. In New York the Hudson was navigable for 150 miles, and by 1770 more than 100 vessels were engaged in the trade between Albany and New York City. In New Jersey and Pennsylvania sloops could sail up the

Delaware as far as Trenton, 75 miles inland. The rocky shelving bed of the Susquehanna prohibited navigation by large vessels, but still could be utilized by a considerable flatboat traffic. In the southern colonies the fall line was located far from the coast and hence a series of magnificent rivers led inland from the sea. The Potomac, the Rappahannock, the James, and the Savannah were the most important of these waterways and all were navigable in vary-degrees. Rapids and shoals that might block sailing vessels were usually run with ease by rafts, and spring floods generally enabled all streams to be navigated for at least a short period. There thus developed a large flotilla of ragamuffin vessels--rafts, pole boats, and small sailing vessels--that plied these river waterways. On these rivers, located to the east of the Appalachian Mountains, were thus developed the first crude river-boats of the New World. The Susquehanna and the Delaware had flat-boats and barges of various types, and the southern rivers developed "cotton boxes"--flatboats with high sides--to handle their special products. These river fleets were used to transport the bulky agricultural products of the interior to the Atlantic seaboard states, where the raw products were exchanged for manufactured goods and the rafts and flatboats were also sold as lumber. As these vessels moved only with the current or wind, travel and trade were irregular and slow.

As contrasted with water transportation, land carriage was exceedingly expensive. The crude trails and roads of the American Colonies effectively limited the amount of internal commerce that could be carried by land transport, for only a few valuable products could bear the high costs of land carriage.

The situation in regards to land transport was at its best in the regions immediately adjacent to the Atlantic Coast. Here there was a relatively high density of population, and cities such as Boston, Newport, Providence, New York, Philadelphia, Baltimore,

and Charleston furnished considerable markets. Massachusetts began making roads in 1639 and around Boston there grew up a considerable network of rough roads that were particularly useful in the winter, when the snow remedied the deficiencies of these crude highways. In the middle colonies land transportation was even more common; New York and Pennsylvania began road building in 1664. By 1707 a freight road had been constructed between New York City and Philadelphia, and by 1732 a regular wagon traffic in goods was operating between these two cities. Around Philadelphia a system of improved highways also extended inland for some 50 or 60 miles and thus made possible a regular transport of grain in Conestoga wagons from the agricultural districts into the urban markets.[1] Virginia also began building highways at an early date and in 1662 passed strict laws that were intended to keep existing roads in good condition.

Land communication during this period was largely by horseback. Lack of bridges and inadequate ferries often made a several-days trip out of what is now only a matter of hours. By 1764 a through

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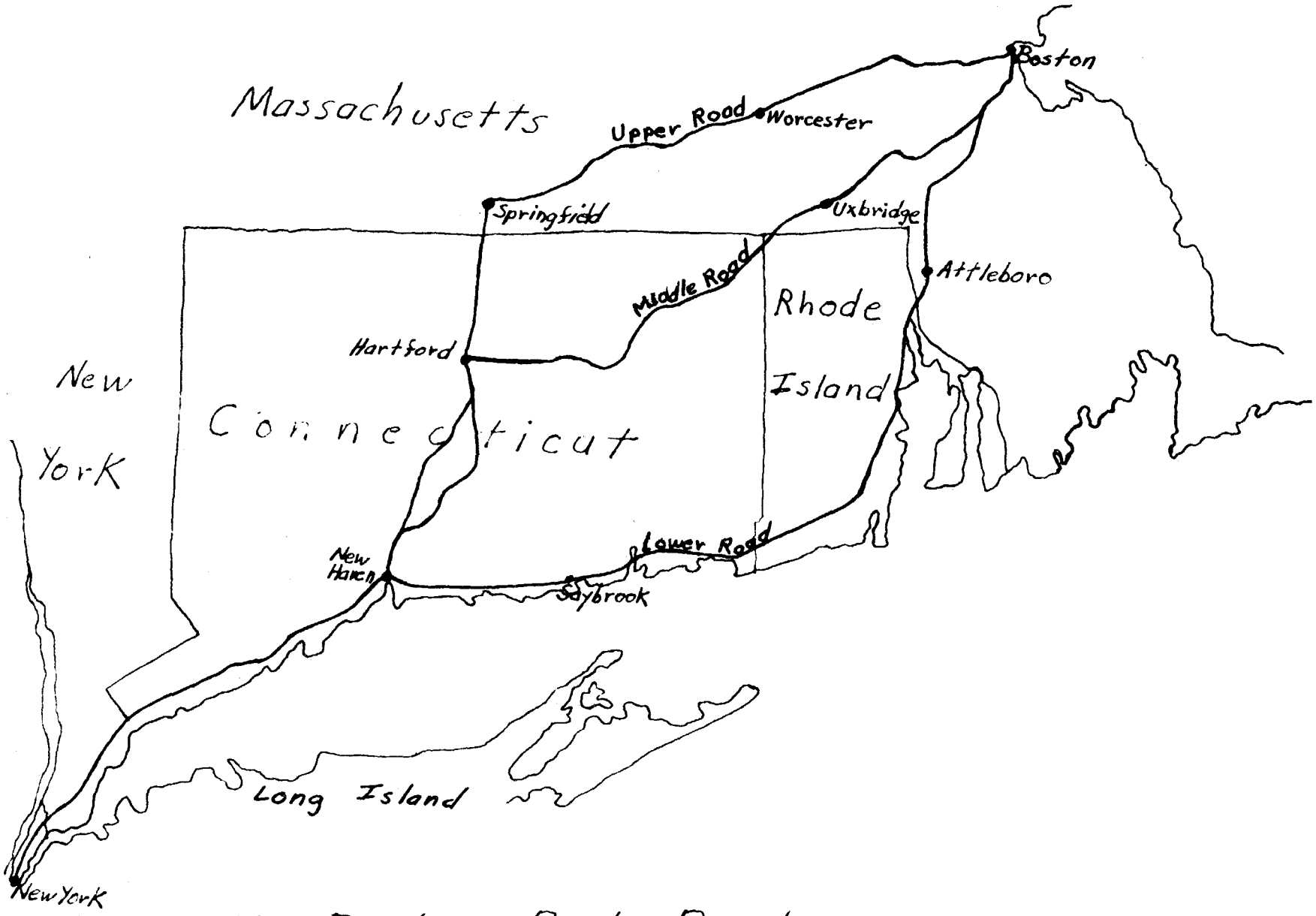
[1]The Conestoga wagon, originating in the Lancaster region of Pennsylvania, was an American invention, differing from the old English wain and Dutch wagon in the curve of its bed. The peculiarly shaped bottom of the Conestoga wagon was higher by at least 12 inches at each end than in the middle. This curve made the vehicle a safer conveyance for grain across rough country than the conventional straight-bed wagon. The Conestoga wagon was covered with linen top, had heavily built wheels with iron tires from four to six inches in width, and was drawn by six horses. The underbody of the wagon was usually painted blue and the upper parts red. "Improved" roads were crowned high with dirt and edged by a gutter; many roads were only cleared paths through the forest.



The Boston Post Road

stage had been instituted between New York and Philadelphia, and by 1773 stagecoaches were also running from New York to Providence and Boston. Postriders on horseback, traveling day and night, could carry letters from New York to Philadelphia in 24 hours, and were making three trips a week. By 1773 there were also two mails a week between New York and Boston.

In the frontier regions, with their long distances and light and dispersed settlements, the difficulties of land transport were even more severe. Even after rough roads had been cut through the great forests to the Ohio, during the French and Indian Wars (1755-58), and after the dispatch of pack trains had become a considerable business, only a few goods could be transported profitably to or from the frontier. Chief among such items were iron products and salt that were shipped westward, while furs and whiskey, valuable goods of small bulk, were brought back by the pack trains on their return trip. But as the War of Independence was to reveal dramatically, the entire road and land transport system of the 13 colonies was entirely inadequate.

II
Travel and Communication
1784-1865

The American Merchant Marine

Following the War for Independence the American merchant marine underwent a period of severe readjustment, for American vessels were excluded from British markets as well as those of Spain, Portugal, France, and Holland by the mercantilist policies followed by those European countries. American merchants were thus forced to seek markets outside of Europe. In 1784 the Empress of China, sailing from New York, but financed jointly by Philadelphia and New York merchants, made the first visit of an American vessel to Canton; in 1786 Elias Hasket Derby's Grand Turk, from Salem, landed a cargo at Mauritius; the first American ship to reach a port in India was the Chesapeake, from Baltimore, sometime between 1786 and 1789; and in 1788 Captain John Kendrick in the Columbia and Robert Gray in the Lady Washington, out of Boston, were the first American ships to visit the Pacific Northwest and Russian waters off Alaska. In spite of these new markets, however, nearly two-thirds of the United States foreign commerce was still with regions under the British flag in 1790.

Fortunately for American commerce, during the Napoleonic Wars that raged in Europe from 1795 to 1815, the British navy swept the French merchant marine from the seas and also destroyed the Spanish navy; and in turn, the British merchant marine was also severely damaged by French privateers. The United States, acting as the great neutral in this terrible contest, impartially sold goods to

both sides. The American merchant marine thus embarked on a career of unparalleled prosperity.[1] Up to 1830, 90% of all American foreign commerce was being carried in American vessels, but then a gradual decline set in. In 1850 the average had dropped to 72% and by 1860 to 66.5%. The rate of decline was increased by the Civil War, and by 1870 the level had dropped off to 35.6%.[2] Up to 1865, however, American shipping was second only to Great Britain in tonnage and carrying trade.

The wooden sailing ship, for the manufacture of which the United States had several advantages, still ruled the seas in 1850. In spite of all the colonial shipbuilding, the supply of timber suitable for ship construction was still plentiful in 1800. By 1850, although shipbuilders had to draw on the forests of Delaware, Maryland, Virginia, and the Middle West, the supply was still unexhausted. A fully equipped 500-ton sailing vessel could be built in America at a cost of $37,500 as compared to about $43,000 in England. As in the colonial era, New England continued to dominate the shipbuilding industry. Massachusetts and Maine were the leaders. In Massachusetts famous yards were located at Boston, Essex, Salem, Newburyport, Haverhill, and Medford. In Maine, Bath became the largest shipbuilding town in the United States. New York City, Philadelphia, and Baltimore also had important yards.[3]

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[1] The American tonnage registered for foreign trade jumped from 123,893 tons in 1789 to 981,019 in 1810. During the War of 1812, the British Navy captured some 1400 American merchant vessels and fishing boats, and the American merchant marine suffered a temporary decline. The registered American tonnage for foreign trade, however, increased from 674,633 tons in 1814 to 854,295 in 1815.

[2] In 1860, the tonnage of American vessels engaged in the foreign trade was 2,379,396 gross tons, and by 1865 it had fallen to 1,518,350 tons.

A second factor contributing to American superiority prior to 1860 was the daring and creativeness of her ship designers. During the Napoleanic Wars a premium was placed upon speed as a means of escape from privateers and war vessels. The American ship designers produced the "Baltimore Clipper," a brig or schooner-rigged vessel, with a better modeled and faster hull than her predecessors, as an answer to this need.

The next in line in the production of swift sailing ships was the "packet ship." In 1816 American shipping firms were convinced that the amount of traffic across the Atlantic was large enough to support a line of vessels sailing at regular intervals. The first such line to be established was the Black Ball Line, with monthly sailings from New York to Liverpool. The pressure of competition on this route stimulated the continual improvement of packet ships. The first vessels of the Black Ball Line ranged from 400 to 500 tons in burden and averaged passages eastward of 23 days and westward of 40. By 1845, however, the size of these vessels regularly exceeded 1,000 tons, and they also made much faster runs. The greatest of the packet boats was the Dreadnought, a 1400-ton clipper ship built at Newburyport in 1853. This ship made the unique record of 13 days and 11 hours between New York and England, and her quickest time from England to Sandy Hook was 19 days. These packet ships won for the United States the sailing supremacy of the North Atlantic.

But the swiftest of the sailing ships was the clipper ship. This vessel was three-masted and square-rigged, with a long hull

---

[3] Tonnage for merchant ships built in 1840: New England States--65,189; Mid-Atlantic and Gulf States--45,494; Northern Lakes and Western rivers--7,626 tons.

tapering from a concave bow to a finely modeled stern, and had a narrow beam farther aft than previous models. The first large vessel which brought these distinctive features together in unmistakable fashion was the Rainbow designed by John W. Griffeth, in 1845. These swift ships were utilized in the gold rushes, first to California and then to Australia, and also in the Oriental tea trade.

The master builder of the clipper ship was Donald McKay, whose greatest vessels, the Flying Cloud, Sovereign of the Seas, Great Republic, and Lightning, were launched from his yards in East Boston. The swiftest sailing vessel afloat, the Lightning, in her first voyage across the Atlantic made 436 miles in one day, the greatest day's run ever made by a sailing ship.

The backbone of the American merchant marine, however, was not the swift packets and clipper ships but the smaller, slower and less graceful freighters. These latter ships were still full-bowed and broadbeamed and carried the great bulk of foreign commerce --heavy freight--to Europe and South America. By 1815 regularly scheduled and chartered public carriers began to transport the bulk of foreign commerce.

By the 1850's, however, the American superiority, based on wood and sail, was being seriously threatened by technical inventions in which Great Britain and not the United States took the lead. In 1838 two British paddlewheel steamboats arrived in New York Harbor.[1] In 1845, there next arrived the British vessel, the Great Britain, an iron steamship driven by screw propellers. In 1850 a British

[1] An American vessel, The City of Savannah, was probably the first to cross the Atlantic ocean in 1819, using a combination of steam and sail.

shipowner instituted a regular run of such iron vessels between England and Philadelphia. These new ships not only utilized a superior means of propulsion but also substituted iron for wood. The use of iron permitted the construction of drier, safer, faster, and larger vessels than was the case with wood.[1] In 1854 insurance companies recognized this fact by charging higher insurance premiums on wooden vessels than on iron ships.

The United States failed to keep abreast of these technological changes, particularly in the substitution of iron for wood. The young Republic was at a great disadvantage in the construction of the new type of ship, for the British iron industry had already been transformed by the industrial revolution whereas the revolution was just beginning in America. Great Britain could not only produce high-grade iron plates more cheaply than the United States, but her iron work, and particularly her marine engines, were the finest in the world. Finally, the insular position of Great Britain compelled that nation to apply the new techniques of navigation to the sea if she was to survive as a great power, while the United States, with the recent acquisition of the Oregon territory and California, began to turn away from the sea after 1850. There were greater possibilities in the United States for gain in developing the manufacturing system of the East, in building improved means of internal transportation, and in exploiting the natural resources of the Trans-Mississippi West than on the sea.

Coastal Trade

In 1793 the tonnage enrolled in coastwise trade was approximately one-third of that registered in foreign commerce. In 1831 the tonnage

[1] In 1884, out of a gross tonnage of 4,271,229, only 386,618 tons were built of metal, and 1,465,908 were propelled by steam.

of vessels engaged in the coastal trade exceeded for the first time that employed in foreign commerce, and by 1850 the coastal tonnage was three times greater than in 1830, and the value of commodities carried in the coastal traffic was six times that transported in American foreign commerce.[1] This expansion was largely due to the increasing economic differentiation of the regions adjacent to the Atlantic Ocean and the Gulf of Mexico, and also to the emergence of New York City, by 1850, as the greatest importing and exporting city in the United States. Coastal vessels carried cotton, coal, rice, sugar, molasses, tobacco, timber, and naval stores to the northern cities, and on their return voyages, distributed manufactured goods from the North and Europe along the coast. This North-South coastal traffic also exceeded in quantity and value that carried on the Mississippi River prior to 1860.

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[1] Coastwise and internal trade gross tonnage figures are as follows: 1789 -- 68,607; 1793 -- 122,071; 1800 -- 272,492; 1810 -- 405,347; 1820 -- 588,025; 1830 -- 516,979; 1840 -- 1,176,694; 1850 -- 1,797, 825; and 1860 -- 2,644,867 tons.

Western Rivers
--1784-1820---

In spite of the glamorous history of the American sailing ship, the more substantial achievements of the period 1784 to 1860 were the improved means of transportation within the United States and the development of a nationwide internal commerce. These changes were fundamental to the growth and unity of the United States both as a governmental entity and as an economic power.

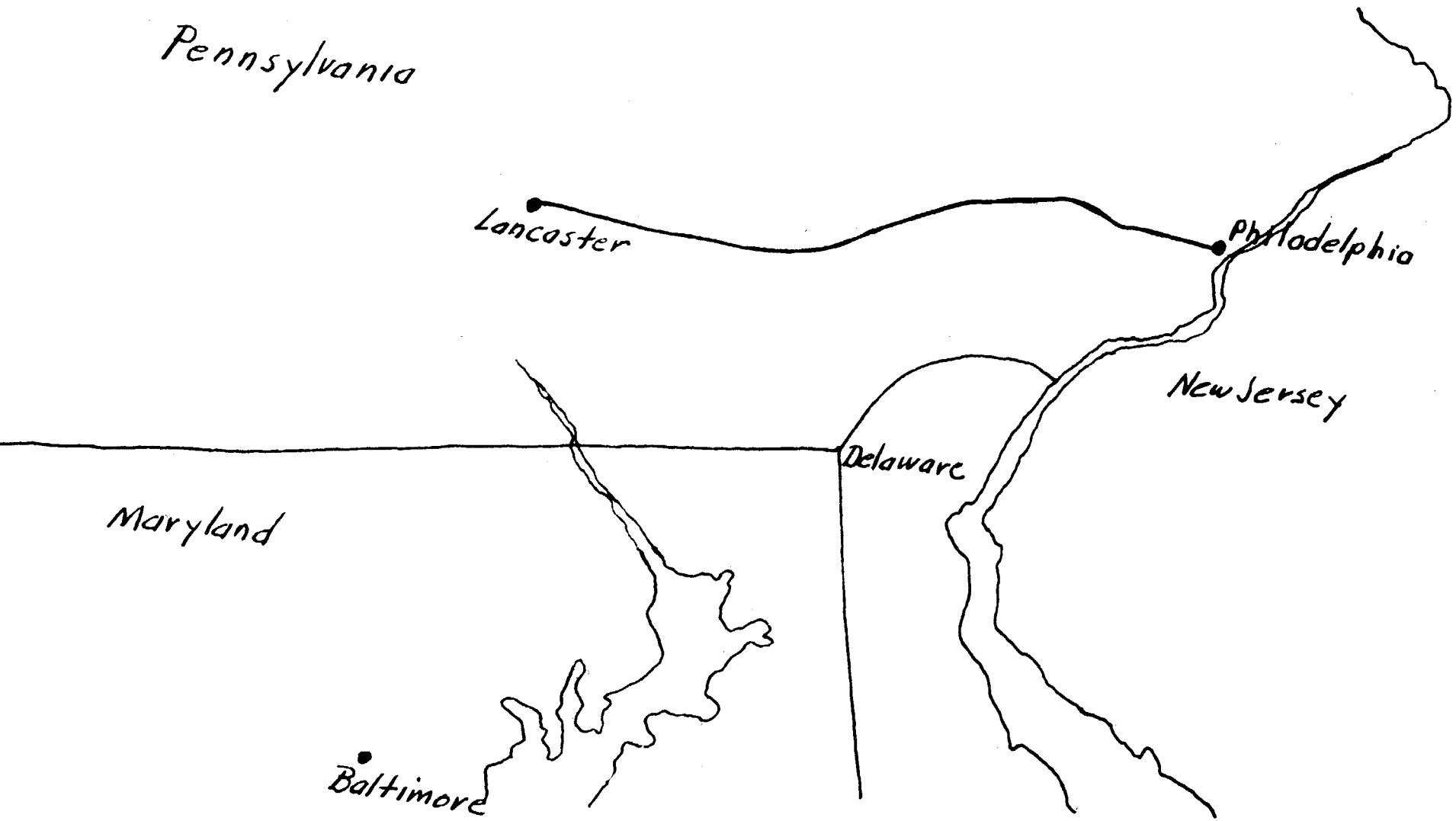
As American settlers pushed into the trans-Appalachian west they found before them a magnificent system of waterways that they were not slow to utilize. In the North were the Great Lakes, and in the South navigable rivers, of which the Mobile was the most important, that ran down to the Gulf of Mexico. Finally, the Middle West possessed one of the great river systems of the world, the Mississippi. This river was navigable for 2,161 miles, from New Orleans to the Falls of St. Anthony. Stretching out to the east or west were its two great subsidiary systems, the Ohio and the Missouri. The former, although interrupted by rapids at Louisville, could carry large vessels as far as Pittsburgh at high water; and the Missouri, in spite of rapid current and shallow flow, could be navigated for a distance of 2,500 miles from its mouth by vessels of light draught. On these western waters sprang up a strange navy composed of many varieties of homemade flat boats, some massive enough to carry cargoes of 200 to 400 barrels downriver; barges - large vessels with masts; and keel boats - light, graceful craft, carrying between 15 and 50 tons, provided with a keel for better balance and strength, and with runways along the sides upon which the crew walked when poling the boat upstream.

These primitive river craft were laden with western produce and went with the current southward to New Orleans. At this city the cargo was unloaded, and the vessels were sold for lumber. Crews then took passage for some eastern port or else traveled across country on foot, many following the Natchez Trace, back to the Ohio settlements. Upstream traffic was light, for few products could stand the expense of shipment. Only keel boats could fight their way upstream by means of the towline, oar, and pole, averaging about 10 miles a day. In 1798 the goods received by the Mississippi River at New Orelans from the Ohio territories of the United States were valued at $975,000. By 1816 the total had increased to more than $8,000,000, and this traffic was transported southward by some 600 barges, about 1,200 flatboats, and only six river steamers.

Roads and Turnpikes, 1784-1820

At the close of the Revolution the roads of the new nation were absolutely inadequate. Their care and construction were generally left to local authorities, who were not particularly interested in the development of through routes, and the lack of capital and engineering knowledge were additional handicaps. Many roads were simply cleared paths through the forest. "Improved" roads were crowned high with dirt and edged by a gutter. Over such roads only the transportation of passengers was profitable; freight could be moved only short distances.

The development of the improved turnpike, however, unshackled highway traffic. The prototype of this new type of road was the Lancaster Turnpike. The Philadelphia and Lancaster Turnpike Road Company was chartered in 1792, the first such private company to be organized for this purpose in the United States. The company received the power to mark out a right of way



The Philadelphia and Lancaster Turnpike

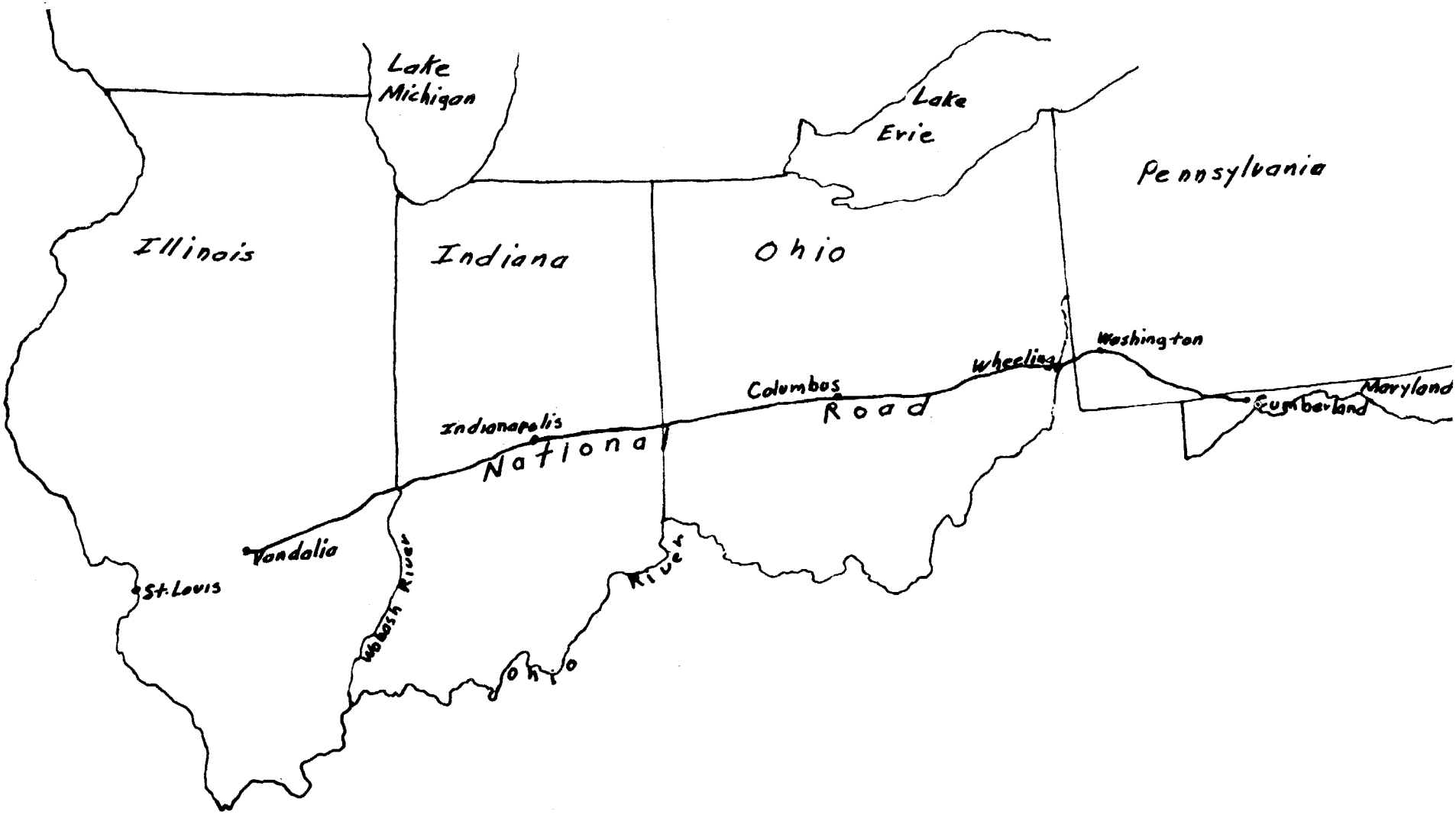
through private property, and to secure returns on its invested capital by erecting toll gates on its road, located seven miles apart, at which elaborate series of tolls were charged upon vehicles and herds of animals utilizing the road. Construction of the road was begun in 1792, under the supervision of an Englishman acquainted with the system of J. L. MacAdam, and completed in 1794. A layer of crushed, small stone was spread over the road base and then hammered solid by the traffic that rolled over it. The Lancaster Turnpike, built at a cost of $465,000, was thus a stone road; it had no gradient greater than 4%, and it passed over three splendid bridges on its 66 mile way from Philadelphia west to Lancaster. So successful was this example that the rage for building improved roads swept rapidly over the country. By 1810, 20 turnpike companies had been chartered in New Hampshire, 27 in Vermont, and upwards of 180 in New England as a whole. By 1811 New York had chartered 137 companies which construction about 1,400 miles of road. Pennsylvania chartered 86 companies and by 1832 had built 2,200 miles of road. Connecticut built about 800 miles. Maryland and Virginia also followed suit. In many cases, where private capital proved inadequate, states acquired stock in turnpike companies to assist the road-building programs. Finally, the western states turned to the federal government for assistance.

Constitutional debates as to whether the national government possessed the power to build roads and make internal improvements seriously curtailed federal assistance. But before the question of constitutionality was decided, the Cumberland Road was constructed with federal aid.

When Ohio was admitted to the Union in 1803, a percentage of the money obtained from the sales of her public land was set aside for road

construction. In 1806 Congress decided to devote a part of this fund to the construction of a roadway connecting Ohio with the Atlantic. The logical route geographically was from the Ohio River to some river flowing into Chesapeake Bay, for this was the shortest distance across the Appalachian Mountains to salt water. In 1811 the local jealousies were finally appeased, and the road was laid out to run 130 miles from Cumberland on the Potomac northward through the lower western corner of Pennsylvania, and then westward to Wheeling on the Ohio. The law prescribed the width of the roadbed, its shape, and that it should be surfaced with stone. The first contracts for its construction were let in 1811, and the road was completed in 1818, at a cost of $13,000 a mile, complete with substantial bridges and a stone surface. But so great was the traffic that the road wore out. While Congress still debated the question of whether the federal government had the constitutional right to repair its own road, the national legislature voted its extension westward through Ohio, Indiana, and Illinois. The road reached Columbus, Ohio, in 1833 and Vandalia, Illinois, in 1852. As finally completed, the Cumberland Road extended 834 miles and cost the federal government $6,821,200.

The completion of the Cumberland Road was an important event in increasing the commercial rivalry being waged by Atlantic seaboard ports for access to western markets. Baltimore was most benefited, for she constructed fine stone turnpikes to tap the Cumberland Road at its eastern terminal. The state of Pennsylvania also subsidized the construction of western turnpikes to connect Philadelphia with Pittsburgh and thus meet the threat posed by Baltimore.



The National Road

Along the Cumberland Road and connecting turnpikes flowed an immense wagon traffic--the Conestoga Wagon was the mainstay of the highway. Freighting companies were chartered and operated on a regular schedule. In 1817 it was estimated that 12,000 wagons arrived in Pittsburg from Baltimore and Philadelphia. Also along these roads raced the Concord stagecoaches, manufactured by Abbott-Downing Company of Concord, New Hampshire, which were to become even more famous west of the Mississippi.

The Cumberland road not only furnished a great highway for emigration west, but reduced cost of freight transportation. The price on a hundredweight of goods from Pittsburgh to Philadelphia fell from $9.50 in 1817 to $6.50 in 1818. But these unusual rates were still to prohibitive to move bulky agricultural articles more than 150 miles. A ton of goods could still be moved across the Atlantic almost as cheaply as from Philadelphia to Lancaster.[1]

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[1] The estimated mileage of surfaced roads in the United States is as follows: 1793 -- 0 miles; 1800 -- 1,200 miles; 1805 -- 2,550; 1810 -- 4,250; 1815 -- 6,500; 1820 -- 9,645; 1825; 14,600; 1830 -- 26,510; 1835 -- 47,562; 1840 -- 64,428; 1845 -- 67, 453; 1850 -- 71,038; 1855 -- 75,748; 1860 -- 88,296; and by 1900 -- 128,500 miles.

Era of the River Steamboat, 1820-1865

On August 9, 1807 the steamboat Clermont, a 160 ton sidewheeler, built by Robert Fulton, in partnership with Robert R. Livingston and Nicholas J. Roosevelt, made its epic making run on the Hudson, thus inaugurating a revolution in transportation.[1] The Clermont covered the 150 miles between New York City and Albany in 32 hours and returned in 30 hours. Fulton's success was based on a careful study of the problem and the observation of a successful English steam tugboat. He purchased an English boiler and English-built steam engine from the firm of Watt and Boulton and installed this machinery with some innovations in an American-built hull. The successful demonstration of the Clermont secured for Fulton and his partners a 20 year monopoly from New York State of the steam navigation on waters of that state. This monopoly, although not unusually oppressive, did delay the free development of steam lines from Connecticut and New Jersey to New York City. The War of 1812 also hindered the establishment of coastal routes. The way for the wide spread of the steamboat, however, was finally cleared in 1824, when the Supreme Court of the United States decided in the case of Gibbons vs Ogden that the monopoly grant was an unconstitutional invasion of the right of the federal government to regulate interstate commerce.

In the meantime the steamboat appeared rapidly on western rivers. Fulton, Livingston, and Roosevelt also obtained a monopoly grant of steamboat navigation from the state of Louisiana. In 1811 Roosevelt launched

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[1]Among the many Americans who had experimented with varying degrees of success prior to Fulton, were James Rumsey in 1784 and 1788, John Fitch in 1785-86, Oliver Evans in 1786, and John Stevens in 1804.

the first western steamboat, the 100 ton New Orleans, built at a cost of about $38,000 at Pittsburgh. In 1812 this vessel reached New Orleans and entered into the trade between that city and Natchez. The engines of these early steamboats were not powerful enough to buck the river currents above Natchez.

The launching of the Washington in 1816, built by Captain Henry M. Shreve--the greatest of the western river navigators, at Wheeling on the Ohio, however, successfully overcame the power problem. In 1817 his vessel ascended the river from New Orleans to Louisville in 25 days. The Washington was also the prototype of the western river steamboat, which was evolved to meet the special conditions of navigation on the Mississippi. These vessels had to carry heavy cargoes in shallow waters working against strong currents. The hull of the Washington was therefore a flat-bottomed box with a deck built only slightly above the waterline. To afford an easy means of landing along riverbanks, the bow was built into a square-toed platform that projected out over the sharp prow. Such vessels drew only about seven feet even when fully laden. High pressure engines connected directly with the crankshaft of the two side paddlewheels were used to propel these vessels. This type of engine furnished great power and was also light, small in bulk, and cheap. The engines and the horizontal boilers were placed well forward on the first deck, with the doors of the boilers opening towards the bow to get the full benefit of the draft. Aft of this machinery was located the second-class cabin. On the upper deck were the fine great cabin and luxurious staterooms of the first-class passengers. Over them was the hurricane deck on which was located the pilot house and two tall smokestacks.

In 1821 the tonnage of steamboats arriving at New Orleans exceeded for the first time that of the primitive flatboats and barges. The river steamers grew slowly in size, and by 1850 the average tonnage was about 500. But it was their speed which represented the greatest advance. In 1851 the Boston performed the trip from New Orleans to Louisville in five days and eight hours.[2]

In 1851 there were probably 600 steamboats in service on the interior rivers, but the traffic on the Mississippi River did not reach its climax until 1859-60. The western steamboat, 1830-50, opened up great new markets in the Middle West and made possible the cheap transportation of bulky agricultural produces to the sea.

Navigation on the Mississippi, however, was fraught with peril due to shifting shoals and bars as well as to the frequent explosions of boilers. By 1850, it has been estimated that 1,070 vessels had been lost, whose total cost was $7,100,000. The number of casualties was placed at 2.269 killed and 1,881 wounded. Under these conditions the average life of a steamboat was only about four or five years.

This immense river traffic created great river ports such as Pittsburgh, Cincinnati, Louisville, and St. Louis, that rivaled the Atlantic seaboard cities in their wealth and trade. Up to 1850 New Orleans ranked with London, Liverpool, and New York as one of the great commercial cities of the world, for most traffic of the Mississippi system came to rest on her wharfs before going to sea. But between 1816 and 1860 a great change occurred in the origin of her traffic. In 1816 80% of the products arriving at

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[2]The all time record for western steamboats was achieved by the J. M. White in 1844, when it made the 1,300 mile run from New Orleans to St. Louis in three days, 23 hours, and nine minutes.

New Orleans came from the Ohio Valley or the Northwest. By 1860 this trade from the Northwest made up only 23% of the total traffic of New Orleans. The Mississippi River had lost much of this upstream commerce as the result of the construction of more efficient lines of communication between the Atlantic Northeast and the Middle West.[1]

In the Far West the first steamship to appear on the Pacific Coast was the Hudson's Bay Company paddlewheeler The Beaver, which arrived at Fort Vancouver on April 10, 1836. From that year until 1888 this 106-ton ship plied the waters of the Northwest coast. The first American river steamer in the Pacific Northwest, the Lot Whitcomb, was launched on the Columbia River on December 25, 1850. By 1852 there were at least six steamboats operating on the Columbia, Willamette, and Yamhill Rivers, and in 1859 the first steamer began plying the Columbia above The Dalles. The Oregon Steam Navigation Company was established in 1860 and at once achieved a monopoly of traffic on the Columbia. By 1865 this company was operating 29 passenger steamships, 13 schooners, and four barges on the Columbia.

The first successful steamboat in California, imported from the East, was the Lady Washington, which went into operation on the Sacramento and American Rivers on August 9, 1849. A year later there were 28 steamboats on the American and Feather Rivers. In 1854 the California Steamboat Navigation Company was organized and immediately established a monopoly on the Sacramento, Feather, American, and San Joaquin Rivers.

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[1]Merchant tonnage on the Western rivers is estimated as follows: 1816 -- 9,930 tons; 1820 -- 27,269; 1830 -- 32,664; 1840 -- 117,952; 1850 -- 302,829; and 1860 -- 167,739 tons.

The Canal Era, 1820-1865

The river steamboat was a great blessing to river towns, but it did not solve the problem of land transportation. As most of the great rivers ran north and south, they also failed to contribute much to movement of goods from east to west. The rapid construction of the nation's turnpike system, spurred on by the efforts of the Atlantic coastal cities to connect with the producing areas of the West, had also been only partially successful, for the high cost of wagon transportation was still much too great to allow an extensive freight traffic to flow over the Appalachian Mountains. The great success of James Brindley in England in constructing the Bridgewater Canal, which was opened in 1761, had attracted the attention of Americans at an early date to the canal as a means of transportation. But wars, lack of capital, and thinness of settlement had prohibited the construction of more than a few short canals before 1820.[1] The canal era really began in the United States with the construction of the Eri Canal. In 1817 New York City stood in isolation at the mouth of the Hudson. The products of the Middle West were going down the Ohio and the Mississippi to New Orleans. The great Cumberland Road favored Baltimore and Philadelphia in moving goods to or from the West. The Erie Canal was New York's answer to this situation. The father of this project was De Witt Clinton, mayor of New York City, governor of the state, and canal commissioner.

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[1] Virginia built a seven mile canal between Richmond and Westham in 1785. The Dismal Swamp Canal was built by Virginia and North Carolina in 1787-1795. In New England the Middlesex Canal, a 30 mile waterway connecting the Merrimac River to Charleston, Mass., was built 1795-1808.

Relying on European experience it was decided not to use rivers directly, which were subject to seasonal fluctuations, but rather to construct a canal parallel to the river and to utilize its waters to keep a fixed level in the canal itself. Also, because a private corporation had failed after many years of effort to build a canal, the task was to be undertaken by the State of New York.

After overcoming local jealousies, the state passed the necessary legislation in 1816 and 1817, calling for the simultaneous construction of two canals, the Erie and the Lake Champlain, at an estimated cost of $7,000,000. The engineering problems were tremendous, particularly in view of the fact that Americans had no trained engineers,and efforts to secure one from England failed. James Giddes and Benjamin Wright, both of whom were lawyers who had practiced surveying on the side, were finally placed in charge. These gentlemen developed their engineering talents as the work progressed. One of their surveyors, Canvas White, was sent to England where he walked along 2,000 miles of towpath observing every feature of canal construction, and returned in time to direct the building of the locks. The first earth on the Erie Canal was turned on July 4, 1817, and work progressed so rapidly that the entire length of the canal from Albany to Buffalo was opened on October 26, 1825.

The total length of canal was 363 miles. Its greatest height above sea level was 566 feet, but the total lockage was just a little less than 700 feet. The canal was actually a big ditch; its prism was 40 feet wide at the top, 28 feet wide at the bottom,

four feet deep, and could accommodate 30-ton barges. Although the gates were of wood, the locks were built of stone. The canal was carried over the Mohawk and Genesee Rivers on massive stone aqueducts, and across the valley of the Irondequoit it traveled on an enormous fill. As an engineering feat the Erie Canal was unexampled in America. Moreover, the canal was built well within the time limit estimated by De Witt Clinton; the cost, together with the Champlain Canal was $10,200,000, and their construction had been accomplished without wastefulness, extravagance, or corruption.

In the first partial year of operation of the Erie, 13,110 boats and rafts passed through it, and the tolls collected were equal to one-seventh of the original cost. In 1850 the tonnage carried in the Erie was 1,635,089, and the tolls that year amounted to $2,933,125.93. By 1882, when tolls were finally abolished, the Erie had collected a total of $120,692,400.85. New York continued the construction of canals as a result of the success of the Erie until the state had 906 miles of artificial waterways.

The Erie Canal brought the regions of the Northwest for the first time into direct contact with New York City and the Atlantic seaboard. The freight rate from Buffalo to New York dropped immediatly from $100 per ton to $10 or $12 and the time of transport from 20 days to eight days. The Erie thus opened a period of unprecedented prosperity for a large portion of the United States. Passenger packets, moving at the rate of four miles an hour, made the distance from Albany to Buffalo in $4\frac{1}{2}$ days, and over this route moved an increasing

stream of westernbound immigrants.[1] The distance to the sea from the old Northwest was now shorter by the Erie Canal than through either the Mississippi or St. Lawrence Valleys.

Although the Walk-In-The-Water, the first steamboat on the Great Lakes above Niagara Falls, was launched at Buffalo in 1818, commerce on the Great Lakes was limited chiefly to the fur trade until 1825. But the opening of the Erie Canal wrought a revolution on the Lakes. By 1830 the tonnage, steam and sail entering Buffalo, had increased six times over 1820. In 1851 this tonnage totaled 195,766 tons, of which about one-third was steam driven.[2] The value of the whole lake traffic in 1851 was estimated at $326,000,000, nearly equal to 75% of the total American foreign trade of that year.

The Erie Canal with its westward extensions also established definitively the preeminence of New York City. In 1800 her population, 60,489, had been less than that of Philadelphia, but by 1850 it had multiplied over eight times to 515,547. Philadelphia, Baltimore, Boston, and Charleston had all been surpassed, and New Orleans was threatened. In 1846 for the first time the arrival of wheat and flour at Buffalo surpassed that received at New Orleans.

The success of the Erie stimulated other states to attempt to duplicate this feat. Canal mileage increased from an estimated 1,270 in 1830, to 3,320 miles in 1840, and to 3,700 miles by 1850. The old Northwest states undertook the construction of feeder canals to pour

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[1]Packet Boats were pulled by four horses, and the fare was three or four cents a mile first class and one and a half cents a mile second class.

[2]Paddlewheel steamers were used on the Great Lakes from 1818 to 1841, but after that date were largely of the propeller type and of considerable size. Total tonnage on the lakes increased from 5,217 in 1816 to 463,123 tons in 1860.

their surplus products into the Great Lakes - Erie Canal channel of commerce. In 1825 Ohio authorized the construction of two trunk canals, the Ohio and Erie, connecting Cleveland and Portsmouth, and the Miami and Erie Canal, connecting Cincinnati and Toledo. These canals, crossing the great agricultural districts of that state, were finished in 1833 and 1829 respectively, giving the state 400 miles of canal, and by 1850 this total had increased to 1,000 miles.

Indiana built, 1832-1843, the Wabash and Erie Canal, which linked Lake Erie with the Ohio River; while Illinois constructed, 1836-1848, the Illinois and Michigan Canal, that connected Lake Michigan with the Mississippi River. In 1853-1855 Michigan built the St. Marys Canal, uniting Lakes Huron and Superior. The financial costs of internal improvements were staggering for these thinly settled frontier communities. The western states invested heavily in these works and then turned to the federal government for further assistance. In 1827 Congress passed bills giving Illinois and Indiana aid. Each state received a land grant of alternate sections from the strip of the public land five miles wide on each side of the canal; the federal government retained the remaining sections. These land grants to the States provided a tangible basis for the securities which they sold to private investors. Much of the capital necessary for these internal improvements was raised in Europe, with England contributing the largest share.

In the East, New England constructed the Blackstone Canal and the New Haven and Northhampton Canal. Pennsylvania, alarmed at seeing her western trade being drawn off by the Erie, rapidly constructed between 1826 and 1834 a system of canals and portages from Philadelphia to Pittsburgh,

following the Susquehanna, Juniata, Conemaugh, and Allegheny Rivers. The Pennsylvania Canal with its connecting railways was 394 miles long and cost over $10,000,000. To build this route to the west it was necessary to surmount an altitude of almost 2300 feet as against a total rise of only 700 feet on the Erie Canal. In order to cross these mountains between Hollidaysburg and Johnstown it was necessary to construct a portage railway 33½ miles long, upon the inclined planes of which boats were raised 1399 feet in less than 10 miles and then lowered 1171 feet. The Pennsylvania Canal had 174 locks as against 88 in the Erie, and the expense of the three transshipments of goods on the Pennsylvania Canal was equal to that of 50 miles by canal. In 1844 the Pennsylvania Canal carried only one-fifth of the total freight moving on the Erie, and the Pennsylvania route was never able to profitably carry the bulky agricultural products of the West. Other canals were also built in Pennsylvania, and by 1842 the state had $53,000,000 invested in these transportation projects.

In New Jersey the Delaware and Raritan Canal (1834-1838) and the Morris Canal, opened 1836, were chiefly used to carry coal. The Chesapeake and Delaware Canal was completed in 1829.

Maryland and Virginia also responded to the challenge of the Erie and took up the old plan to connect the Atlantic Coast and the Ohio River by means of a canal running along the Potomac. The Potomac Company, with George Washington as its first president, had been incorporated in 1785, but it was not until July 4, 1828 that the Chesapeake and Ohio Canal was commenced. The original plans called for the canal to run from Georgetown to Cumberland, and thence by tunnel under the Alleghenies to the Youghiogheny. A tangle of jealousies between states and cities hindered its progress. However, Congress was induced to subscribe to $1,000,000 of its stock, the

terminal cities $1,500,000, and the state of Maryland $7,000,000. Virginia dropped out of the project when the canal was finally located on the Maryland side of the Potomac, as did Baltimore when this city discovered there would be no connection between it and the eastern terminal at Georgetown.

Baltimore merchants, in lieu of the canal, then supported the construction of the Baltimore and Ohio Railroad along the same general route as the canal. As a result of the bitter opposition and competition from the railroad, the Chesapeake and Ohio Canal, built at a cost of $11,000,000, did not stagger into Cumberland until 1850; the canal never succeeded in crossing the mountains to the Ohio and was never a financial success.

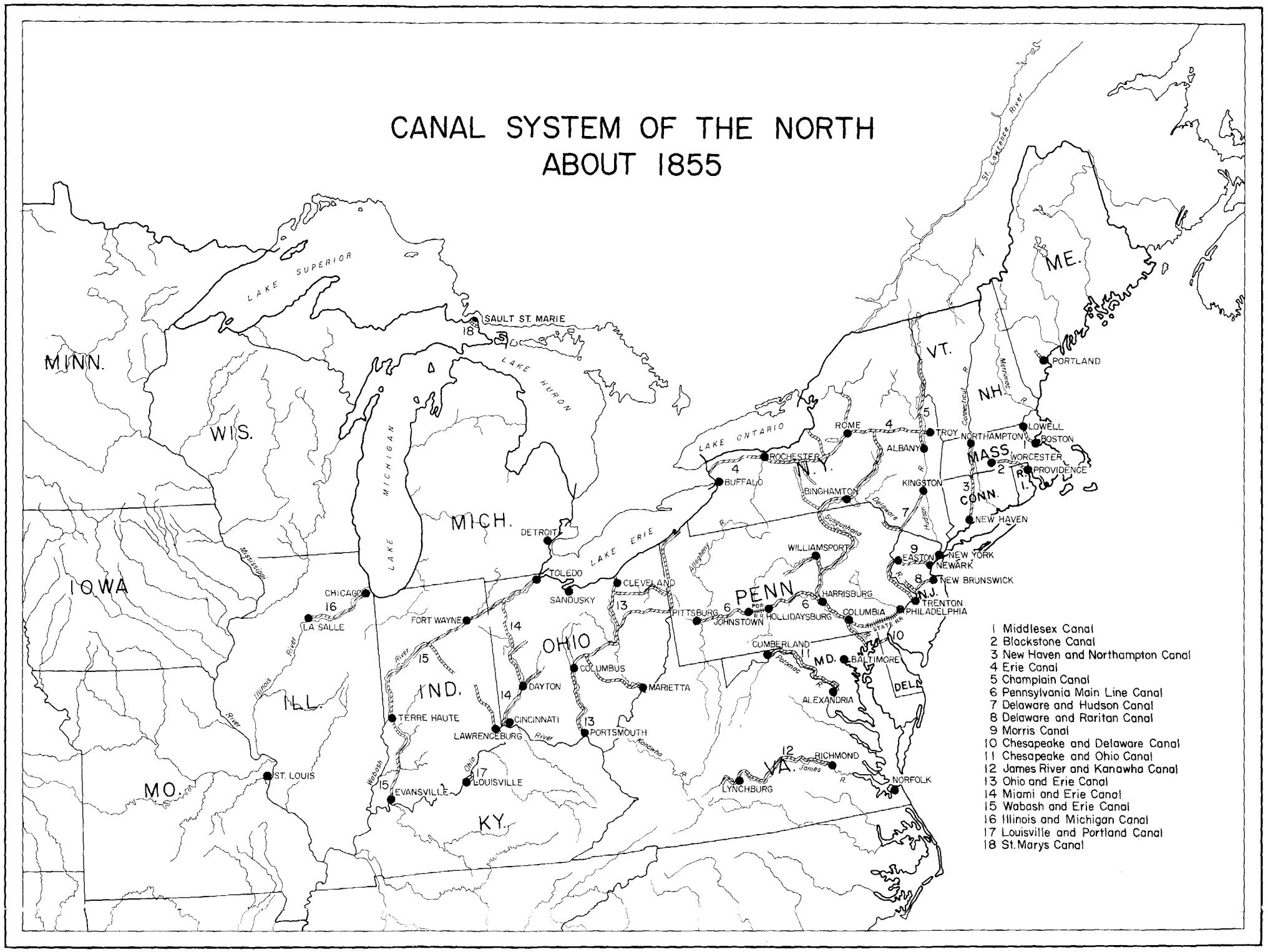
Virginia also had its projects. In 1832 the state chartered the James River and Kanawha Company, and in 1835 the corporation began to construct a canal parallel to the James River, intending to build a railroad from the terminus over the mountains to the Kanawha, and to improve that river to the Ohio. By 1840 the canal, after many difficultues, reached Lynchburg, and by 1851 it was completed some 50 miles farther, but the rail connections over the mountains to the Kanawha were never built.

Americans went heavily in debt to build these vast improvements. State debts, which had amounted to only $12,790,728 in 1820, increased to $66,482,186 in 1835, soared to more than $170,000,000 in 1838, and rose to $200,000,000 in 1840, nearly all incurred for banks, turnpikes, canals, and railroads. Unfortunately the financial history of most of these canals did not duplicate that of the Erie. Only seven states had not contracted debts for these purposes. When the panic of 1837 struck, many states were on the verge of financial bankruptcy, and by 1842 eight states

were forced to repudiate their debts.

The demonstration of the earning power of most of the canals was halted by the competition of railroads in the 1850's. But canals also had a larger economic importance than from merely the financial viewpoint. These new canals, from 1820 to 1850, at once became the main avenues of travel and of emigration, carrying westward a great tide of settlers. They also enabled people to live in the newly settled western areas by carrying away their produce and by returning with the necessities and comforts which a new country needed and which it could not produce for itself.

CANAL SYSTEM OF THE NORTH
ABOUT 1855



1 Middlesex Canal
2 Blackstone Canal
3 New Haven and Northampton Canal
4 Erie Canal
5 Champlain Canal
6 Pennsylvania Main Line Canal
7 Delaware and Hudson Canal
8 Delaware and Raritan Canal
9 Morris Canal
10 Chesapeake and Delaware Canal
11 Chesapeake and Ohio Canal
12 James River and Kanawha Canal
13 Ohio and Erie Canal
14 Miami and Erie Canal
15 Wabash and Erie Canal
16 Illinois and Michigan Canal
17 Louisville and Portland Canal
18 St. Marys Canal

The Coming of the Railroad
1830--1865

The railroad united two unrelated developments. The first was the invention of the prepared roadbed, the second was the application of steam engine to locomotion. Railways, using a prepared roadbed, and powered by animals or fixed steam engines, had been used in both England and the United States for many years. But the creator of the steam railroad was George Stephenson, a English engineer for the Liverpool & Manchester Railway, who successfully demonstrated the new device, the Rocket, in 1829 and 1830.[1]

The railroad, like the turnpike and canal, was built to attach a large tributary area to the Atlantic seaboard cities. The rivalry of these great cities resulted in a desperate competition to reach the agricultural regions of the West by the rapid construction of East-and-West routes. The great railroad race that was about to begin in 1830 was precipitated by the overlordship bestowed upon New York by the Erie Canal. Outdistanced rivals had generally reacted with the construction of their own canals, but topographical features could not duplicate those that favored the Erie. Thecoast cities were thus stimulated to seek some new device that would again equalize the race for markets.

Baltimore, left by the wayside in the plans for the development of the Chesapeake and Ohio Canal, countered with a scheme of her own, the Baltimore and Ohio Railroad. City merchants incorporated the railroad company in 1827.

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[1]Other men whose work contributed to Stephenson's final solution were the Englishman Richard Trevithick, working in 1802 and 1804; and the American, Oliver Evans, who experimented in 1803.

On July 4, 1828, the same date that the Canal Company began construction, the railroad also turned the first shovel of earth; the race was on. Horse and sail power were first used to move the cars of the railroad but in 1830 the first locomotive, the Tom Thumb, was successfully demonstrated on the road, and the new device was adopted in 1832. As the railroad proceeded up the north bank of the Potomac, the canal and railroad quarreled violently over the right of way; court injunctions and state jealously prevented the railroad from passing beyond the narrow pass at Harpers Ferry until 1840. In order to proceed further west the railroad was finally forced to cross the Potomac to the south bank and build through Virginia. The panic of 1837 cut off financial assistance from both Maryland and Viriginia, but additional aid was finally secured from the Barings of London, and the railroad reached Cumberland in 1842, eight years ahead of the Chesapeake and Ohio Canal. The railroad was now blocked by mountains, and Pennsylvania, acting in the interests of the Pennsylvania Railroad, prohibited the Baltimore and Ohio from crossing the southwest corner of that state. Engineers then found a feasible route across the mountains, and Wheeling, after subscribing $1,000,000 to the railroad, was chosen as the western terminus. The railroad, however, was not able to cross the Appalachian barrier and enter Wheeling until 1852.

Boston also saw her hegemony over New England threatened by the construction of canals. In 1830-31 the Massachusetts legislature chartered three railroads which were to form the spokes of the Boston hub--the Boston and Lowell, the Boston and Providence, and most important of these, the Boston and Worcester. All three were completed by 1836. The Boston and Worcester was the first unit in the line designed to tap the

Erie Canal by building towards Albany. The Western Railroad, chartered in 1833, was run from Worcester to the western boundary of the state, there to connect with a line coming east from Albany. The connecting roads were completed in 1842. By 1850 New England had the most complete rail network in the United States. Boston was the center of 3,000 miles of railroad. Lines had been pushed up the Main Coast as far as Portland, and other roads crossed New Hampshire and Vermont, and also tapped resources in northern New York in the Lake Champlain region.

In New York State the Mohawk and Hudson Railroad was chartered in 1826, and its 17-mile line, extending from Albany to Schenectady, was finished for traffic in 1831. In August of that year, the third locomotive built in America, the De Witt Clinton, made a satisfactory trial run. The opening of this road was followed by the construction between 1830 and 1842 of 13 other independent railroads, abutting end to end, and stretching from Albany to Buffalo, thus paralleling the route of the Erie Canal. Boston capitalists were enthusiastic subscribers to the stock of these roads for these lines threatened to direct the grain products of the west directly to New England, without first passing through New York City.

New York City, at last alarmed by this possibility and also in the hope of drawing the commerce of the southern counties of the state away from Philadelphia, planned the construction of a direct through railroad, the New York and Erie, to connect New York City with Lake Erie. The company was chartered in 1832 but construction did not start until 1836. Great financial difficulties delayed progress, and the railroad did not succeed in reaching Dunkirk on Lake Erie until 1851.

In Pennsylvania, Philadelphia had suffered most from the competition of the Erie, and her first response, the great Pennsylvania Main Line Canal, had been a failure. By 1842 the state was forced into bankruptcy. The

second response was the Pennsylvania Railroad, a private corporation chartered in 1846 for the purpose of building a railroad from Harrisburg to Pittsburgh. This line, which also included some of the state-built railroads, was constructed rapidly but it was not until 1858 that a through line extended from Philadelphia to Pittsburgh.

Virginia adopted a policy of state aid to privately owned railroad projects. The first railroad grant was made in 1831, and by 1852 the state debt, largely invested in railroads, was $11,971,830. Various small railroads were built north and south and when joined together completed a single-track line from North Carolina to the Potomac; other lines ran inland from the ports of Norfolk, Petersburg, and Richmond; western routes, rivals of the James River Canal project, were gradually evolved into the Central Rialroad which, curving northward from Richmond, was to penetrate the mountain passes to reach the Ohio River. A second railroad, the Virginia and Tennessee, was to run southwest from Lynchburg through the westem valleys to Chattanooga. Neither of these western roads, however, was completed until after 1850.

Farther south, Charleston chartered the South Carolina Canal and Railroad Company in 1828, to build a railroad from that city across the state to Hamburg, a town on the Savannah River opposite to Augusta. It was hoped that this line would divert the river traffic from Savannah to Charleston. In 1830 one of the first locomotives made in America, The Best Friend of Charleston, was successfully demonstrated on this line. The completed road, 136 miles long, was opened for traffic in 1833. Charleston then planned to build west over the mountains to Cincinnati and

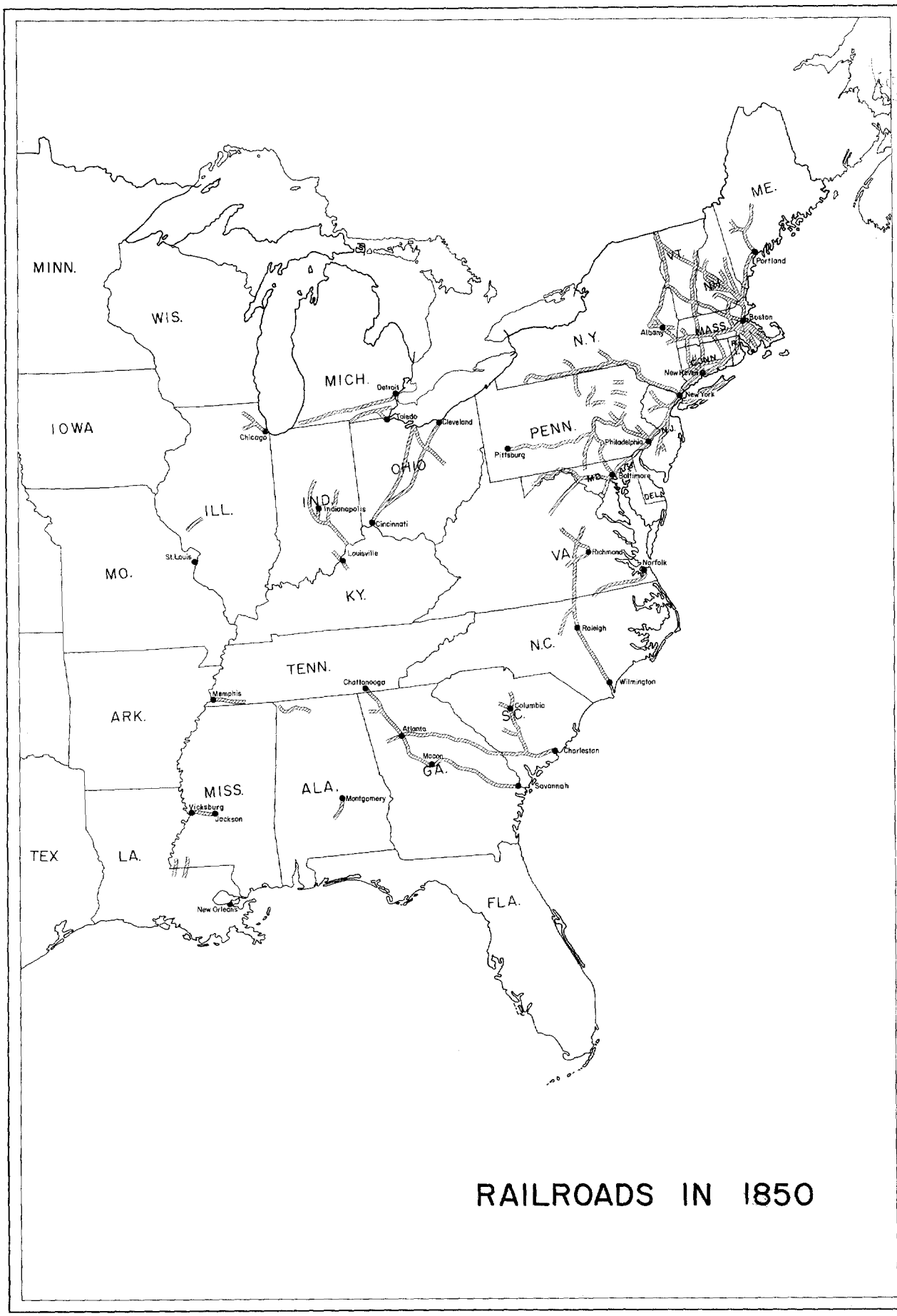
Louisville but these schemes collapsed in the panic of 1837.

In 1833, Georgia made two moves to counter those of Charleston. Savannah organized the Central of Georgia Railroad and Canal Company to construct a railroad from Savannah to Macon; while the state legislature chartered the Georgia Railroad Company to build inland from Augusta. Hardly 50 miles apart both roads built inland. In 1836 the state legislature ordered the survey and construction of the Western and Atlantic Railroad from De Kalk County (where Atlanta then arose from the wilderness), over the mountains to the Tennessee River (where Chattanooga was to spring from the wilderness). After meeting the customary financial difficulties, the Western and Atlantic, the only state-owned and state-operated railroad in the United States, was finally opened to traffic in 1851. This road, with the two eastern lines, gave Georgia the first western connection in the southern states and made it the kingpin of the whole southern railway system.

By 1850 these Georgia roads had connected the interior cotton belt with the Atlantic seaboard. In 1848-49 cotton receipts fell off at New Orleans, while they greatly increased at Charleston and Savannah. Both Gulf cities, New Orleans and Mobile, were alarmed by this trend but New Orleans, prior to 1850, contented herself merely with projecting grandiose plans for railroads. Mobile, on the other hand, began energetically in 1848 to build a road that was intended to reach the Mississippi at Columbus, Kentucky.

In the Middle West railroad construction prior to 1850 was largely of a fragmentary nature. In Ohio, however, a railroad was completed across the state in 1848, from Cincinnati to Cleveland and Sandusky.

The Michigan Central, chartered in 1846, crossed that state in 1849, connecting Detroit with Lake Michigan.



RAILROADS IN 1850

The construction of the American railroad network up to 1850 was a gigantic experiment. In this period hardly two railroads were built alike; each had its own gauge, and variety of equipment. The scarcity of investment capital and building through country whose traffic possibilities were mostly potential led to rapid, cheap, and inferior construction. To save money in the initial construction railroads were built with steep grades, sharp curves, and out of inferior material. The result was constant repair or entire reconstruction of roads, and the accident rate was exceedingly high.

In 1850 there were 9,021 miles of railroad in the United States. Almost all of these had been constructed east of the Appalachians.[1] With but one exception -- the string of 14 end-to-end railroads extending from Troy and Albany through central New York State to Buffalo--no through east-west route between the Atlantic seaboard and interior had been completed. Also, no through north-south route had been built either east or west of the Appalacians prior to 1850.

The decade of the fifties saw the general completion of the main rail network east of the Mississippi. In the South, the Western and Atlantic of Georgia reached Chattanooga in 1851. The Erie railroad, a 485-mile through road under one management, was also completed from New York to Lake Erie in 1851. Competition from the Erie spurred to consolidationg the 14 end-to-end roads from Albany to Buffalo. The New York Central Railroad, combining these 14 lines, was incorporated by the State of New York, in 1853. The Baltimore and Ohio, halted at Cumberland since 1842, pushed over the mountains and entered Wheeling on the Ohio on Christmas Eve, 1852. The Pennsylvania Railroad finally completed its through route from Philadelphia to Pittsburgh in 1858.

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[1]Rate of railroad expansion was as follows: 23 miles in 1830; 1,098 miles in 1835; 2,818 miles in 1840; and 4,633 miles by 1845.

Having reached their original western terminals, the eastern lines were next to push on to new western terminals located on the Great Lakes, the Ohio and the Mississippi. The great struggle in the northwest grew out of the rivalry between St. Louis, Milwaukee, and Chicago for the trade of the upper Mississippi and of the Missouri. Milwaukee drove railroads across Wisconsin to the Mississippi, but she was handicapped by the fact that she had only lake connections to the eastward. To maintain the importance of St. Louis, Missouri sponsored a railroad network that was to radiate from the great river port, and which was also to connect at the western border of the state with a project transcontinental railroad.

But Chicago possessed advantages that made her supreme. Standing on the southern tip of Lake Michigan, all lines from Iowa, Wisconsin, and Minnesota that connected with the East were forced by geography to pass through Chicago. In the fifties railroad after railroad sought her as a terminus. From the East came the Michigan Central and Michigan Southern, and in 1852-53 an all-rail connection via these lines was completed between New York and Chicago. In 1854 the first rail connection between Chicago and the Mississippi was secured over the tracks of the Chicago and Rock Island. The Illinois Central, 1850-54, drove south from Chicago to Cairo at the mouth of the Ohio.[1] In 1857 St. Louis and the Baltimore and Ohio completed connections linking St. Louis and Cincinnati with Baltimore. In 1858 the Pennsylvania Railroad entered Chicago over the tracks of the Pittsburgh, Fort Wayne, and Chicago Railroad.

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[1]At the request of western states, the Federal Government, in 1850, made the first federal land grant to states for the purpose of aiding the building of railroads. The Illinois Central received some 2,595,000 acres along its right of way. This grant set the pattern for the many other land grants that were made for the same purpose after 1856.

South of the Ohio River there was the same rivalry between river ports that desired to become railroad centers. Of them all, Chattanooga, situated at the head of navigation on the Tennessee River and accessible also from the East, was invincible. The connections from Richmond, Charleston and Savannah were all completed by 1858, and lines were also being constructed eastward from Natchez, Vicksburg, and Memphis, on the Mississippi, towards Chattanooga. Of these three competitors, Memphis was most successful, reaching Chattanooga in 1857. Nashville also built railroads, thereby connecting with the Atlantic seaboard south to Chattanooga and north to the Ohio.

In the 1850's New Orleans finally began to build railroads: one, running north to the Ohio, reached Columbus, Kentucky in 1858; the second was to go toward Texas, but by 1861 it had not yet reached the western boundary of Louisiana. Mobile's railroad to the Ohio reached Cairo in 1859.

By 1860 the United States had 30,626 miles of railroad, all of it, except for 22 miles in California, located east of the Mississippi.[2] Of this total, only 9,283 miles -- less than one-third--were located in the South.[3] The Civil War, 1861-65, halted all major construction of the new railroads and resulted in the almost complete destruction of the railroad system of the South

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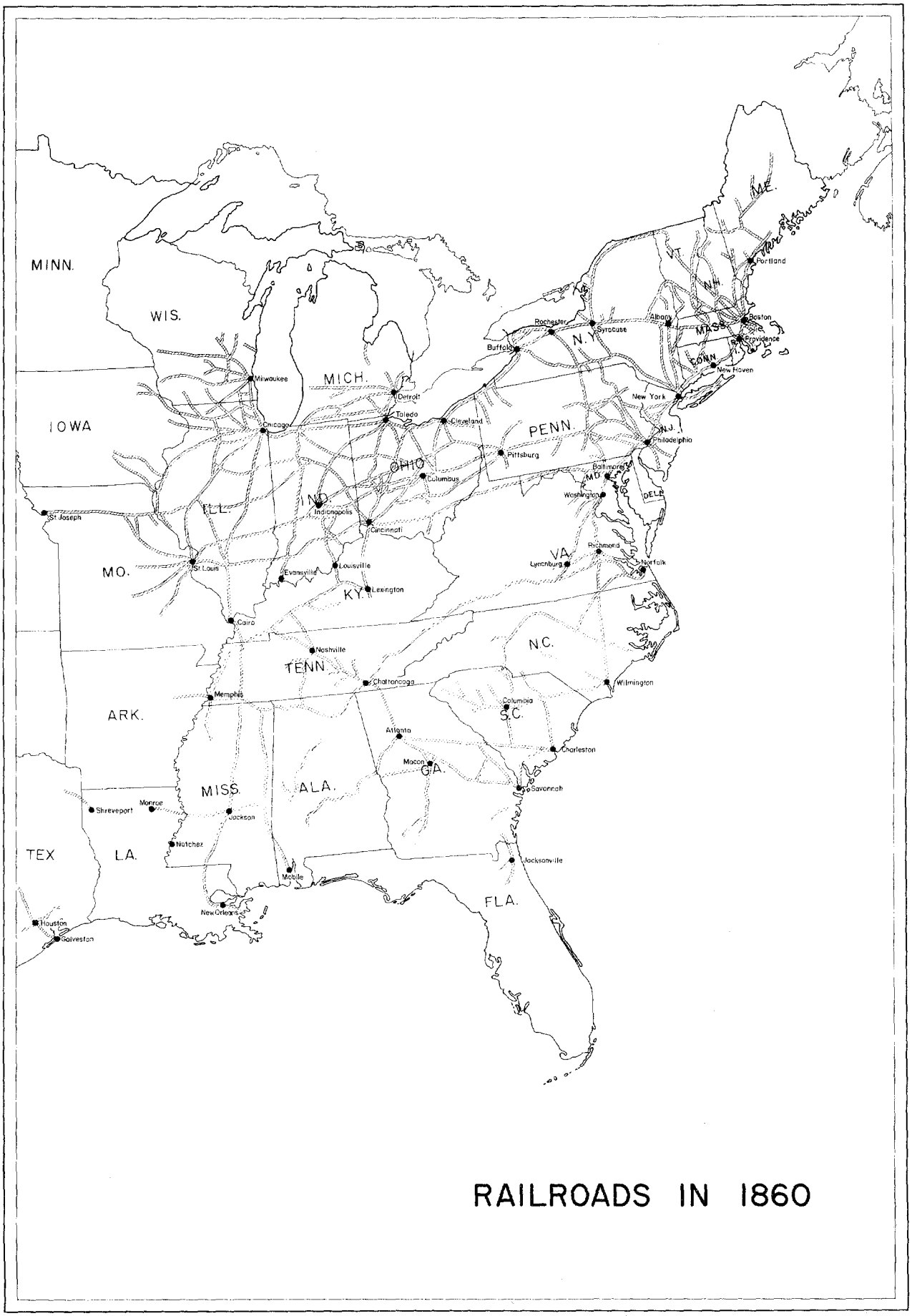
[2]About 1,600 miles of railroad were located west of, but just adjacent to the Mississippi. Thus Missouri had 750 miles, Texas about 300 miles, Iowa 375 miles, and Arkansas about 100 miles.

[3]In contrast with the South, the railway mileage in Ohio, Indiana, Illinois Michigan, and Wisconsin increased from a mere 660 miles in 1847 to 7,653 miles by 1861.



RAILROADS IN 1860

1) Transportation in the Trans-Mississippi West 1849 -- 1865

The first regular communications with the Pacific Coast were established by an Act of Congress in 1847; these provided for monthly mail service by steamship from New York and New Orleans to Panama and from that point to some port in Oregon. Compensation for service over this 6,700-mile route was set at $199,000 per year. The Pacific Mail Steamship Company, incorporated April, 1848, was awarded the contract for the Panama to Astoria portion of the route. The first trip of this company's ship, The California, started from New York on October 6, 1848 and arrived in San Francisco on February 28, 1849, after a 15,000-mile voyage by way of Cape Horn. Service was increased to semi-monthly schedule in 1851. From 1848 to 1869 the bulk of the "heavy mail" was carried by steamship to the West Coast.

The discovery of gold and the great rush of population to California in 1849-50 led to western demands for improved mail service. Congress responded by establishing five overland mail routes between 1849 and 1858. These monthly and semi-monthly mails were carried by pack animals, usually mules, and were therefore known as the "Jackass Mail." As conditions along the routes improved, stagecoaches were introduced. Through trips, from Independence, Missouri to California took about 60 days.

This slow service led to new demands for faster overland mail. Congress finally responded in 1857, passing a law that provided for compensation of $600,00 per annum for a semi-weekly stage service from St. Louis

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1) Only a summary is given here as this subject has been treated in some detail in the subtheme study of Theme XV, "Transportation and Communication," 1960, pages 1-44.

and Memphis to San Francisco, the through run to be made in 25 days. John Butterfield received the contract and organized the famous Overland Mail Company for this purpose. Service, using Concord coaches, started over the 2,795-mile Southern Overland Route in 1858, the mail was regularly carried through in from 21 to 23 days from 1858 to 1861.

Other stage lines followed in an effort to obtain equally lucrative government mail contracts, using the shorter Central Overland Route from St. Joseph Missouri to Sacramento, California. Chief among the competitors was the famous firm of Russell, Majors, and Waddell, which from 1854 to 1860 had obtained, by means of government contracts, a monopoly of all the military freighting operations on the Great Plains. In this business the company used some 50,000 oxen, 625 wagons, and employed from 1,700 to 2,000 men. The partners began stage and mail service on the Central route in 1859, providing a through trip of from 16 to 20 days. To further increase their chances of winning a proposed $1,000,000 mail contract away from the Butterfield interests, William H. Russell organized the Pony Express, whose relay riders, riding day and night, carried the mail over the Central route in 10 days. The Pony Express operated from April 1860 to October 1861, when the first transcontinental telegraph line was completed. When the Civil War blocked the Southern Overland Route, Russell and Butterfield were jointly awarded the great mail contract on the Central Overland Route. By 1861, however, Russell, Majors, and Waddell were bankrupt, and Ben Holladay, the "stagecoach king," purchased the firm in 1862. Holladay, in conjunction with the Butterfield interests, operated the overland mail stages from 1862 to 1866. In addition to the Central route, Holladay also controlled nearly 5,000 miles of other

western stage lines, as well as steamship lines to Oregon and the Far East. In 1866 Holladay sold his stage holdings to Wells Fargo and Company. By this purchase Wells Fargo secured an exclusive monopoly of all express and of almost all stage routes between the Missouri River and the Pacific Coast. The completion of the first transcontinental railroad in May 1869, however, ended forever the era of the overland stage.

Telegraph, 1832 -- 1865

The electromagnetic telegraph was perfected by Samuel F. B. Morse, of New York City, between 1832 and 1837.[1] In 1843 Congress appropriated $30,000 for the construction of a line between Baltimore and Washington, D.C., over which the new invention was successfully demonstrated in 1844. A private telegraph company was then organized, and after experiencing considerable financial difficulty, opened its first line between Philadelphia and Newark in 1846.

The extension of the new means of communication, guided by Ezra Cornell, was then rapid. In 1846-47 the lines were extended to New York, Boston, Albany, and Buffalo and in 1848 to Cleveland, Toledo, Detroit, and Chicago. The first telegraph companies in California were organized in 1851, and as early as 1854 plans were proposed for the construction of a transcontinental line. In June 1860, Congress passed legislation providing a subsidy and land grant for the construction of such a line. The contract was awarded to Hiram Sibley of the Western Union Telegraph Company,[2] and simultaneous construction on the line from East and West was begun in May and July of

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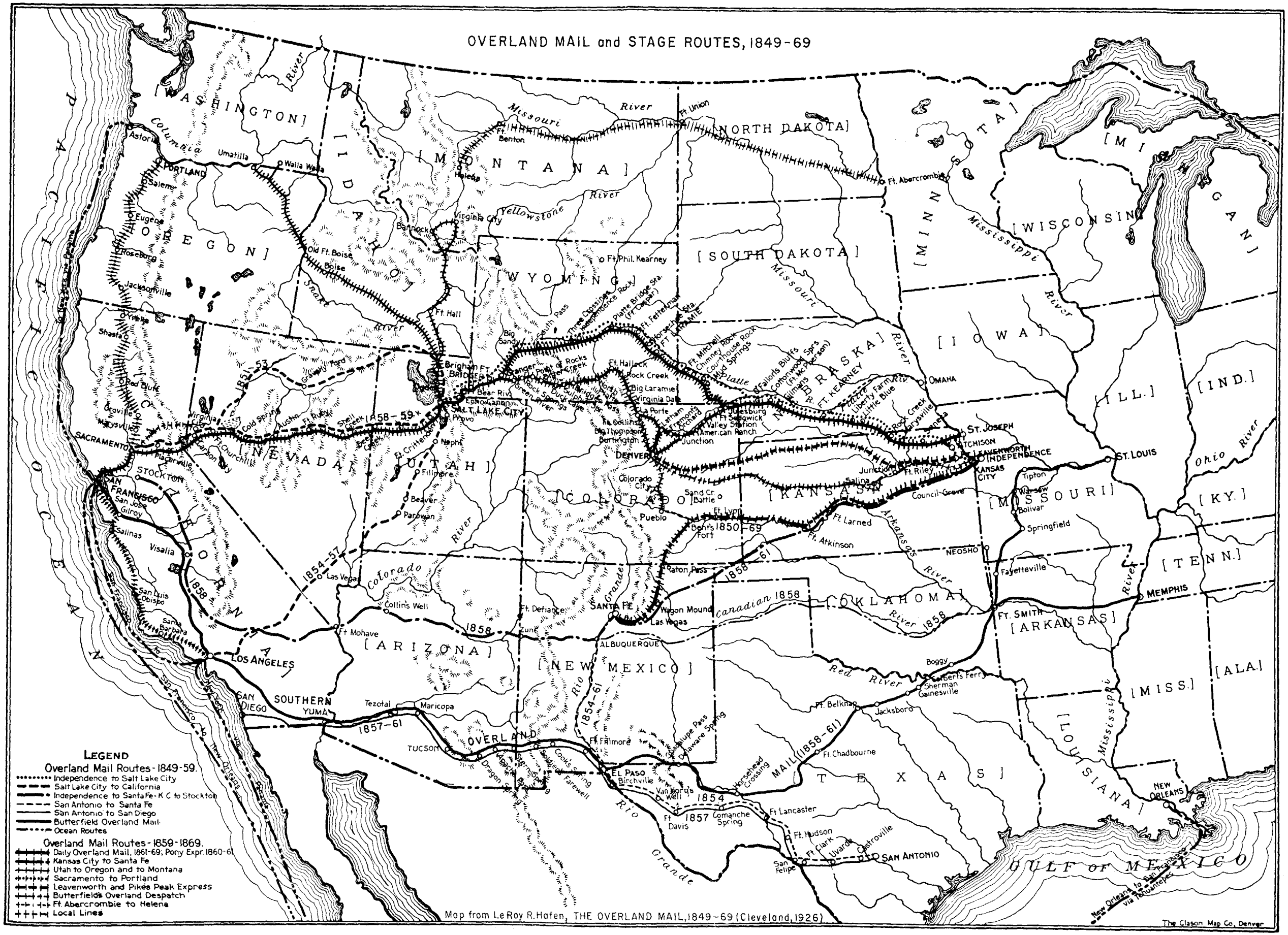
[1] Morse was greatly indebted to the work of many other men, including that of Alfred Vail.

[2] The Western Union Telegraph Company was organized in 1855.

of 1861. The two ends of the wire were joined at Salt Lake City, Utah, on October 24, 1861. By that year there were about 50,000 miles of telegraph lines in operation in the United States. The possibilities of telegraphy in underseas communication were also quickly realized. Cyrus Field completed the first transatlantic cable in 1858, but transmission was not successful until the cable was relaid in 1866.

OVERLAND MAIL and STAGE ROUTES, 1849-69



Map from Le Roy R. Hafen, THE OVERLAND MAIL, 1849-69 (Cleveland, 1926)

The Clason Map Co., Denver

(Section III)

Travel and Communication, 1865-1910

The Railroad is "King"

In the period following the Civil War the railroad emerged as the dominant means of transportation in the United States. It was an era of almost unbelievably rapid expansion and construction: mileage amounting to 30,626 miles in 1860, increased by 1870 to 52,922; to 93,262 by 1880; to 166,703 by 1890; to 193,346 by 1900; and to 240,293 miles by 1910. Railroads advanced rapidly across the continent to the Pacific Coast, thus creating not only a great national market but also swifly opening the trans-Mississippi West to settlement. These two achievements made possible the great agricultural and industrial development that raised the United States to the rank of a world power by 1900.

In the era following the Civil War the railroad construction projects ceased to be purely local in scope and became transcontinental in aspiration. The earlier uncertainty of profits due to construction in the advance of population and of traffic, however, remained, as did the earlier difficulty in raising the funds. Private capital was inadequate for the task, so between 1850 and 1875 nearly every governmental unit--town, city, county or state, not prohibited by some constitutional restraint, issued its own securities or guaranteed those of private corporations, in the millions of dollars, for the purpose of constructing railroads. Between 1856 and 1872 the federal government also granted almost 200,000,000 acres of public land and $64,623,512

in bonds for this purpose.[1]

After 1865 artificial methods of capitalization were devised to obtain the necessary funds for construction and to make money, thus introducing an era of speculation in which legitimate chance-taking shaded imperceptibly into criminal fraud.[2] The operation of railroads also fell into the hands of individuals who were less concerned with the propperity of the roads or the welfare of the communities served than with making money for themselves. This they could do most rapidly through the stock market, where the securities of the railroad corporations were bought and sold, and where the main interest was not traffic but in the manipulation of stock prices and the issuing of "watered" stock.[3] It is small wonder that the cycles of business depression which swept the nation in 1837, 1857, 1873, and 1893 were in part caused by the overexpansion of the railroads and by their financial practices.

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[1] Of these total federal land grants, 131,362,183 acres or 242,000 square miles were finally patented by the railroads; the remainder was forfeited by the inability of the railroads to meet the requirements of the law. These land grants included 1/4th of the states of Minnesota and Washington, 1/5th of Wisconsin, Iowa, Kansas, North Dakota, and Montana;1/7th of Nebraska, and 1/8th of California. The national bonds, after a valiant struggle to avoid payment, were finally and reluctantly redeemed by the railroads.

[2] Jay Cooke's financial operations for the Northern Pacific Railroad, 1869-1873, is an excellent example of this type of fund raising.

[3] Classic examples of master manipulators operating with railroads in the stock market are: Daniel Drew, Jim Fisk,and Jay Gould with the Erie Railroad, 1864-74; Jay Gould with the Union Pacific, Kansas Pacific, and Denber & Rio Grande, 1873-1883; and C. S. Mellen with the New York, New Haven, and Hartford Railroad in 1903. It was estimated that of the $7,500,000,000 indebtedness of the railroads in 1883, as much as $2,000,000,000 represented water.

After 1865, the energy, ambition, and desire of individuals to make money were relied upon to construct and operate the nation's chief means of transportation. In effect, peaceful and orderly development was thrown overboard, and man was invited to strive with man and company to war with company. The law of the jungle prevailed in the railroad world. From this "reign of competition" it was believed that even though some railroads might go into bankruptcy, the general public would still benefit from extended facilities, improved service, and lowered rates. The spactacular results of this method of doing business far exceeded everyone's expectations, but not in ways anticipated. With such high prizes at stake, the railroads violated every item in the code of public ethics.

Public officials--state, federal, and local--and including judges, legislators, and executives, were bought and sold by the railroads. The logical climax of this competitive system came in 1893-98, when 156 railroads with about one third of the total mileage (67,000 miles) in the United States went into bankruptcy.[1]

The competition of the latter part of the nineteenth century was to be the most violent the United States had ever witnessed because of the very nature of the railroad. Investments in roadbed and terminals were fixed; a certain minimum payment was necessary, whatever the extent of operations, and operating expenses did not increase proportionately to the amount of traffic carried. Hence the railroads were desperately eager for traffic volume and would continue operations under any circumstances which promised some return. Deficits on some traffic would be borne if they could be made up on others; periods of extended loss would be suffered in the hope of future profits. The railroads therefore engaged in bitter

[1] In 1893 there were 1,034 railroads in the United States, with 169,780 miles of track.

rate wars for the purpose of diverting to their own lines as much of the existing traffic as was possible. In areas that were safe from competition the rates were set at all the traffic would bear. In disputed territories, however, rate cutting, the rebate,[1] and discrimination between long and short hauls, were applied with vicious effects on individuals and communities involved. The disastrous economic consequences of this intensive competition on the railroads soon became apparent. Periods of rate cutting would then be followed by "pools" or agreements, whereby transcontinental and regional traffic of a disputed territory would be divided among the contestants according to a mutual plan. Brief periods of peace followed, with the rates set and the volume of traffic divided until one railroad believed itself to be in a strong enough position to disregard the terms of the treaty, thus launching a new rate war. The constantly expanding rail facilities ever widened the size of the market and with it the field of competition. As the scale of competition expanded so did the "pools" until they embraced much of the country. The evils of this system of unlimited competition could not be checked, for no one man or group of men was able to impose a dictatorship upon the railroad world for many years. The nation was thus confronted with a serious new problem.

Railroads East of the Mississippi, 1865-1893. Such complex competition appeared first in the Northeastern United States, where the era of short roads serving purely local needs came earliest to its close. By 1855 the Baltimore and Ohio, the Pennsylvania, the Erie, and the New York Central

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[1] The rebate was a reduction from the published tariffs which railroads granted to corporations or individuals in order to secure their traffic patronage.

were all reaching out for the same western traffic and engaging in rate wars. But this competition was only a preliminary skirmish to the larger conflict which grew steadily in intensity after the Civil War.

Cornelius Vanderbilt emerged in 1864 as the prototype of the new railroad capitalist who was to dominate the railroad world during the last half of the 19th century. He had amassed a fortune in steamboating, first on the Hudson River and Long Island Sound and later on the Atlantic. In the conduct of his business he gave and asked no quarter. In 1860, at the age of 66, "Commodore" Vanderbilt audaciously embarked upon the project of creating a railroad system and further enlarging his fortune. By 1864 he had consolidated the two independent lines between Albany and New York City and emerged from the speculative flurries to which the stocks of these concerns were subjected in Wall Street with enormous winnings. He then began the purchase of stock in the New York Central Railroad and obtained control in 1866-67. In 1869 he consolidated his holdings into a new corporation called the New York Central and Hudson River Railroad, with a through route from New York City to Buffalo and also a $42,500,000 increase in book value of the properties of the railroad.

In 1867 Vanderbilt decided to add the Erie Railroad to his properties to prevent the possibility of its competition with his holdings. He launched his campaign to obtain control of this rival railroad by purchasing its stock on the open market in 1868, and in so doing came into direct conflict with the talented Erie ring of manipulators comprised of Daniel Drew, Jim Fisk, and Jay Gould. The great battle raged in the stock market, in the courts, and finally in the New York Legislature. Representatives in that body were purchased by both parties in an effort to obtain

favorable legislation. The Erie ring proved more adept in this procedure, for a law was passed forbidding the union of the Central and Erie under any condition. Vanderbilt had met his match, and although a peace treaty was signed which relieved the Commodore of some of his Erie stock, he had lost $2,000,000 and also failed to secure possession of the Erie. Thwarted in this effort, Vanderbilt pushed his rail control westward, and by his death in 1877, had a through route of 981 miles from New York to Chicago. He had also accumulated a personal fortune of $100,000,000, relaid his track with heavy rail, erected strong bridges, replaced defective equipment, and reduced the running time between New York and Chicago from 50 hours to 24. The Central continued to progress under the direction of Vanderbilt's heirs and, after 1885, also of the banking house of J. P. Morgan. Its lines reached from St. Louis to Boston and from Detroit to Cincinnati, and by 1900 the Central system had slighly more than 10,000 miles of track.

The Erie railroad was systematically looted for many years but finally escaped from Gould and Drew in 1874. The road then passed through receivership and reorganization from 1875 to 1878. In 1883, through lease and construction, the Erie finally secured an entrance into both Chicago and Cincinnati and was finally in a position to compete with its rivals. Financial difficulties, however, again dogged the company from 1884 to 1887. The company was then financially solvent until the Panic of 1893, but the heavy debts incurred by the Erie ring were a heavy load on the company throughout this period.

The Pennsylvania Railroad, under the leadership of J. Edgar Thomson, Thomas A. Scott, and George B. Roberts, was steadily more aggressive during this period. In 1869, with the acquisition of the Pittsburgh, Fort Wayne and Chicago, it entered Chicago. In the seventies it extended

its tracks west to St. Louis and in the east through New Jersey to New York harbor. Feeders were also built south to Cincinnati, Washington, and Richmo and north to a row of ports on the Great Lakes. By 1900 the Pennsylvania system had more than 10,000 miles of track. In that same year, under the leadership of Alexander J. Cassatt, the Pennsylvania also undertook the final step to place itself in an equal position with its rival, the New York Central. At a cost of $100,000,000 the Pennsylvania Railroad tunneled under the Hudson River into New York City, erected the great Pennsylvania Station, and then tunneled under the East River to Long Island, where it secured connections with New England lines over the Hell Gate Bridge.

The Baltimore and Ohio Railroad, led by John W. Garrett, and his son Robert Garrett, found itself engaged in intense competition with the Pennsylvania Railroad. After great difficulty the Baltimore and Ohio Railroad achieved an entrance into Chicago in 1874, but was less successful in the East, where its only access to New York City was over the lines of the hostile Pennsylvania. In 1884, by an exceedingly expensive bit of construction, the Baltimore and Ohio succeeded in extending its own lines from Baltimore to Philadelphia. A second step completed at this time was the arrangement of traffic contracts with other independent roads which penetrated the New York area. Although the Baltimore and Ohio thus reached the west bank of the Hudson River, it was unable to achieve a direct entranc into New York City.

The railroad system and economic life of the South had been almost entirely destroyed by the Civil War. Reconstruction of the Southern rail network, controlled largely by the Pennsylvania Railroad, began in 1867.

By 1874 the Richmond and Danville had completed a line from Richmond to Atlanta, and in 1878 its feeders reached into South Carolina. In 1870 the Pennsylvania Railroad also acquired control of the East Tennessee, Virginia and Georgia Railroad and began rebuilding west of the Appalachian Mountains. A holding company called the Southern Railway Securities Company was then formed to control all of the Pennsylvania Railroad interests in the South. But because of the extreme disorder and depression in the South during the Reconstruction period, these southern roads did not prosper; and the poorer sections began to default. The Pennsylvania then disposed of its interests and left the roads to shift for themselves. The period 1877-1893 in the South was then marked by typical overexpansion, failure, and reorganization, and the southern railroads were inspired by the same ruthless spirit of competition which bankruptcy had induced in certain northern lines.

Railroads West of the Mississippi, 1865-1893.[1] The construction of the "transcontinental" railroads which connected the Mississippi Valley and the Great Lakes with the Pacific Ocean wrote a vivid chapter in the history of the United States. Building their lines far in advance of the lines of settlement, these railroads brought within easy reach every considerable section of the West. Possessed of millions of land grant acres, the transcontinental railroads advertised widely in the East and Europe, and brought thousands of settlers to the Far West. Finally, these railroads completed the last links in the chain of transportation necessary to create a continental market.

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[1] Only a summary is given here as this subject has already been treated in detail in the subtheme study of Theme XV, "Transportation and Communication," 1960, page 45-92.

The construction of the transcontinental roads followed the same general pattern established earlier by the lines built east of the Mississippi. However, the vastnesses of the trans-Mississippi territory and size of the railroads involved tended to exaggerate the details of the process. The gamble and stakes were higher. Construction and expansion were further spurred by the desire to avoid dependence upon associates who at any moment might prove faithless, or to achieve a monopoly of territory and thus to prevent competition. The American phenomenon of temporary and flimsy construction was also represented in the trans-Mississippi West.

Plans calling for the construction of a transcontinental railroad had been seriously proposed as early as 1845, but the sectional rivalry of the nation prevented any federal action to support these plans until after the South had withdrawn from the Union. In 1862 and 1864 Congress finally passed acts providing assistance for the first transcontinental railroad project. A federal land grant was made directly to the two railroad corporations involved, largely because the proposed route extended through territories rather than states. In addition, the government granted a subsidy of 30-year national bonds, secured by a second mortgage on the road. Serious construction did not begin until 1865, with Central Pacific, led by the Big Four--Leland Stanford, Collis P. Huntington, Mark Hopkins, and Charles Crocker--building east from California, and the Union Pacific, directed by its Chief Engineer, General Grenville M. Dodge, laying track west from Omaha, Nebraska. Spurred on by the government subsidy provided for each mile built, the two companies crossed the continent rapidly in spite of many obstacles, and the two ends of track met at Promontory, Utah,

on May 10, 1869, thus successfully completing what has been called "the greatest engineering and construction feat of the nineteenth century." From 1869 to 1883 the Central Pacific-Union Pacific combination enjoyed a monopoly of transcontinental traffic.

In 1868 the Atchison, Topeka, and Santa Fe Railroad, aided by federal land grants, began building west from Topeka. After bitter struggles with the topography, rival railroads, and financial difficulties, the Santa Fe formed a junction with the lines of the Southern Pacific Railroad at Deming, New Mexico, on March 1, 1881, thus apparently completing the second transcontinental railroad. Unfortunately for the Santa Fe, the Southern Pacific was controlled by Collis P. Huntington of the Central Pacific, and was in alliance with the Union Pacific. In practice the transcontinental traffic was diverted to the Central Pacific-Union Pacific line. It was not until 1885 that the Santa Fe was finally able to enter California and reach the Pacific Coast over its own line, and it was 1900 before Santa Fe entered San Francisco over its own track.

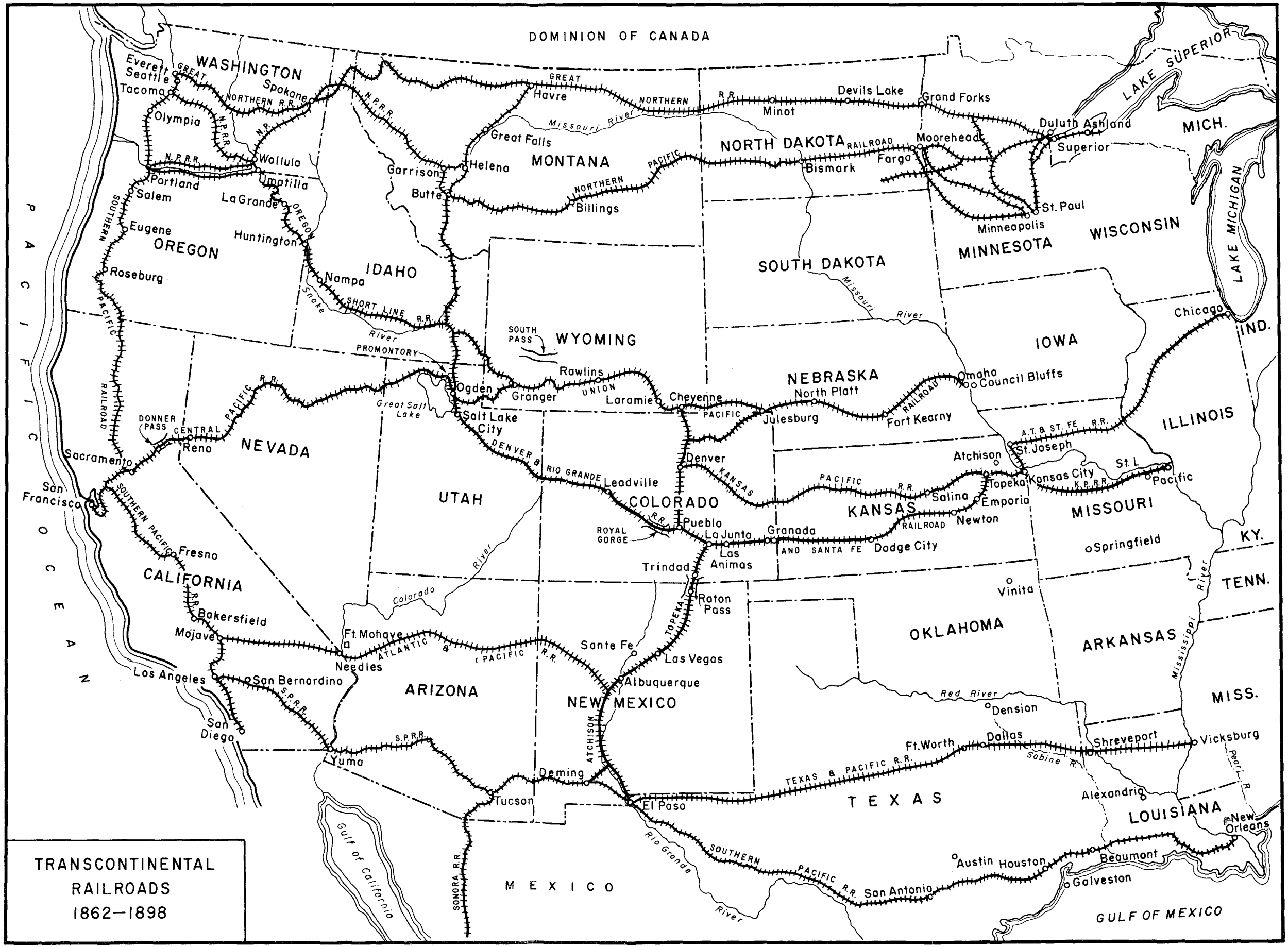
The Southern Pacific Railroad Company of California had been chartered in 1865 for the purpose of building a railroad from San Francisco to San Diego. The "Big Four" of the Central Pacific acquired control of the Southern Pacific in 1868 to protect their interests in the Central Pacific and also to achieve a complete monopoly of railroads in California. Construction on the Southern Pacific southward began in 1871, and by 1877 had acquired control of 85% of the railroads in California. Huntington extended the Southern Pacific line to Deming, New Mexico, in 1881, thus blocking the Santa Fe. In 1882, he pushed his lines to form a junction with Jay Gould's Texas & Pacific, near El Paso, Texas. Huntington, however, was apparently not willing to put too much trust in an agreement with Gould, and in 1883

the Southern Pacific completed its own transcontinental line by forming a junction with the Galveston, Harrisburg, and San Antonio Railroad. The acquisition of this company and the construction of additional lines produced a Southern Pacific through-route from San Francisco to New Orleans. The control of a steamship company next gave the railroad a direct connection with New York. By 1896 the Southern Pacific, which now included the Central Pacific, controlled 7,300 miles of track.

The Northern Pacific Railroad Company, led by Jay Cooke, began construction in 1870 and had completed about 500 miles by 1873, when Cooke's banking house failed in the panic of that year. From 1873 to 1879 the Northern Pacific was bankrupt, and all construction ceased. In 1881, Henry Villard, by means of his famous "blind pool,"[1] obtained control of the Northern Pacific, and construction was continued. On September 8, 1883, the last rail was laid and the line was completed into Portland, Oregon. In 1887 the Northern Pacific finished its line to its original western objective, Tacoma, Washington, in an effort to head off James J. Hill's Great Northern Railroad from the Pacific Coast.

In 1878 James J. Hill, backed by Canadian capital, entered railroading and took charge of the bankrupt St. Paul and Pacific Railroad of Minnesota. As he lacked the assistance of federal land grants and subsidies, Hill adopted the policy of building west in careful stages, pausing to allow the country to develop behind him, thus creating the traffic and also providing the revenues necessary for the next step forward. He also introduced the concepts of efficiency and economy of operation into the Western railroad scene. By these means he completed his Great Northern Railway across the continent to Everett, Washington, in 1893 and controlled about 3,500 miles

[1] Villard offered investors a chance to invest their money in a project organized for an unstated reason and backed only by the security of Villard's word.


DOMINION OF CANADA
LAKE SUPERIOR
LAKE MICHIGAN
PACIFIC OCEAN
GULF OF MEXICO
MEXICO
WASHINGTON
OREGON
IDAHO
MONTANA
NORTH DAKOTA
SOUTH DAKOTA
MINNESOTA
WISCONSIN
MICH.
IOWA
NEBRASKA
WYOMING
NEVADA
UTAH
COLORADO
KANSAS
ILLINOIS
MISSOURI
KY.
TENN.
ARKANSAS
OKLAHOMA
TEXAS
LOUISIANA
MISS.
CALIFORNIA
ARIZONA
NEW MEXICO
IND.
Everett
Seattle
Tacoma
Olympia
Spokane
Wallula
Portland
Salem
Eugene
Roseburg
Umatilla
La Grande
Huntington
Nampa
Havre
Great Falls
Helena
Garrison
Butte
Billings
Minot
Devils Lake
Grand Forks
Bismark
Fargo
Moorehead
Duluth
Ashland
Superior
St. Paul
Minneapolis
Chicago
Omaha
Council Bluffs
North Platt
Julesburg
Fort Kearny
Rawlins
Laramie
Cheyenne
Ogden
Granger
Salt Lake City
Reno
Sacramento
San Francisco
Fresno
Bakersfield
Mojave
Los Angeles
San Bernardino
San Diego
Yuma
Needles
Ft. Mohave
Tucson
Deming
El Paso
Albuquerque
Sante Fe
Las Vegas
Raton Pass
Trindad
Las Animas
La Junta
Pueblo
Leadville
Denver
Granada
Dodge City
Salina
Newton
Emporia
Topeka
Atchison
St. Joseph
Kansas City
St. L
Pacific
Springfield
Vinita
Dension
Dallas
Ft. Worth
Shreveport
Vicksburg
Alexandria
New Orleans
Beaumont
Galveston
Houston
Austin
San Antonio
Gulf of California
Great Salt Lake
Missouri River
Snake River
Colorado River
Red River
Sabine R.
Pearl R.
Mississippi River
Rio Grande River
GREAT NORTHERN R.R.
N.P.R.R.
N.P.
SOUTHERN PACIFIC RAILROAD
OREGON SHORT LINE R.R.
PROMONTORY
UNION PACIFIC
DENVER & RIO GRANDE
KANSAS PACIFIC R.R.
A.T. & ST. FE R.R.
K.P.R.R.
ATLANTIC & PACIFIC R.R.
S.P.R.R.
SONORA R.R.
TOPEKA
ATCHISON
TEXAS & PACIFIC R.R.
SOUTHERN PACIFIC R.R.
SOUTH PASS
DONNER PASS
CENTRAL PACIFIC R.R.
ROYAL GORGE
AND SANTA FE RAILROAD
TRANSCONTINENTAL RAILROADS 1862—1898

of track.[1]

Development of a Nationwide Rail System. Although competition set railroad against railroad, the obvious advantages of cooperation were sometimes too great to be ignored. In the eighties most railroads abandoned their insistence upon their own peculiar gauge, and 4 feet $8\frac{1}{2}$ inches became t standard gauge. Railroads also worked out arrangements for the interchange of freight cars on a mileage or a per diem basis, thus eliminating the former need for private freight car lines. In 1883, the American Railway Association adopted a scheme by which the country was divided into four time zones, roughtly 15° in width, between which the difference of time was to be an hour. Timetables were thus regularized across the nation. In 1889, largely at the insistence of the federal government, the country was also divided into three great districts, within each of which classification of commodities was uniform for all roads.

The period following the Civil War also saw the introduction and use of important improvements in railroad equipment. George M. Pullman constructed his first sleeping car in 1864, and George Westinghouse took out the first of his series of patents on the airbrake in 1868. By the late eighties the light iron rail had generally been replaced by the heavy steel rail.

The Age of Consolidation and Harmony, 1893-1910. The efforts of railroads to limit competition among themselves by means of private agreements or "pools" failed,[2] largely because these pacts were extralegal, and

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[1] The last stage in western expansion of railroads occurred in Alaska. The first such railroad to be built was the White Pass and Yukon Route Railway, begun in 1898 and completed in 1900. This was a narrow gauge railroad running from Skagway to White Horse, Canada. By 1909 Alaska had 333 miles of completed track.

[2] "Pools" were private agreements made between various railroads for the purpose of dividing available traffic in a region upon some percentage basis.

there could be no resort to the courts to secure punishment for members who violated the agreements. Finally, the Federal Interstate Commerce Act, passed in 1887, positively prohibited the use of "pools."

In 1893 the greatest financial storm the United States had yet experienced shook the nation to its economic foundation. Five hundred and fifty-four banks and 156 railroads went into bankruptcy in that year. Into this whirling vortex of economic disaster plunged the Uninn Pacific, the Northern Pacific, and the Santa Fe, in the West.[1] In the East the Erie went into bankruptcy for the fourth time, and down went the Baltimore and Ohio.[2] In the South, some 11,000 miles of railroad also failed.

This general chaos of bankruptcy afforded a great opportunity for an era of actual consolidations. As railroad after railroad was reorganized, the stronger roads invested in the weaker ones or provided the funds necessary for financial readjustment. The years of golden prosperity after 1898 introduced a period of nationwide consolidation by the railroads. Such immense rail systems were formed that it was believed they would be immune from the dangers of unlimited competition. Another device widely adopted to achieve the same end was the uniting of several railroads through the ownership of one another's stock and also by representation on one another's board of directors. By this means a "harmonious" policy which became known as a "community of interests" was widely established.

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[1] In 1893 the Union Pacific had almost 8,000 miles of track, the Santa Fe 9,348 miles, and the Northern Pacific about 2,800 miles.

[2] The Erie system had about 4,600 miles of track in 1893, and the Baltimore and Ohio about 8,500.

The greatest protagonist and master of these policies of consolidation and "community of interests" was Edward H. Harriman. He started as an office boy on Wall Street, saved money, purchased a seat on the Stock Exchange and became a successful speculator. In 1883 he also became a director of the Illinois Central Railroad. Under Harriman's administration the trackage of the railroad was more than doubled, its efficiency increased, its equipment improved, and, with a large cash reserve built up for use in contingencies, its credit became impregnable.

When the Union Pacific went into bankruptcy in 1893, Harriman saw a great opportunity. He compelled the banking house which had undertaken the task of reorganization to permit his participation. He became a member of the board of directors and by means of extensive stock purchases, he secured, by 1900, absolute control of the Union Pacific. Meanwhile the rising prosperity of the country had increased the earnings of the Union Pacific, and these were reinvested in the railroad by Harriman. The original flimsy construction was completely rebuilt. Curves and steep grades were eliminated; heavy steel rails were utilized, and the road was double tracked; more powerful locomotives and larger cars were acquired; and many branch lines lost in the panic of 1893 were reacquired.

Harriman's second great opportunity occurred in 1901. The great capitalists of the Southern Pacific-Central Pacific railroads had died and their stock was for sale. In 1901 the Union Pacific purchased 45% of the Southern Pacific stock, and Harriman became president of that powerful railroad. The flimsy original construction of the Southern Pacific was now also replaced at the expense of the traditional dividends.

Harriman's mighty empire now included the Union Pacific-Central Pacific transcontinental route, the Southern Pacific transcontinental route

to New Orleans , the rail route from Portland to California, most of the rail lines in California, and steamboat lines from New Orleans to New York, from Panama to California, and from San Francisco to Portland. The only threats to this "harmony" came from the Santa Fe in the Southwest and from the Northern Pacific and Great Northern Railroads in the Northwest.

After several battles with the Santa Fe, Harriman quickly convinced that railroad that it should operate its lines in harmony with his. In 1905 two directors of the Union Pacific were elected to the board of directors of the Santa Fe, and Harriman and his associates also purchased above 14% of the Santa Fe's capital stock to insure his victory.

Turning to the Northwest, Harriman launched a war that has become an American financial epic. James J. Hill, master of the Great Northern, backed by the powerful banking house of J. P. Morgan and Company, had also seen a great opportunity when the Northern Pacific went into bankruptcy in 1893. Hill and Morgan quickly secured control of the Northern Pacific, reconstructed it, and "harmonized" it with the interests of the Great Northern. But Hill did not stop there; in the Far West his lines were advancing southward into Oregon, which had been Harriman's exclusive territory, and in the Middle West the Great Northern and Northern Pacific had secured an interest in the Chicago, Burlington and Quincy. This line provided the Hill roads with a direct line into Chicago, made it possible to divert Mississippi traffic to the Northwest over Hill lines, and further invaded Harriman territory. When Harriman sought to obtain an interest in the Chicago, Burlington, and Quincy, the Hill-Morgan group refused his request.

In April 1901, Harriman began the open conflict by purchasing extensive holdings in the Northern Pacific, which in turn controlled one-half interest in the Chicago, Burlington, and Quincy. By May he had acquired $78,000,000 out of a preferred capital stock of $155,000,000 in the Northern Pacific. Victory seemed in his grasp, until lawyers revealed that holders of the common stock could retire the preferred stock at will, and Harriman held only $37,000,000 out of a total of $75,000,000 in common stock. The contest therefore continued on Wall Street. On May 9, 1901, stock of the Northern Pacific leaped from $350 a share to $1,000 a share, and none was available at any price. Stock speculators had been selling stock that they did not possess and were now frantically endeavoring to purchase it in order to fulfill their contracts. Unless Harriman and the Hill-Morgan interests made peace the number of bankruptcies in the nation's financial communities would be appalling.

The great compromise took the form of the Northern Securities Company, chartered by the State of New Jersey in 1901. This corporation was a holding company whose capital stock of $400,000,000 was exchanged for all of the stock of the Northern Pacific and a large part of the stock of the Great Northern, both of which still controlled the Chicago, Burlington and Quincy. The directors of the Northern Securities Company were 15; three of these, including Harriman, were directors of the Union Pacific. Harriman was also made a member of the executive committee of the Northern Securities Company. The purpose of the company was to establish a permanent harmony of interests among the different railroads. By this agreement the Harriman lines, aggregating nearly 21,000 miles, and the Hill lines, totaling 20,000 miles, were united by the community of interest idea. Competition was thus effectively limited west of the Mississippi.

The Supreme Court of the United States ordered the dissolution of the Northern Securities Company in 1904. Harriman emerged from this breakup in good order! His Union Pacific retained $22,000,000 worth of stock in the Great Northern and the Northern Pacific; from the sale of other holdings in these roads he realized a profit of some $35,000,000 which Harriman then proceeded to invest in other railways of the Northwest and the East. Among the eastern roads, he acquired an 8% holding in the New York Central and Hudson River Railroad; the Central of Georgia Railroad was purchased outright, thus providing an outlet in the Southeast; and by 1906 the Union Pacific owned more than 18% of the stock of the Baltimore and Ohio Railroad. Harriman's community of interests now extanded across the nation, and for a time it appeared that the elimination of competition might be accomplished by means of a railroad dictator. In testimony before the Federal Interstate Commerce Commission in 1907, Harriman said that only the law prevented him from concentrating the control of every transcontinental railroad in his own hands. Probably the greatest railroad man in the United States, if not in the world, Harriman died in 1909, and his more grandiose conceptions remained unrealized. The federal government, however, was proceeding with efforts to demolish the vast Harriman empire. In 1912 the Supreme Court ordered the separation of the Union Pacific and the Southern Pacific; other Union Pacific holdings in the Great Northern, the Northern Pacific and the Santa Fe had already been sold before that date.

The degree of nationwide consolidation and community of interests achieved between 1900 and 1910 is revealed by the following figures: of the 228,000 miles of railroad in the United States that year, about two-thirds were controlled by seven groups, and these same seven groups also

controlled 85% of the railroad earnings of the nation. The great railroad powers were: The Vanderbilt roads, with over 22,500 miles, dominating the northern routes from New York to Chicago; the Pennsylvania interests (20,000 miles) controlling the railroads to the West from Pennsylvania and Maryland; the J. P. Morgan roads (18,000 miles) dominating the Southeast; the Gould roads (about 17,000 miles), and the Rock Island System (about 15,000 miles), ruling the Mississippi Valley. The Hill roads with some 20,000 miles had a monopoly of the Northwest, and the Harriman roads (21,000 miles) dominated the central and southern transcontinental routes. These same seven groups were further united through the medium of the great investment banking houses, such as that of J. P. Morgan, which supplied the funds for railroads and controlled their operating policies in varying degrees, and also by means of interlocking railroad directorates.

Decline of the Merchant Marine

The decline of the American Merchant Marine after 1865 was rapid and spectacular. In 1860, the tonnage of American vessels engaged in the foreign trade was 2,379,396 gross tons; this fell to 1,448,846 gross tons by 1870, to 816,795 gross tons by 1900, and to 782,517 gross tons in 1910. In 1860, American vessels had carried 66.5% of the value of all goods entering into the American foreign trade; in 1870 the proportion had dropped to 35.6%, in 1900 to 9.3%, and to 8.7% in 1910.

A few shipping companies did make their appearance, but they were of slight significance in the light of the competition offered by the crack British, Dutch, and German ships engaged in the transatlantic and South American trade. In the early seventies the Pennsylvania Railroad

organized the American Steamship Company, which for 25 years operated four iron ships in the transatlantic run. The Red D Line also appeared, with three iron steamers plying between New York and Venezuela. The Ward Line, organized in 1877, operated a regular service to Cuba and Mexico. The International Navigation Company was chartered in 1891 and entered four large steamers in the run between New York and England. This company, however, went bankrup in 1902, and even J. P. Morgan was unable to make money when he reorganized it as the International Navigation Company

The Coastal Trade

The coasting trade, its tonnage and cargoes of bulky commodities, such as coal, lumber, cotton, and petroleum, increased rapidly after the Civil War, but came almost completely under the control of the railroads. As the railroads increased in size and improved their efficiency of operation, competition between the water carriers and the railroads became bitter. From the seventies onward, however, there was a progressive establishment of a "harmony of interests" in which the railroads dominated the situation. By 1912, a community of interests had ended competition between rail and water carriers on both the East and West Coasts.[2]

Twilight of the River Steamboats and Commerce

The year 1859-60 had witnessed the high-water mark of commerce on the lower Mississippi. After the Civil War this traffic did not revive. Passenger traffic was first lost to the railroads, followed next by package freight and the express business. By 1870 the railroads were also carrying

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[1] Tonnage of total U.S. Merchant Vessels in 1910 was distributed as follows: New England - 799,811; Mid-Atlantic and Gulf States - 2,722,862; Pacific Coast - 936,591 tons.

[2] Coastwise and internal trade gross tonnage figures are as follows: 1865 - 3,381,522; 1870 - 2,638,247; 1880 - 2,637,686, 1890 - 3,409,435; 1900 - 4,286,516; and 1910 - 6,668,966.

to market over four-fifths of the grain and flour of the Northwest. By 1880 the cotton of the Southwest was also going by rail to the Atlantic seaboard, and this doomed the river steamboats on the lower Mississippi. The upper Mississippi and the Missouri Rivers also ceased to be important avenues of transportation when the railroads of the Northwest were constructed in the seventies and eighties.

The eastern rivers, from the Potomac to the Hudson, were reduced to carrying lumber, sand, gravel, and petroleum. Only the Ohio River escaped this decline in traffic. Here the coal trade of the Monongahela, carried by river barges, increased from 5,017,370 tons in 1890 to 12,875,673 tons in 1916.[1]

In the Far West the California Steamboat Navigation Company, which had maintained a monopoly on the Sacramento River since 1854, was forced to sell out to the railroads in 1871. On the Columbia a similar monopoly had been maintained by the Oregon Steam Navigation Company since 1860. By 1868 this company had extended its operations up the Columbia River into Canada, over tributaries eastward to within 125 miles of Missouri River in Montana, and southward, by means of stagecoaches, freight wagons and mule trains, to within 150 miles of Salt Lake City. However, this great corporation fell in 1879, when it was purchased by Henry Villard of the Northern Pacific Railroad for $5,000,000. River traffic declined rapidly thereafter as the transcontinental railroads paralleled or crossed the Columbia.

The last stand of the stern-wheeler river steamer as a major means of transportation was made in Alaska. The only transportation to the

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[1] Tonnage on western rivers fell from 501,800 tons in 1879 to only 153,716 tons by 1910.

interior, from 1890 to 1906, was made via the Yukon and Tanana Rivers by means of the river steamers plying between St. Michael and the trading and goldmining camps situated along the two rivers, as far inland as Fort Independence and Fort Selkirk. During the great Klondike gold rush of 1897, and subsequent rushes, hundreds of river steamers carried thousands of miners and tons of freight up the Yukon. The great days of heavy river traffic, however, were ended forever by the completion of the Alaska Railroad to Fairbanks in 1922.[1]

Decline of Canals

The demise of canals as an important means of transport was also brought about by means of railroad competition. The surrender began in the 1850's but was rapidly accelerated after the Civil War as the railroads perfected their efficiency of operation and the size of their rail networks. The great Erie Canal still survived, carrying more than 3,560,000 tons of goods in 1872 and still making money. In 1882 the New York legislature abolished all tolls on this waterway, thus reinvigorating it as a means of competition. But the relative importance of the Erie Canal as a means of transportation declined rapidly. In 1860 the New York Canal system had carried more goods than the New York Central and Erie Railroads combined, but by 1900 the railroads were transporting almost 20 times as much traffic as the waterways. Annual tonnage on the Erie dropped from a high point of over 4,600,000 tons in 1880 to 2,000,000 tons in 1905.

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[1] In 1909 there were only 333 miles of completed railroad, owned by 10 corporations, in Alaska. Construction of the first system of roads in that territory was started in 1906.

Traffic on the Great Lakes

The one startling exception to general proscription of waterways by the railroads was the Great Lakes. Here total shipments increased from 25,000,000 short tons in 1889 to over 125,000,000 in 1910. By 1910 one third of the United States merchant marine, or 2,895,102 tons, was employed on the Great Lakes. Lake ports had a commerce greater than the cities on the Atlantic seaboard. An important reason for the success of the lake traffic in the face of railroad competition was their location in a region producing bulky commodities -- iron ore, coal, and wheat -- that were admirably suited to water transportation. Iron was carried from Lake Superior eastward to the great steel plants on Lake Erie and Michigan,and return cargoes were supplied by coal.

A second reason for the success of water traffic on the lakes was the continual improvement of technical equipment. After the eighties sailing vessels declined, and the propeller steam vessel became the dominant carrier. The average size of the steam vessel increased from 231 tons in 1865 to about 3,000 tons by 1910. The ships were also carefully designed to carry their heavy cargoes. Hulls were long boxes with slighly shaped ends and straight sides. The wheel houses and engines were placed near the bow and stern; the cargo space lay between and could be reached by a series of hatches. Machinery was devised to load and unload these vessels rapidly so that ships could make many trips each year before the lakes froze over.

The railroads applied their usual competitive tactics against the Great Lakes carriers. By 1912 six steamboat lines were owned by the Erie, New York Central, Pennsylvania, and Lehigh railroads. These lines, as distinct from the bulk carriers dominated the through-line passenger

and package freight traffic on the lakes. Needless to say, these steamboat lines were "harmonized" with the interests of the railroad owners. The railroads, however, were unable to control the great traffic in coal and iron. By 1914 eight powerful steamship companies, backed largely by steel corporations, controlled nearly 46% of the total bulk trade. The largest of these corporations was the Pittsburgh Steamship Company, a subsidiary of the United States Steel Corporation, which owned about one-sixth of the American bulk carrier tonnage on the Great Lakes. Through interlocking directorates, these eight companies established a "community of interests," and competitive warfare was banned from the lakes. The United States Steel Corporation, in effect, practically fixed the lake rate on transporting ore.

Electric Railways, 1872-1910

The electric railway was basically an urban means of transportation. The horse buses gave way to the horse street cars, and these in turn gave way to the cable car. The cable car was developed by Andrew S. Hallidee in 1873 as a means of climbing the hills of San Francisco. Cable lines were built in most major American cities in the 1880's; the largest system was in Chicago, where three companies owned 82 miles of track and 710 grip cars.

In 1884, John C. Henry strung a dual overhead wire over a horse-car track in Kansas City and installed an electric motor in a mule car. The experiment succeeded but the inventor went bankrupt. The first successful electric car, a single pole trolley developed by Frank J. Sprague, went into operation on a 13-mile line in Richmond, Virginia, in 1888, and by 1893 the electric car had clearly demonstrated its superiority

to the cable car except on heavy grades. The new device spread rapidly. By 1901 there were some 15,000 miles of electric railway in the United States.

New York, Chicago, and Boston all had elevated electric systems by 1901. Boston was the American pioneer for subways and completed her first unit in 1898; New York began building her system in 1900. But the rising sun of the electric railways was soon dimmed when they fell into the hands of promoters, who organized trolley lines, then extended them rapidly, bringing about incorporations or consolidations that were swimming in watered stocks, paid out dividends when the companies did not earn them, neglected to make proper charges for depreciation, and finally left well laden with loot, before the roof caved in. The full development of electric railway freight possibilities was further discouraged by the competition and hostility of the steam railroads, and also by the advent of the automobile. Due to financial mismanagement and excessive capitalization, a considerable portion of the electric railways passed through either financial reorganization or actual receivership between 1900 and 1913.

Telegraph, Telephone, and Wireless, 1866-1910

In 1866, Cyrus Field, a retired American paper manufacturer, financed with English capital, completed the first permanently successful cable across the Atlantic. By 1883 all telegraph wires were controlled by a single corporation, the Western Union. The great telegraph system of the United States finally was completed by 1900, and between 1901 and 1904 the telegraph and cable linked Alaska directly with the nation.[1]

[1] The great telegraph and cable system of Alaska was constructed by the U.S. Army Signal Corps, 1901-1904.

In 1876 Alexander Graham Bell successfully demonstrated the telephone over a line he had erected between Boston and Cambridgeport, Masaachusetts, and took out his first patent on the new device. The first telephone exchange was opened in 1878, and by 1880 there were 34,305 miles of telephone wires in the United States. Long-distance telephoning began with the opening of a line between New York and Philadelphia in January, 1887;[1] in 1892 the American Telephone and Telegraph inaugurated a long distance line between Chicago and New York, but it was not until 1915 that a transcontinental telephone service connected New York with San Francisco. There were 855,000 telephones in the United States in 1900, and this had increased to 9,172,000 by 1915. In 1909 the American Telephone and Telegraph Company, of which the Bell Telephone Company was then a subsidiary, also acquired control of the Western Union Telegraph Company, thus forming a monopoly of all telegraph and telephone service in the United States. This union was finally broken up by the courts in 1913.

In 1896 Guglielmo Marconi, an Irish-Italian, took out his first patent in England on the wireless telegraph. In 1902 he was able to send a message across the Atlantic, and by 1914 wireless installations had become standard equipment on ocean ships. In 1915 the American Telephone and Telegraph Company was also able to send wireless messages across the Atlantic, but it was not until 1925 that a regular wireless telephone service was installed between London and New York.

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[1] The American Telephone and Telegraph Company was organized for this purpose by the Bell Telephone Company in 1885.

The Automobile, 1890-1910

The early experimentation with the automobile was largely done in Europe, where the automobile had been considerably developed before there was much interest in America. As the news of the "horseless carriages" reached America in the 1890's, many tinkering mechanics, such as Charles F. Duryea, Ransome E. Olds, Elwood Haynes, and Henry Ford,[1] succeeded in putting together contraptions that were propelled by a variety of means, including electricity, gasoline, and steam. After 1900 there was a period of intense competition in the United States in which the automobile was quickly made practical. By 1910 the production of automobiles was about 181,000 a year, plus 6,000 trucks; the vehicles registered numbered 468,500, but the great influence of the motor car was yet to come.[2]

Under the influence of the automobile and the bicycle craze of the nineties there was soon to be a renaissance of road building. Better road organizations were formed, culminating in 1910 in the organization of the American Association for Highway Improvement.

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[1] One American inventor, George B. Selden, of Rochester, N. Y. had developed a vehicle moved by a gasoline engine as early as 1877, and he patented this device in 1895.

[2] In 1900 there were 4,192 passenger cars produced and 8,000 automobiles registered in the United States. The first motor trucks, 700 in number, were produced in 1904. By 1905 there were 24,250 passenger cars being produced a year.

Aviation, 1896-1910

Experiments in the construction of airplanes had been made in England, France, and America in the early nineties, but little came from them. In 1896 Orville and Wilbur Wright, two middle-western bicycle repairers, became interested in the possibility of human flight in heavierthan air machines. After seven long years' experimentation they made their first successful flight on December 17, 1903 near Kitty Hawk, North Carolina. They continued their work until 1908, when they began the demonstration of their planes in America and Europe.[1] The military possibilities of the airplane received its first great impetus in the First World War, but the rapid development of the commercial possibilities of aviation did not begin until the 1920's and 1930's.

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[1] In 1913, 43 aircraft were produced in the United States; 14 of these were for U.S. Military use, and the other 29 were exported.

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Part II

Survey of Sites and Buildings

Sites of Exceptional Value

RIVERBOAT S. S. NENANA, ALASKA

Location: Foot of First Avenue, on Chena River, in Fairbanks.

Ownership: City of Fairbanks (Administered by Greater Fairbanks Opportunities, Inc., 545 Third Avenue, Fairbanks).

Significance

The S. S. Nenana, an 1898 stern-wheeler riverboat, is apparently the last surviving example of the great riverboats that once served as a major method of transportation on the rivers of the Far West and Alaska.

The first American riverboats appeared on the California rivers (the Sacramento, Feather, American, and San Joaquin) in 1849, and on the Columbia in the Pacific Northwest in 1850. Multiplying rapidly in numbers, these steamships were quickly organized into two great corporations known as the California Steamboat Navigation Company and the Oregon Steam Navigation Company, which established monopolies of traffic within their respective spheres of influence. Under their direction the riverboat served as a major mode of transportation until the coming of the railroad brought their dominance to an end, first in California in 1871, and then in the Pacific Northwest in 1879.

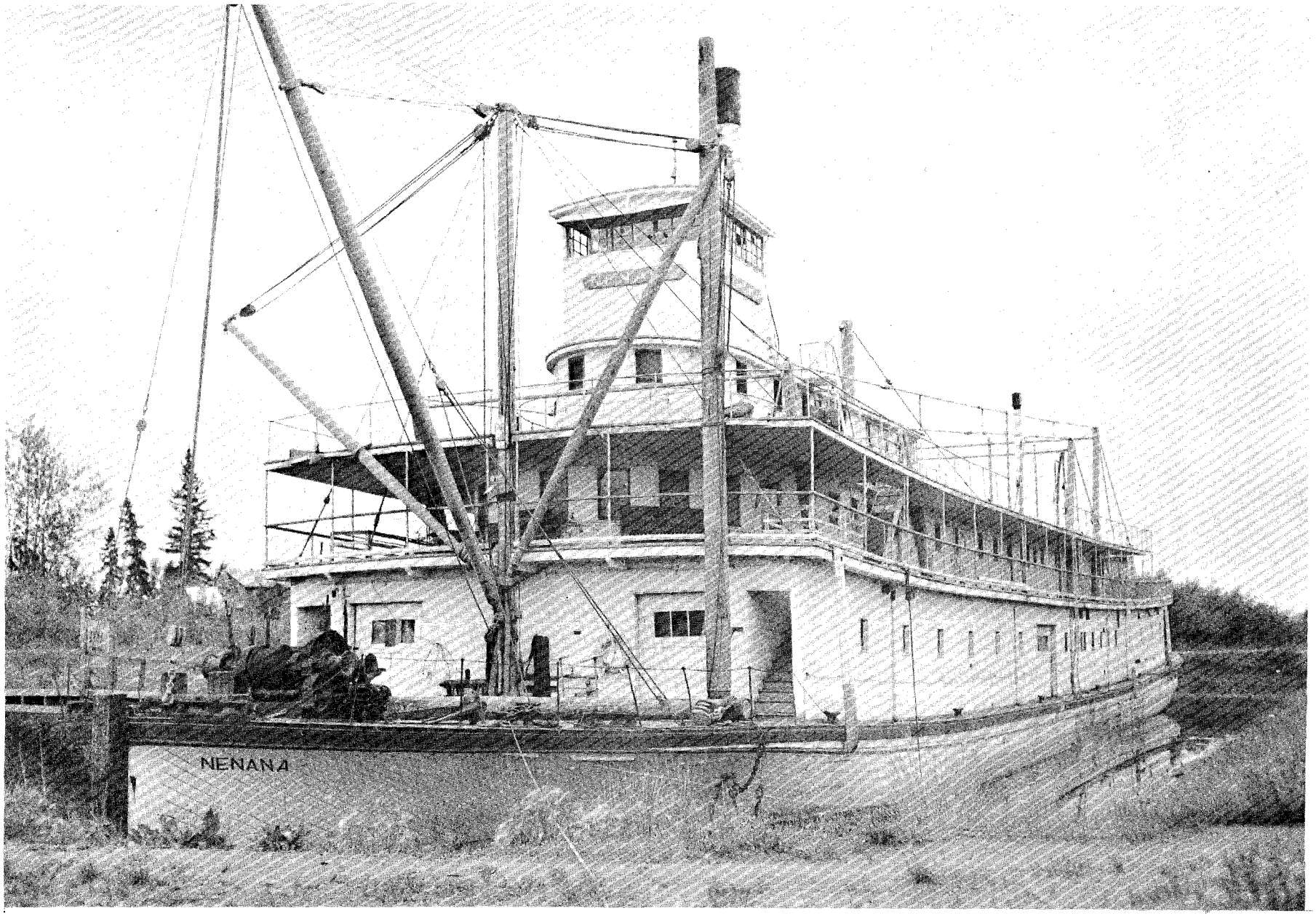
The last stand of the river steamer as a major means of transportation was made in Alaska. The only transportation to the interior, from 1890 to 1906, was made via the Yukon and Tanana Rivers by means of the river steamers plying between St. Michael

and the trading posts and gold mining camps situated along the two rivers. During the great Klondike gold rush of 1897, and subsequent rushes, hundreds of river steamers carried thousands of miners and tons of freight up the Yukon. The great days of heavy river traffic, however, were ended forever by the completion of the Alaska Railroad to Fairbanks in 1922.

Condition of Boat

The S. S. Nenana is permanently anchored on the bank of the Chena River and appears to be in excellent condition. The city plans to preserve the ship and exhibit it as a museum.

References: Guide to Fairbanks, June, 1961 (Leaflet published by Fairbanks Chamber of Commerce); Clarence L. Andrews, The Story of Alaska (Caldwell, Idaho, 1947), 222-223; Stuart R. Tompkins, Alaska - Promyshlennik and Sourdough (Norman, Okl.,1945), 234-235; Jerry MacMullen, Paddle-Wheel Days in California (Stanford, 1946); Oscar Osburn Winther, The Old Oregon Country (Stanford, 1950), 231-245.



Riverboat S.S. **NENANA** 1898, Fairbanks, Alaska

N. P. S. Photo, 1961

BALCLUTHA, CALIFORNIA

Location: Pier 43, San Francisco.

Ownership: San Francisco Maritime Museum.

Significance

The Balclutha, a steel, three-masted, square-rigged vessel built in 1886, is one of the three surviving ships on the Pacific Coast that are representative of the age of sail.

Built at Clyde, Scotland, the ship spent her first 13 years as general trader carrying grain, lumber, and whiskey to Auckland, Calcutta, Rangoon, and sailing 17 times around Cape Horn. In 1899 she was purchased by Pope & Talbot Lumber Company of San Francisco, placed under Hawaiian registry, and engaged in the lumber trade from Washington to Australia.

In 1904 the Balclutha was acquired by the Alaska Packers Association of San Francisco and in 1906 was renamed the Star of Alaska. The Packers Association, by 1904, was a large organization, operating 23 canneries in Alaska and employing over 7,000 "hands". Its salmon pack was worth about five million dollars a year and the Association paid out dividends of some five hundred thousand dollars a year.

For the next 26 years, the Star of Alaska transported workers the 1500 to 2500 miles to the Alaskan canneries each spring, and brought them back, with the salmon, to San Francisco each fall.

The Star of Alaska, the fastest and last of the Alaska Packers fleet of eight "Star" vessels, was retired as a cargo carrier in 1930.

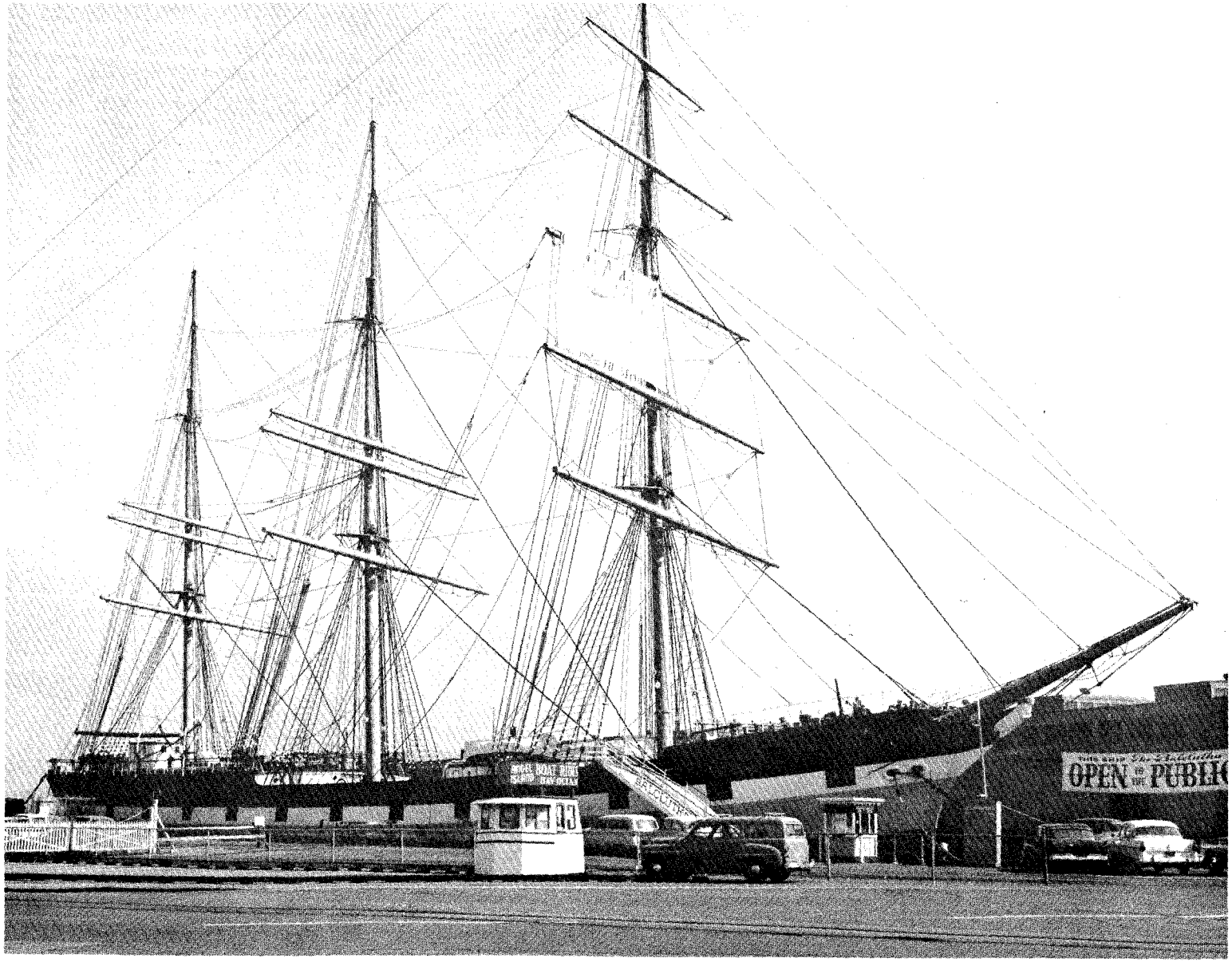
Renamed the Pacific Queen, the ship was next exhibited as a "pirate ship" until 1953.

Condition of the Vessel

The Balclutha, 1689 gross tons, is 256.5 feet long, with a beam of 38.6 feet, and a depth of 22.7 feet. The vessel was acquired by the San Francisco Maritime Museum in 1954 and has since been carefully and authentically restored in every detail to its late 19th century role as a general trading ship. The ship is in splendid condition and is open to the public as an exhibit.

The C. A. Thayer, built at Eureka, California, in 1895, and the last of the three-masted West Coast lumber schooners, is also being restored by the San Francisco Maritime Museum. This wooden ship will be exhibited as a floating museum.

References: Alan Villiers and Roger R. Olmsted, Balclutha - Two Stories in the Life of a Ship (Reprinted from Ships and the Sea, 1955).



Sailing Ship BALCLUTHA, 1886, San Francisco, California

N. P. S. Photo, 1961

STAR OF INDIA, CALIFORNIA

Location: B Street Pier, Harbor Drive, San Diego.

Ownership: Maritime Museum Association of San Diego.

Significance

Star of India, an iron, three-masted bark built in 1863, is one of the three surviving ships on the Pacific Coast that are representative of the age of sail.

The Star of India, 1,200 gross tons and 205 feet in length, was built by Gibson, McDonald & Arnold at Ramsey, Isle of Man, as the full-rigged ship Euterpe. Owned by the British firm of Wakefield, Nash & Company of Liverpool, the vessel first sailed in the India trade and then carried emigrants to New Zealand and occasionally to Australia.

In 1898 the ship was acquired by the Pacific Colonial Ship Company of San Francisco (J. J. Moore & Company) and was put under Hawaiian registry. During this period the vessel sailed in the export lumber trade from Puget Sound, Washington, to Australia.

In 1901 the Alaska Packers Association of San Francisco purchased the ship and changed its name to Star of India. By 1906 this company had acquired a total of eight former British iron or steel ships and all names were changed to begin with "Star". The Packers Association operated the Star of India in the Alaska fisheries until 1923, when she was finally laid up. In 1926 the

vessel was purchased by the late James Wood Coffroth as the nucleus for a maritime museum.

Condition of Ship

Her original appearance has changed considerably since her British days. She was cut down to a bark rig, for handling with a smaller crew, in 1901, and at the same time the Alaska Packers built a long extension onto her poop, carrying it forward almost to the mainmast, to provide quarters for 45 fishermen; the remainder of the crew slept in the 'tween-decking where she had formerly carried steerage-class emigrants.

The ship, except for the noted alterations, is otherwise intact and in sound condition. The Maritime Museum Association hopes to restore the vessel by 1963.

References: Letter of G. F. MacMullen, Director, San Diego Historical Society Junipero Serrea Museum, to Regional Chief of Interpretation Bennett T. Gale, dated April 29, 1961; California - A Guide to the Golden State (American Guide Series) (New York, 1954), 263.

Sailing Ship STAR OF INDIA, 1863, San Diego, California

N. P. S. Photo, 1961

THE FIRST TELEPHONE EXCHANGE, CONNECTICUT

Location: Metropolitan Building, State and Chapel Streets, New Haven.

Ownership: William Perlbroth, 746 Chapel St., New Haven.

Significance

The world's first telephone exchange began handling the calls of its subscribers in New Haven on January 28, 1878. A small, crude switchboard that sat on a rough table in a room in the middle of the ground floor on the east side of the Boardman Building (now the Metropolitan Building) served as the heart of the exchange. The imagination and determination of George W. Coy had led to the creation of the switchboard and the exchange, which led to a revolution in communication throughout the world.

The recently founded Bell Telephone Company appointed Coy as its agent in New Haven on November 3, 1877. From the moment of his appointment Coy apparently intended to establish a telephone exchange, and on January 15, 1878 he and two partners organized the District Telephone Company of New Haven. The fledgling concern quickly established itself in the now historic room in the Boardman Building.

Coy did not originate the idea of a switchboard, but he produced the first one. It consisted of a wooden panel, three feet wide and two feet high, containing a series of eight-point switches, made of screws and lengths of brass. Eight wires ran from the switchboard; and within two weeks after the birth of the company Coy had run those wires to the exchange's subscribers, who lived within the center of New Haven. Not possessing telephone poles,

Coy had strung the wires through trees and over roof tops. Coy's exchange had a total of twenty-one customers when it began operating.

With the switchboard on a table, a large packing box used as a desk, and a soap box employed as a chair, the first telephone exchange presented a modest appearance. The exchange's operation was also modest, for only two conversations could be handled at the same time. The operator made six separate connections in order to complete each call and he could only tell when a conversation had ended by hearing no voice over the line, thus he had to listen in on all calls from time to time. All such difficulties notwithstanding, the exchange achieved immediate success, as New Haven quickly realized the value of Coy's innovation. On February 21, 1878 Coy published the world's first telephone book, it containing fifty subscribers names. An even more tangible sign of triumph appeared late in May, 1878, when Coy and several partners established the Connecticut District Telephone Company, with a capitalization of $20,000.

Coy's bold venture introduced a new era in communication. As one author says, "It /the exchange/ was the first of its kind in the world; the first to give inter-connection to any and all subscribers; and the occasion of its opening is an important landmark in telephone history."[1]

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[1] J. Leigh Walsh, Connecticut Pioneers in Telephoney (New Haven, Connecticut, 1950), 49.

Condition of Site

The room in which Coy set up his exchange is currently occupied by a restaurant, called the "Bell Spa." There is nothing of the exchange in the room. The Southern New England Telephone Company, the direct descendant of Coy's company, has placed a plaque commemorating the exchange on the Chapel Street wall of the Metropolitan Building.

References: H. S. Feder and H. E. Spencer, "Telephone Switching," Scientific American, 207 (July, 1962), 132-143, 133-134; Frederick L. Rhodes, Beginnings of Telephony (New York, 1929), 149; J. Leigh Walsh, Connecticut Pioneers in Telephony (New Haven, Connecticut, 1950), 1-2, 24, 29, 33, 36, 46-51, 530.

The Boardman (now Metropolitan) Building World's First (1878) Telephone Exchange, New Haven, Connecticut

N. P. S. Photo, 1962

HOME OF HENRY MORRISON FLAGLER, FLORIDA

Location: Whitehall Way, Palm Beach

Ownership: The Henry Morrison Flagler Museum

Significance

Henry M. Flagler, more than any other individual, was responsible for the initial development of East Florida. A visit in 1883 began his interest in developing the east coast of Florida. Poor hotel facilities in St. Augustine led him to build the luxurious Ponce de Leon Hotel. A palatial hotel needed adequate transportation, and so Flagler began building the Florida East Coast System. From then on he pushed his hotels and railroad in partnership steadily down the coast. As far south as Daytona the Flagler lines had been old short-line properties which had been merged and developed; from that point on, the expansion was true pioneering into virgin areas.

Before long Flagler's imagination was on the move again. He developed steamship connections with the West Indies and began to dream of linking Florida with South America. Flagler's final and most spectacular extension of his railway connected the Florida Keys to Key West, a distance of 106 miles, by overseas bridges.

> "Unquestionably, his most spectacular achievement was the Key West Extension; the most advertised, his hotel system, which laid the foundation for the great Florida industry, the tourist trade. But his most abiding contribution . . . lay in the fact that several hundred miles of coast and its back country were

"opened to human living, . . . that towns grew where there had been no human dwelling, that land was rescued from the jungle . . . , that thousands of trainloads of fruits and vegetables were shipped out of the State, and that settlers were brought in."[1]

Henry Morrison Flagler was a multimillionaire when, at 53 he embarked on these undertakings that within a few years transformed Florida. He was unique among the nation's pioneer builders. Unlike those whose projects were underwritten by investors, Flagler financed his ventures out of his own pocket. In his time he alone undertook and carried out such tremendous enterprises with his own personal fortune. Few American developers could match his range of interests and activities--hotels, railroads, oil, steamship lines, public utilities, land companies, port terminals, and several Florida cities themselves. All told, between $50,000,000 and $75,000,000 of the Flagler fortune was invested in Florida's east coast. This does not include Flagler's home, Whitehall, nor his numerous philanthropies. Altruism can hardly be made the decisive criterion for evaluating the importance of a man's contribution. It does add significance to his work. Flagler spent money in Florida while other developers made money. He was, however, far from impractical in his plans for the east coast, and he expected them to carry themselves financially in the long run.

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1 Kathryn Abbey Hanna, Florida Land of Change (Chapel Hill, 1948).

Flagler set in motion forces of prosperity which over the years have remained predominant in the Florida economy.

Condition of Site

According to tradition, Flagler gave instructions to the architects Carrere and Hastings to "build me the finest home you can think of." Whitehall was completed in 1902 at a cost of $2,500,000. In architectural style, Whitehall reflects the influence of Spain. In front, huge marble columns and broad steps form a vast colonnade entering into the main hall. The house stands on a six-acre site bordering Lake Worth; it is surrounded by gardens, and enclosed by a handsome wrought-iron fence. The rich interior is decorated and furnished in a wide variety of styles and periods.

Flagler lived here until his death in 1913. Subsequent to Mrs. Flagler's death in 1917, the mansion was sold to a group of investors who converted it into a hotel which utilized its ballroom, salon, library, lobby, lounge, restaurant and luxury suites, and built a ten-story addition onto the west-side of the mansion.

In 1959, the Henry Morrison Flagler Museum was organized and bought Whitehall as a memorial. Since the original house was used without basic alteration, it is in excellent condition. Careful work has restored it in large part to its early condition and original furnishings. Much of it is now opened to the public, and its accommodations are available to philanthropic, cultural,

and civic organizations for meetings and programs. Restoration continues and the adjacent hotel will be razed as soon as funds are available.

References: Kathryn Abbey Hanna, Florida: Land of Change (Chapel Hill, 1948); J. E. Davell, Florida: Historic, Dramatic, Contemporary (4 vols., New York, 1952); Alfred J. and Kathryn Abbey Hanna, Florida's Golden Sands (Indianapolis, 1950); S. Walter Martin, "Henry Morrison Flagler," Florida Historical Quarterly, XXV (1947), 257-76. Holland Thompson, "Henry Morrison Flagler," Dictionary of American Biography, VI, 451-52; Works Projects Administration, Florida: A Guide to the Southernmost State (New York, 1940); "History of Whitehall," unpublished report of the Henry Morrison Flagler Museum.

Whitehall, Home of Henry M. Flagler (1902), Palm Beach, Florida

Photo, Courtesy Henry M. Flagler Museum

WILLIAM SCARBROUGH HOUSE, GEORGIA

Location: 111 W. Broad Street, Savannah

Ownership: The Scarbrough House was given to the Savannah Board of Education by George W. J. De Renne to be used for the education of "colored children of African descent." If not used for this purpose, it is to revert to De Renne's heirs. In September of 1962 its school use was discontinued. Future ownership of the house must thus now soon be determined.

Significance

In May, 1819, the CITY OF SAVANNAH made a historic Atlantic crossing from Savannah to Liverpool, the first crossing made by a combination of steam and sail. The SAVANNAH, a 300-ton vessel, was built in 1818 in New York City by Francis Fickett as a sailing packet for the New York Havre Line. Captain Moses Rogers persuaded Scarbrough & Isaacs, a wealthy Savannah shipping firm, to purchase the vessel and fit her with an engine and boiler. The Savannah Steamship Company, of which Scarbrough was the principal promoter, fitted her with a 90-horsepower engine and boiler and paddle wheels. She crossed the Atlantic in 1819 in a 27-day trip, during 80 hours of which she traveled under steam. Before returning to Savannah she visited St. Petersburg, Cronstadt, and Stockholm.

Shortly after her historic voyage the SAVANNAH's engines were removed; the large amount of space required for machinery and fuel too greatly reduced her cargo space. The SAVANNAH spent the rest of her days as a sailing vessel between New York and Savannah. Her voyage had, however, proved the mechanical feasibility of the ocean steamship. Her failure was commercial and not mechanical.

Condition of Site

Scarbrough's Savannah home was built in 1818; it is a three-storied stuccoed brick structure of Classical Revival style attributed to the noted Savannah architect, William Jay. The home is in a downtown section of Savannah which is no longer a desirable residential district. Until recently it was used as a public school for Negroes. Blackboards, fluorescent lighting and other additions for school purposes have been made. The greatest of these was the addition of a stairway up through what was originally a large open central well. While the house is dirty, faded and in need of having the traces of school use removed, there appear to have been no fundamental structural changes made, and its basic condition is good.

References: J. Caldwell Jenkins, "The Steamship Savannah," Georgia Historical Quarterly, I (1917), 243-252; Alexander R. Lawton, "The Savannah, The First Transatlantic Steamship; the John Randolph, America's First Iron Vessel; Savannah's Promotion of Transportation," Georgia Historical Quarterly, III (1919), 45-60; Works Projects Administration, Georgia: A Guide to the Towns and Countryside (Athens, 1940).

TRAVELER'S REST (OR JARRETT MANOR), GEORGIA

Location: Just off U. S. 123, six miles east of Toccoa

Ownership: The State of Georgia. Administered by The Georgia State Historical Commission.

Significance

Since it was built in 1784, Traveler's Rest has been a frontier fort, stagecoach inn, and hospitable plantation home. The central section of the house was built in 1784 by Major Jesse Walton, Revolutionary soldier and Indian fighter.

Major Walton was plagued by raiding Indians who stole his livestock. In 1787, while Indian commissioners waited in North Carolina for Cherokee negotiators who never appeared, a band of Indians attacked settlers in the Tugaloo Valley. According to tradition, a party led by Walton barricaded itself within his house; the defenders stood off the attack for four days and nights, only to be overcome, slain, and scalped. Other accounts vary the story, but whatever the variations, it is certain that Major Walton was killed during an Indian attack.

Shortly after Walton's death, his heirs sold the estate; it was then purchased from the new owner by Devereaux Jarrett, "richest man in the Tugaloo Valley." Young Devereaux showed shrewd business sense and accumulated a great deal of land. He prospered and made additions to both ends of Jarrett Manor, strengthening it against possible future Indian troubles. As traffic increased on the road past the manor, Jarrett opened it to the public as a facility combining tavern, trading post, and

post office. The Jarrett account books, which doubled as registers, still bear the names of illustrious travelers. G. W. Featherstonehaugh, English scientist and author, was a guest in 1837, and John C. Calhoun was a frequent visitor. The plantation became the most popular stop between Charleston and Chattanooga on the Federal post road.

In the post-Civil War era, the Jarretts operated the home as an inn. Jefferson Davis, Alexander H. Stephens and Joseph E. Brown are among the names that appear on the old guest books of Traveler's Rest of that era.

Traveler's Rest remained in the family until 1955, when it was acquired from Mrs. Mary Jarrett White by the State of Georgia, which now maintains it as a house museum.

Condition of Site

Traveler's Rest is today virtually unchanged. It is still solidly based on its original hand-hewn sills, old English locks remain in the doors and early glass in many of the windows, and much original Jarrett family furniture furnishes the rooms. The house is kept unpainted as always.

The construction and arrangement of the old house tells a lot about its early uses. Jesse Walton set the sturdy central section over a large cobblestone basement which contained the kitchen, dining room, storerooms, and wine cellar. The first floor was divided into four rooms and two hallways, all opening onto a broad front porch. The second floor was broken up into 13 rooms; these open one into the other with no central hall. Four stairways

connect the two floors. Gables in the attic are studded with loopholes. The area that came to be used as a post office is unchanged; a few cancelled letters and the official appointment of Charles P. Jarrett as postmaster at Tugaloo are kept there.

Several outbuildings remain. In what was once a slave cabin, numerous Indian relics which were dug from a mound on the property are displayed.

Because of its excellent preservation and unspoiled character, Traveler's Rest is an excellent example of an early tavern and inn in a rural, frontier setting. It is significant, too, because of its long continuity of service, from the late 18th century until well in the 19th.

References: Medora Field Perkerson, White Columns in Georgia (New York, 1952); C. E. Gregory, "Traveler's Rest or Jarrett Manor," information pamphlet of the Georgia Historical Commission; Work Projects Administration Georgia: A Guide to Its Towns and Countryside (Athens, 1940).

Traveler's Rest, 1784, Tocca, Georgia

Photo, Courtesy Georgia Historical Commission

ILLINOIS AND MICHIGAN CANAL, ILLINOIS

Location: Channahon

Ownership: Governor James A. Rhodes, State of Ohio.

Significance

Just as the Erie Canal made New York City the dominant metropolis on the eastern seaboard, so did the Illinois and Michigan Canal propel Chicago into a position of supremacy in the Middle West. The canal, with its completion in 1848, linked Chicago to the Mississippi River and completed a continuous waterway from New York to the queen of American rivers. The economic benefit redounding from the waterway contributed in no small way to the young city's sudden acquisition of national importance.

The astounding success of New York's Erie Canal inspired many other states to undertake the construction of canals. Agitation for building a canal from Chicago to LaSalle, where it would join the Illinois River, which in turn flowed into the Mississippi failed to achieve results for many years. Finally, on July 4, 1836 suitable dignitaries broke ground for the undertaking at Canalport.

The construction of the canal proved to be as difficult as had the struggle to win approval for the waterway's development. The canal commissioners divided the route of the artery into sections and awarded contracts for the building of each section to the lowest bidders, many of whom proved to be irresponsible. Delay also ensued because of the difficulty of finding laborers,

and workmen for the canal had to be brought in from the East. The laborers encountered rocky soil near Chicago and that made excavating very difficult, which slowed progress. But the shaky finances of Illinois proved to be the greatest obstacle to the rapid completion of the project. The Panic of 1837 swept over the Nation just after the ground had been broken for the canal and this economic disaster greatly reduced the normal rate of construction. The State, in desperate straits by 1841, printed scrip in order to carry on the work. In a short time this currency lost all value and Illinois had to abandon work on the canal for several years. She resumed construction only in 1845, but by 1848 the last shovel of dirt was turned and the waterway was completed. It had cost $6,500,000, ran for about one hundred miles and was sixty feet wide at water level.

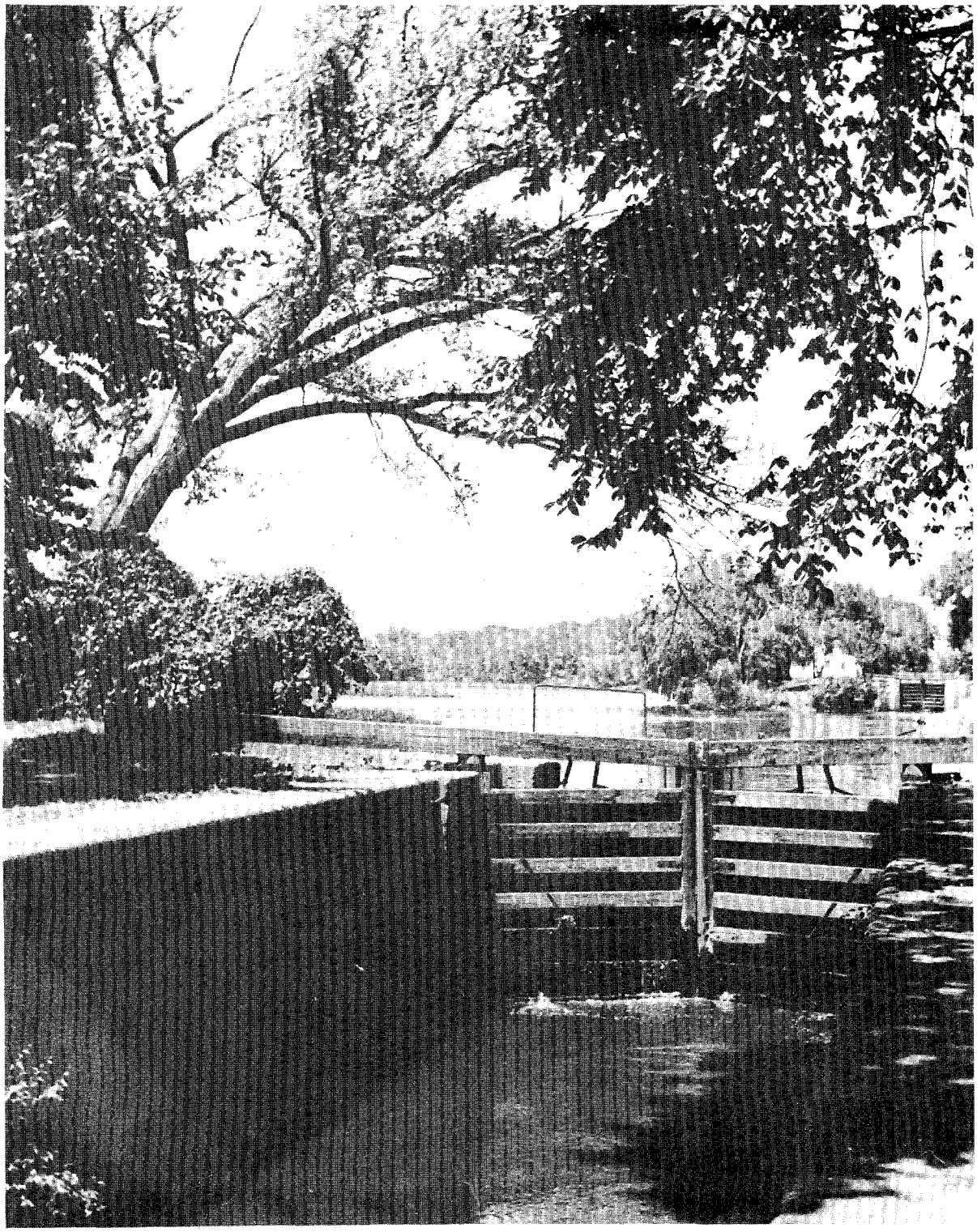
Despite the frequent collapse of its banks and its freezing in winter, the canal proved to be a tremendous boon to Chicago. The grain that poured into the city over the waterway made Chicago a leading grain market; the cattle and hogs carried into the growing town led to her development as a meat packing center; and by 1854 the canal's influence had helped to increase Chicago's population to 74,500, whereas it had only been 12,088 in 1845.

Condition of Site

Much of the canal is incorporated in the Illinois and Michigan Canal Parkway. Commercial use of the waterway ended in 1933, and during the remainder of that decade many of the canal's locks and other appurtenances were restored. An especially interesting lock,

which is in working condition, is at Channahon. There, the old towpath may also be followed.

References: Charles M. Gates, "Historical Report on the Illinois and Michigan Canal," (Unpublished Report, National Park Service, January, 1936), 5-7, 11, 13-14, 27; Alvin F. Harlow, Old Towpaths (New York, 1926), 112, 121, 284-287; Henry M. Mayer (ed.) History of Transportation in the United States Before 1860 (Washington, D. C., 1917), 514; Bessie Louise Pierce, A History of Chicago (3 vols.; New York, 1937-1957), I, 119-122. Also, letter of Richard S. Hagen, Department of Conservation, State of Illinois, 400 South Spring Street, Springfield, to S. S. Bradford, December 12, 1962.



Restored Locks of Illinois and Michigan Canal (1836-48) At Channahon, Illinois

Photo, Courtesy Illinois Department of Conservation

NATIONAL ROAD, CASTLEMAN BRIDGE, MARYLAND

Location: U.S.Route 40, just west of Grantsville

Ownership:-Administration: Governor J. Millard Tawes, Annapolis, Maryland

Significance

The National Road in Maryland crossed numerous streams and the Castleman Bridge over the Little Youghiogeny River is a magnificent example of the bridge building art used in constructing the great highway. The well-built structure possessed the largest stone arch in the United States when erected in 1813 and it is little wonder that in 1816 a traveller spoke of the structure in highly laudatory fashion, calling it "possitively [sic] a Superb Bridge."[1]

The Federal Government's decision to construct a road from Cumberland, Maryland to the Ohio River was responsible for the erection of the Castleman Bridge. Cumberland had been chosen as the starting point for the new highway because a good road, the Frederick Pike, already ran from Baltimore to Cumberland. Construction of the National Road, or the Cumberland Road as Congress always referred to it, began in the spring of 1811 and the War Department exercised general supervision of the undertaking. Gangs of men, with their picks, shovels, oxen and horses, cleared the roadway, levelled hills and filled hollows. A path sixty-six feet wide angled northwest as the road moved towards the Pennsylvania border, climbing and descending one mountain after another. The

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[1] "Uria Brown's Journal," Maryland Historical Magazine, X (September 1915), 279.

actual roadway was thirty feet wide, and twenty feet of that width was covered with a layer of stones, a foot to eighteen inches deep. The first ten miles had been completed by the fall of 1812, but the War of 1812 delayed the building of the final fourteen and a half miles of the road to Pennsylvania.

No sooner had the Maryland section of the National Pike been completed, than a tidal wave of traffic moved across the highway. Great cargo wagons filled the road; some of them that passed over the Castleman Bridge were drawn by twelve horses and carried ten-ton loads. Smaller wagons, stagecoaches and droves of animals also crossed the bridge. Most movement on the road ceased when night fell and the inns and taverns along the highway became crowded. Traffic moved both east and west over the artery with greater ease and speed than ever before, and probably numerous users of the road thought that "The goodness of God must have been in Congress unknownst to them"[1] when the National Government authorized the construction of the Cumberland Road.

The National Road in Maryland, as well as in the other states through which it passed, required constant repair. In addition to the damage incurred from landslides and heavy rains, the constant movement of wagons tended to damage the paving. Wagons that locked their wheels in going down hills cut deep ruts in the road's surface, for example. As a result, in the 1820's and early 1830's laborers practically rebuilt the road, especially during

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[1] "Uria Brown's Journal," Maryland Historical Magazine, X (September 1915).

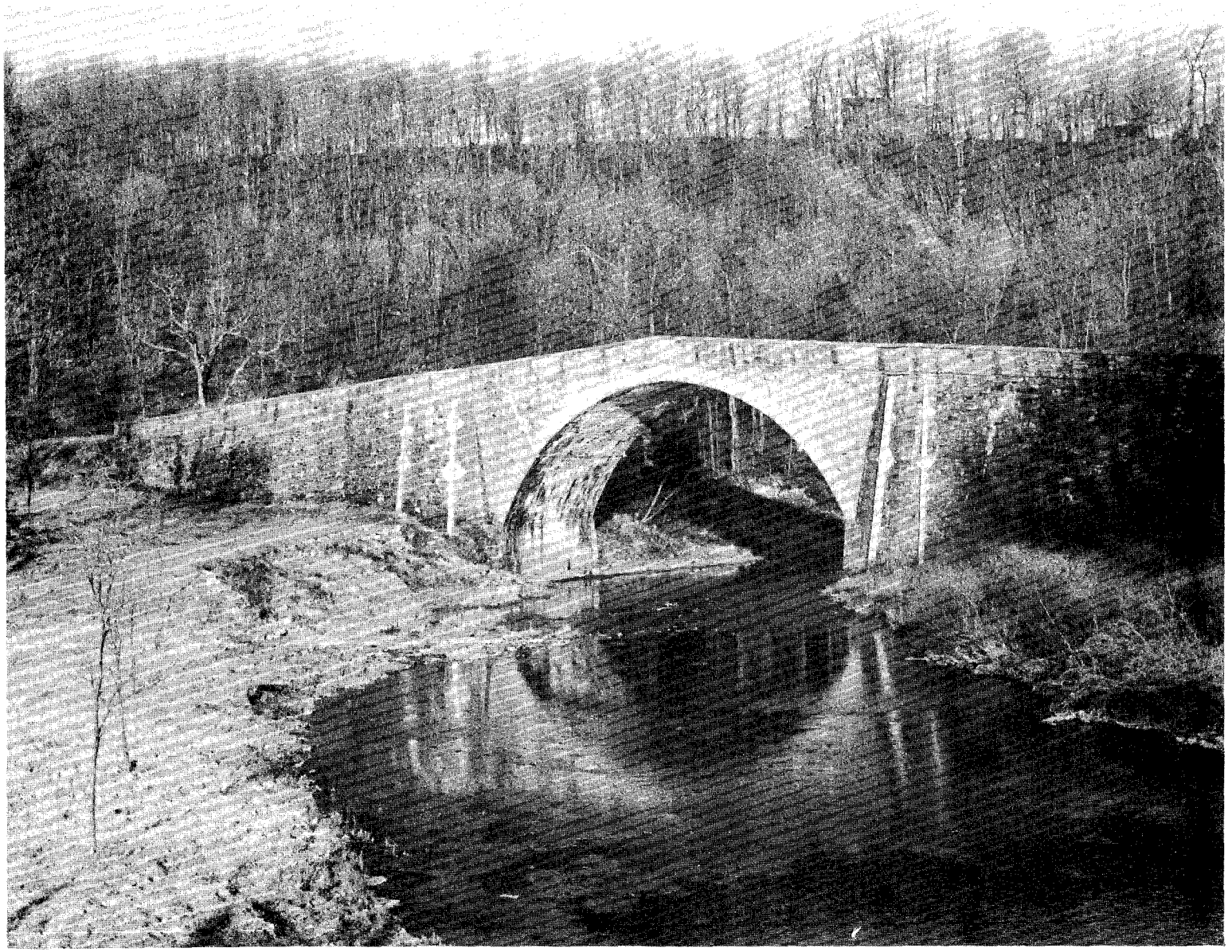
the latter period. With the completion of the repairs undertaken in 1831, the United States turned the extent of the road in Maryland over to the State.

The Castleman Bridge, like the road, continued to serve the traveller for many years after Maryland assumed control of her section of the National Road. Indeed, the bridge remained in use until 1933, when the State supplanted it with a concrete and steel structure. The Castleman Bridge now remains an outstanding reminder of the era of the National Road in Maryland.

Condition of Site

The Castleman Bridge is in sound condition. In 1911 some repair work was done, but the bridge is essentially the same as when built. U. S. Route 40 passes just south of the bridge, which now forms the center of a small State park. Picnic tables are placed near the old bridge.

References: "Uria Brown's Journal," Maryland Historical Magazine, X (Sept., 1915), 262-283 (p.279); Archer B. Hulbert, The Old National Road - The Historic Highway of America, in Publications, IX (1901), Ohio Archaeological and Historical Society, 423-426, 430, 443-444; Maryland, A History of Road Building in Maryland (Baltimore, 1959), 20-27, 123-124; Mrs. Carroll Miller, "Romance of the National Pike," Western Pennsylvania Historical Magazine, X, 1-37 (pp. 7-8, 12, 15).



The Castleman Bridge, 1813. on the National Road at Grantsville, Maryland

N. P. S. Photo, 1962

BALTIMORE AND OHIO RAILROAD
ELLICOTT CITY STATION, MARYLAND

Location: Ellicott City

Ownership: President, Jervis Langdon, Jr., Baltimore and Ohio Railroad

Significance

The small stone railroad station in Ellicott City was very probably the first permanent railroad depot in the nation. Erected in 1830 by the Baltimore and Ohio Railroad, the oldest surviving railroad company in the country, the building served as the railroad's first terminus and remains in service today. The station is thus a very significant link with the beginning of railroading in the United States.

Leading citizens of Baltimore, fearful of growing commercial competition from New York and Philadelphia, expressed interest in a railroad as early as the fall of 1826. Twenty-five of the city's influential businessmen subsequently met on February 2, 1827 and discussed the possibilities of constructing a railroad to the Ohio River, finally appointing a committee to study the undertaking. The committee reported a week later and recommended the project. Those behind the railroad then secured a charter from the State of Maryland on February 28, offered stock to the public, which was quickly sold, and prepared for the survey of the route. The newly formed Baltimore and Ohio Railroad Company employed Army officers, as well as individuals who had helped build the National Road, to survey the railroad's route and by April, 1828 the survey had been completed. Between Baltimore

and Ellicott City, the railroad was to follow the Patapsco River because of the easy grades.

July 4, 1828 saw Maryland's leading citizen, Charles Carroll of Carrollton, turn the first spade of earth for the railroad and the Masons lay the first milestone. Dividing the distance between Baltimore and Ellicott City into twenty-six sections, the company soon requested bids and by July 28 laborers had initiated grading operations. Picks and shovels were flying on all sections of the line to Ellicott City within four months. Construction of the roadbed proved to be more costly and difficult than the company had anticipated, and expenses averaged about $17,000 a mile. Two large viaducts had to be erected, the Carrollton Viaduct over Gwyns Falls, which still stands, and the Patterson Viaduct over the Patapsco River, the ruins of which can be seen below Ellicott City. Accidents slowed the pace of construction, as when a landslide killed four men. Frequent riots and brawls among the poorly-paid workers also retarded progress. But by October 1, 1829 the laborers began to lay the imported English track and by the following spring the rails ran to Ellicott City.

The Baltimore and Ohio proudly announced the inauguration of service to Ellicott City on May 24, 1830. Three trips a day would be made and the round trip of twenty-six miles would cost seventy-five cents. The Pioneer, the lead car of four individually horse-drawn cars forming the initial train, led the first train to Ellicott City, furthering a revolution in transportation. The one and one-half hour trip achieved instant popularity, and during the first thirty days the company earned about a $1,000

a week. Apparently, as one individual wrote after riding over the route in March, 1832, all passengers "found, . . . , that this mode of travelling, sometimes over ridges, at other times in deep artificial chasms, now over bridges, and soon after under them, was quite a novelty, and highly entertaining."[1] So much so, that the company after four months had taken in $20,012.36, a sum greatly exceeding the line's operating costs.

The success of the first section of the railroad undoubtedly spurred the further development of the Baltimore and Ohio. In July, 1831 the company initiated regular steam engine service; and late in 1834 the tracks reached Harpers Ferry. Various difficulties slowed the line's advance from Harpers Ferry to Wheeling, but in 1852 the Baltimore and Ohio finally touched the Ohio River.

The Baltimore and Ohio continued to grow after 1857, but the original section of the line between Baltimore and Ellicott City remains a landmark in the history of the company and American railroading. And the little station at Ellicott City easily carrys us back to those first, exciting days on the Baltimore and Ohio.

Condition of Site

Situated on the left as you leave the bridge over the Patapsco and enter Ellicott City, the station is now used only

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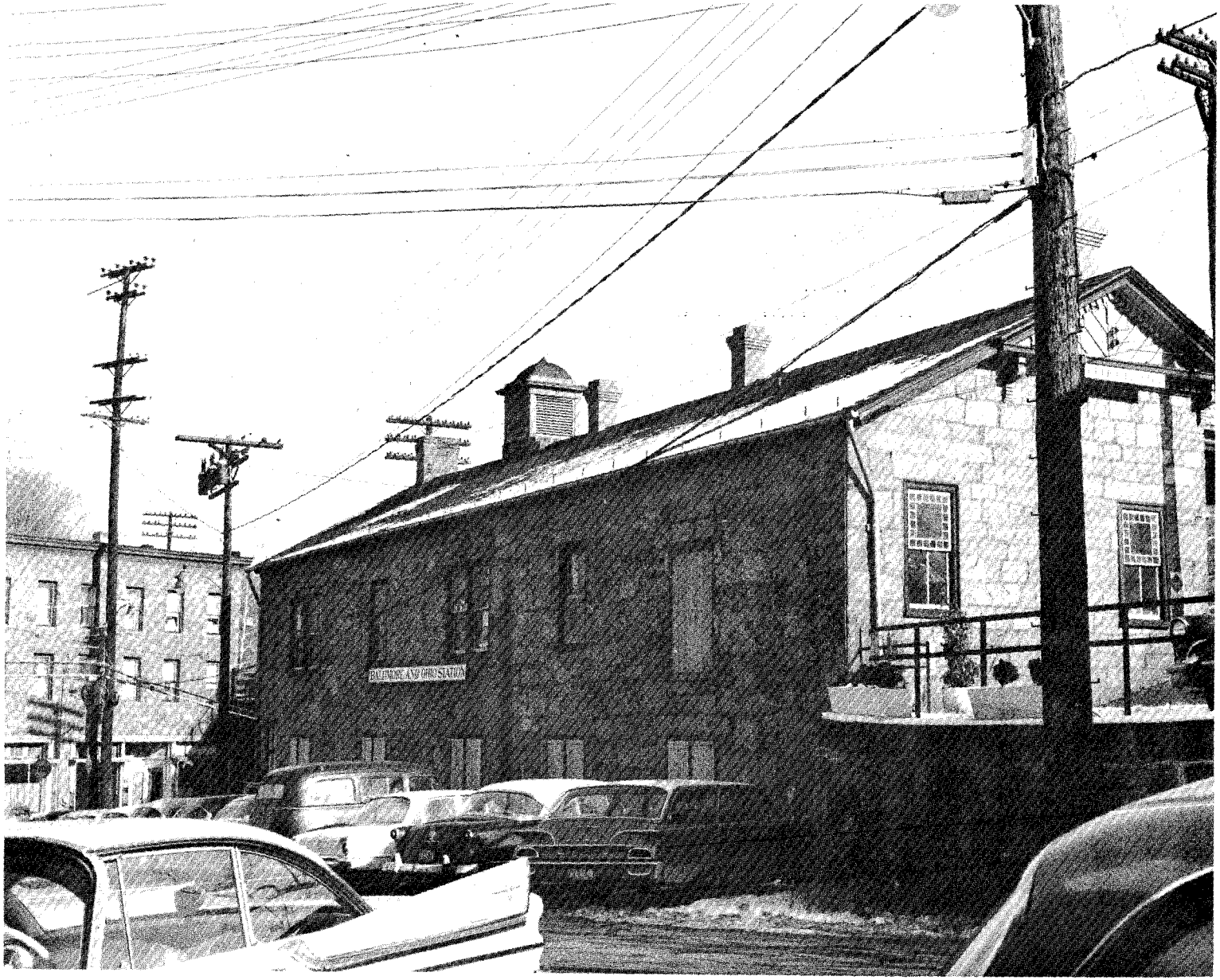
[1] Charles A. Varle, A Complete View of Baltimore with a Statistical Sketch (Baltimore, 1833), 111.

as a freight depot. Huge box cars often sit in front of the building, which is in very good condition. The exterior appears to be little changed from when the structure was built, but the interior has been greatly altered. All in all, however, the building retains a great air of authenticity and revivifies the early days of the Baltimore and Ohio. Just north of the station, incidentally, is part of the original viaduct that carries the track over the road leading into Ellicott City.

References: Baltimore and Ohio, Old Main Line, (n.p., 1946) 1-3; Frank Barnes, et al, Mount Clare Station, Baltimore and Ohio Transportation Museum (Unpublished report, National Park Service, 1962), 1, 4-8; Edward Hungerford, The Story of the Baltimore and Ohio Railroad, 1827-1927 (2 vols., New York, 1928), I, 3, 18-20, 27, 30-31, 37-38, 51-52, 60, 63, 65-66, 69-72, 83-85, 87-88, 101, 109, 116-117, 123, 146-147, 264; John F. Stover, American Railroads (Chicago, 1961), 12-13; Charles A. Varle, A Complete View of Baltimore with a Statistical Sketch (Baltimore, 1833), 108, 111, 112.



Baltimore & Ohio Railroad Passenger Station, 1830, Ellicott City, Maryland

N. P. S. Photo, 1962

THOMAS VIADUCT, MARYLAND

Location: Relay

Ownership-Administration: Jervis Langdon, Jr., President Baltimore and Ohio Railroad

Significance

Today's heavy locomotives and the lengthy trains they pull pass over the Thomas Viaduct, the world's oldest multiple stone-arch railroad bridge, with just as great safety as did the puffing, tiny, ten-ton steam engines of more than a century ago. This majestic and solidly-built viaduct, completed in 1835, remains America's earliest notable example of railroad bridge construction.

The Baltimore and Ohio Railroad began constructing the first railroad into Washington in 1832. In laying out the route, Benjamin H. Latrobe, a civil engineer and a son of the famous architect of the same name, had to provide for passage over the Patapsco River which flowed through a deep ravine between Relay and Elk Ridge Landing. His answer to the problem lay in his design for the present viaduct. John McCartney, of Ohio, undertook the task of executing Labrobe's plan.

McCartney, using local granite, created a masterpiece from Latrobe's design. His workmen raised eight elliptical arches to support the floor of the bridge, with the openings of the arches varying only from fifty-seven feet, ten and a half inches, to fifty-eight feet, four and a half inches, in length. Built on a four degree curve, the bridge runs for 612 feet and stands

60 feet above the river. The floor is twenty-six feet wide, wide enough to hold a double track. The viaduct contains 24,476 cubic yards of stone and it cost $142,236.51. Upon completing the bridge, McCartney, proud and pleased with his work, erected at his own expense a handsome monument commemorating the bridge's construction. This obelisk stands at the north end of the viaduct.

The Baltimore and Ohio named the bridge the "Thomas Viaduct," after the company's president, Philip E. Thomas. Lacking the company's confidence in the structure, some skeptical engineers slightingly referred to the viaduct as "Latrobe's Folly," thinking the bridge would collapse under its own weight. How wrong these pessimists were! Since August 25, 1835 the viaduct has remained in constant use and engineers believe that it will carry rail traffic for centuries to come. That there have been no major repairs or changes in the viaduct, also shows how the voices of doom erred in their predictions.

Condition of Site

The Thomas Viaduct is in excellent condition. One of the interesting things the visitor should note about the viaduct is the half-column that runs from the top of each pier to the floor of the bridge. Those columns suggest that McCartney sought not only to build an enduring bridge, but also a beautiful one.

References: Baltimore and Ohio, Old Main Line (n.p., 1946), 4, 7; Edward Hungerford, The Story of the Baltimore and Ohio Railroad (2 vols., New York, 1928), I, 153, 166-67, 171-172; "The Oldest Stone-Arch Railroad Bridge in the World: The Thomas Viaduct, Across the Patapsco River," The Scientific Monthly, XLI (October, 1935), 381-383.

Baltimore & Ohio Railroad Thomas Viaduct, 1835, Relay, Maryland

N. P. S. Photo. 1962

BOSTON LIGHT, MASSACHUSETTS

Location: Little Brewster Island

Ownership-Administration: Admiral Edwin J. Roland,
Commandant United States Coast Guard
1300 E Street, N. W.
Washington 25, D. C.

Significance

Sailing vessels and steamships approaching Boston have been safely guided into the city's harbor by a friendly light on the rocky south side of Little Brewster Island since 1716. It is highly doubtful that any other lighthouse site in the New World has been used longer than that on this small island before Boston.

Massachusetts' regard for the seafarer stimulated the construction of the two lighthouses that have stood on Little Brewster Island. The Colony of Massachusetts Bay spent £2,385:17:8 to erect the original lighthouse on the island and its light first shone in September, 1716. The tall tower's beacon continued to warn ships away from dangerous rocks until June, 1776, when the British blew up the structure after General George Washington compelled them to evacuate Massachusetts' capital. As the redcoats withdrew, they planted a time fuse and the resulting explosion destroyed the tower. Throughout the remainder of the Revolution no light appeared on the island, but with the return of peace in 1783 the Massachusetts General Court authorized the construction of a new lighthouse. The builders of the new tower evidently followed the plan of the old lighthouse, probably incorporating the remaining wall of the destroyed tower in the new structure. Finished in 1783, the

lighthouse was operated by the Commonwealth until 1790, when on June 10 Massachusetts ceded the light to the United States.

Some changes have been made in the lighthouse since its construction. Because of the appearance of dangerous cracks in 1809, workmen placed six heavy iron bands around the tower in order to strengthen it. A circular staircase was placed inside in 1844 and in 1859 fourteen feet were added to the tower's original seventy-five foot height.

The present lighthouse, as had its predecessor, first used oil lamps in its tower. Sixteen such lamps, for example, were at the top of the building in 1789. The government placed Argand lamps, a vastly improved oil-burning light, in the lighthouse in 1811 and constructed a revolving apparatus for them. With the outbreak of the War of 1812, the keeper darkened his lamps so that the British could not benefit from their light. The light was also extinguished during World War II.

The Boston Light is still a primary light and it throws a 100,000 candle-power beam every thirty seconds. A light ship six miles to the east and a more powerful light on the Graves, however, have decreased the former importance of the old light.

The cannon that stands beside the lighthouse served for many years as the lighthouse's fog signal. Massachusetts Bay, as a result of a request by the keeper of the first light, supplied the cannon in 1719 and for the next 132 years it boomed out in warning whenever fog descended. Only in 1851 did the Government place a bell near the light for fog warnings, thus

ending the long and honorable career of the cannon, which is probably the oldest fog signal in the country.

Condition of Site

The United States Coast Guard keeps the lighthouse in excellent condition. Several maintenance buildings stand at the foot of the tower and nearby is a large house for the station's complement.

References: Hans C. Adamson, Keeper of the Lights (New York, 1955), 93, 95-96; George R. Putnam, Lighthouses and Lightships of the United States (Boston, 1933), 1-2, 5, 7-10; Edward R. Snow, Famous Lighthouses of America (New York, 1955), 39-40; U. S. Coast Guard, Historically Famous Lighthouses (Washington, U. S. Government Printing Office, 1957), 33-35.

Boston Light, 1783, Little Brewster Island, Boston Harbor, Massachusetts

Photo, Courtesy of U. S. Coast Guard

BOSTON SUBWAY, MASSACHUSETTS

Location: Beneath Tremont, Boylston and Washington Streets

Ownership: Thomas J. McLernon, General Manager, Metropolitan Transit Authority, Jamaica Plain

Significance

The difficulties created by today's urban traffic congestion often obscure the fact that metropolises have been cursed with that problem for many decades. The Boston of the late nineteenth century frequently suffered from jams of horse-drawn vehicles; in particular, street cars clogged the heart of the city during the day's rush hours. In order to alleviate that situation, Boston constructed a subway, the first in America and the fifth in the world.

The Massachusetts General Court authorized Boston in 1894 to build a subway. Leading citizens and merchants of Boston opposed the project, but the general public enthusiastically supported the scheme and fully approved the start of the subway's construction in 1895. The work gangs, for the most part, dug a deep trench through the streets under which the subway was to run and then closed the cut with a steel-beam and concrete ceiling. No great delays occurred in the subway's construction and in the fall of 1897 the city opened part of the line. About a year later, in September, 1898, the entire subway was put in use. The subway ran for one and two-thirds miles and contained over five miles of track. Handsome stone exits and entrances were

erected on the Tremont Street side of the Boston Common, and these are still in use. Boston initially rented the line to a private company for twenty years, rather than operate it herself.

The city's subway cost $4,350,000 and it soon proved that the money had been well spent. The underground tracks enabled from 200 to 400 more street cars an hour to travel through the heart of the city during peak travel hours. Indeed, during the subway's first year about 50,000,000 passengers used the subway, more than four times the number handled by London's subway when it began operating.

Sub-surface rapid transit came to America with the opening of Boston's subway. Intrigued by the success of the line, New York City soon followed suit and began to build her famous subway system. Other cities subsequently turned to subways; today, underground lines form one of the nation's major means of urban transportation.

Condition of Site

The original line in Boston has been incorporated into the city's present and greatly enlarged subway system. The 1897-98 tunnel is still used and apparently remains unchanged. More easily seen reminders of the subway's first days are the solidly built entrances and exits on the Common; they have not been changed since their construction.

References: Archibald Black, The Story of Tunnels (New York, 1937), 74-75; Milo R. Maltbie, "Rapid-Transit Subways in Metropolitan Cities," Annual Report (1904), Smithsonian Institution, 759-771 (762-763, 768-770); John Anderson Miller, Fares Please! From Horsecars to Streamliners (New York, 1941), 90-92.

1897 View of Boston Subway, Boston, Massachusetts (First Subway in America) Photo, Courtesy Boston Metropolitan Transit Authority

EADS BRIDGE, MISSOURI

Location: Washington Avenue, at the Mississippi River, St. Louis, Missouri.

Ownership: Terminal Railroad Association, Union Station, St. Louis

Significance

"The Eads Bridge was of tremendous importance in the development of St. Louis, establishing it as the focal railroad crossing and the most important city of the Mississippi. The bridge was also an important factor in the development of the transcontinental railroad systems. Its significance in "the winning of the West" was recognized when the Eads Bridge was pictured on a U. S. stamp of the "Trans-Mississippi Issue" in 1898--the first bridge to receive such philatelic recognition."[1]

The bridge was regarded as a landmark in bridge building and was one of the major engineering achievements of its time. One well-known authority on engineering states, "It [Eads Bridge] was the first of the big arch bridges made of iron and steel, and the cantilever method of erection adopted has been followed, with only one notable exception, for all its followers. It is also of interest that steel was used in this bridge in America several years before its use was permitted in England."[2]

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[1] David B. Steinman and Sara Ruth Watson, Bridges and Their Builders (New York: 1941), p. 205.

[2] H. Shirley Smith, The World's Great Bridges (London: 1953), p. 85.

This famous bridge is notable architecturally as well as structurally. "With a fine sense of aesthetic requirements, Eads insisted upon making the center span somewhat longer than the flanking spans. The three spans are 502, 520 and 502 feet, respectively."[1]

The engineer for this bridge was James Buchanan Eads (1820-1887). An engineer of international reputation, his advice was sought not only by many municipalities but by foreign governments as well. When the bill was authorized for the construction of the bridge across the Mississippi at St. Louis, the project was considered to be impracticable by 27 of the leading engineers of the country. Eads thought otherwise. Construction was started in 1867 and the bridge was completed in 1874. It cost a total of $10,000,000. The conditions encountered during its construction were so extraordinary that only an inventive genius such as Eads possessed could provide the many appliances needed for the subaqueous work and for the superstructure.

The bridge continues to be in use and is one of the landmarks of St. Louis.

References: "James Buchanan Eads," Dictionary of American Biography (New York: 1946), Vol. V, pp. 587-589; H. Shirley Smith, The World's Great Bridges (London, 1953); David B. Steinman and Sara Ruth Watson, Bridges and Their Builders, (New York, 1941).

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[1] Steinman and Watson, op. cit., p. 174.

Eads Bridge, 1867-1874, World's First Steel-truss Bridge, St. Louis, Missouri

N. P. S. Photo, 1962

MIDWAY PONY EXPRESS STATION, NEBRASKA

Location: Three miles south and one mile east of Gothenburg, Nebraska on the 96 Ranch.

Owner: Robert Williams, Managing Partner, 96 Ranches, Gothenburg, Nebraska.

Significance

Midway Station is one of the few surviving stations of that short-lived Pony Express. Located on its original site three miles south and one mile east of Gothenburg, Nebraska, it retains a high degree of its integrity. This building was the 29th station west of the eastern terminal of the Express, St. Joseph, Missouri and the 18th in Nebraska. The Midway Station is shown approximately in its present location on contemporary maps of the Pony Express route.

From this station an Express rider, Jim Moore, during the Indian troubles, on June 6, 1864 rode to Julesburg, Colorado and back in record time.

Condition of Structure

This building constructed of heavy logs squared with an adze is in very good condition. The floors which are breaking through in one place appear to be original. The original dirt roof is surmounted by a shingled roof, which has been constructed to protect the older portion. The three rooms of the station need to be investigated to determine if there has been any alteration in the ground plans of the original structure. The doors, doorframes, windows and window frames appear to be of recent origin. For many years, it served as living quarters for ranch hands.

Bibliography: Merrill Mattes and Paul Henderson, "The Pony Express: Across Nebraska from St. Joseph to Fort Laramie," Nebraska History, Vol. 41 (June 1960), 101-102.

SANDY HOOK LIGHT, NEW JERSEY

Location: Sandy Hook

Ownership: Admiral Edwin J. Roland, Commandant, United States Coast Guard, 1300 E Street, N. W., Washington 25, D. C.

Significance

The tall, white lighthouse at Sandy Hook is the oldest standing light tower in the United States. Since 1764, the lighthouse's unfailing beam has befriended innumerable vessels as they have passed in or out of New York's great harbor.

Because of the risks to shipping in the treacherous waters around Sandy Hook, numerous merchants in New York City pressed the colony's government for the erection of a lighthouse on the desolate point. New York's assembly answered their pleas with an act in 1761 that authorized the holding of a lottery to raise funds for the construction of a lighthouse. This lottery raised £2,600, but in 1763 another one had to be held to raise additional money. The builders finished the structure in 1764 and on June 11 its lamps were lit for the first time. New York City collected a tonnage tax of twenty-two pence per ton in the following years in order to help pay for the light's maintenance.

The light, originally called the "New York Lighthouse," has served the shipping world with relatively few interruptions since its construction. During the American Revolution the Americans put it out of operation in March, 1776 so that the British could not benefit from it. Seafarers that they were, the enemy realized the light's value and restored the beacon as

soon as they could. Some intrepid Americans in small boats managed to elude British warships on June 1, 1776 and bombard the lighthouse with cannon, but that resulted only in minor damage to the tower. Following the winning of independence the light was ceded to the United States on March 25, 1790. It is doubtful if Federal control of the light greatly benefited the keeper of the lighthouse, as in 1793 the Government paid him only $266.66 a year. The keeper faithfully attended the light, however, and its beam appeared as each night fell. Only during World War II was the lighthouse again darkened.

The original tower of the Sandy Hook Light still stands. It is octagonal, with massive masonry walls that are seven feet thick at the base. The tower rises eighty-five feet above the ground and eighty-eight feet above the water. It is interesting to note that when built the lighthouse stood about five hundred feet from the northern end of Sandy Hook, now, due to the action of the water, the light is five-eighths of a mile from the point.

A light ship eight miles to the east has lessened the importance of the Sandy Hook Light. Even so, and in spite of the fact that in 1950 it was a third-order light, with a 45,000 candle power, fixed electric light, the light continues to aid the mariner, as it has faithfully done for the last 196 years.

Condition of Site

Maintained by the United States Coast Guard, the lighthouse is in excellent condition.

References: John T. Cunningham, The New Jersey Shore (New Brunswick, 1958), 37; George R. Putnam, Lighthouses and Lightships of the United States (Boston, 1933), 4, 11-14, 35; Edward R. Snow, Famous Lighthouses of America (New York, 1955), 115-117; U. S. Coast Guard, Historically Famous Lighthouses (Washington, Government Printing Office, 1957), 61-62.

Sandy Hook Light, Sandy Hook, New Jersey. Erected in 1764, this is the Oldest Standing Light Tower in the United States

Photo, Courtesy U. S. Coast Guard

NAVESINK LIGHTHOUSE STATION, NEW JERSEY

Location: Highlands

Ownership-Administration: Governor Richard J. Hughes, Trenton

Significance

The Navesink Lighthouse Station, sitting two-hundred and forty-eight feet above sea level on the easternmost spur of the Highlands of Navesink, is unique in the history of the American lighthouse service. It is exceptional because a number of very important innovations in lighthouse equipment and in wireless communications were made there, and because the present lighthouse is the most imposing structure of its kind in the nation.

The Highlands of Navesink form an admirable site for a light, and as early as 1746 a beacon had been placed on the elevation. Many years later, in 1827-28, the United States erected the present lighthouse's immediate predecessor. The new light station consisted of two stone, octagonal towers, standing about 320 feet apart. When completed, the north tower threw a fixed beam seaward, while the south tower cast a revolving light. An important advance in the efficiency of lighthouses occurred in 1841, when the Government installed the first Fresnel lens in the country in the south tower. Invented by Augustin Fresnel, a Frenchman, the lens produced a beam that could be seen twenty-two miles away. But because the station's two towers had deteriorated so badly by 1860, the United States tore them down and erected new ones.

The Government completed the towers in 1861-62, each of them standing seventy-three feet high. Both of the towers had first-order lights. Lighthouse service officials in 1883 installed a mineral oil lamp in the north tower, the first lamp of its kind used in a primary light in the nation. In the following year, workmen also converted the south tower to a mineral oil lamp. An even greater innovation occurred in 1898, when, in cooperation with the French Lighthouse Board, the lighthouse service placed the country's first electric-arc lamp in the south tower. Statistics about this lamp are awe-inspiring, for it weighed over seven tons, revolved every ten seconds and shot forth a beam of 25,000,000 candle power every five seconds. With this amazingly bright lamp in the south tower, it is needless to wonder why the Government extinguished the north tower's light in September, 1898. Subsequently, the arc-lamp in the south tower was replaced by an electric incandescant light of 9,000,000 candle power.

Around the turn of the nineteenth century, several important developments in communication occurred at Navesink. Marchese Guglielmo Marconi in 1899 used the north tower of the light station to conduct the first successful demonstration of his wireless on the country's east coast. Four years later the Navy established one of the nation's first wireless stations on the lighthouse's grounds, and in 1917 the first experimental radio-beacon was placed at the light.

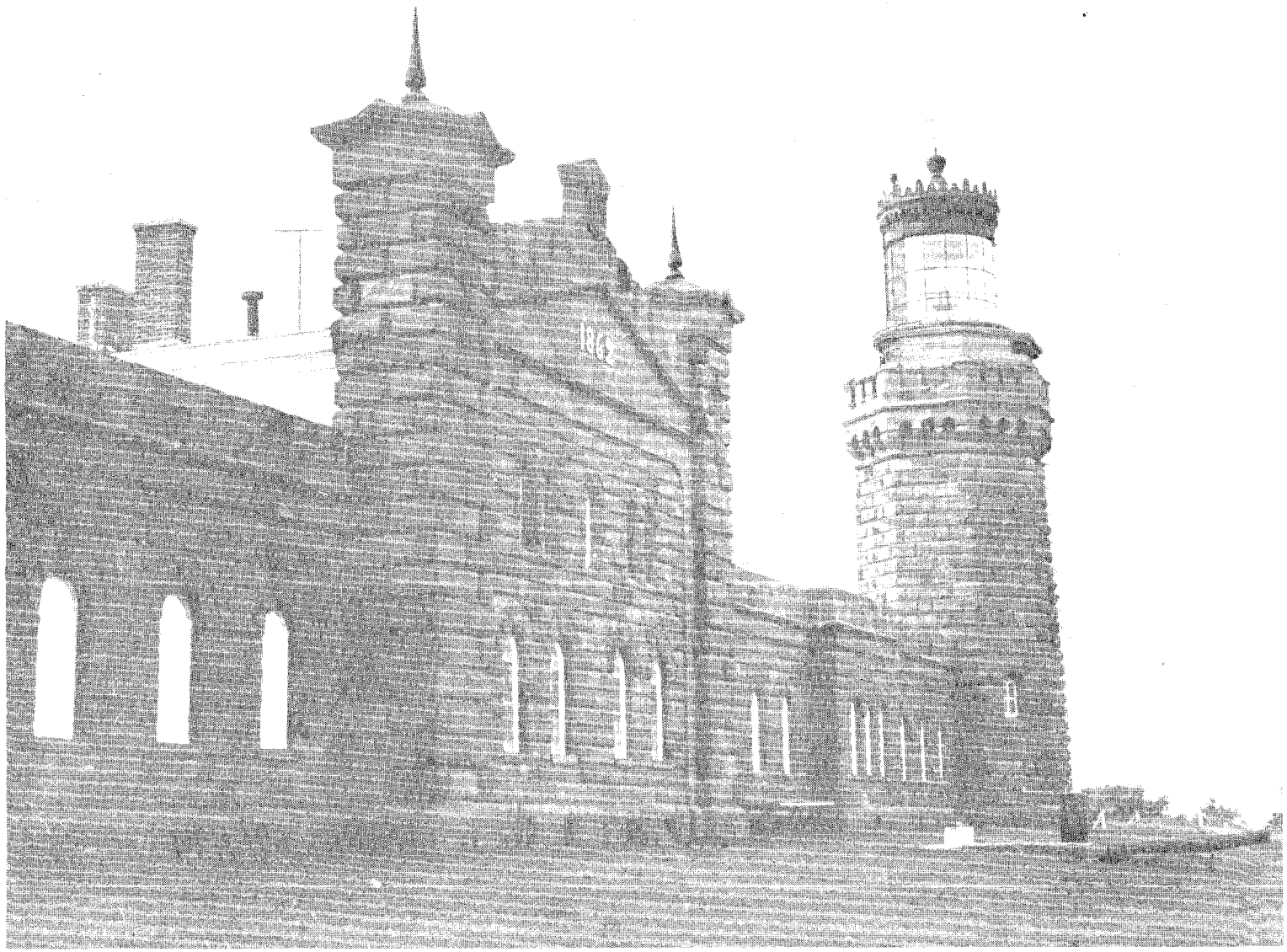
The impressive history of the Navesink Lighthouse Station is complemented by the arresting appearance of the lighthouse. The station's two towers are connected by a two hundred and twenty-eight foot crenelated, fortress-like falsefront. When viewed from a distance, the lighthouse reminds one of a medieval fortification or castle. Behind the wall stand the quarters for the lighthouse's crew.

The Navesink Light is now a highly significant and interesting relic. Decommissioned in 1952 because of the development of better navigational aids, it serves to remind us of the many contributions made in behalf of transportation and communication at this site.

Condition of Site

The State of New Jersey now administers the lighthouse and it is in good condition. Some renovations were made in the interior of the lighthouse after the Government abandoned the light station, but the striking front of the edifice remains in good condition. From this site the visitor can also enjoy a superb view of the Sandy Hook Light and the ocean beyond.

References: Hans C. Adamson, Keepers of the Lights (New York, 1955), 129-130; Frank Barnes, "Report on . . . Navesink Light Attendant Station," (Unpublished report, National Park Service, 1954), 7, 10-18; George R. Putnam, Lighthouses and Lightships of the United States (Boston, 1933), 61-63; Edward R. Snow, Famous Lighthouses of America (New York, 1955), 117-118.



The North Tower of the Navesink Lighthouse, Highlands, New Jersey. Erected 1862

N. P. S. Photo, 1962

OLD BLENHEIM BRIDGE, NEW YORK

Location: North Blenheim

Ownership: Mr. Charles S. Mix, Chairman, Board of Supervisors of Schoharie County, Schoharie

Significance

America's extant covered bridges are treasured relics of an earlier and vastly different United States. The building of covered bridges, once a flourishing art, no longer exists, and today we are extremely fortunate to possess about 1,500 examples of that lost skill. Unique among all of these bridges is the 127-year old covered bridge over Schoharie Creek, as it is the longest single-span covered bridge in the world.

The village of North Blenheim had considered erecting a bridge over the Schoharie for many years, but only in 1834 did the town undertake the project. North Blenheim fortunately obtained the services of Nicholas Montgomery Powers, Vermont's greatest builder of covered bridges. Powers, employed at $7 a day, soon had his men cutting down oak and pine trees and readying the fallen timber for use. In advance of his time, he pre-fabricated sections for the structure, using a site behind the village. When the sections had been finished, they were carried to the creek. Further relying upon his inventiveness, Powers devised a new truss construction for the bridge, one in which the center truss rose higher than the two outside ones. The main truss "enclosed a single arch of oak which . . . [reached] from below the lower chord on up to the ridge-pole at the peak of the roof. It . . . [was]

really three concentric arches, one on top of another, and carefully blocked apart to allow air to circulate among them."[1] The workmen used 3,600 pounds of hand-wrought iron bolts and 1,500 pounds of washers to join the bridge's timbers. The bridge had two lanes (now there are only seven other two-lane covered bridges in the Nation) and was 232 feet long, with a clear span of 210 feet between the stone piers. Protected against the elements by its covering, the bridge remained in active service until 1932.

Condition of Site

The Old Blenheim Bridge is in very good condition. The state erected a steel bridge across the Schoharie in 1932 and left the covered bridge unused. Schoharie County now maintains the structure. Outside of the bridge's tin roof, Powers' work remains essentially unchanged. The traveller will find more than adequate parking space at the bridge, and it is a pleasant place to have a picnic luncheon.

References: Richard Sanders Allen, Covered Bridges of the Northeast (Brattleboro, Vermont, 1957), 1, 50-51, 88-89; David B. Steinman and Sara R. Watson, Bridges and Their Builders (New York, 1957), 124.

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[1] Richard Sanders Allen, Covered Bridges of the Northeast (Brattleboro, Vermont, 1957), 89.

ERIE CANAL, NEW YORK

Location: Montgomery County, six miles west of Amsterdam

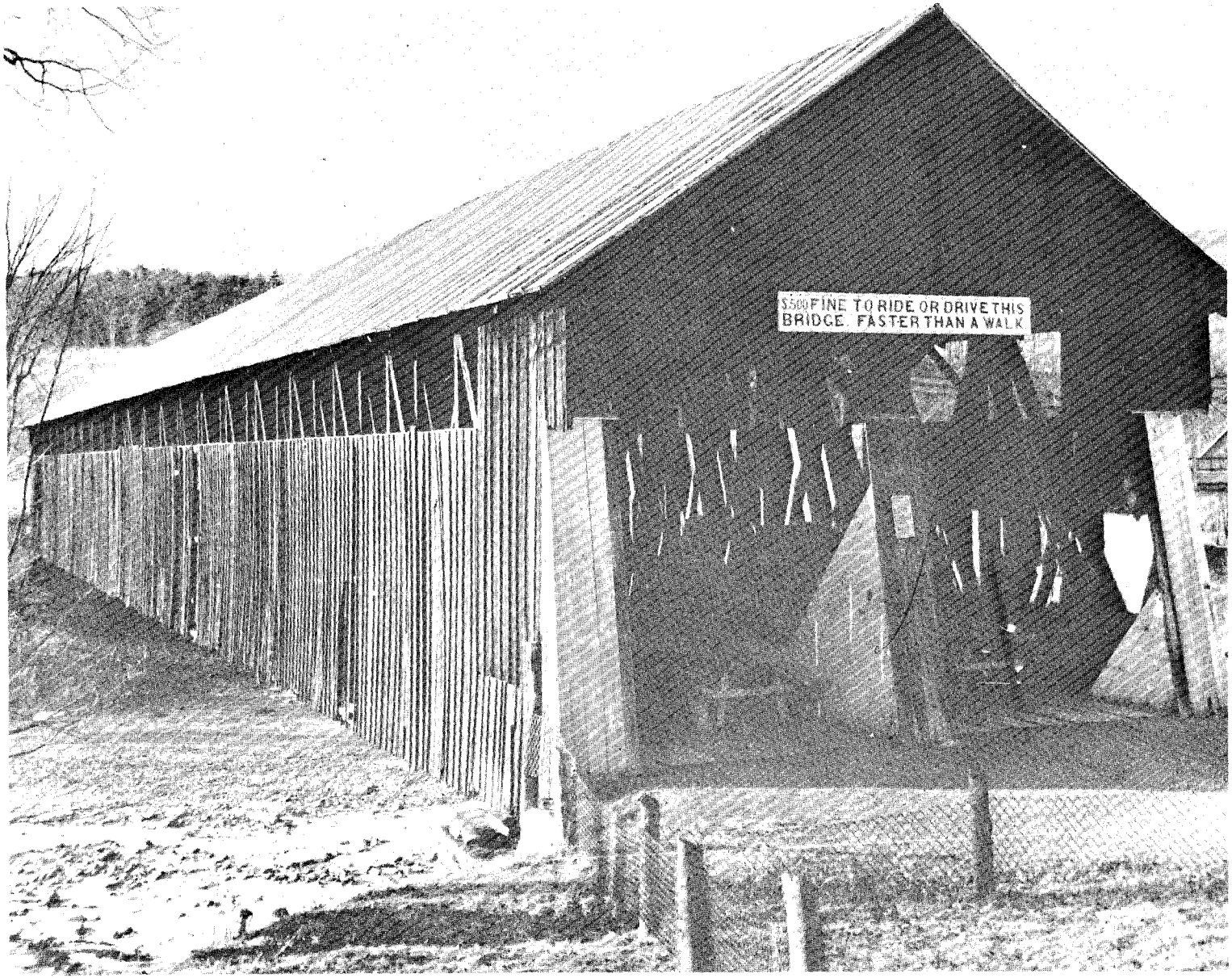
Ownership: State of New York and various

Significance

The Erie Canal has already been classified as possessing exceptional value in Theme XI, Advance of the Frontier, 1763-1830, but as the completion of the canal in 1825 and its instantaneous success created the canal era in America, bringing with it political, economic and social changes that tremendously benefited the entire United States, its inclusion here is amply warranted.

Agitation for a canal between the Hudson River and Lake Erie caused the New York legislature to authorize a survey for a waterway in 1808. The resulting report led to the appointment of a commission to consider further the merits of the project and in 1811 it recommended a waterway connecting the river and the lake. Further progress on the canal scheme fell victim to the War of 1812, but upon its conclusion the State renewed its interest in the project. Another commission resumed study of the undertaking in 1816 and reported favorably early in 1817; and on April 15, 1817 the legislature authorized the construction of the canal.

New York exhibited boldness, if nothing else, in undertaking the construction of the Erie Canal. Only four other artificial waterways existed in the country, and they were short ones, not



Old Blenheim Bridge, North Blenheim, New York. Built in 1835

Photo, Courtesy Schoharie County Historical Society

to be compared to the Empire State's gigantic project. Nothing daunted, State officials broke ground for the canal at Rome on July 4, 1817.

The route of the canal had been divided into three sections, a western section, from Lake Erie to the Seneca River; a middle section, from the Seneca River to Rome; and an eastern section, from Rome to Albany--and laborers inaugurated work on the middle section. Learning as they progressed, the builders of the canal made remarkable progress and by October 8, 1819 barges were using the eastern section. The central section carried barges by 1821; and both the eastern and central sections had met with overwhelming success. Yet, the detractors of the canal continued to wage a hot fight against further work on the waterway, only to be frustrated in their efforts by DeWitt Clinton, Governor of New York. Clinton, who had served on the 1811 and subsequent canal commissions and who was violently in favor of the waterway, beat back all attacks and secured legislation authorizing the continuation of work on the artery. In October, 1825 the laborers completed the western and final section of the canal.

The Erie Canal stretched for 363 miles across New York and provided a water passage from the Atlantic Ocean to the Great Lakes. The ditch was forty feet wide at water level, twenty-eight feet wide on the bottom and carried a stream four feet deep. It had a total of eighty-eight locks and, with the exception of about ten miles in the western section, formed a completely artificial waterway. As an augury of its astounding success, the canal, along with the Champlain Canal, collected over $500,000 in tolls in 1825.

Seldom has such an undertaking in travel and communication loomed so large in the history of the United States. "Clinton's Folly," by providing inexpensive transportation, helped to populate the old Middle West. Thousands moved west on the canal's barges and those emigrants contributed mightily to the dynamic growth of the Northwest Territory. The canal, at the same time, provided a cheap means of sending products east, and in so doing made New York the dominant coastal city. A superlative technical accomplishment, it served as an engineering school, producing a host of trained individuals, and in inaugurating a country-wide canal craze the canal also supplied the engineers to build the new waterways.

Condition of Site

Since its completion, the Erie Canal has seen changes. It was enlarged between 1835 and 1862 and some effort to deepen the canal occurred in 1897-1898. The State began construction of a barge canal in 1903 and finished it in 1918, with the new waterway sometimes following the original canal and sometimes not. The best preserved site on the canal today is at Fort Hunter, where are located the only extant locks of the original canal. This site also includes locks built in the 1840's and the 1841 aqueduct that carried the canal across Schoharie Creek. A movement has been underway to create a state park at Fort Hunger, but it has met with little encouragement from the state legislature to date.

References: Edward A. Channing, A History of the United States (6 vols.; New York, 1921), V, 11, 13-14; A. F. Harlow, Old Towpaths (New York, 1926), 300; Archer B. Hulbert, Great American Canals (2 vols.; Cleveland, 1904), II, 192-194; 195; Henry M. Meyer, History of Transportation in the United States Before 1860 (Washington,D.C.,1917), 182-185, 187-193; New York: A Guide to the Empire State (Third Printing, New York, 1947), 9, 84-85.

Locks of the Original Erie Canal (1817-1825), Fort Hunter, New York

N. P. S. Photo, 1958

"LOCUST GROVE," NEW YORK

Location: 370 South Street, Poughkeepsie

Ownership: Miss Annette I. Young, 370 South Street, Poughkeepsie

Significance

Samuel F. B. Morse purchased "Locust Grove" in 1847, three years after his famous message had flashed over the wire between Washington and Baltimore. Morse, who for years had been a wanderer, loved Locust Grove and he returned to the beautiful estate summer after summer, adding sections to the original house and making it very much his own home. Until 1871, the year of his death, Morse gained full measure from the peace and beauty of Locust Grove.

The inventor of the telegraph was born in Charlestown, Massachusetts on April 27, 1791. Upon being graduated from Yale in 1810, Morse determined to follow painting as a career and sailed to England in order to study under Washington Allston. The young artist returned to the United States in 1815 and for fifteen years practiced his profession with artistic success, but financial failure. He again set out for Europe in 1829, where he spent the next three years studying, painting and travelling. During his wanders through France, Morse observed the French semaphore telegraph and saw how it sped the transmission of messages. With the benefit of more than just an elemental knowledge of electricity, the artist, apparently for the first time, began to wonder if an electrical telegraph could be developed.

Morse boarded the Sully in the fall of 1832 to make the return trip to the United States. Dr. Charles T. Jackson, an eminent American scientist, was a fellow passenger of Morse's and one evening the two became engaged in conversation. The talk turned to electricity at one time and during the course of the discussion Morse said that it should be possible to send messages by electricity. Stimulated by the ensuing discussion, Morse, upon returning to his cabin, sketched the basic idea for an electrical telegraph in a notebook. This marked a turning point in his life.

Upon his arrival in New York on November 16, Morse began to devote more and more time to developing the telegraph. By 1835 the inventor's apparatus could send a message a very short distance and print it. Morse continued to improve his telegraph with the help of others and in September, 1837 he exhibited the improved instrument before a number of colleagues. He applied for a patent in the same month.

Completely abandoning painting in 1837, Morse began the long arduous struggle to have his invention accepted by the public. He first travelled to England and France to secure patents, but both nations rejected his claims. Returning to America, Morse sought to gain support from the National Government. Not until 1843 did he meet with success, when Congress, just before it ended its 1843 session, appropriated $30,000 for the construction of an experimental line between Washington and Baltimore. Securing permission from the Baltimore and Ohio Railroad to place a line

along its right-of-way, Morse quickly inaugurated the project. Workmen initially ran the wire through pipes and then buried the pipes, but after eight or ten miles of wire had been laid faulty transmission forced a halt. It was this crisis that compelled Morse to turn to poles, and during the winter the laborers removed the wire from the pipe. With the return of warmer weather, poles were erected and the wire strung over them. Morse's line ran from the Supreme Court Chamber in the capitol to the Baltimore and Ohio depot on Pratt Street by early May, 1844, and on May 24 he tapped out the now immortal phrase, "What hath God wrought."

Morse's remaining twenty-seven years continued to be full ones. He engaged in numerous activities, one of the most important being the defence of his invention. Between 1848 and 1854 he was involved in almost continuous litigation over the telegraph, and only in the latter year did the courts proclaim him to be the inventor of the telegraph. Morse died in 1871, honored the world over for his contribution to the advancement of mankind.

Condition of Site

The original part of Morse's house at Locust Grove was erected in 1830. After purchasing the house, Morse added rooms on the north and south sides, which turned the building into an octagon. The room that opens on the south veranda served as Morse's study. He subsequently added a drawing room on the west and carried this addition up four stories, making a tower. Morse also built the porte cochere on the south side. The present owner's father purchased the house in 1895 and enlarged the north room. The building is in fair condition at present.

References: Dictionary of American Biography; Leila Livingston Morse, "Samuel F. B. Morse," Year Book, XVII (1932), Dutchess County Historical Society, 29-32; Helen W. Reynolds, "The Story of Locust Grove," ibid., 21-28; Robert L. Thompson, Wiring a Continent (Princeton, 1947), 7-10, 21-23; Carleton Mabee, The American Leonardo (New York, 1943), 145-146, 149-154, 181, 205, 308.

Samuel F. B. Morse Home, "Locust Grove," 1847-71, Poughkeepsie, New York

N. P. S. Photo, 1962

BROOKLYN BRIDGE, NEW YORK

Location: New York City

Ownership-Administration: Mayor Robert F. Wagner, City Hall

Significance

The Brooklyn Bridge is the best known bridge in the world. The innovations used in its construction have influenced bridge building throughout the world and its beauty has pleased people everywhere.

The man most responsible for the construction of the Brooklyn Bridge, John Augustus Roebling, was born in Germany on June 12, 1806. Trained as an engineer, Roebling built roads and bridges in Prussia until 1831, when he emigrated to America. He and some fellow immigrants established a farming colony in Pennsylvania, which he soon abandoned. Resuming his engineering career, Roebling in succeeding years further developed his bridge building art. He became a pioneer in using iron cable for suspension bridges, and between 1851-55 Roebling erected a notable suspension bridge over Niagara Falls. Hardly had he accomplished that task before he undertook another great job, the construction of a bridge over the Ohio River at Cincinnati. This project consumed the years between 1856-66, but in the latter year New York City chose Roebling to be the chief engineer for building the long-dreamed of bridge over the East River, to connect Manhattan and Brooklyn.

Roebling eagerly accepted the monumental task, little thinking that he would sacrifice his life to the bridge. In the following

months, he selected the best site and drew plans for the bridge. By May, 1869 his site and plans had both been approved, and work on the enterprise began. While inspecting progress, Roebling crushed his foot and lockjaw soon incapacitated him. He never recovered, and he became the bridge's first victim.

Upon Roebling's death, his son, Colonel Washington A. Roebling, also a bridge engineer, assumed supervision of the work. Guided by his father's plans, the younger Roebling gave personal leadership to the workers, often going into the pneumatic caissons, among the first to be used, that were employed to build the foundations for the bridge's great towers. Roebling's visits to the caissons led to another tragic accident in 1872, when he succumbed to the much feared caisson sickness, which painfully paralyzed him and left him temporarily speechless. Roebling never fully recovered, but through incredible strength of will he continued to direct the building of the Brooklyn Bridge from a room in his house on Columbia Heights in Brooklyn, using binoculars to observe progress on the structure.

Roebling's illness did not defeat him, but political corruption, continual bickering over funds, dishonest contractors and accidents almost did. But in spite of the legion of difficulties besetting the crippled engineer, he remained indefatigable in his efforts to complete the great undertaking. The 350-foot high Brooklyn tower, which contained 90,000 tons of stone, was completed in June, 1875 and a year later the Manhattan tower was finished. Now faced with the problem of whether to use iron or

steel cables, Roebling decided in favor of steel. This was an historic decision because steel cables had never been used before in a suspension bridge. Roebling created another precedent when he galvanized the cables in order to protect them against salt and other destructive elements. By the fall of 1881 the workmen had strung the cables and on December 11, Mrs. Roebling, her husband's most valued assistant, and others walked across the bridge on temporary planking. A little over a year later the bridge had been completed. Unable to attend the opening ceremony, Roebling very probably observed it through his binoculars. Within twenty-four hours after its opening, the bridge had been crossed by some 250,000 people. Probably few of those who walked to Manhattan or Brooklyn that day realized that the bridge had cost $9,000,000, that twenty lives had been lost in its construction and that only the courage, faith and steadfastness of the Roeblings had made the bridge a reality.

Condition of Site

The 1,595-foot span over the East River is still one of the major links between Manhattan and Brooklyn. New York strengthened the structure between 1948-53 and laid a new and lighter floor, but did nothing to change its appearance. Still essentially the bridge that the Roeblings built, the Brooklyn Bridge should serve and enchant innumerable future generations.

References: Carl W. Condit, American Building Art (New York, 1961), 129; David B. Steinman and Sara R. Watson, Bridges and Their Builders (New York, 1957), 205, 211-214, 218, 232, 233-236, 240, 243, 246-247; David B. Steinman, The Builders of the Bridge (New York, 1950), 368-370, 374, 377-379, 385-386, 406, 417.

The Brooklyn Bridge, New York, New York. Built 1869-1883

1960 Photo, Courtesy New York Department of Public Works

E. H. HARRIMAN'S HOME, "ARDEN", NEW YORK

Location: Arden

Ownership: Dr. Grayson Kirk, President,
Columbia University, New York

Significance

Unbeknownst to the inhabitants of the Gobi Desert, a smallish, thin and dark American considered building a railroad across the desert's barren, wind-swept wastes about 1905. This man was Edward Henry Harriman, one of America's pre-eminent railroad moguls. Harriman never began the Gobi railroad, but the fact that he thought of the undertaking as part of his scheme for a world-wide transportation system testifies to the boldness and enterprise of the builder of "Arden," a man who ranks as one of the greatest organizers and builders in American railroad history.

Harriman was born on February 25, 1848, the son of an Episcopal minister, and as a young man he quickly showed his aptitude for business. He left school when fourteen and obtained a job on Wall Street; by his twentieth birthday 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 successful initial venture in railroads established a suitable precedent for the intense businessman's subsequent career. The Illinois Central Railroad made him a director on May 30, 1883 and four years later the line elevated him to a vice-presidency. Due largely to his sound policies, the railroad weathered the Panic

of 1893, even continuing to pay dividends as one line after another failed during that economic maelstrom. The depression following the panic brought Harriman his first great opportunity, management of the bankrupt Union Pacific. He purchased control of the railroad in 1897, even though the line had been bitingly referred to as but "two dirt ballasted streaks of rust,"[1] and he made it 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, as in 1901 Harriman gained control of the Southern Pacific Railroad. With the merger of the Union and Southern Pacific Railroads, the nation beheld the greatest combination of railroad properties that had ever been accomplished. Not content to stop there, Herriman, along with James Jerome Hill and J. P. Morgan, formed the Northern Securities Company in November, 1901, which created a gigantic combination out of the Harriman lines, the Northern Pacific and the Great Northern. It was short lived, however, as in 1904 the Federal Government forced the break-up of the concern. Harriman, during the remaining five years of his life remained extremely active, 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 also from his remarkable interest in the practical side of

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[1]Robert E. Riegel, The Story of Western Railroads (New York, 1926), 311.

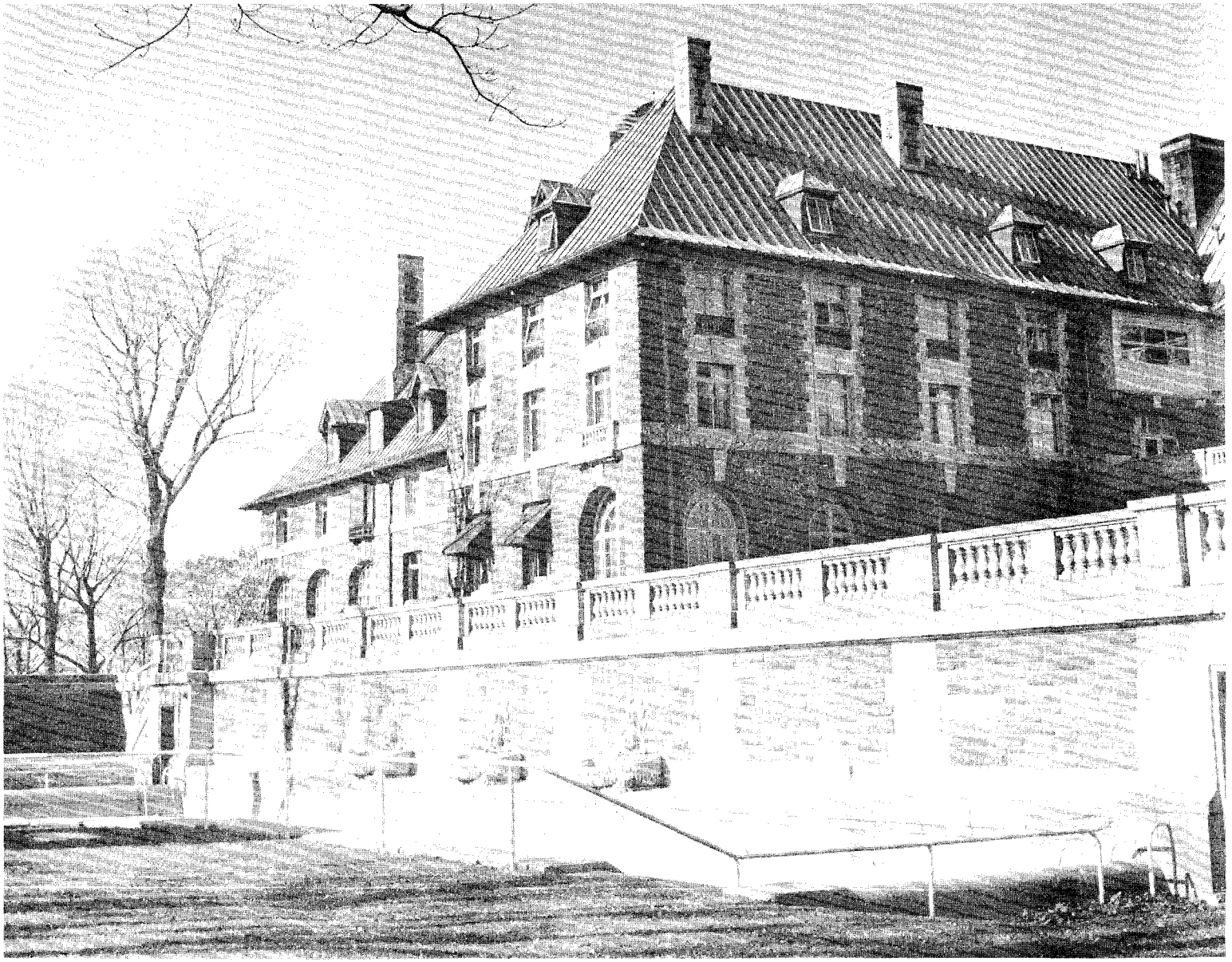
railroading. Realizing that the greatest volume of traffic hauled by as few trains as possible would produce the largest profit, he thoroughly rehabilitated most of the lines with which he was associated. As the driving force in the Illinois Central Railroad between 1882-1892, he added 1500 miles of track and built or bought 234 new passenger and 3,401 freight cars, with the result that he increased the line's annual gross revenue from about $8,000,000 to just over $20,000,000. When he became the paramount individual in the Union Pacific, he first travelled over 5,000 miles on the system and then spent $174,000,000 in the following years to improve every aspect of the railroad. Harriman, after acquiring the Southern Pacific, spent $20,000,000 within two years on improvements. As a result of his insistence upon excellence, the Southern Pacific in 1909 carried 10,000,000 more freight-tons than it had in 1901, but with a drop of 3,400,000 freight-train miles run.

The railroad magnate, near the end of his astounding career, built the great house at Arden. He had first purchased land in the area near Tuxedo in 1885, and by 1900 the original 8,000 acres had grown to 20,000. 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 a site for the house and lawn and by the summer of 1909, the house had been completed. But on September 9, 1909 Harriman died.

Condition of Site

Arden is in excellent condition. Now owned and used 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 also well kept. The visitor will also enjoy the magnificent view from the house.

References: George Kennan, E. H. Harriman (2 vols.; Boston, 1922), I, 5, 9, 12, 15, 18, 62-63, 65, 71, 74-75, 80, 92, 94, 110, 138, 144, 149, 177-181, 238, 240-241, 259-261, 271-272, 329-330; II, 2, 23-24, 30, 336-339, 346, 388. Also Robert E. Riegel, The Story of Western Railroads, (New York, 1926), 311-315.



Edward H. Harriman House, "Arden", Arden, New York. Built 1905-1909

N. P. S. Photo, 1962

SALEM TAVERN, NORTH CAROLINA

Location: 800 South Main Street, Winston-Salem

Ownership: Old Salem, Inc.

Significance

Salem, North Carolina was founded in 1766 by members of the Moravian religious group; it was a planned, congregation town which held title to the land and, through elected officials, supervised all crafts and industries. The tavern building was the first brick structure in the village. Its construction was begun in January of 1784 on the foundations of the earlier half-timbered tavern which had been destroyed by fire. The tavern was owned by the Moravian congregation and was operated as a necessary adjunct to the town's development as the trading center for western North Carolina.

Salem Tavern enjoyed a widespread reputation for hospitality and comfort. Most of the distinguished visitors to the town stayed there. On his Southern tour of 1791, Washington was entertained for two days at the Tavern and occupied the quarters above the "gentlemen's" room.

Condition of Site

The inn is in the restored part of Old Salem and is operated as an exhibition house by Old Salem, Inc. Interior arrangement of the tavern follows the plan of most contemporary ordinaries. The "publick" room, "gentlemen's" room, and sleeping rooms resemble closely those of other 18th century taverns. Inventories of the tavern which had been preserved were used in a careful refurnishing

with authentic furniture. There are many items peculiar to tavern usage, such as bar utensils, tobacco dispenser, etc., that are highly effective in completing the setting.

In its architecture, Salem Tavern is a splendid example of an 18th century "ordinary" in the South. Its authentic furnishing makes it an excellent example of an 18th century town tavern.

References: Hugh T. Lefler and Albert R. Newsome, The History of a Southern State, North Carolina (Chapel Hill, 1954); Work Projects Administration, North Carolina: A Guide to the Old North State (Chapel Hill, 1939); Old Salem, Inc., "Old Salem North Carolina" (Winston-Salem, n.d.).

NATIONAL ROAD, S-BRIDGE, OHIO

Location: U. S. Route 40, five miles west of Old Washington

Ownership-Administration: Governor James A. Rhodes, Columbus, Ohio

Significance

Ohio benefited tremendously from the National Road. The broad highway not only brought hordes of settlers into the Buckeye State, but also gave her citizens an excellent means of shipping produce to the East. Rapid development of the area resulted, and Ohio soon became a major force in the Union. The S-bridge across a small stream five miles west of Old Washington is a tangible reminder of the old artery and a fine memorial to its contributions to Ohio.

The Congressional Act of April 30, 1802 that provided for the creation of the State of Ohio also included a provision for the construction of a road to the west. This road came to be known as the National, or Cumberland Road, and by 1818 it had reached Wheeling, but there the artery stopped and no extension of it occurred for several years. Congress appropriated $10,000 in 1820 for a survey of the route from Wheeling through Ohio, and five years later a $150,000 appropriation provided for extending the road from Wheeling to Zanesville. Officials turned the first spades of earth for the highway in Ohio at St. Clairsville on July 4, 1825, and as laborers subsequently pushed the highway towards Zanesville, they followed the route of Zane's Trace, the State's first road. Construction of the road proceeded without too much difficulty because of the easy terrain; a mile of road in eastern Ohio cost about $3,400, whereas

between Cumberland, Maryland, and Uniontown, Pennsylvania, the same distance had cost about $9,745 as the highway had been thrown over the mountains. After the Cumberland Road entered Zanesville, additional Congressional appropriations had carried it to Columbus by 1833 and to the Indiana border by 1837.

Swarms of traffic began to move over the pike's completed sections, even before the National Road reached Ohio's western border. And as had happened in Maryland and Pennsylvania, the highway's crushed stone paving tended to deteriorate under the constant pounding that it received. Only the bridges bore the great parade of wagons without collapsing, and the S-bridge near Old Washington testifies to the excellence of their construction.

The bridge was constructed in 1828 and is one of four of its kind extant in Ohio. Many legends offer explanations for their unusual design. One tale relates that an English engineer and an Irish builder met in a tavern, and that the confidant son of St. Patrick proclaimed that he could build any bridge that a man from England could design. The Englishman, after several drams, produced the plan of the S-bridge and placed it before the Irishman. Nothing daunted, the contractor took the drawing and in the following days erected the bridge. The best conjecture today is that the S-bridge involved the easiest kind of arch to make and called for the least amount of building material.

When the Cumberland Road reached its terminus in Vandalia, Illinois in 1852, Ohio possessed more of the road than any other state, and her pride in the highway and realization of its value

led to legislation to protect it. As early as 1828 the State had provided for its maintenance and for the punishment of those who damaged the highway. Anyone who mutilated the milestones, culverts or bridges, for example, could be fined $500, or imprisoned for up to thirty days, or both. When the National Government gave the completed sections of the road to Ohio in the 1830's, she immediately erected toll houses. The State collected over a million dollars in tolls from users of the highway between 1831 and 1877.

Condition of Site

Although over a hundred years old, the S-bridge is in excellent condition. The abutments and arch appear to be in as good condition as when built. The bridge is maintained by the State of Ohio and is the center of a small roadside park. Individuals can walk over the bridge and a marker explains the bridge's construction. Picnic tables are available at the site.

References: Archer B. Hulbert, The Old National Road - The Historic Highway of America, in Publications, IX (1901), Ohio Archaeological and Historical Society, 405-407, 417, 434, 436-437, 444, 455; Philip D. Jordan, The National Road (Indianapolis, 1948), 95-96; George R. Stewart, U. S. 40, Cross Section of the United States of America (Boston, 1953), 124-125; Carl Wittke (ed.), The History of the State of Ohio (6 vols., Columbus, 1941-43), III, 108-109.

National Road: S-Bridge, 1828, On U. S. Route 40, Five Miles West of Old Washington, Ohio

N. P. S. Photo, 1962

MIAMI AND ERIE CANAL, "DEEP CUT", OHIO

Location: Ohio Route 66, two miles south of Spencerville

Ownership-Administration: Richard Lawwill, Director
Anthony Wayne Parkway
15th and High Streets
Columbus, Ohio

Significance

The "Deep Cut" is a fascinating remain of the Miami and Erie Canal, one of early Ohio's two major artificial waterways. An amazing, man-made trough in the face of the earth, the Deep Cut is an impressive reminder of the obstacles that Ohio's people (as well as other Americans) conquered in order to develop their inherently rich land.

The Buckeye State possessed one of the most extensive systems of canals in the Union prior to the Civil War. Because of canal agitation early in the 1820's, Ohio appointed a commission in January, 1822 to survey possible canal routes and to supply an estimate of costs for the waterways; and by early 1823 the commission had reported. Regardless of the commission's ideas, by 1825 sectional demands compelled the legislature to approve two main north-south canals, one in the east and the other in the west, and the legislators on February 24, 1825 authorized the Board of Canal Commissioners to decide on the routes for the Ohio and Erie Canal, the eastern waterway, and the Miami and Erie, the western canal. The commissioners soon declared that the western artery would run from Cincinnati to Dayton, then to Toledo.

DeWitt Clinton, the hero of New York's Erie Canal and the nation's most popular groundbreaker at any new canal undertaking, turned the first dirt for the Miami and Erie Canal on July 21, 1825. Unlike some other states, Ohio planned both the Miami and Erie Canal and Ohio and Erie Canal, which Clinton had begun on July 4, 1825, very well. She escaped major embarrassment or delay in their construction, moreover, because the canal commissioners proved to be unusually honest and responsible. The builders of the Miami and Erie met some difficulties, of course. Fevers and illnesses swept through the laborers from time to time, felling many of the men and impeding progress on the canal. Contractors for the various sections of the waterway also suffered from a disease, that of trying to force extravagant sums from the canal commissioners. In spite of these and other troubles, the ditch progressed fairly well and by 1832 the Miami and Erie stretched from Cincinnati to Dayton. Almost fourteen years passed, however, before the waterway reached Toledo. When the canal touched Lake Erie, it had a total length of 248 miles, a minimum surface width of 40 feet, carried four feet of water and had cost $8,062,680.80.

There was no greater excavation on the Miami and Erie than the Deep Cut, just below Spencerville. Men from nearby farms, immigrant Irishmen and convicts had been brought together during the construction of the waterway to dig a ditch through the ridge of blue clay that separated the St. Marys and Auglaize watersheds. With their picks, shovels and barrows, plus blasting powder, the diligent workers slowly advanced through the ridge. Working for thirty cents

a day, many of the laborers drank up their wages at night and often became involved in brawls that flared up in their camps. But in spite of the tough earth, whiskey and riots, the men finally completed the cut. The ditch was 6,600 feet long and from 5 to 52 feet deep.

The money expended in digging the Deep Cut and in building the rest of the Miami and Erie Canal was amply returned to Ohio by the waterway. As one author says, "The touch of internal improvements [of which the Miami and Erie was a major one] acted upon Ohio like the mysterious wand of a magician, converting a wide, unimproved, and comparatively poor state, into a profusion of wealth, property and greatness."[1] The Canal, by providing cheap, easy transportation, helped to settle western Ohio, raised land values and provided an outlet for farm goods. Thus the Miami and Erie Canal contributed notably to Ohio's swift rise to a leading position in the nation. Railroads greatly lessened the value of the Miami and Erie by 1860, but by that date the waterway had done its major work.

Condition of Site

Outside of trees clinging to its banks, the Deep Cut is much the same as when horses drew canal barges through it. Water fills the ditch and the towpath is clearly visible, especially where the trees are bare. A roadside park offers the traveler the chance to stop and observe the great excavation and a very fine marker gives

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[1] Emilius O. Randall and Daniel J. Ryan, History of Ohio (5 vols; New York, 1912), III, 362.

a resumé of the Deep Cut's history. Picnic tables and toilet facilities are also available.

References: Alvin F. Harlow, Old Towpaths (New York, 1926), 244, 247, 251-252, 258, 260, 262; Henry M. Meyer (ed.), History of Transportation in the United States Before 1860 (Washington D. C., 1917), 283-285, 287, 290, 292-295; Emilius O. Randall and Daniel J. Ryan, History of Ohio (5 vols.; New York, 1912), III, 360, 362-363. Also Joseph Dunlap, Allen County Historical Society, Lima, Ohio, to S. S. Bradford, January 11, 1963.

"Deep Cut" of the Miami and Erie Canal (1825-1846) Ohio Route 66, South of Spencerville, Ohio

N. P. S. Photo, 1962

NATIONAL ROAD, S-BRIDGE, PENNSYLVANIA

Location: U. S. Route 40, six miles west of Washington

Ownership-Administration: Governor William W. Scranton, Harrisburg, Pennsylvania

Significance

The National Road swept down a long hill six miles west of Washington and at its bottom crossed Buffalo Creek. The bridge crossing the stream still stands, although today's speeding traveller on the successor to the Cumberland Road, Route 40, may miss it as he flies down the steep slope and over a modern bridge. If that occurs, the motorist will pass a striking remnant of one of America's most historic roads.

The Nation's construction of the National Road ranks as one of the young country's most imaginative undertakings, and one which immensely benefited the Commonwealth of Pennsylvania. The road originated at Cumberland, Maryland, and its construction began in 1811, only to be slowed by the War of 1812. The path of the highway in Pennsylvania ran from Addison, near the Maryland border, to Uniontown and then to Washington, the route demanded by the Commonwealth when she agreed to the road's penetration of her borders. Gangs of men worked on the road, clearing away trees and stumps, grading hills and curves and crushing stone for the road's surface. A good stonebreaker, using a heavy hammer, cracked about eight perches of stone a day, at twelve and a half cents a perch. Work on the artery progressed steadily as the years passed and by 1817 the highway had reached Uniontown, near which village one individual

saw the road staked out "before there was a shovel full of earth displaced, and also . . . /saw/ that great contractor Mordicai Cochran, . . . , with his immortal Irish brigade, a thousand strong, with their carts, wheel barrows, picks, shovels and blasting tools, grading these commons and climbing the long mountain side up to Point Lookout, like a well trained army, and leaving behind them as they went a road good enough for an emperor to travel over."[1] The workers continued to push the road westward after passing Uniontown and by 1818 the Cumberland Road touched the Ohio River at Wheeling.

The National Road ran for a little over seventy-five miles in Pennsylvania and throughout the 1820's traffic streamed over the pike. Specially bred horses pulled huge, colorful Conestoga wagons, often with wheels fifteen to twenty-feet in circumference and from six to ten inches wide, over the road's winding course. Brightly decorated stagecoaches dashed over the bridge at Buffalo Creek as they sped to their destinations, many of the coaches bearing on their door panels colorful portraits of the drivers' political heroes. Moving much more slowly, large droves of horses, mules, cattle, hogs and sheep plodded over the road as their drivers urged them on. When evening came, those on the road found lodging in the numerous inns that bordered the highway.

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[1] Mrs. Carroll Miller, "Romance of the National Pike," Western Pennsylvania Historical Magazine, X (1927), 10.

The bridge over Buffalo Creek, along with the rest of the National Road in Pennsylvania, had been turned over to the Commonwealth by the National Government by 1836. Pennsylvania erected six toll houses along the road and on some sections collectors took tolls until the 1850's. But by that decade, the glorious years of the National Road in the Commonwealth had faded into the past.

Condition of Site

Some years ago, the Commonwealth realigned Route 40 and left the bridge unused. The west end of the bridge was apparently damaged when the road was relocated and now the structure is only in fair condition. There is room enough on the east end of the bridge for visitors to pull off of Route 40 and park.

References: Archer B. Hulbert, The Old National Road - The Historic Highway of America, in Publications, IX (1901), Ohio Archaeological and Historical Society, 406, 424-425, 444; Mrs. Carroll Miller, "Romance of the National Pike," Western Pennsylvania Historical Magazine, X (1927), 1 - 37 (pp. 8, 10-11, 15-16, 18, 24, 28); Thomas B. Searight, The Old Pike, A History of the National Road (Uniontown, 1894), 16-17, 321.

National Road: S-Bridge, 1818, U. S. Route 40, Six miles west of Washington, Pennsylvania. The bridge appears today as shown in this 1931 photograph.

Photo, Courtesy Pennsylvania Department of Highways

PENNSYLVANIA CANAL, ALLEGHENY PORTAGE RAILROAD
PENNSYLVANIA

Location: Hollidaysburg to Johnstown

Ownership: Various

Significance

Pennsylvania's construction of the Pennsylvania Canal represents one of the most ambitious undertakings in early nineteenth-century America. The completed canal, a combination of artificial waterways and railroads, connected Philadelphia with Lake Erie and its most amazing section was the Allegheny Portage Railroad, which enabled the project to overcome the forbidding wall created by the Allegheny Mountains.

Pennsylvanians began to agitate for a canal early in the 1820's because of New York's building of the Erie Canal and other transportation developments threatening Philadelphia's commercial importance. Responding to that pressure, the Commonwealth's legislature on February 25, 1826 authorized the construction of the Pennsylvania Canal. Philadelphia would be connected to Pittsburgh, and Pittsburgh to Lake Erie by the projected undertaking. Losing no time, Pennsylvania inaugurated work on the canal on July 4, 1826. The "Main Line," running between Philadelphia and Pittsburgh, was divided into five sections, two of which had no water. There was no river between Philadelphia and Columbia, and between Hollidaysburg and Johnstown stood the near 1,400-foot ridge of the Allegheny Mountains. When the Main Line had been completed by 1834, the first obstacle had been overcome by the Philadelphia - Columbia Railroad, the second by the Allegheny Portage Railroad.

The Allegheny Mountains had frustrated the canal planners since 1824. Canal commissioners first suggested using a series of locks to overcome the steep grade; later, other recommended a macadam road, over which boats could be carried. While workers steadily advanced other sections of the Main Line, the method of subduing the mountains remained undiscovered. The legislature finally responded to public pressure in 1830 and authorized three engineers to study the problem and recommend a solution. They did, and reported in favor of a railroad, the construction of which the lawmakers authorized in March, 1831. Laborers opened their attack on the ridge in May, and by March 18, 1834 they had completed the portage railroad.

The portage railroad lingers in memory as an incredible feat. On each side of the ridge were five inclined planes, which were used to pull cars, later sections of canal barges, up the steepest grades. The inclines varied in length from 1,480 to over 3,000 feet, overcoming elevations of 150 to 307 feet. At the top of each plane stood an engine house, covering two stationary steam engines. When in operation, four cars, with 7,000 pound loads in each, were pulled up by means of great ropes and at the same time four cars were lowered down the plane. Once the cars had reached the top of a plane, horses or mules pulled them over a track, resting on granite ties, to the next plane. The Commonwealth later supplanted the animals with steam engines. The cars on the western side of the ridge passed through America's first railroad tunnel, the Staple Bend Tunnel. Tunneling was so new to America, incidentally, that the first canal

commission had described a tunnel as "a hole like a well dug horizontally under a hill or mountain."[1] The Allegheny Portage Railroad had cost $1,634,357.69.

The Portage Railroad, although an imaginative accomplishment, was never too efficient. Passengers and cargoes on either side of the high hill had to be removed from canal barges and then loaded on cars. Later, when sectional boats could be placed on trucks and carried over the mountain, the system still proved cumbersome. Until iron cables replaced the great ropes, frequent mishaps occurred because of trouble with the ropes, which varied in length from 3,600 to 6,600 feet. The thawing of the ground each spring also caused the granite ties to become dislocated. A new railroad was built between 1853 and 1855 completely avoiding the planes, but it also failed and in 1857 Pennsylvania sold the railroad to the Pennsylvania Railroad Company. After three months of deficit operation, the railroad company tore up most of the track and used it elsewhere.

The Allegheny Portage Railroad lost money during seventeen of the years between 1834 and 1857. But the whole of the Pennsylvania Canal returned little profit, and in 1864 the western division was abandoned, as was the eastern division in 1899.

Condition of Site

There are several evidences of the portage railroad today. At the top of the ridge is the Lemon House, where travellers spent the night. On the western side of the mountain, four miles east of Johnstown, is the Staple Bend Tunnel. On the approach level to the

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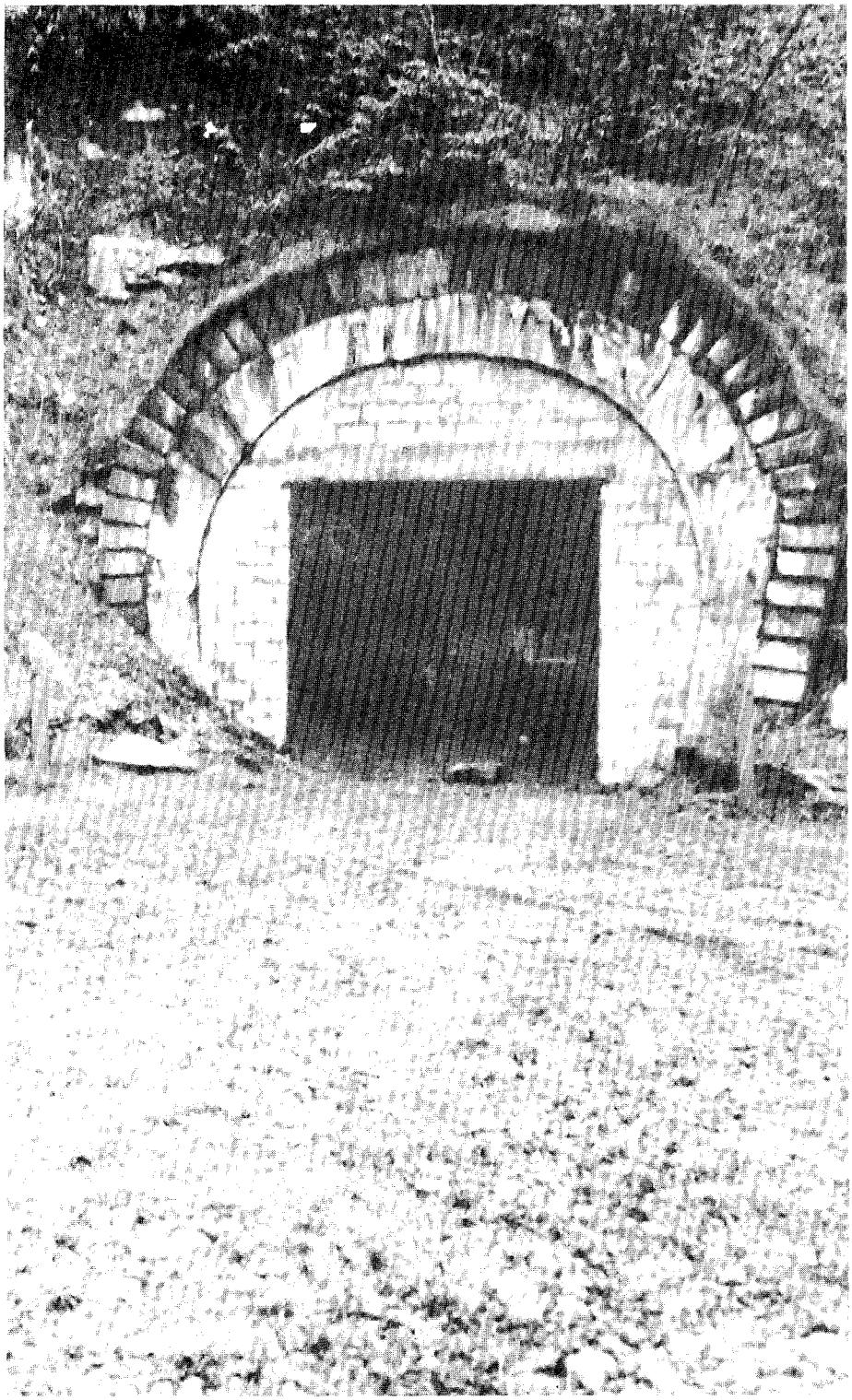
[1]Quoted in Willard R. Rhoads, "The Pennsylvania Canal," Western Pennsylvania Historical Magazine, 43 (Sept., 1960), 223.

tunnel are a great number of stone ties dating from the construction of the railroad. Other remains, such as a skew arch bridge, and traces of the inclined planes and levels between the planes are also visible.

References: Frank Barnes, "Reconnaissance Report, Allegheny Portage Railroad, Johnstown-Hollidaysburg, Pennsylvania" (Unpublished Report, National Park Service, 1962); Avard L. Bishop, The State Works of Pennsylvania, in Transactions, XIII (1907-08), 149-297, Connecticut Academy of Arts and Sciences, (194, 198, 238, 279); Willard R. Rhoads, "The Pennsylvania Canal," Western Pennsylvania Historical Magazine, 43 (September, 1960), 203-238 (203, 206-207, 213-214, 217, 223-225, 231-233, 236).



Pennsylvania Canal, Allegheny Portage Railroad (1826-34). Eastern entrance to the Staple Bend Tunnel. Built in 1831-34, this was America's first railroad tunnel. Located four miles east of Johnstown, Pennsylvania. N. P. S. Photo, 1962

WILLIAM AIKEN HOUSE, SOUTH CAROLINA

Location: 456 King Street, Charleston

Ownership: The Southern Railway

Significance

William Aiken was the first president (1828-1831) of the South Carolina Canal and Railroad Company, builders of the pioneer Charleston and Hamburg Railroad. This company inaugurated the American steam railroad era at Charleston by using for the first time on this continent a steam locomotive in regular service to pull a train of cars on a track. It was, subsequently, the first in the country to carry the mail.

The South Carolina Canal and Railroad Company was organized at City Hall in Charleston, May 12, 1828. William Aiken was elected president, and twelve directors were chosen. William Howard of the War Department's engineering corps surveyed a route for the railroad in 1829; the company's chief engineer, Horatio Allen, made a new survey later in the same year. Allen laid out almost an air-line route from Charleston to the site of Aiken and avoided crossing the Ashley River. In September of that year Allen, who had recently observed English experiments with railroads, was chosen to take charge of the construction work. He was already convinced that steam rather than horse power was to be the future means for powering trains. So insistently did he present his views to the South Carolina Company that on January 14, 1830, its members unanimously decided that their road should be built for the application

of steam power and that mechanical propulsion should be employed exclusively. The locomotive competition in England had taken place only three months before, and it is accordingly probable that the South Carolina undertaking was the first railroad in either Europe or America to adopt formally the use of steam and pursue construction work in accordance with such a resolution. It is quite certain that no other American railway had precedence of it in that respect.[1]

In 1830, locating the road and letting contracts began. By March, 1830, the company had contracted for an engine, The Best Friend of Charleston, which was the first locomotive made in America for regular and practical use on a railway. It was built in New York City, shipped by sea to Charleston in October of 1830 and was placed on the road and operated in preliminary trials during the same year.

The first formal run of the Best Friend took place in January of 1831 with two pleasure cars attached and a small carriage fitted for the occasion to carry a detachment of United States troops. About 150 stockholders and invited guests made the historic first run. It was a gala event.

Such trips delighted Charlestonians until 1831 when a fireman caused a boiler explosion. The engine was rebuilt under the name

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[1] Seymour Dunbar, A History of Travel in America, III, 958-960.

The Phoenix. Another small engine, the West Point, was added at this time. These engines could run at 16 to 21 miles per hour, carrying five or six of their small cars and forty to fifty passengers. With empty cars, they could run 35 to 45 miles per hour.

The railroad was completed to Hamburg at the end of September, 1833. The completed 136-mile road was the longest in the world, and its operation was considered marvelous at the time.

The mission of the Charleston and Hamburg Railroad from the first had been to divert a large traffic from Savannah to Charleston and to develop the overall traffic demand. The line to Hamburg was only one link in a contemplated chain. Extensions both westward and northward from the initial line were wanted as feeders. Augusta, Georgia and the towns to the westward constructed the Georgia Railroad, but the City of Augusta forbade the two lines to terminate within a mile of each other. This necessitated breaking the freight and put the Savannah boats on a footing of equal competition with the Charleston railroad in bidding for cotton brought to Augusta by the Georgia Railroad.

Condition of Site

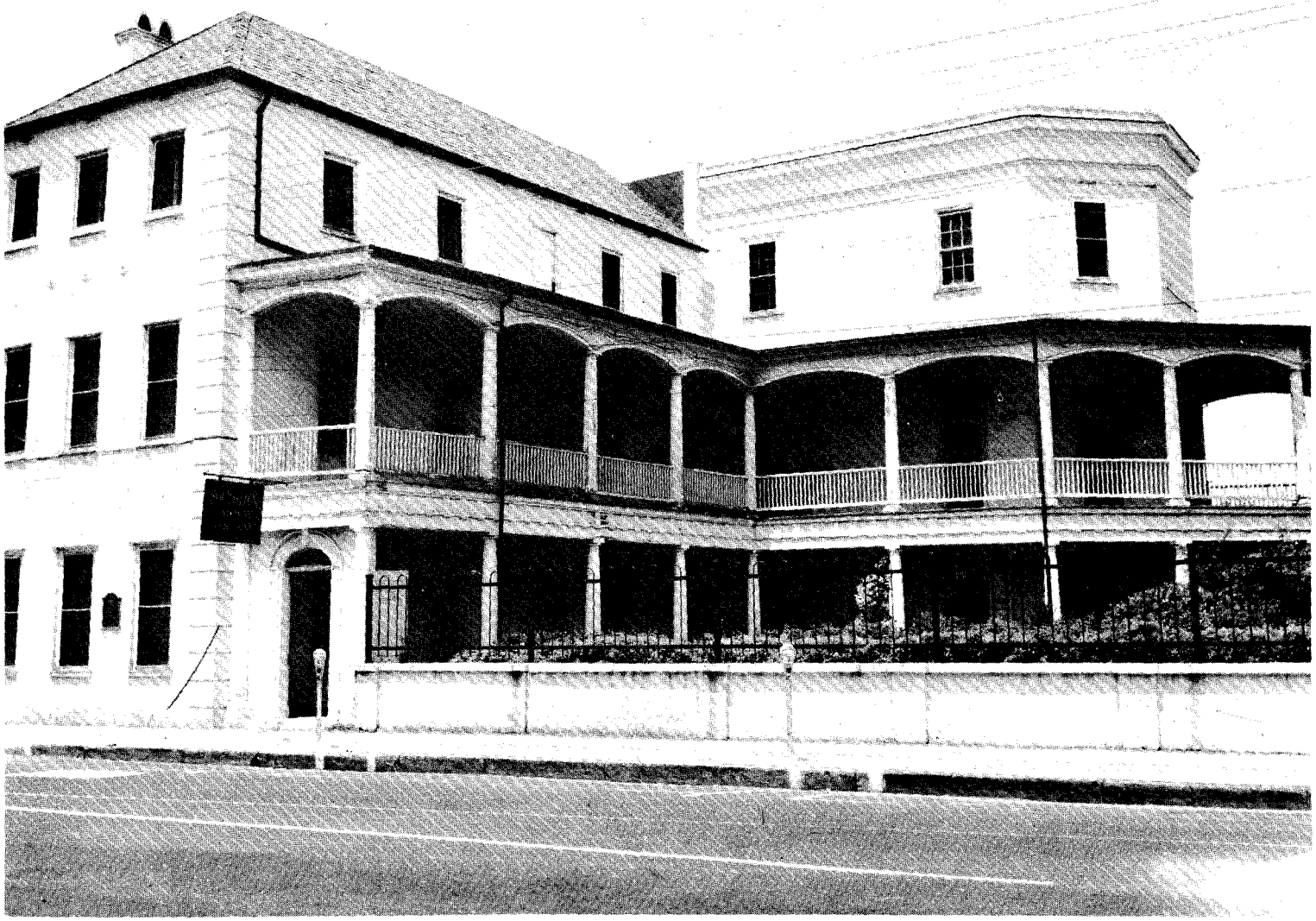
The Aiken House is a handsome brick house with white stucco. It was built between 1807 and 1811; the east wing was added after 1831. The property was inherited by Governor William Aiken, Jr., who sold it in 1863 to the South Carolina Railroad Company which later became a part of the Southern Railway System. The building

is now used as Division Headquarters of the Southern, but its residential appearance has been preserved.

The Aiken House is closely associated physically with the early history of the railroad. Present-day Southern tracks which follow the line of the Charleston and Hamburg run along the rear of the property. The point from which The Best Friend of Charleston began its initial run is only about two blocks from the house. This spot is marked by a South Carolina Historical Marker.

The Camden Depot with its interesting castellated brick and stucco gates is on Ann Street just behind the Aiken House. Across the street is the ante-bellum South Carolina Railroad Warehouse (now Southern Railway freight office). One block to the south on John Street are two other ante-bellum South Carolina Railroad buildings. In conjunction with the home of the first president, these make a notable historic group.

References: Ulrich Bonnell Philips, A History of Transportation in the Eastern Cotton Belt to 1860 (New York, 1908); Samuel M. Derrick, Centennial History of South Carolina Railroad (Columbia, 1930); Seymour Dunbar, A History of Travel in America, 4 volumes (Indianapolis, 1915); Samuel G. Stoney, This is Charleston (Charleston, South Carolina, 1944).



William Aiken House. Home of the first president (1828-31) of the South Carolina Canal and Railroad Company, Charleston, South Carolina

N. P. S. Photo, 1961

THE TICONDEROGA, VERMONT

Location: Shelburne Museum, Shelburne

Ownership: Mr. Sterling D. Emerson, Director, Shelburne Museum

Significance

The Ticonderoga, the only extant unchanged vessel of its kind in the United States, symbolizes an era of travel that has all but vanished from American waters. Between the time of her construction in 1906, and the middle of the 1950's, the sturdily built vessel plied the waters of Lake Champlain as an excursion boat, carrying thousands of passengers over the beautiful and historic lake. Sadly enough, by 1953 the popularity of automobile transportation had permanently stopped the Ticonderoga's great paddlewheels, and a long-enjoyed mode of travel on the lake ended.

The Champlain Transportation Company launched the Ticonderoga in April, 1906. As the last steamboat built at Shelburne Harbor, her launching ended an interesting phase of ship building there. The ship was 220 feet long, had a beam of fifty-seven and a half feet and a displacement of 892 tons. Midships, on either side of the steel hull, were the paddle wheels, each twenty-five feet in diameter. Both paddle wheels were covered with paddle boxes. Deep in the hull sat her Fletcher walking-beam engine, the walking-beam of which protruded through the top of the third deck. When in operation, the walking beam could be seen oscillating to and fro as the paddle wheels propelled the ship through the water. This engine is still in the Ticonderoga and it is a unique piece of machinery. When fully loaded, the vessel cruised at seventeen miles per hour.

Much of the ship's original cost, $170,000, must have been expended on its appointments. A handsome and beautifully carved stairway led to the stateroom hall. At the head of the stairs appeared the "traditional plate-glass mirror,"[1] and just above the mirror stood a magnificently carved eagle, with wings posed as if for instant flight. In the saloon panelled walls, a Brussels carpet and numerous mahogany chairs all bespoke an unassuming elegance. The staterooms were also tastefully furnished, but the ship had only ten of them as it was a day boat. When filled to capacity, the vessel carried 1,200 persons.

After the Champlain Transportation Company closed its office in 1948, thus ending a business begun in 1809, the Shelburne Museum in December, 1951 purchased the Ticonderoga. The Shelburne Steamboat Company, organized by the museum, operated the ship for a few years, but because of a lack of passengers the museum decided to transport the vessel to the Shelburne Museum. As the museum stood about three miles from the lake, the carrying of the Ticonderoga overland proved to be a tremendous task. Begun in the fall of 1954, the job was completed in the spring of 1955. The vessel is now permanently berthed at the museum.

Condition of Site

Since 1955, the Ticonderoga has been thoroughly rehabilitated. New carpets rest on the floors of the saloon, staterooms and dining

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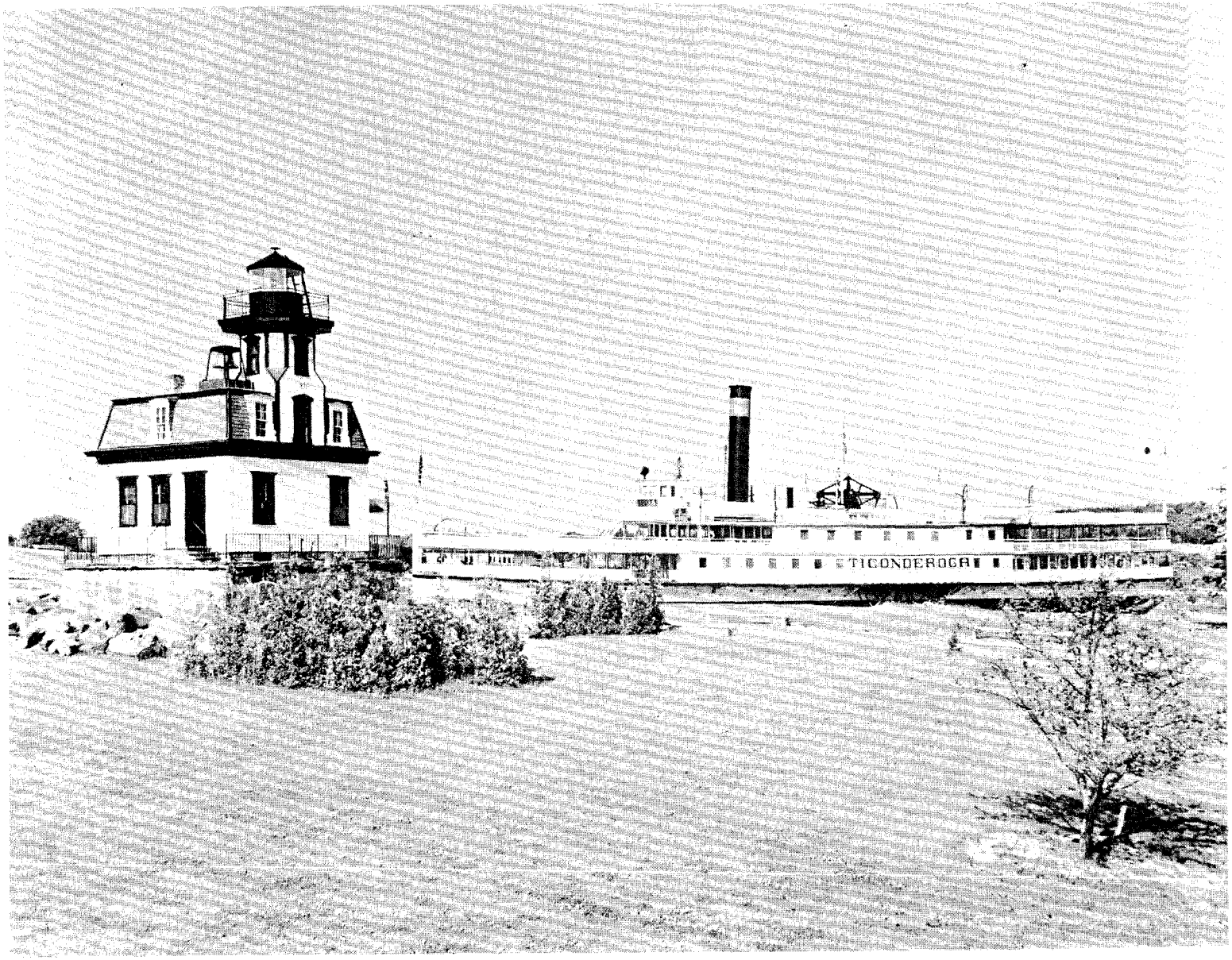
[1] Ralph N. Hill, The Story of the Ticonderoga (Burlington, Vt., 1957), 26.

room, and all parts of the vessel have been repainted. Other than those changes, the vessel is essentially the same as when launched in 1906.

References: Ralph N. Hill, Sidewheeler Saga (New York, 1953), 250; Ralph N. Hill, The Story of the Ticonderoga (Burlington, Vermont, 1957), 18, 25-26, 64, 90-91, 103-104, 106-107.



Lakeboat, THE TICONDEROGA, 1906, Shelburne, Vermont

Photo, Courtesy Shelburne Museum

CAPE HENRY LIGHTHOUSE, VIRGINIA

Location: South Entrance to Chesapeake Bay, ten miles east of downtown Norfolk and approximately two miles north of Virginia Beach.

Ownership: Association for the Preservation of Virginia Antiquities; 1.77 acres.

Significance

Cape Henry Lighthouse is the first lighthouse structure authorized, fully completed, and lighted by the newly organized Federal Government. It is an octagonal stone structure, faced with hewn or hammer-dressed stone -- the first of three lighthouses to be built by John Mc Comb, Jr. The tower was completed in October, 1792, and it was lighted in that same month. It is the third oldest lighthouse in the United States.

From early colonial times Chesapeake Bay boasted a substantial volume of shipping. For decades, however, efforts to gain the benefits of a lighthouse were unsuccessful. The division of the Bay into two political entities, Virginia and Maryland, made unified action difficult; the comparative regularity of the coast off the Virginia Capes made it seem less pressing; and there was difficulty in getting agreement among so many interested, and often conflicting parties -- the two houses of the Maryland and Virginia Assemblies, the British Government, Lord Baltimore, and British merchants trading to the Chesapeake. The lighthouse was not erected until this complex situation had been simplified with the establishment of the Federal Government. Then it became the first whose authorization and complete construction were undertaken.

The oil-burning lamps of the Cape Henry Lighthouse were first lighted late in October, 1792. From reports and indications noted through the years, the light at Cape Henry burned with regularity in subsequent years. The lantern itself, of course, underwent a number of improvements, and there were some structural improvements as well.

During an inspection in 1872 the stability and safety of the old tower were first questioned. Since it was considered "one of the first lights in importance along the coast," it was argued that a more powerful light was needed. These recommendations did not get immediate attention. Finally, an initial appropriation of $75,000, on June 20, 1878, paved the way for the start of a new tower and its associated facilities. The new tower was completed some 350 feet southeast of the old one late in 1881 and lighted in December of that year.

After the new light was placed in operation, the old tower remained a day-mark and is also used as a basis for coast survey triangulation. It ceases, however, to be noted otherwise for any lighthouse purpose. It did continue as a landmark. On April 29, 1896 the Association for the Preservation of Virginia Antiquities placed on it a tablet marking the first landing of the English colonists on Virginia's soil. The old tower thus became a forerunner of the Cape Henry Memorial.

The Cape Henry and Sandy Hook Lighthouses are outstanding in the degree to which the original tower has been preserved. The sandstone tower of Cape Henry is essentially unchanged although

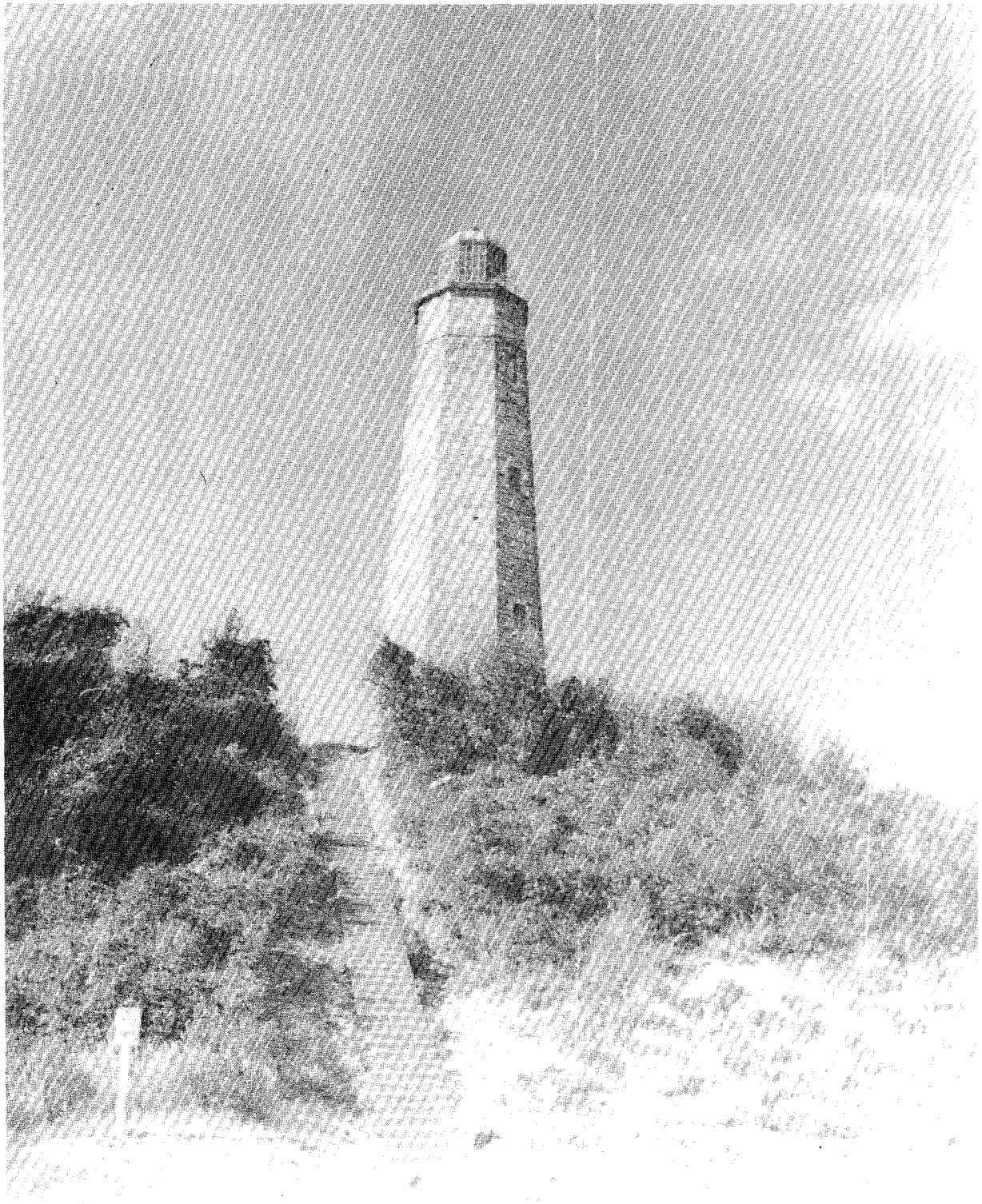
brick lining and an iron stairway have been added to the interior.

Condition of Site

In 1930 the old tower and 1.77 acres were deeded to the Association for the Preservation of Virginia Antiquities. When last visited in 1962, the lighthouse appeared rather unkept and obviously lacking in regular care. Its entrance door was unlocked and permitted visitors to come and go at will. There was no interpretation offered to the public. Attention is drawn to it largely through occasional repairs and on special occasions such as Garden Week in Virginia and Cape Henry Bay.

The structure appears to be solid though wind erosion at the base of the tower threatens serious damage. There was, however, strong local interest in maintaining the lighthouse, both on the part of the Norfolk Branch of the APVA and segments of the general public. The City of Norfolk, Virginia Beach, and Princess Anne County have recently appropriated funds for repairs, presumably to be done through the APVA.

References: Charles M. Hatch, Jr., "The Old Cape Henry Light" (unpublished ms. report, NPS, 1962); U. S. Coast Guard, Historically Famous Lighthouses (Washington, GPO, 1950).



Cape Henry Lighthouse near Norfolk, Virginia. Completed in 1792, it was the first lighthouse to be erected by the new Federal Government

N. P. S. Photo

GADSBY'S TAVERN, VIRGINIA

Location: 128 N. Royal Street, Alexandria

Ownership: Gadsby's Tavern Board, Inc., under the auspices of the American Legion

Significance

Gadsby's Tavern, which comprises two adjoining tavern buildings, is one of America's most famous taverns. The smaller of the two buildings was built in 1752 and known as the City Tavern, and sometimes as the Coffee House. During the last half of the 18th century it was an important center in Virginia life. Washington recruited his first command of Provincial troops for the Great Meadows campaign in 1754 at City Tavern. He was quartered here when he received his commission as Major on General Braddock's staff. The Fairfax Resolves were prepared here -- those resolves that eventually grew into the Virginia Bill of Rights. In this tavern met the convention called by Washington to settle the question of import duties on the Potomac River commerce. The question seemed of larger importance and in time led to the convention in Philadelphia which prepared the Constitution of the United States. The first celebration of the adoption of the Federal Constitution subsequently took place here on June 28, 1788.

John Wise built a large three-story brick addition in 1792. It was opened on February 11, with festivities commemorating Washington's birthday. In Wise's new hotel, Alexandria architecture reached its highest expression, and it was the ultimate in comfort and elegance for its day.

In 1794, John Gadsby took over the tavern under a lease. As fine as the tavern had been under Wise, it was to reach new excellence and fame. Running the two taverns as one, under the name Gadsby's Tavern, he spread the fame of its comfort and culinary art throughout the country. From Boston to New Orleans, the traveler did his best to make Gadsby's. Gadsby established his own stage line from Alexandria to Philadelphia, and it was necessary to be a guest with him in order to get a ticket.

Such men as George Mason, Thomas Jefferson, Alexander Hamilton, George Clinton, Benjamin Franklin, General Braddock, the Byrds, Fitzhughs, Lees, and Washingtons are among those who visited Gadsby's. Indeed the two taverns housed and fed most of the famous persons visiting the country from 1752 for the next one hundred years.

Condition of Site

The two buildings that make up the Tavern were purchased by the American Legion, Post #24 in 1926. Since then, patriotic organizations of Alexandria have joined in its restoration. The ballroom woodwork of the larger City Hotel, which was taken for the American Wing in the Metropolitan Museum of Art, has been copied in detail and replaced. The front of this building was restored by the Mount Vernon Chapter of the D.A.R., and the main doorway was purchased from the Metropolitan Museum and restored in 1949. Two ballrooms, a walled courtyard with cobblestone surfacing, an underground brick kitchen, a tap room and lodging rooms furnished in the manner of Colonial Virginia give an excellent picture of

tavern hospitality as it was enjoyed at this famous inn. The Alexandria American Legion maintains the two buildings in excellent condition as their meeting place and as a memorial to the men and women of the Armed Services. It is opened to the public during the spring and summer season.

Gadsby's Tavern is an outstanding illustration of the central role played by many taverns in early American life.

References: Gay Montague Moore, Seaport in Virginia: George Washington's Alexandria (Richmond, 1949); Work Projects Administration, Virginia: A Guide to the Old Dominion (New York, 1940).

Gadsby's Tavern, Erected in 1752 and 1792, Alexandria, Virginia

N. P. S. Photo

RISING SUN TAVERN, VIRGINIA

Location: 1306 Caroline Street, Fredericksburg

Ownership: The Association for the Preservation of Virginia Antiquities

Significance

The Rising Sun Tavern was owned and, traditionally, built about 1760 by Charles Washington, the youngest brother of George Washington. It was known as the Washington Tavern when Charles kept it and also served as Fredericksburg's postmaster.

In the hands of a later host, George Weedon, the tavern became a political as well as social center. Weedon was a former German officer from Hamburg who fought in the French and Indian campaigns and settled in Fredericksburg. It was a favorite meeting place of Virginia Revolutionary patriots: George Washington, Thomas Jefferson, Patrick Henry, George Mason, Hugh Mercer, John Marshall, the Lees, and other colonial leaders on their way from the South to Philadelphia. Here George Mason, George Wythe, Edmund Pendleton, Thomas Jefferson, and Thomas Ludwell Lee met on January 13, 1777, and outlined the bill that Jefferson later phrased and Madison presented to the Virginia Assembly in 1785 as the Statute of Virginia for Religious Liberty. The Peace Ball, attended by Washington and his mother, his officers, LaFayette, Rochambeau, Admiral de Gras, and others to celebrate the victory at Yorktown, was held in 1781 in the assembly room which has since burned.

The tavern was a social center for the colonial town. Dinners and balls were held here, and traveling entertainers stopped to

perform. It was the town post office and stagecoach stop.

Condition of Site

The Rising Sun Tavern ceased to be operated as a tavern sometime prior to the Civil War. The Association for the Preservation of Virginia Antiquities acquired the property in 1907, and began a program of careful restoration and refurnishing. The tavern is a story-and-a-half frame building covered with broad hand-beveled clapboards. It is approached by a small stone porch which has been restored. The gabled roof is pierced by three very small dormers and built-in end chimneys. Despite its age, the building has never been structurally altered and is considered an architectural gem.

The large number of tavern pieces added in the refurnishing project make the Rising Sun unusually interesting and authentic in its illustration of colonial tavern life. The old post office has been restored with its letter slots and an original account sheet of the mail and early envelopes. In the process of restoration some of the original railings from the 18th century bar were found under the plaster, and the entire bar has now been rebuilt.

Furnishings and accessories of the late 18th century English and American origin are of the period when the tavern flourished. Among the many interesting items are gaming tables, a large and important collection of English and American pewter, an original license to keep the tavern which is dated 1793, a stagecoach sign dated 1775, and many other accessories used in operating a "proper tavern."

The Rising Sun Tavern is notable as an illustration of the important role played by taverns in early American life when they were community travel and social centers and meeting places where important political questions were discussed and often resolved.

References: Elise Lathrop, Historic Houses of Early America, (New York, 1936); Work Projects Administration, Virginia: A Guide to the Old Dominion (New York, 1940); Association for the Preservation of Virginia Antiquities, "Rising Sun Tavern," Information Leaflet.

Rising Sun Tavern, c. 1760, Fredericksburg, Virginia

N. P. S. Photo

SHERIDAN INN, WYOMING

Location: Southwest Corner of Broadway & 5th Street, Sheridan, Wyoming.

Significance

Opened in June, 1893 and rated as the finest hotel between Chicago and San Francisco, Sheridan Inn served for many years as the social center of the region. In the following year William Cody ("Buffalo Bill") built elaborate barns and livery stable which was operated in connection with the hotel management. It was the outfitting point of numerous hunting expeditions for big game that went out to the Mountains to the West, and here tourists set out by stage to Yellowstone National Park.

The idea of this hotel was conceived by George Holdrege, general manager for the Chicago, Burlington and Quincy Railroad which was then building into Sheridan. The architect was Thomas R. Kimball, of Omaha, who modeled the structure after a Scottish inn he had visited. This hotel purportedly had the first bath tub and electric lights in that part of the country. Cody is said to have led the grand march at the opening of the Inn to guests. Tubs of free iced champagne were served at this gala affair.

For two decades and to some extent at the present time, the Inn was the social center for the valley. When dances were held in its dining room, the cow country danced with the women in evening gowns and the men in their board shirts and tails.

From 1894-96 when it was operated by Cody, the Inn was a mecca for showmen and its manager is said to have recruited aces then for his acts for his famous Wild West show. Distinguished guests who stayed at the hotel were General O. O. Howard, General Leonard Wood, General Nelson A. Miles, Capt. John J. Pershing, William Jennings Bryan, Charles Russell, William Howard Taft, Calamity Jane, Mary Roberts Rinehart and Senator Joseph Henry Robinson.

Remains

The building continues to serve as a hotel and retains much of its integrity. The barns and livery stables, however, have been razed.

Bibliography: WPA, Wyoming: A Guide to Its History, Highways and People (New York, 1941) 212-213.

Sheridan Inn, 1893, Sheridan, Wyoming

N. P. S. Photo, 1961

The Advisory Board on National Parks, Historic Sites, Buildings, and Monuments, at their 44th and 45th meetings, held May 15-19 and September 15-19, 1961 respectively, recognized 12 sites as possessing exceptional value under subtheme "Transportation and Communication" of Theme XV - Westward Expansion, 1830-1898. The 12 sites so classified are as follows.

1. Apache Pass, Arizona. A major avenue of cross-country travel in the Southwest, Apache Pass permitted crossing of the Chiricahua Mountains. The trail leading through it was so located because of the water of Apache Spring. It was a leading site on the Butterfield Overland Mail route. It was considered the most dangerous point along the entire route from Tipton, Missouri, to San Francisco, California. Stone foundations and rock debris today mark the site of the Apache Pass Stage Station. The Butterfield trail may be followed from one end of the Pass to the other and the historical setting remains intact. Located in Cochise County, Arizona, 15 miles south of Bowie, the Pass is owned by the United States Government and various private individuals.

2. Big Four House, California. The Big Four Building, located at 220-226 K Street, Sacramento, was the first general offices of the Central Pacific Railroad. Here the "Big Four" -- Huntington, Stanford, Hopkins, and Charles Crocker, assisted by the engineer Theodore Judah, planned, financed, and built the western end (California to Utah) of the first transcontinental railway. Here also the "Big Four" obtained control of the Southern Pacific Railroad and began the construction of that line to southern California. The structure served as the general offices of the Central Pacific until 1873, when they were transferred to San Francisco.

3. Pony Express Terminal, California. The Pony Express Terminal, located at 1006 Second Street, Sacramento, served as the original western terminal of the Pony Express from April 1860 to March 1861, and also is the office, 1858-1863, of the California State Telegraph Company, which helped to construct the first transcontinental telegraph line in 1860-61.

This two-story brick building, erected in 1853, was occupied by B. F. Hastings and Co., the State Library, the State Supreme Court, and Wells, Fargo and Co. In 1858 Wells Fargo moved out of the south portion of the structure, and this section was at once occupied by the Alta Telegraph Company. This latter company, reorganized in July 1860 as the California State Telegraph Company, served as the Sacramento agent of Russell, Majors, and Waddell's Pony Express from April 1860 to March 1861.

4. Oak Grove Butterfield Stage Station, California. The Oak Grove station appears to be the only one still standing on the entire route of the Butterfield Overland Mail which operated between San Francisco and two eastern termini, St. Louis, Missouri, and Memphis, Tennessee. The Oak Grove Stage Station is a well preserved, one-story adobe building and the quaint rambling structure still retains the atmosphere of old staging days. Located in San Diego County, California, on State Highway 79, the site has been marked by the State of California, and is in private ownership.

5. Durango-Silverton Narrow Gauge Railroad, Colorado. This 45-mile stretch of narrow gauge railroad track was completed in 1882 along the gorge of the Las Animas River between Durango and Silverton. It climbs 2,800 feet to an elevation of 8,302 feet in that distance. Its purpose was to bring gold and silver ores of the Silverton area to smelters at Durango. As the sole surviving regularly scheduled passenger narrow gauge railroad in the West, it is an important historical survival of a facility that played a significant role in the history of the Rocky Mountains.

6. Grenville M. Dodge House, Iowa. This was the home of Grenville M. Dodge, one of the Nation's foremost railroad builders. From 1852 until 1892, Dodge was active in railroad surveys and construction, and later was a railroad executive. Dodge therefore ranks as one of the world's great railroad builders. He died in 1916. His 14-room mansion was constructed at a cost of $35,000 in 1869 or '70 and has been described as a fine example of Victorian architecture. External features of the house appear to be unchanged, although the interior has been altered through conversion to an apartment house. Located at 605 South Third Street in Council Bluffs, Iowa, the site is in private ownership.

7. Cottonwood Pony Express Station, Kansas. The Cottonwood Pony Express Station, Hanover, Kansas, is said to be the only surviving unmoved and unaltered Pony Express Station. It was an important stop on the Oregon-California trail, and served as a relay station for both the Overland Mail and the Pony Express. Built by George Hollenberg in 1857 as part of a ranch, it later comprised a store, post office, kitchen, dining room, and bedroom. The attic was used as sleeping quarters for employees, stage drivers, and Pony Express riders. The station is in good condition, apparently little changed. Owned by the State of Kansas and administered by the Kansas State Historical Society, it is located near Hanover, Kansas.

8. James J. Hill Home, Minnesota. Constructed in 1889, at a cost of about $200,000, this 32-room house was the home of James J. Hill. Hill was not only one of the Nation's great railroad builders, but was a financial leader as well. From 1878 to 1912, he was an active leader in railroad construction. In 1890, all of the roads he controlled were combined as the Great Northern Railway Company. Hill died in 1916. Although the exterior features of his house remain unchanged, the interior has been remodeled. Located at 240 Summit Avenue, St. Paul, Minnesota, the house is owned by the St. Paul Diocesan Teachers College.

9. Patee House, Missouri. When completed in 1858, the Patee House was one of the finest hotels west of the Mississippi. In 1860 it served as the headquarters for Russell, Majors, and Waddell, operators of the Pony Express. Many of the riders stayed at the hotel. On the street in front of the hotel, a cannon was fired inaugurating the Pony Express on April 3, 1860. Since it was constructed, the building has passed through many hands and has been used for many purposes. It last served as a shirt factory. Located at 12th and Penn Streets, St. Joseph, Missouri, the building is privately owned.

10. Fort Benton, Montana. Fort Benton commemorates the steamboat era on the upper Missouri. Although established earlier as a fur trading center, its real prosperity dates from 1859 with the arrival of the first steamboat. Discovery of Montana gold deposits in 1862 brought in a rush of miners and Fort Benton became the center for overland transportation following trips up the river by steamboat. Although little remains of the Fort Benton of the 1860's and '70's, the river front along which the steamboats once docked and unloaded is evidently unchanged. The site is partially in public ownership and partly privately owned.

11. Fort Churchill, Nevada. Fort Churchill served as an important post from 1860 to 1867 on the Central Overland Mail Stage and the Pony Express. It also protected the first transcontinental telegraph lines. From 1861 to 1865, it was the main headquarters of all Nevada military posts. Fort Churchill was abandoned in March, 1870, following which the adobe structures gradually dissolved. In 1935, under supervision of the National Park Service, some of the buildings were reconstructed. Today only ruins of some 15 of the reconstructed structures remain. Located in Lyons County, on U. S. Highway 95, Fort Churchill is now a Nevada State Park.

12. Fort Ruby, Nevada. Established during the Civil War to protect the stage and telegraph facilities from Indian attacks, Fort Ruby was built in the fall of 1862. Near Fort Ruby, also, was the overland stage ranch, established to supply the stage line with grain and provisions. Fort Ruby was occupied until 1869 when the transcontinental stage operations came to an end. Fort Ruby now consists of two original structures of the old post. Both buildings are in excellent condition. Located in White Pine County, Nevada, about 71 miles southeast of Elko, Fort Ruby is privately owned.

Classified by the Advisory Board at its 47th meeting, held October 1962, under Theme XVIII, was:

13. Allegheny Portage Railroad of Pennsylvania Canal, Pennsylvania. The Allegheny Portage Railroad was built in the period 1831-1834 as a part of the Pennsylvania Canal. Its function was to provide a way of lifting barge traffic on the canal 1,400 feet over the Allegheny Summit westbound and 1,200 feet eastbound, and to lower the traffic in opposite directions, on the 36-mile railroad that connected the western and eastern ends of the canal between Hollidaysburg and Johnstown, Pennsylvania. This was accomplished by an ingenious system of inclines which represented the most difficult engineering accomplishment in the canal building era of United States internal improvements.

Sites in the National Park System Related to Theme XVIII

1. Natchez Trace Parkway, Alabama, Mississippi, Tennessee.
A historical Parkway commemorating the Old Trace. Natchez Trace served from 1785 to 1800 as a foot trail utilized by men from Kentucky and adjacent parts of the old West to return to their homes after having floated flour and other farm products to New Orleans on flatboats. Between 1801 and 1806 the Trace was improved into a 450-mile Post Road and served as an important wilderness highway until 1830.

2. Cabrillo National Monument, California.
Although established primarily to commemorate the discovery of the coast of California by Juan Rodriguez Cabrillo on September 28, 1542, the Monument also contains the old San Diego Lighthouse on Point Loma. First lighted on November 15, 1855, it was one of six lighthouses authorized for the Pacific Coast by Congress in 1850, shortly after the American occupation of California.

3. Cumberland Gap National Historical Park, Kentucky, Virginia, Tennessee.
The key pass on the Wilderness Road, a famous 208-mile trail blazed by Daniel Boone in 1775. This historic migration route through the Cumberland Mountains played a significant role in the early settlement of the Northwest Territory from 1783 to 1815.

4. Chesapeake and Ohio Canal National Monument, Maryland.
Located in Georgetown, D.C. to Seneca, Maryland. America's feverish canal-building during the 1820's and 1830's was triggered by the construction and subsequent astounding success of the Erie Canal. Promoters in Maryland, Virginia and the District of Columbia formed the Chesapeake and Ohio Canal Company in 1828, three years after the completion of the Erie Canal, intending to build a waterway from Georgetown on the Potomac River to Pittsburgh and the Ohio River. This canal would run 360 miles, and President John Quincy Adams turned the first ground for it on July 4, 1828. The first section of the canal had been completed by 1831, that which ran from Georgetown to Seneca, and the waterway reached Cumberland nineteen years later. Because of insurmountable difficulties, the canal was never extended beyond that city.

   In spite of the artery's failure to reach Pittsburgh, the Chesapeake and Ohio Canal represented no mean accomplishment. The waterway ran for 184.5 miles, varied between 60 and 80 feet in width, had 74 locks and carried six feet of water.

The canal proved to be a great boon, and during the 1870's as many as 540 boats used the waterway. Indeed, barges travelled on the waterway until well into the nineteenth century.

The restored section between Georgetown and Seneca commemorates the canal's history. Within this part of the canal are 23 locks, several lockhouses and the great Falls Tavern. This tavern was built between 1820 and 1831 and brings back to mind the day when canal travellers enjoyed the inn's pleasant hospitality.

5. Jefferson National Expansion Memorial Historic Site, Missouri.
Jefferson National Expansion Memorial Historic Site, in St. Louis, Missouri, was established to tell the story of westward expansion. Recognized as a "Gateway to the West," St. Louis was the hub of a gigantic water and rail transportation system. Situated near the confluence of the Missouri and the Mississippi Rivers, it was one of the key ports in the navigation system of both rivers. When railroads became an important part of the economy of the nation, St. Louis likewise developed into an important railroad center. Both a river and railroad museum at Jefferson National Expansion Memorial Historic Site will tell the story of the role of the city in transportation in the trans-Mississippi West.

6. Wright Brothers National Memorial, North Carolina.
Site of first successful power-driven flight, made by Wilbur and Orville Wright on December 17, 1903. The two 1903 camp buildings have been reproduced, and two dunes used for gliding experiments from 1900 to 1902 have been stabilized.

7. Cape Hatteras National Seashore Recreational Area, North Carolina.
Within the National Seashore three lighthouses are located: one on Bodie Island, another at Cape Hatteras overlooking the "Graveyard of the Atlantic," and a third in the village of Ocracoke. The lighthouse at Cape Hatteras is the second erected there. The present lighthouse was built in 1870 and is the tallest lighthouse in the United States. It is opened to visitors on a limited schedule.

8. Fort Necessity National Battlefield, Pennsylvania.
Located on U. S. Route 40, eleven miles east of Uniontown. Tavern after tavern sprang up in Maryland, Pennsylvania, Ohio, Indiana and Illinois as the National Road advanced westward from Cumberland between 1811 and 1852. When the broad highway finally reached Vandalia, Illinois, in 1852, the

road was almost literally bordered by inns, especially in Maryland and Pennsylvania. Many of those hospitable buildings still stand, and one of the most outstanding of them is the Mount Washington Tavern, now a part of Fort Necessity National Battlefield.

The Mount Washington Tavern sits atop a hill on the south side of present U. S. Route 40. It is a large, handsome, three-story brick structure, with a gable roof. The tavern, built about 1818, played host to travellers on the new National Road, over which poured steady streams of traffic in both directions. Night after night it gave lodging to drivers of huge Conestoga wagons, pilots of speedy stagecoaches and to numerous other individuals. Even when newer transportation developments lessened movement on the road, the inn continued to welcome travellers for many years.

The Tavern now symbolizes a long-vanished era. Its preservation not only keeps alive memories of its own warm and ready welcome for tired travellers on the National Road, but also memorializes the important role of all the taverns on one of America's great highways.

9. Golden Spike National Historic Site, Utah.
Here at Promontory Summit, in Box Elder County, was driven the last spike in the nation's first transcontinental railroad. The uniting of the Union Pacific and Central Pacific Railroads on May 10, 1869, gave the United States its first means of rapid transportation from coast to coast and opened the West up to an accelerated conquest, settlement, and economic development.

10. Fort Laramie National Monument, Wyoming.
During its early years as a military post, Fort Laramie played an important role in transportation and communication of the Central Plains region. Beginning in 1850, the mail route extending from the east to Salt Lake City operated through Fort Laramie. This was later extended to California. When the Pony Express was inaugurated ten years later, the fort was made one of the stations. When the first transcontinental telegraph was built across the nation, the military post was one of the stations. Likewise this establishment became a stopping point and station on the Overland Stage route. However, with the coming of the railroad its importance as a transportation site declined.

OTHER SITES CONSIDERED

ARKANSAS

Butterfield Overland Mail Route:

The Butterfield Overland Mail provided the first expedited overland mail from St. Louis to San Francisco. After a year of preparations, a trail 2,795 miles long was marked out across the continent; on September 15, 1858, service was inaugurated with coaches leaving from Tipton, Missouri and San Francisco.

Butterfield's engineers followed a direct line through northwest Arkansas that entered the state just north of Elkhorn Tavern. The trail led on down through Fayetteville, Strickler, Van Buren, and Fort Smith before leaving Arkansas.

1. Elkhorn Tavern, though not a station on the Butterfield, was a stop on several local stage lines. With its reputation for good food and drink, it is probable that the Overland coaches made unscheduled stops there. During the savage Battle of Pea Ridge in March, 1862, the inn was used as a hospital for both armies. On March 12, four days after the battle, the tavern was burned. In 1865, it was rebuilt using the same foundation and chimney. Elkhorn Tavern is today a part of Pea Ridge National Military Park.

2. Parks' Station, two miles southwest of Moffitt and about fourteen miles from Fayetteville, is the only original Butterfield station still standing on the Arkansas route. The house has undergone considerable alterations and no longer bears any resemblance to its original appearance as a story-and-a-half log house. Only the framing, floor timbers, and dressed log wall of the inner core belong to the original structure.

3. In the settlement of Strickler, the Strickler family log house, built in the 1840's on the east side of the road, was a stopping place for some of the stage lines on this route. During the Civil War the original house was burned. The present double log house was afterwards rebuilt on the same foundations. This rebuilt house continued to be a stage stop, but the Butterfield Line had ended in Arkansas with the war.

Thus, though there are sites having many interesting associations with the Butterfield Overland Mail along its Arkansas route, each has had its historical integrity impaired to some degree.

4. Stagecoach House, is located eight miles west of Little Rock on State Route #5. The inn, originally known as the Ten-Mile House, was intended as an overnight stopping point on the old Southwest Trail. It was designed in 1836 by Gideon Shrylock, Kentucky architect of the Old Capitol in Little Rock. The inn was General Frederick Steele's headquarters when Federal troops occupied Little Rock during the Civil War.

Stagecoach House is built of brick between broad chimneys. The building has been vacant for about three years, but it and the grounds are maintained in good condition. It is privately owned and is now up for sale.

CALIFORNIA

5. Pacific Mail Steamship Company Buildings:

Located in Benicia, on the east side of 5th Street and on the north shore of the Carquinez Straits. In March, 1847, as a result of the acquisition of Oregon, Congress passed a law that provided for the construction of five steamships under the direction of the Secretary of the Navy. The Secretary was further instructed to contract for the monthly transportation of the mail in these new vessels from New York and New Orleans to Panama and from that point to some port in Oregon. Compensation for the entire service over the 6,700 mile route was set by Congress at $199,000 per year.

Two ten-year contracts, running from October 1, 1848, were awarded. The contract for the New York to Panama portion of the route was secured by George Laws, while the second, for the Panama to Astoria route, was acquired by William H. Aspinwall. Through the efforts of Aspinwall, the Pacific Mail Steamship Company was incorporated in April, 1848, and the firm at once built three of the vessels. The first of these, the California, sailed from New York on October 6, 1848, bound for Oregon by way of Cape Horn. Stopping on the west coasts of Peru and Panama enroute, the ship was nearly swamped by the first rush of gold seekers. The vessel completed her 15,000 mile voyage to San Francisco on February 28, 1849, thus achieving the double honor of inaugurating the first national communication system to the

Pacific Coast and of depositing the first '49ers in California. Encouraged by the successful operation of the company, Congress, in 1851, increased the mail service to a semi-monthly schedule and the compensation to $348,250 per annum for the remainder of the contract.

In 1855 Aspinwall and the Pacific Mail Steamship Company completed a 50-mile railroad across the Isthmus of Panama. Thereafter the federal government paid Aspinwall $100,000 a year for the movement of mail over this line.

From 1848 to 1858 the ocean route was the quickest and easiest way of reaching California. By 1857, however, the Pacific Mail Steamship Company, the Panama Railroad, and the United States Mail Steamship Company were regarded in California and Oregon as a gigantic monopoly, making great profits, charging exorbitant prices, and providing inferior accommodations to the public. This hostile western attitude was a very important factor in bringing into being, in 1856-57, the expedited transcontinental Overland Mail as the only means of providing competition for the sea route. By 1860 the overland stages were carrying more letter mail than the ocean steamers, but the "heavy mail" continued to be largely transported by the sea route from 1857 to 1869.

In February 1865 the U. S. Government began to support steamship lines by contracts providing for a monthly mail steamship service between San Francisco and China, with calls at the Hawaiian Islands and Japan, at an annual compensation of $500,000. This first contract went to the Pacific Mail Steamship Company, but before this service was fully in operation, the company was freed from the requirement of calling at the Hawaiian Islands, because it was shorter and therefore cheaper to follow the northern great circle route across the Pacific and also because harbor labor facilities at Honolulu were inadequate. (The Company resumed this service in 1875.)

The completion of the first transcontinental railroad in May, 1869 caused a considerable increase in shipping from San Francisco into the Western Pacific. Directors of the Central Pacific Railroad tried to enter into this endeavor by means of a cooperative agreement with the Pacific Mail Steamship Company. When this effort failed, the railroad directors organized the competing Occidental and Oriental Steamship Company in 1874. To meet this new competition the Pacific Mail Steamship line built the City of New York, the City of Para, and several other vessels of the "City" fleet.

The struggle between these two companies centered over the shipping going out of San Francisco. Eventually government cancellation of the Pacific Mail Steamship Company's contract for delivery of mail to the Orient forced the line into an agreement with the railroad interests.

In the Spanish American War the ships of the Pacific Mail Steamship Company were especially important in transporting troops to the Philippines.

The Pacific Mail Steamship Company established headquarters in Benicia in 1850, and the expansion of its business resulted in the enlargement of the company wharf in 1853. Foundries and machine shops were then built and here the great seagoing ships of the company were repaired and coaled. As a result of competition from the Central Pacific Railroad, headquarters of the Pacific Mail Company were finally transferred to San Francisco and their property at Benicia was disposed of in 1881.

Two brick shops of the Pacific Mail Company still stand but have been greatly altered by modern additions. They now serve as portions of shops of the Yuba Construction Company. The great dock of the Pacific Mail Steamship Company has completely disappeared.

6. Alcatraz Island:

Located in San Francisco Bay. The first lighthouse to be put in use on the Pacific Coast by the United States Light House Service was placed on Alcatraz Island and put into operation in 1854. The lighthouse, with a Fresnel lantern, was visible for 12 miles and in foul weather an automatic fog bell struck every 15 seconds. The old lighthouse, with modern equipment, is still in use.

7. San Francisco Cable Cars:

Located at Market and Powell Streets, San Francisco. Andrew S. Hallidie, an English builder of aerial cables for use in Western mines, invented an arrangement whereby heavy cables could be laid underground to draw cars up the steep hills of San Francisco. The first car thus equipped ran from Kearny Street via steep Clay Street over Nob Hill to Leavenworth in August 1873, and soon thereafter there were eight companies with 112 miles of track operating in the city.

Cable lines were built in New York, Washington, Cincinnati and Boston; the largest such system was that of Chicago, where three companies owned 82 miles of track and 710 grip cars. By 1893, however, the cable car, except on steep grades, was generally being replaced by the electric street car.

About 10 miles of the San Francisco cable car system, with the grip cars, have been retained in use and serve as an interesting tourist attraction. These three lines, operated by the Municipal Railway, are the only cable cars still in use in the United States.

8. "First Long Distance Telephone Line":

Located at French Corral, Nevada County, California. Site of one of the first telephone lines in the world, put in operation in 1878.

The Ridge Telephone Company was organized in 1878 by three great hydraulic mining companies of the San Juan Ridge, namely, the Milton Mining & Water Company of French Corral, the Eureka Lakes and Yuba Canal Companies of North San Juan, and the North Bloomfield Blue Gravel Mining Company of North Bloomfield. Its line was completed and placed in operation before December 1, 1878, within two years after Alexander Graham Bell had taken out his patent on the telephone. The total distance of the Ridge Telephone Company line was 60 miles, extending from French Corral through Sweetland, Sebastopol, North San Juan, Cherokee, North Columbia, Malskoff, North Bloomfield, Bloody Run, Moores Flat, Eureka (now Graniteville), to Milton via Weaver Lake, with one branch line from above Eureka to Faucherie.

The original instruments used on this line were the Thomas A. Edison phones, manufactured in 1878 by the American Speaking Telephone Company of Boston.

The office of the Milton Mining and Water Company of French Corral, in which one terminus of the Ridge Telephone Company line was located, is still standing and is now utilized as a grocery store. The site is marked as California State Registered Historical Landmark Number 247. General long distance telephoning between major cities began with the opening of a line between New York and Philadelphia in January, 1887.

9. Initial U. S. Air Meet Site:

Site of the first air meet held in the United States, January 10-20, 1910. The site is located at Wilmington Avenue near Del Amo, in the City of Compton, Los Angeles County. The site has been completely destroyed by industrial development. The former location is marked as California Registered State Historical Landmark Number 718.

COLORADO

10. Virginia Dale Stage Station:

Located about one mile north of the post office Virginia Dale on U. S. Highway 287 near Colorado-Wyoming State Line.

Virginia Dale was established in June, 1862 as the first division point on the Overland Stage Line northwest of Denver. It was one of the stations on the Daily Overland Mail which extended from St. Joseph, Missouri to San Francisco, California. The station was created when Indian disturbances forced the Overland Stage to be re-routed through northern Colorado from eastern Wyoming. During 1864-1866 it was a noted camping place for emigrant trains, as it was on the only route over which travel was permitted since Indians had infested the North Platte route. Schuyler Colfax, later Vice President of the United States, and several other important personages were detained here as the result of Indian attacks in 1865. The station remained a division point on the Overland State until 1867, when the Union Pacific built to Cheyenne, and was then abandoned.

The station was first under the superintendence of notorious Joseph A. ("Jack") Slade, who purportedly named it for his wife. As the result of his conduct during his drinking bouts, Slade was discharged after about a year at the place. He later went to Montana where he was hung by the Vigilantes.

A traveler who visited Virginia Dale described the station in a letter dated at that place in June 1865:

> "Virginia Dale deserves its pretty name. . . . Only the station of the stage line occupies the dale; a house, a barn, a blacksmith shop; the keeper and his wife, the latter as sweet, as gentle and as lady-like as if just transplanted from Eastern society, yet preparing bountiful meals for twice-daily stage loads of hungry and dirty passengers; the stock tender and his assistant--these were all the inhabitants of the spot,

"and no neighbors within fifteen miles. For the day, our party and its escort--the soldiers lying off in the grass by the water with their camp fire and their baggage wagon--made unusual life and gave a peculiar picturesqueness to the sequestered spot."

Despite the fact that the Station stands on its original site, the building has lost much of its integrity. The log walls now partially covered with weatherboarding, the stone fireplace on the east and the walled-in cellar under the station is the only portion of the original structure which remains. An examination of the building indicates there were originally three rooms, the walls between which have been removed.

The building now serves as a Community Center. The floors are comparatively new. Considerable alterations seem to have been made to the roof.

A study of photographs of Virginia Dale Station indicates considerable change has taken place in both the structure and its setting within the past 40 years.

11. Royal Gorge:

Located in Royal Gorge Park, about 10 miles northwest of Canon City, Colorado, and includes about 5,120 acres.

Royal Gorge, near Canon City, Colorado is primarily of significance in the history of the trans-Mississippi West in connection with the spectacular fights between the Atchison, Topeka and Santa Fe, known as the "Santa Fe," and the Denver and Rio Grande railroads to control this narrow defile which led to Leadville and other rich mining fields in Colorado. Professor Robert G. Athearn, University of Colorado, described it as "One of the most bitter of these railroad wars." Its outcome no doubt altered the extension of the two railroads but made no major impact on the history of the West.

The Rio Grande, headed by General William J. Palmer in the late 1870's and 1880's, was aggressively pushing its narrow gauge lines through the rich mining regions of Colorado with the view of tapping their mineral resources and trading with any major trans-continental line that should disect it. Organized in 1870, this railroad had built from Denver to Colorado Springs and Pueblo and from thence to Canon City. From that place it planned to extend its line up the "Royal Gorge" of the Arkansas westward to the South Park region and north to Leadville.

The aggressive Santa Fe Line, however, devised plans to bring this rich mining region into its system. Since the D. & R. G. had surveyed its projected route through Arkansas Valley to Leadville, it considered its claims valid. Taking advantage of its rival's failure to file a plat for its projected line with the General Land Office, the Santa Fe in 1878 proceeded to occupy the gorge. The Santa Fe sent armed men there to occupy the narrow defile and the D. & R. G. sent men there to resist such seizure. Both sides appealed to the courts and as a result the smaller D. & R. G., by the end of 1878, was forced to yield and lease most of its equipment and trackage to its more powerful adversary. The Santa Fe began the construction of its road into Leadville.

In 1879, however, the fortunes of the D. & R. G. improved. The U. S. Supreme Court reversed the lower courts and rendered a decision that the Rio Grande had priority in the Royal Gorge and ordered the lower court to provide for joint trackage in the canyon area where it was too narrow for more than one set of rails. Palmer sent a group of armed men to occupy the gorge and the matter was again taken before the courts. In the fall of the year, Jay Gould, who had obtained control of the Union Pacific and the Kansas Pacific, also secured financial control of the narrow gauge's property. As the Santa Fe found itself in increasing difficult straits a three man commission, appointed by the courts to study the feasibility of two roads up the Arkansas Valley, decided that for a distance of 4.09 miles up the Royal Gorge, the two roads would need to share a single track. Later in the year the court decided that the D. & R. G.'s lease to the Santa Fe in no way affected that railroad's priority in Royal Gorge. In 1880, a "treaty" was effected between the two companies in which the Santa Fe, among other things, agreed to abandon the Royal Gorge route, with the understanding that the D. & R. G. would pay the Santa Fe for the labor and material. The D. & R. G., in return, agreed to abandon the building of some of its proposed lines into New Mexico and Texas and give a portion of its business to the Santa Fe.

Despite the treaty, the war proved expensive for the D. & R. G. As a result it was forced to give up its plan to build southward and eastward. It had no place to go but West, into the mountains and perhaps to Salt Lake City. The prize Leadville and the wealthy mining region of Colorado proved to be transitory as the mineral resources became largely exhausted in the 20th century.

Royal Gorge, which is a well known tourist attraction of Colorado, except for the facilities erected for visitors, remains relatively unchanged.

CONNECTICUT

12. Eli Whitney Blake Home ("Bushnell House"):

Located at 155 Elm Street, New Haven.

Eli Whitney Blake, a nephew of Eli Whitney, invented a stone crusher during the 1850's that was a terrific boon in road construction. His invention has not been basically improved since its birth and the stone crusher still remains a highly useful piece of machinery.

Blake, born on January 27, 1795, had a long and interesting life. Shortly after being graduated from Yale, he entered his uncle's factory and upon Whitney's death helped to carry on the business until 1836. He left the arms manufacturing industry to establish a factory producing domestic hardware, one of the first of its kind in the nation, and he led the concern for thirty-five years. Blake, when called upon by New Haven in 1855 to help supervise the paving of streets in the city, realized the need for a stone crusher and by June, 1858 he had created one. The inventor in his later years followed various scientific studies and helped to found the Connecticut Academy of Sciences. He died on August 18, 1886.

Bushnell House is now occupied by the Graduates Club of Yale University. The building is a good example of the Federal style of architecture of the early nineteenth century.

DELAWARE

13. Chesapeake and Delaware Canal:

Located Delaware City to the Chesapeake Bay, Delaware-Maryland. The construction of the Chesapeake and Delaware Canal between 1824 and 1830 fulfilled a project first considered in the eighteenth century. In so doing, a vital link between the Chesapeake and Delaware Bays came into existence, greatly benefiting shipping on the eastern coast.

The first real effort to build a canal across the isthmus below Wilmington, Delaware occurred between 1802-05. It accomplished little, however, and the undertaking had to wait for the determined effort launched in 1824. This second movement succeeded, even overcoming the rocky ridge that ran north and south between the bays. When the ridge had been cut through, a ditch over a mile long and ninety-two feet deep at its deepest point had been made. The waterway had been completed by 1830; it ran for a little over thirteen miles and had cost $2,250,000, making it the most costly canal of its

period. The waterway proved a great boon to shipping and thoroughly justified its construction.

The Federal Government bought the canal in 1919 and converted it into a sea-level ship waterway. It is still heavily used.

FLORIDA

14. University of Tampa, formerly Tampa Bay Hotel:

The Tampa Bay Hotel was the most colorful of the projects of Henry B. Plant. In 1905 the heirs of the Plant estate deeded the hotel to the city for $125,000. The University of Tampa was established in 1933 and now occupies the hotel building.

Henry B. Plant was a Connecticut Yankee who came to Florida first in 1853 on account of his wife's health. The following year he settled in Atlanta as superintendent of the Adams Express Company. As war clouds gathered, the company, fearing confiscation, helped Plant to organize in 1861 the Southern Express Corporation. The depression of 1873 and Reconstruction mismanagement in the South gave Plant his opportunity to invest, and by 1879 he had begun building and buying up shortline railroads at foreclosure. These Plant merged into a new system and forged ahead into central and southern Florida, regions entirely free from railroad penetration. He succeeded in creating a continuous connection from Tampa to the North.

In February, 1884, the first train over the new road reached the shores of Tampa Bay and modern Tampa was in the making. From this backbone, branch lines spread out bringing new life and settlers to Florida. Plant also branched out into shipping and hotel construction.

Unquestionably, Plant's enterprises contributed greatly to the varied growth of central and west coast Florida. He has been called the father of Tampa, in which city his efforts centered. Unlike Flagler, who spent money in Florida, Plant made money. Plant does not seem to have been a constructive builder in the same sense, nor to the same degree as Henry M. Flagler, Florida's outstanding railroad builder and developer.

GEORGIA

Central of Georgia Railroad:

15. Central of Georgia Offices, 227 W. Broad St., Savannah:
16. Central of Georgia Offices, 233 W. Broad St., Savannah:
17. Central of Georgia Passenger Depot, W. Broad St., Savannah:
18. Central of Georgia Viaducts:

The Central of Georgia, organized in 1833, has valuable terminal facilities in Savannah, both for their historical and technical interest. The old offices of the road are at 227 W. Broad Street. Next door at 233 W. Broad are newer offices. Warehouses extend to the rear of both of these buildings. Immediately south of the newer building--entered through gates with unusual castellated brick gate houses--there is an open area in which there are tracks and two buildings. Just south of this is the old (and still used) passenger depot with an open, arched train shed behind it. Just across the street to the south is the yard, round house, and shop area. To the west of this terminal grouping two fine arched, brick viaducts bring the tracks in over highway 17A. The northern of the two viaducts is somewhat spoiled because a cement products company has built under the shelter of one of the arches. The southern viaduct is unspoiled and quite striking.

The completeness of these facilities was recognized by Colburn's New York Railroad Advocate as early as 1855. "We have many large and elegant depot buildings, and quite as many great and excellent repair shops, but we are now speaking particularly of a great and complete station for the accommodation of the freight and passenger business, and for the construction and repair of the entire machinery of a great road.

"To say that Savannah, Georgia is likely to have the most complete and elegant railroad in the country (besides its also being one of the very largest), may be a matter of some surprise. . ."

These structures are all in use by the railroad today and still provide an unusually complete and interesting railroad complex.

Active efforts toward a rail or canal communication between Savannah and Macon and Columbus began in the fall of 1833. A citizens' mass meeting in October urged the City Council to take vigorous action on such a project.

The charter of the Central of Georgia Railroad and Canal Company was promptly granted by the legislature and an engineer was employed in January, 1834 to survey the route. The company was reorganized in 1836 with banking privileges and that fall began grading the first nine miles from Savannah. By May, 1838 the company had engines running twenty-six miles from Savannah. The company finally extended its track into Macon on October 13, 1843.

As originally built, the Central of Georgia extended only from Savannah to Macon. The road from Macon to Atlanta, that from Macon to Southwest Georgia with its branch to Columbus, and the local spurs to Milledgeville and Thomaston were built by separate companies. Most of these companies, however, were either heavily subsidized by Central of Georgia subscriptions or controlled in sympathy with it to such a degree as to make them practically a part of its system from an early time. They, with still other connecting lines, have now all been actually acquired by the Central of Georgia.

The Central of Georgia was important historically as an element in the expanding rail network in Georgia that has made the state an important hub in our modern transportation network. The sites considered are additionally interesting in that they form an unusual early and still complete railroad complex. No landmark development in our transportation history is, however, represented by the Central of Georgia.

19. James Camak House:

James Camak as editor of the Athens Southern Banner began urging rail connections with Augusta, Georgia as early as 1833. Augusta was cool to the project. When it seemed assured, Augusta insisted that its tracks should never be connected with those of the South Carolina Railroad without her consent, since she wanted to maintain a position as middleman between the two roads.

At the end of 1833 a company was incorporated as the Georgia Railroad Company. By 1845 its tracks reached Atlanta, then growing as the terminus of the Western and Atlanta Railroad. A month later the Central of Georgia from Savannah also reached Atlanta. Thus, the Georgia Railroad Company served as an important link in the system of railroads centered on the Western and Atlanta Railroad that tied the transportation development of the Southeast to Georgia and made Atlanta the railroad center and basing point for the whole region.

The Camak House, at 279 Meigs Street in Athens, is of brick painted white; it is maintained in good condition. Five generations of the family owned and occupied the house until it was sold to the Masons in 1949.

ILLINOIS

20. Illinois Central Railroad:

Located Cairo to Centralia, with a branch line to Chicago and one to Dubuque.

The Illinois Central Railroad received 2,500,000 acres of land from the Federal Government in 1851 and thus became the country's first "land-grant" railroad. The National Government followed this precedent in succeeding years and granted other railroads millions upon millions of acres to help them bear their construction costs.

Work on the Illinois Central began on December 23, 1851. Benefiting from excellent management and easy terrain, construction of the road progressed in happy fashion. More difficulty was had with the laborers than anything else, who at times numbered about 10,000 men. Riots and battles between different work gangs often slowed the pace of construction, as did the devastating effects of fevers and other illnesses. One hundred and thirty men in Peru died within ten days because of a cholera epidemic. By September 26, 1856 the last of the English track had been laid, however, and the company's 700-mile line soon throve with business.

The Illinois Central Railroad has been greatly expanded since 1856. Continual improvement of the railroad has also occurred, so much so, that nothing of the original line remains.

INDIANA

21. Wabash and Erie Canal:

Located Evansville to Fort Wayne. Indiana, inspired by the success of the Erie Canal, began work on the Wabash and Erie Canal on February 22, 1832. Twenty-five miles of the waterway had been completed by 1835, but by 1839 work on the canal stopped because of the State's desperate financial condition. Indiana managed to resume construction of the artery in the following year, but not until 1857 had the entire waterway been

completed, including a connection with Ohio's Miami and Erie Canal. The Wabash and Erie, in spite of the slow pace of construction, greatly stimulated Indiana's growth as it helped to populate the State's vast, level lands, raised land values and encouraged the growth of towns and cities.

The State abandoned the waterway in 1875 and since then time has dealt harshly with the canal. Many locks and many sections of it have been seriously damaged, or have entirely disappeared. Some stretches of the Wabash and Erie can be seen along its route between Fort Wayne and the Ohio border, however, and portions of the artery also exist in Vigo and Wabash Counties.

KENTUCKY

22. Hill House:

The Hill House, a tavern, built in 1840, still stands on the Northwest corner of Sutton and Front Streets in Maysville, Kentucky. A modern, concrete flood wall destroyed much of the eastern end of Front Street, including another early tavern, Goddard's Tavern. Hill House survived though it has been converted into apartments. The Hill House was the aristocratic stopping place in town in the years following construction of the Maysville-Lexington Turnpike.

In 1827 the Maysville-Lexington Turnpike Company was reorganized. Within a short time this project became the focal point of the great debate over Federal aid to internal improvements. President Jackson's veto of government aid in 1830 led Kentucky to give aid to state turnpike projects. When it became evident that little help could be expected from the Federal Government for internal improvements, the states began their construction or gave their credit to support them. The macadamized road was completed and opened to traffic in 1835. It was 64 miles long and ran from Maysville to Washington, Millersburg, Paris, and Lexington. U. S. 68 follows that route today.

23. Duncan's Tavern:

Major Joseph Duncan in 1788 built an imposing stone tavern on what is now the Public Square, Paris, Kentucky. When Duncan built this large, twenty-room stone inn, all the buildings of the surrounding territory were constructed of logs. In those early days, Bourbon County contained in whole, or part, 33 of

the present counties of Kentucky. Paris (then called Hopewell) was the county seat. Duncan's Tavern was thus a focal point of the territory and many men famous in early Kentucky history stopped there.

In 1940, after continuous use for more than a century and a half, the old inn had become so unsightly that plans were being made to tear it down. The City of Paris agreed to present it to the Kentucky D. A. R. on condition that they restore and maintain it as a shrine open to the public. Restoration has been accomplished and Duncan's Tavern is now in an excellent condition and kept open to the public.

24. First Post Office West of the Alleghanies:

A small log post office began distributing mail in 1792 on what is now Walnut Street in Danville, Kentucky. General Thomas Barbee was commissioned postmaster on August 20, 1792. This was the first post office west of the Alleghany Mountains.

The log structure still has the original cage with the letter slots in it. In 1950, the Danville and Boyle County Historical Society moved the cabin from its original site. It has been incorporated into Danville's Constitution Square, a reproduction of Kentucky's first court square. Here are reproduced the first court house, meeting house, log schoolhouse and jail. It was on this site that Kentucky's first constitution was framed and adopted in 1792.

MARYLAND

25. National Road, Toll House:

Located U. S. Route 40, six and a half miles west of Cumberland.

After the United States had given Maryland its section of the National Road, the State erected two toll houses on the road around 1833. Only this one is extant. The toll house is made of brick and is heptagonal, and the building's collector received tolls for many years from drivers of wagons and stagecoaches, as well as from drovers of cattle, sheep and hogs. A white panel to the left of the doorway, as one faces the building, lists the various charges for users of the road. This little building is an interesting and significant reminder of the National Road after it came under Maryland's control.

MISSISSIPPI

26. First Station of West Feliciana Railroad:

The first station of the West Feliciana Railroad in Woodville, Mississippi is a two-story building of brick with grey stuccoing. Its large columns at both the front and back make it an imposing structure. The station is on the corner of Bank Street and Boston Row on the courthouse square, and it now houses offices of the State Welfare Department.

The West Feliciana was the first railroad built in Mississippi, the second in the Mississippi Valley, and the fifth in the United States. It was among the first railroads to use the standard gauge, the first to issue and print freight tariffs, and the first to adopt cattle guards and pits.

The West Feliciana was incorporated March 28, 1831, to construct a railroad from St. Francisville, Louisiana to the state line of Mississippi, and on to Woodville. It was finally completed by 1845, but the business of the road was never such as to make it a profitable investment. It is today a part of the Yazoo and Mississippi Railroad, which is a subsidiary of the Illinois Central.

27. King's Tavern:

King's Tavern, on Jefferson Street between North Rankin and North Union Streets, is conceded to be the oldest house in Natchez. It abuts the sidewalk and is constructed of ship's timbers. Its hugh sleepers and beams filled with holes and rounded pegs indicate that they were part of a flatboat. It is thought to have been a blockhouse on the Natchez Trace and was for many years a mail and stagecoach station on the Trace. It remains in the hands of descendants of the Postlethwait family, who have owned it for 150 years.

King's Tavern is of considerable architectural and historical interest. It is now furnished and used as a private home and is not, therefore, illustrative of its original purpose and use.

28. Texada Tavern;

Texada Tavern, located on the northwest corner of Wall and Washington Streets in Natchez, is a formidable structure of Spanish architecture; its walls are of brick and concrete with the doors opening on the street level. The house was built in the early 1700's by Spanish Governor Don Carlos de Grandpere and was the Cabildo for Natchez. The house passed into the hands of Don Manuel Garcia Texada, who opened a tavern in his newly acquired property.

Originally there was an open corridor running through the ground floor to a patio in the rear. A stairway on either side of this arcade led to rooms above. Back of the house were the brick kitchen and servants' quarters.

Today, the open arcade has been closed by a door, and the house has been converted into low rental apartment units. While the building seems to be structurally sound, it has been considerably altered and is in poor repair.

NEW HAMPSHIRE

29. Covered Railroad Bridge:

Located Bennington. The covered railroad bridge across the Contoocook River at Bennington, erected in 1877, is the oldest structure of its kind in the world. A 110-foot timber truss span, believed to be the oldest of its type still in use on a railroad, carries the bridge across the river. A pier was erected at the bridge's center in 1915 in order to strengthen the span, but this is the only major change made since the structure's construction. The Boston and Maine Railroad owns the bridge and trains continue to use it.

NEW JERSEY

30. Alfred Vail House:

Alfred Vail was one of the numerous company that contributed so much to Samuel F. B. Morse's development of the electrical telegraph, and it was in Vail's house in Morris Plains that his improvements in the telegraph first bore fruit.

Vail was born on September 25, 1807, the son of a very successful ironmaster. Skilled in things mechanical, Vail became the supervisor of the machine shop at his father's ironworks when he was still very young. He became attracted to the ministry, however, and in 1830 he left home to study

in New York. Vail attended one of Morse's exhibitions of the telegraph late in 1837 and immediately volunteered to become a partner in the undertaking. Morse agreed to the request, and they then went to Morris Plains. Vail, by early January, 1838 had vastly improved the mechanical end of Morse's instrument, which was shown in a demonstration in Vail's house on January 8. The young man remained associated with Morse until about 1848, then broke with the inventor and journeyed back to Morris Plains. He died there on January 18, 1859, penniless and forgotten.

The Vail house is a large, three-story, clapboard and gabled structure. At first glance, it resembles a barn.

NEW YORK

31. The Old Mine Road:

Located Kingston, New York, to Warren County, New Jersey. A small, sometimes paved, sometimes dirt road winds and twists its way from Kingston, New York, into Warren County, New Jersey. This is the Old Mine Road, which tradition claims is America's oldest, longest road. The facts about the narrow track are elusive, but it is said that Dutch miners built the artery sometime about the middle of the seventeenth century in order to transport copper mined in New Jersey to Kingston, then called Esopus. The traveller may most easily gain access to the road at Port Jervis, New York, where he may drive either north or south on it.

32. Boston Post Road:

Located New York to Boston, through New York, Connecticut, Massachusetts, and Rhode Island. High on the list of historic American roads is the Boston Post Road. Although nothing of the original dirt road remains, we can still follow its route and imagine how it appeared during the colonial and post-Revolutionary eras.

The Boston Post Road formed a vital link between New York and Boston during the colonial years. The first post rider set out for the capital of Massachusetts Bay on January 22, 1673 and two weeks later arrived in Boston. Mail carriers travelled back and forth between the two cities on a regular schedule by 1700. When Benjamin Franklin assumed control of

the postal service in America in 1753, he placed it on a weekly basis. Use of the artery constantly increased, and in 1772 some enterprising individuals began a stagecoach service from New Amsterdam to Boston.

In truth, the name "Boston Post Road" is something of a misnomer, for there were really three post roads. The Upper Post Road ran from New York to New Haven, and from there to Springfield, Worcester and Boston. The Middle Post Road, after reaching New Haven from New York, proceeded to Hartford and then across northeastern Connecticut to Boston. The first post rider apparently followed this route. The Lower Post Road followed the Connecticut coast to Rhode Island after leaving New Haven, thence to Boston. Traffic greatly increased over the roads following the Revolution and in the first decade of the nineteenth century attempts were made to improve them. The rise of railroads subsequently deprived them of business and then they greatly deteriorated.

The Boston Post Road was revived with the advent of the automobile age. The paving and realignment of the routes has greatly changed the old highway, but its spirit still lives.

33. Frontier House:

Located at Lewiston. The massive, stone Frontier House has been a prominent building in Lewiston since 1824, the date of its construction. James and Benjamin Barton erected the house and it took eighteen men more than a year to raise the building's stone walls. The three-story structure served as an inn for many decades, welcoming such travellers as Daniel Webster, Washington Irving and President William McKinley. Although now closed, the Frontier House remains one of Lewiston's most attractive and impressive buildings.

34. Jay Gould Home, "Lyndhurst":

Located at Tarrytown. Of all the financiers and railroad magnates who dazzled the country with their operations between 1865 and 1900, Jay Gould remains the most incredible. Gould, born on May 27, 1836, early evidenced skill in handling intricate financial and managerial problems. The intense and determined businessman allowed no opportunity for profit to

escape him, and railroads, the nation's gold supply, newspapers, New York City's elevated railways and the young telegraph business all felt the results of his keen, incisive and daring mind after the Civil War. Perhaps the objects of Gould's attention did not uniformly benefit from his concern for them, but he did, and when he died on December 2, 1892 his personal fortune amounted to many, many millions.

"Lyndhurst" was built in 1840. An outstanding example of the Pointed Tudor style of architecture, the structure's pinnacles, turrets, chimneys and gables contrast greatly with today's taste for swift, straight lines in buildings.

NORTH CAROLINA

35. Dismal Swamp Canal:

The Dismal Swamp Canal, running from Deep Creek, North Carolina to South Mills, Virginia, is today a section of the alternate route of the Intracoastal Waterway. In 1899 the canal was enlarged to its present form, and in 1940 the present locks were constructed.

The Dismal Swamp Canal was chartered in 1790 to connect Hampton Roads, Virginia with Albemarle Sound through the North Carolina rivers. When the campaign for subscriptions was begun, George Washington became one of the first subscribers by his purchase of stock valued at $500. Actual excavation was begun at each end in 1793.

The British blockade of Chesapeake Bay in 1812 emphasized the need for an inland waterway to Albemarle Sound and provided the impetus for the completion of the canal. In June, 1814 vessels began to come through the finished canal.

Use proved the canal a financial success, but not large enough to carry vessels of sufficient size to navigate the Albemarle and Pamlico Sounds. By the winter of 1828 it was enlarged and reopened. A majority of the canal traffic came from the sounds and rivers of North Carolina in schooners built for such use. By 1856 the volume of traffic began to decline because of competition with the newer Albemarle and Chesapeake Canal. As an alternate route of the Intracoastal Waterway today, it does not have a heavy commercial use.

36. Albemarle and Chesapeake Canal:

Beginning in the upper reaches of the North River, the canal crossed the Currituck peninsula five miles to Currituck Sound. From Currituck Sound to North Landing River, and by means of a nine-mile excavation, it connected the Elizabeth River and Chesapeake Bay.

The company received its charter in 1854 and began construction at each end in 1855. The first vessel passed through the canal in January of 1859, even though the canal was not completed according to specifications.

An increase of obstacles on the Dismal Swamp Canal increased the number of vessels using the newer waterway. With the close of the Civil War the canal continued to grow in traffic volume. It is today a link in the primary route of the Intracoastal Waterway.

OHIO

37. The Golden Lamb:

Located at Lebanon. The Golden Lamb, one of Ohio's oldest inns, stands in the center of Lebanon. The original inn was built of logs in 1803, but by 1815 a brick building had been constructed on the site of the earlier tavern. Commonly known as the Golden Lamb by 1845, a three-story addition was made to the north side of the structure in 1854. The present fourth story was added in 1878 and more recently the tavern's front porch and balconies have been added.

Long famed for its hospitality, the Golden Lamb has been host to ten presidents. Such noted people as Charles Dickens, Henry Clay and Cordell Hull have also lodged in the inn. The Golden Lamb still continues to function, carrying on its long tradition of hospitably serving the traveller.

38. National Road, S-Bridge:

Located on U. S. Route 40, just west of New Concord. This S-bridge closely resembles the one already described in the section of this study concerning sites possessing exceptional value (see pages 134-136). The bridge, built in 1828, is a fine inheritance from the National Road and is well worth a moment's stop. Because of the slope of the bridge, its S-shape can be clearly observed.

39. Captain John C. Ainsworth House:

Located on Linn Avenue in the Mount Pleasant district of Oregon City, Clackamas County.

This was the early Oregon home of John C. Ainsworth, captain of the Lot Whitcomb, the first American river steamer built in the Pacific Northwest, and founder of the powerful Oregon Steam Navigation Company, which dominated Columbia River traffic from 1860 to 1880. The house is also one of the earliest and finest examples of Classic Greek Revival architecture in the Pacific Northwest.

Captain John C. Ainsworth was born in Warren County, Ohio, June 6, 1822. He served as a pilot and captain on the riverboats of the Ohio and Mississippi, and in 1849, joined the gold rush to California. When the Lot Whitcomb was launched on the Columbia River on December 25, 1850, her first master was Ainsworth, who was to become known as one of the Far West's most skilled riverboat captains and steamship entrepreneurs.

By 1860 steamboat competition on the Columbia River and its tributaries had become intense and Captain Ainsworth set as his goal the consolidation of all major Columbia River shipping concerns for the purpose of eliminating this unrelenting cut-throat competition. His efforts met with success, when joining with Simeon G. Reed, a merchant of Portland, Robert R. Thompson, steamboat owner of the Dallas, William S. Ladd, Portland's principal bankers, and Jacob Kamm, a riverboat engineer and others, the Oregon Steam Navigation Company was incorporated on May 12, 1860, with a capital of $172,000. For the next 20 years this company was to monopolize river transportation in the Pacific Northwest.

The Company was organized just in time to profit from the gold rush to Idaho that occurred in 1861-62. During these years 35,000 passengers and 25,000 tons of freight were carried up the Columbia. In 1862 the Company increased its capitalization to $2,000,000 and 48% profits were made on the original investment.

By 1865 the firm was operating 29 passenger steamships, 13 schooners, and four barges on the Columbia. In 1868 the company increased its capitalization to $5,000,000 and its operations extended up the Columbia River into Canada, over tributaries eastward to within 125 miles of the Missouri River in Montana, and southward, by means of stagecoaches, freight wagons and mule trains, to within 150 miles of Salt Lake City.

John C. Ainsworth was the dominating figure in the affairs of the Oregon Steam Navigation Company from 1860 to 1873, then others began to take a greater part, although Ainsworth continued to be active in the business. On May 23, 1879, Henry Villard of the Northern Pacific Railroad Company purchased the Oregon Steamship Company for $5,000,000 and the firm thereafter became subordinate to Villard's railroad interests.

Ainsworth, as President of the Oregon Steam Navigation Company, also headed a construction company that built a portion of the Northern Pacific Railroad line from Portland to Tacoma in 1870-73.

Captain Ainsworth erected his two-story frame house at Mount Pleasant in 1851-52. Built in the Greek Revival style, it is the one example of a temple front on a large scale to be found in Oregon. Its four stately columns are octagonal rather than round, and there is also second story balcony above the door in front, and French windows.

The entrance hall still has its original staircase and there are two fireplaces on the first floor and two on the second. There is a ballroom with an orchestra platform situated at the rear on the first floor. The original exterior of the building is virtually intact, except for the late 19th century addition of a two-story bay window on the east side of the house. The interior, however, has been considerably altered by later inhabitants.

Captain Ainsworth resided in the house from 1851 to the 1860's, when his associations with the Oregon Steam Navigation Company lead him to sell the Mount Pleasant property, and move to Portland, where Company headquarters were located. The property is utilized as a farm.

PENNSYLVANIA

40. Robert Fulton Birthplace:

Located eight miles south of Quarryville. Robert Fulton was born in his father's little farmhouse near Quarryville on November 14, 1765. Early showing a bent for painting, Fulton journeyed abroad in 1786 to study art. The would-be artist remained in Europe for twenty years, devoting most of his energies, as it turned out, to engineering and mechanical problems. The improvement of canals, submarines and steamboats all occupied the inventive and engaging Fulton's efforts.

Most noteworthy was his construction and sailing, in 1803, of a steamboat on the Seine. He returned to his native land in 1806 and built the famous Clermont, which steamed up the Hudson in August, 1807. From that time until his death on February 24, 1815, Fulton devoted his days to the commercial development of the steamboat. Indeed, it is for this that Fulton is most remembered, others having built steamboats before he did.

Fulton's birthplace is a two and a half story stone structure. Since his birth, the house has been greatly altered.

41. Philadelphia-Lancaster Turnpike:

The Philadelphia-Lancaster Turnpike introduced turnpike planning and the use of crushed stone as paving to the United States. Agitation for an improved road from Philadelphia to Lancaster arose soon after the end of the Revolution, and by April, 1792 Pennsylvania had authorized the incorporation of a turnpike company. The company had been fully organized by July 24 and in the spring of 1793 work began on the road. Construction progressed rapidly and by the close of 1794 the highway had been completed. The road ran for sixty-two miles, was twenty-four feet wide, had a covering of crushed stone eighteen inches thick at the center and crossed streams and rivers by means of stone bridges. One three-arch bridge across the brandywine cost $12,000. The total cost amounted to $465,000, or $7,500 a mile.

Traffic of all kinds began streaming over the road as soon as it had been completed. Indeed, Conestoga wagon traffic became so heavy that the turnpike also was called the Conestoga Road. If a wagon rumbled over the entire length, it had to pass through nine toll gates, where rates varied from one to thirteen and a half cents a mile. A regular stagecoach service had been established by May, 1797 and a coach leaving Lancaster at 5 P. M. would arrive in Philadelphia at 5 A. M. Sixty-one taverns sprang up along the road, serving many of the needs of the wagon drivers and other users of the turnpike. These inns benefited from the thriving business of the road until the 1820's, when use of the highway began to decline. Onrushing railroad development in the 1830's greatly lessened traffic, and leaner and leaner years for the turnpike company followed. The Philadelphia and Lancaster Turnpike Road Company survived until 1902, but by that time the various sections of the road had been sold or turned over to private or public bodies, or abandoned.

The Philadelphia-Lancaster Turnpike left its mark upon the nation because the highway's success inaugurated a burst of turnpike construction that resulted in general road improvement in New England and the Middle States. Commerce greatly benefited from that development, just as commerce between Philadelphia and western Pennsylvania had been stimulated by the country's first paved road.

U. S. Route 30 follows the route of the turnpike. Unfortunately, nothing remains of the original road.

42. National Road, Toll House:

Located on U. S. Route 40, just west of Uniontown.

After the Federal Government gave Pennsylvania the section of the National Road that lay in the Commonwealth, she erected six toll houses along the highway in 1835. Two of the buildings are extant, and this one is of particular interest as it stands on much-travelled Route 40, which rests on top of the old National Road at this point. The other standing toll house is in Addison; unlike this structure, the Addison building is made of stone. The latter toll house is also in much better condition. Both of these buildings are valuable reminders of the National Road when it came under State control.

43. The East Broad Top Railroad:

Located at Orbisonia. The East Broad Top Railroad, a narrow gauge line, served largely as a coal-carrying railroad from its construction in 1872 to its demise in 1953. Its steam engines puffed over the narrow, thirty-mile track from Mount Union to Robertsdale, transporting coal from the mines to the Pennsylvania Railroad. With the decline in the use of coal after World War II, the line's business fell drastically, so much so that in 1953 it ceased operating.

With all of its track and rolling stock apparently doomed, the generous purchaser of the line preserved three and a half miles of the track. Two of the railroad's steam engines now travel back and forth over the remaining line, carrying visitors in the old passenger cars. The old station at Orbisonia is also open to visitors.

National Road: Unrestored 1835 Toll House, On U. S. Route 40, just west of Uniontown, Pennsylvania N. P. S. Photo, 1962

SOUTH CAROLINA

44. The Exchange, Early Post Office:

Located in Charleston. A post office was officially established in Charleston in 1740 under the postal administration of Andrew Hamilton. The Charleston office was the headquarters for European mail to every English continental settlement south of Virginia.

In 1767 the Commons House of Assembly began construction of a building to serve as exchange and custom house. It was finished in 1771 and one authority has called it "one of the most elaborate of all Georgian civic buildings." It was the scene of stirring political events in the final years of the colonial period and the American Revolution.

The Federal Government purchased the building in 1818 for a post office and custom house. Throughout most of the nineteenth century, until at least 1883, the Old Exchange continued to serve Charleston as its post office.

The Exchange has undergone extensive alterations during the past 194 years. The riverfront portico has been removed, leaving the secondary facade on Bay Street as the main entrance; land reclamation has removed it from its former riverfront setting; the cupola and monumental urns which formerly graced the attic parapet are gone; and the spacious arcades have been walled in. Despite these changes, the building still presents a "solid and imposing" appearance, and it is susceptible of at least partial restoration.

The Exchange is owned by the State of South Carolina and the Rebecca Motte Chapter of the Daughters of the American Revolution.

45. Land's Ford Canal and Locks:

Fine structural remains of a stone bridge, locks and culverts of the Land's Ford Canal make it of considerable local and state interest. These ruins located two miles east of U.S. 21 and 5 miles north of Highway 9 near Rock Hill, South Carolina have interesting interpretive potential.

Within the framework of the history of national travel and communication, Land's Ford Canal represents a small segment of an ambitious plan which was never realized.

The canal has long been abandoned, but its traces can easily be followed in woodland now owned by the Duke Power Company. A beautifully preserved, arched stone bridge and locks can be reached by dirt road. These and other remains of stone locks and culverts are interesting evidence of the old canal.

Ambitious plans for a canal from Charleston to the North Carolina mountains where a fifty-mile portage would take cargo to the Watauga and thence to the Tennessee and Mississippi Rivers led to the construction of Land's Ford Canal. Work was carried on in the 1820's under the direction of the South Carolina Board of Public Works with Robert Mills as chief engineer.

Mills' report of 1825 indicated that this completed unit was two miles long and included five locks to overcome 32 feet of fall in the Catawba River.

46. Stump House Mountain Tunnel:

This tunnel is ten miles south of the North Carolina-South Carolina state line on South Carolina 28 and one-and-a-half miles farther down an unpaved road. With the coming of the railroad, South Carolina launched an ambitious project to connect its port at Charleston with the Mississippi by rail.

In 1853 the critical mountain crossing was undertaken with the effort to tunnel 1-1/2 miles of mountain stone at Rabun Gap with the purpose of linking the Blue Ridge Railroad of Knoxville with the Charleston line.

The project was nearly two-thirds completed in 1859 when funds gave out. Then the Civil War halted efforts. Later efforts, even as late as the twentieth century, have failed to push the tunnel to completion. However, rail crossing of the mountains has been made at other points.

TENNESSEE

47. Samuel Cleage House:

The Samuel Cleage House was built by an itinerant contractor of that name in Athens, Tennessee on Jackson Street a block-and-a-half off the town square. In 1836 it was the central office for the Hiwassee Railroad, which, in 1837, became the East Tennessee and Georgia Railroad. It is a fine two-story brick house. It is, however, no longer associated with railroads, but serves as the office for the Pilot Finance Company.

In 1836 two enterprises were projected, either of which could provide an outlet by railroad for goods from the rich but undeveloped Tennessee Valley to the markets of the Atlantic Coast and the Cotton South. These were the ambitious but ill-fated Louisville, Cincinnati and Charleston project and the ultimately successful Hiwassee railroad enterprise.

On January 30, 1836, the Tennessee Legislature incorporated the Hiwassee Railroad Company to build a railroad from Knoxville to a point on the southern boundary of Tennessee where it would then connect with the line of the contemplated railroad from Augusta, Georgia to Memphis, Tennessee. This was the first railroad in Tennessee upon which actual construction was begun.

In 1848 a reorganization changed the name to the East Tennessee and Georgia. The road was to connect with the Western and Atlantic at Dalton, Georgia and could connect with a line from Knoxville to the Virginia state line which was then being considered. By June 1855, rails were laid on the East Tennessee and Georgia from Dalton to Knoxville. That city now had connections through the Western and Atlantic at Dalton with Charleston, Augusta, Atlanta, Savannah and Montgomery. During the fall of 1856 a Virginia railroad, the Virginia and Tennessee, reached Bristol, Virginia. This made the East Tennessee and Virginia, on which construction had begun in 1851, the only incomplete section in a combination linking North and South.

Finally, on May 14, 1858, President Samuel B. Cunningham drove the last spike; excursion trains left Knoxville and Bristol for the ceremony. The East Tennessee and Georgia with its sister road, the East Tennessee and Virginia, thus became the connecting link in Tennessee between the northeast Atlantic states and cities and the agricultural regions of the Mississippi Valley and Gulf States. Completion of the East Tennessee and Virginia was hailed in predominantly Unionist East Tennessee as the savior of the Union. A Knoxville newspaper felt that it signaled the ". . . binding together of the North and South with a bond indissoluble." Instead, these roads became of inestimable strategic importance in the Civil War.

48. Derry Inn:

Still very well preserved, Derry Inn is a large two-story frame house on the Old Blountville Road near the center of Blountville, Tennessee.

The inn is actually made up of three buildings. The east or gathering room and entrance hall were an old log structure with two rooms above. A storehouse was built in the vicinity about 1785. Sometime between 1795 and 1801 William Derry bought the house and store and moved them side by side; he called it his mansion and store building. A three-story stone kitchen and dining room structure is directly behind the log house. Derry used the store building to accommodate travelers and house a post office, and lived in the log house.

Until shortly before 1930 an inn was operated here; until 1940 meals were served. The present owners have made it their residence and have done much to rehabilitate it.

In the early 19th century Derry Inn served as a stop on a stagecoach route. There was a main stage route from Abington to Blountville. From Blountville there were three others; one going west by way of Kingsport and Rogersville to Knoxville; another by Jonesboro to Knoxville; and a third going into Virginia by way of Estillville.

Derry Inn is largely unchanged today and in excellent condition. Its role as an active inn in a junction town and its excellent state of preservation make it an interesting historic building. It is now furnished and used as a private home, and is not, therefore, illustrative of its original purpose and use.

VIRGINIA

49. Old Potomac Company Locks:

Located at Great Falls, Virginia, approximately 15 miles north of Washington, D. C., the ruins of the Old Potomac Company Canal Locks and the town of Matildaville still remain. Here, under the direction of George Washington in 1802, one of the first attempts to establish a water route between the English settlements on the Atlantic coast and the country west of the Allegheny Mountains was made. Largely through his efforts, the Potomac Company was organized in 1785 to carry out this plan.

As the first president of the company, Washington was actively engaged in the project. He frequently visited the working parties assigned to clearing the obstructions from the river and building short, skirting canals around the treacherous river falls. Although Washington resigned this office when he became President of the United States, his interest in the affairs of the Potomac Company continued.

Potomac Company "Deep Cut" for canal and lower locks, 1802, near Great Falls, Virginia

N. P. S. Photo, c. 1930

In 1802, the Potomac Company canals were substantially completed. Small raft-like boats, moved by hand with the aid of the river currents, then began to bring furs, lumber, flour, and farm produce to Georgetown. Upon reaching the impassable Great Falls of the Potomac, the boats entered the company's outstanding skirting canal. Here, on the Virginia banks of the river, the canal was 1,200 yards long, 25 feet wide, and 6 feet deep. It passed boats through 5 lift locks over an elevation of more than 76 feet. Four other short canals, with a total length of slightly more than 3 miles, were also built by the company at various other locations. Although the canals and locks of the Potomac Company were considered a great engineering accomplishment, the improvements to the river channel were inadequate.

Later, the charter of the Potomac Company was relinquished to the Chesapeake and Ohio Canal Company which was formed in 1828 to construct a canal on the Maryland side of the Potomac.

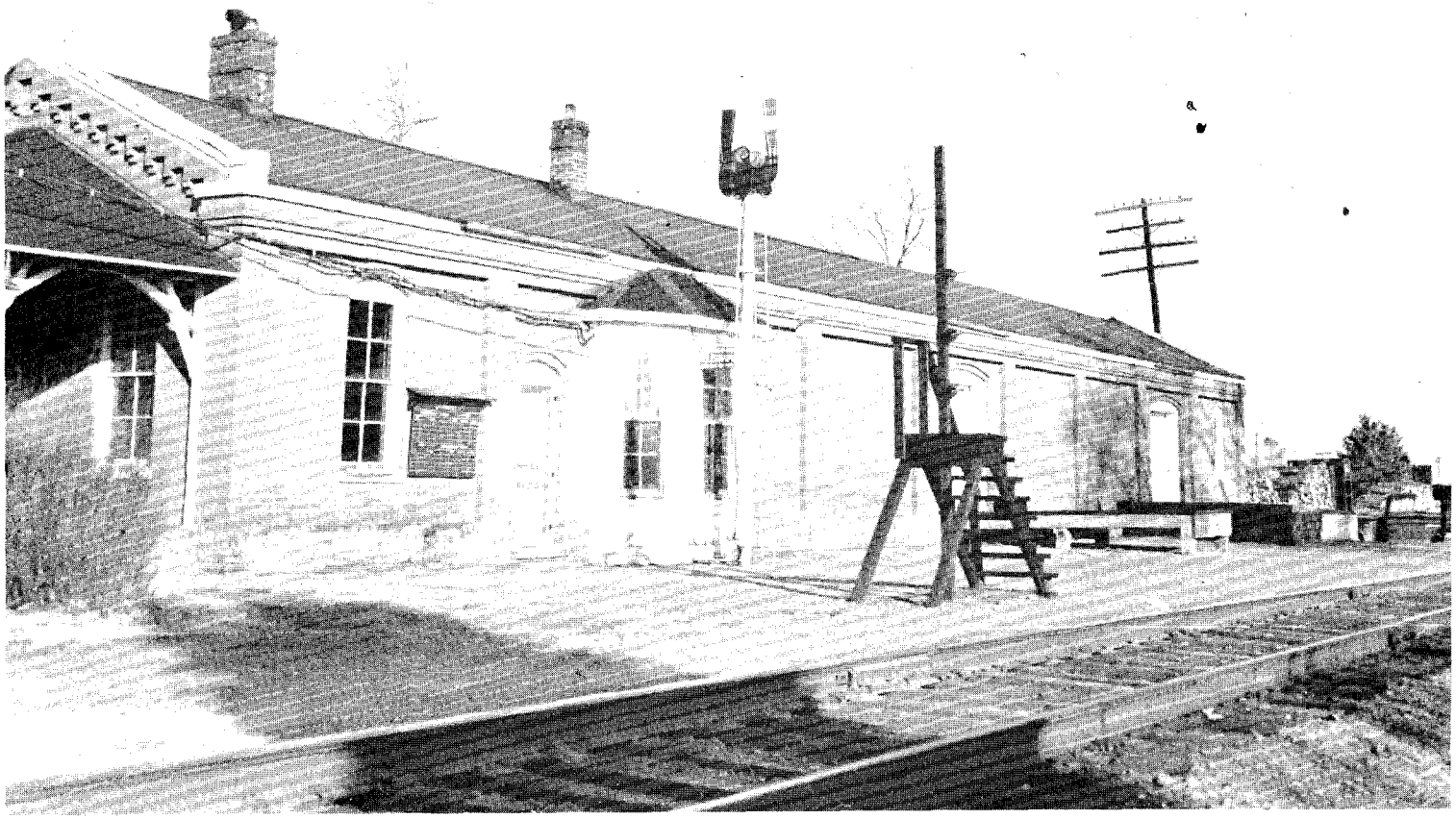
Today, the area is rich with historical evidence. The ruins of Matildaville, an old grist mill built by the eight Lord Fairfax, and five of the Potomac Company Canal locks are visible.

In spite of years of neglect, they are in a remarkable state of preservation.

With the exception of Mount Vernon, this area is more closely associated with George Washington than any other. The 800 acres that contain the ruins has changed little since the days when he was actively engaged in the project.

50. Chesapeake and Ohio Railroad Depot:

A small brick depot, a combination passenger and freight depot, located in the small village of Beaver Dam is the oldest such depot still in use by the Chesapeake and Ohio Railroad. The building, 25' by 125', is in fine condition and a most interesting example of early railroad architecture. Two small waiting rooms at the western end are still heated by iron stoves. An agent and telegrapher's office with its distinctive bay window is just behind the waiting room. Two freight bays occupy the remainder of the building. The depot was built in 1841 by the original predecessor of the Chesapeake and Ohio, the Louisa Railroad. Its brick walls have resisted three fires and four raids by Federal troops during the Civil War.



Chesapeake & Ohio Railroad Depot, 1841, Beaver Dam, Virginia

N. P. S. Photo

51. "Old East Humpback" Covered Bridge:

Just west of Covington, Virginia near U. S. 60, there is located "Old East Humpback," the oldest covered bridge still standing in Virginia. According to tradition, it was constructed across Dunlap Creek in 1822 shortly after the state set up the James River and Kanawha Turnpike Company. The bridge long served as a part of that turnpike.

52. Old Swan Tavern:

Old Swan Tavern, a small red brick building at the corner of Jefferson and Park Streets in Charlottesville, was built about 1773, by Jack Jouett. Members of the Assembly met there several times after removing from Richmond during the Revolution. The tavern is now occupied by the Red Lands Club.

WASHINGTON

53. Cape Disappointment Light Station:

Located on Cape Disappointment, at the mouth of the Columbia River. Here is situated the first lighthouse erected by the United States government on the Pacific Northwest Coast. The light was put into operation on October 15, 1856, and is still in use.

WEST VIRGINIA

54. Rumsey State Park:

Rumsey State Park, at the north end of Mill Street, Shepherdstown, occupies two acres of rocky bluff overlooking the Potomac River. Here James Rumsey in 1787 conducted his successful experiment with a steam-propelled boat.

Several hundred people gathered on the banks here on December 3, 1787 to see the success or failure of the marvelous boat that was to move without oars, paddles, sails or set poles. A water-tight boiler drove the boat by the reaction of a jet of water expelled at the stern; the stern cylinder was mounted above a pump cylinder.

With Rumsey and two assistants manning it, the boat successfully carried a number of ladies as passengers upstream for half a mile and continued to cruise back and forth for two hours at three miles per hour. For the first time a steamboat large enough to carry freight and passengers had been successfully operated before a crowd of eye-witnesses.

Harassed by rival claims to the invention, especially those of John Fitch, and hampered by his own lack of business ability, Rumsey failed to profit by his pioneering. It was twenty years before the steamboat became a commercial success with the launching of Robert Fulton's Clermont.

WISCONSIN

55. Old Wade House:

Located in Old Wade House State Park, Greenbush. The two-story, gabled and clapboard Old Wade House is one of the oldest stagecoach inns in Wisconsin. When Sylvanius Wade moved to the territory of Wisconsin in 1844, he ended his trek in a sparsely settled section of the land. Even though the area was thinly populated, some bold persons organized a stagecoach line between Fond du Lac and Sheboygan in 1845 and this led Wade to build an inn. The $300-building was completed in 1851 and quickly became a popular hostelry, catering to the needs of tired and thirsty travellers.

In 1950, long after the passing of the stagecoach era, the Kohler Foundation purchased the building and completely restored it. When the building's rehabilitation had been completed, the foundation presented it to the State.

OTHER SITES NOTED

ALABAMA

1. Old Pisgah Tavern and Post Office, Carbon Hill.

CONNECTICUT

2. Rising Sun Tavern, Near Northford.

3. Samuel Wright House, Near Cromwell.

FLORIDA

4. American Shoal Lighthouse - Offshore - visible from Overseas Highway at Saddlebunch Keys.

5. Lighthouses of the Florida Keys - Between Miami and Dry Tortugas Lighthouse.

6. St. Augustine Military Road, Pensacola.

GEORGIA

7. Eppinger Mansion, Savannah

8. Old Federal Road, Georgia-Tennessee

9. Tybee Lighthouse, Tybee Island, Savannah

10. Vann's Tavern, Calhoun

INDIANA

11. Jackson Covered Bridge, Sugar Creek, Parke County

12. Michigan Road, Madison to South Bend

KENTUCKY

13. Bright's Inn, Stanford

14. Portland Canal, Louisville

MASSACHUSETTS

15. Boston, Lowell Railroad

16. Old Ordinary, Hingham

MISSISSIPPI

17. Jackson Military Road, Macon

18. Robinson Road

NEW JERSEY

19. Indian King Tavern, Haddonfield

NEW YORK

20. Albany Post Road, New York to Albany

21. Montauk Light, Montauk Point, Long Island

NORTH CAROLINA

22. Cape Lookout Lighthouse

23. Roanoke Canal, Rock Landing to Weldon, N. C.

OHIO

24. Headly Inn

25. Our House, Gallipolis

PENNSYLVANIA

26. Old Rush House, Jim Thorpe

27. Asa Packer House, Farmington

SOUTH CAROLINA

28. Morris Island Lighthouse, Morris Island, Charleston

29. Santee Canal, Santee River to headwaters of Cooper River

30. Six-Mile House, Charleston

TENNESSEE

31. Chester Inn, Jonesboro

32. DeVault Inn, Leesburg

VIRGINIA

33. Hanover Tavern, Hanover

34. Three Chopt Road, U. S. 250

35. Half-Way House, U. S. 1, ($11\frac{1}{2}$ miles south of Richmond)

CRITERIA FOR THE EVALUATION OF HISTORIC SITES AND BUILDINGS

1. Structures or sites at which events occurred that have made an outstanding contribution to, and are identified prominently with, or which best represent, the broad cultural, political, economic, military, or social history of the Nation, and from which the visitor may grasp the larger patterns of our American heritage.

2. Structures or sites associated importantly with the lives of outstanding historic personages.

3. Structures or sites associated significantly with an important event that best represents some great idea or ideal of the American People.

4. Structures that embody the distinguishing characteristics of an architectural type specimen, exceptionally valuable for a study of a period style or method of construction; or a notable structure representing the work of a master builder, designer, or architect.

5. Archeological sites that have produced information of major scientific importance by revealing new cultures, or by shedding light upon periods of occupation over large areas of the United States. Such sites are those which have produced, or which may reasonably be expected to produce, data affecting theories, concepts, and ideas to a major degree.

6. Every historic and archeological site and structure should have integrity--that is, there should not be doubt as to whether it is the original site or structure, and in the case of a structure, that it represents original materials and workmanship. Intangible elements of feeling and association, although difficult to describe, may be factors in weighing the integrity of a site or structure.

7. Structures or sites which are primarily of significance in the field of religion or to religious bodies but are not of national importance in other fields of the history of the United States, such as, political, military, or architectural history, will not be eligible for consideration.

8. Structures or sites of recent historical importance, relating to events or persons within 50 years, will not, as a rule, be eligible for consideration.

GPO 966554