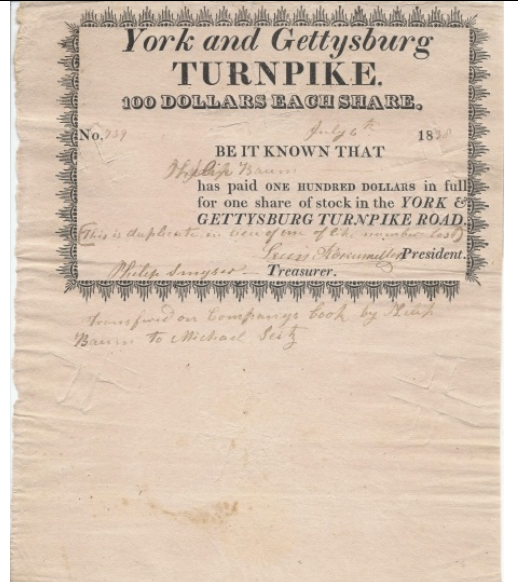
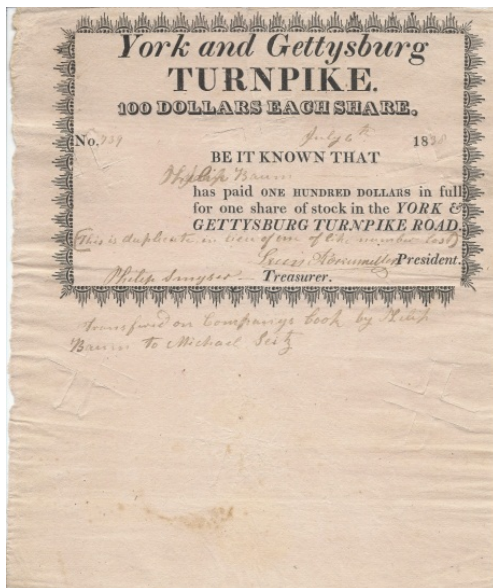


Chapter 121c -- Infrastructure And Mobility

	<p>Dates: 1840</p>	<p>Sections:</p> <ul style="list-style-type: none"> • New, Improved Roads Dot The Landscape • Steamboats Enable Upstream Travel • The Boom In Railroads Is Under Way • Transportation Tycoon Cornelius Vanderbilt
-----------------------------------------------------------------------------------	-------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

New Improved Roads Dot The Landscape



Stock Certificate For The York to Gettysburg Pike

The westward movement of the population and of commerce between 1820 and 1840 is accelerated by the transition from simple dirt cart paths to well-constructed macadam roads, costing \$1,500 to \$2,000 per mile to complete.

Once these improved roads are available, a farmer or a settler family in a wagon is able to cover a distance of about 15 miles in a day.

Because of the large capital requirements, the macadam roads tend to be built by corporations, sanctioned by state governments and operating as turnpikes, i.e. toll roads. To guarantee the collection of fees for use, toll booths are constructed every few miles.

But with the exception of lucrative pikes situated on bridges crossing rivers, most of these investments are break-even at best for stock-holders.

Still the building efforts flourish – largely because towns and cities with good roads tend to enjoy greater commercial success. Roads yield farmers and travelers, who spend their money on Main St. at local taverns, inns, storefronts, and other businesses.

Between 1800 and 1840, some 1355 corporations are sanctioned across eleven Atlantic coast states to build turnpikes. That represents roughly one in every four incorporations for all purposes.

Turnpike Corporations Sanctioned In America

1801-10	1811-20	1821-30	1831-40
398	362	230	365

* Klein & Majewski UCSB for 11 eastern states

Roads become so important that some communities, lacking capital, force their resident to work several days each year to construct and maintain local pikes, or pay a penalty tax.

The federal government also plays a role here, funding the “National Road” in 1806, with construction beginning in 1811 in Cumberland, Maryland and reaching its final destination in Vandalia, Illinois, in 1837. This macadam road, running 611 miles in length, will carry the lion’s share of travelers and commerce along the east-west axis through the 1840’s, when the era of trains begins.

As time passes, a cheaper alternative to the macadam construction materializes in the form of the plank road. Here lumber “sills” are laid down in parallel about six feet apart, and covered by eight foot long by three foot wide by four inch thick wood planks placed perpendicular to the sills and held down by their own weight. These plank roads tend, however, to wear out every 4-5 years, and they eventually fade out of popularity.

The development of serviceable roads throughout America is also supported by the desire of citizens and businesses to stay in touch via the U.S. Postal Service. In 1792 Congress designates that roads used to deliver mail be declared postal routes – and thereby eligible to be considered for permanent Post Offices, soon the mark of civic pride and connectivity.

By 1840, however, the population is bound together not only by the emerging road systems, but also by two technological advances – steamboats and trains.

Both will appeal to American’s growing desire not only to move about, but to do so at an ever faster pace.

Steamboats Enable Upstream Travel



A Brooklyn Ferryboat

Breakthroughs in steam engine technology during the 1760's and 1770's by the Scottish inventor and machine maker, James Watt, filter across the Atlantic and begin to impact America in a multitude of ways. The first involves steamboats.

The Pennsylvania native, Robert Fulton, travels to Europe in 1788 to further his dual careers as an artist and inventor, and becomes fascinated by the potential of steamboats to transform water travel in America by going upstream at speeds unimaginable to rowboats or canoes. While in England, he also works with the navy to build torpedoes and even submarines, designed to combat invasion threats from Napoleon's French fleet.

At the same time, another American, John Fitch, is making trial runs with early steamboat models on the Delaware River. But it is Fulton who builds the first commercially viable steamboat, named The Clermont, which in 1807 ferries passengers over 150 miles from NYC to Albany in some 32 hours.

Soon thereafter, the young entrepreneur, Cornelius Vanderbilt, begins to add steamboats to his fleet, and by 1838 his fabulously profitable Staten Island Ferry is transporting passengers to most points within Long Island Sound.

In 1837 the Western Transportation Line offers a range of steamboat trip between Philadelphia and St. Louis, some 1750 miles and 14 days away. Food is served onboard at a price of 37.5 cents per meal.

East – West Steamboat Travel In 1837

Philadelphia To:	Price	Travel Days
Pittsburgh	\$6.00	6.5
Cincinnati	8.50	8.5
Louisville	9.00	9.5
St. Louis	13.00	14.0

William Pooley 1905 PhD Thesis - UWisconsin

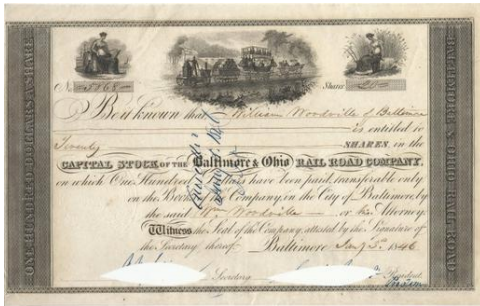
The Boom In Railroads Is Under Way

Meanwhile Watt's steam engine has also been adapted to overland travel, in the form of trains.



The first train is built by the Englishman, Richard Trevithick, in 1804, for travel on roadways. By 1825, however, one George Stephenson establishes the Stockton & Darlington Railway, in northeast England, the first public steam train set up to run on iron tracks.

George Stephenson (1781-1848)



Stock Certificate For Baltimore & Ohio Railroad

The notion of developing a similar system in America begins to take serious shape on April 24, 1827, when the B&O Rail Road Company is incorporated, to construct a common carrier line linking the port city of Baltimore to cities along the Ohio River, in competition with the seven year old Erie Canal.

In 1830, the inventor and entrepreneur, Peter Cooper, builds the locomotive, *Tom Thumb*, to convince the B&O owners to use his steam engines on their lines. Within a decade its successor is capable of hauling 50 tons at a speed of 15mph, twice that of a horse-drawn stagecoach.



Peter Cooper (1791-1883)

Profits from Cooper's engine fuels his subsequent investments in iron mills, New York city real estate, and the American Telegraph Company (after Samuel Morse's 1837 invention), making him one of the richest men in America. He is also a devout Christian who fights against slavery and for Indian rights, and runs for President in 1876, at age 85, on the Greenback Party ticket.

In 1831 Holmes Hinkley and his partner Daniel Child found The Boston Machine Works, which builds locomotives for America over the next three decades. One example is the locomotive "Muzzey," a 4-4-0 configuration (4 leading wheels, 4 driving wheels, 0 trailing wheels), which they complete around 1854.



Businesses see the benefits of rail transportation right away, and the race is on to lay track, especially across the industrializing northern states.

The Steam Locomotive “Muzzy,” In 4-4-0 Configuration

By 1840, track mileage has reached 2,755 miles in total.

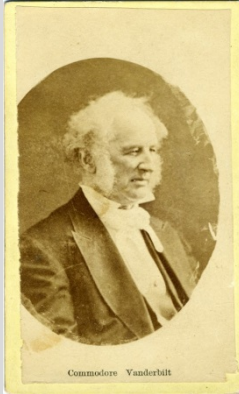
Accumulated Miles Of Railroad Tracks By Region

Geography	1830	1840
Total U.S.	40	2,755
New England (Me,NH,Vt,Ma,RI,Ct)	30	513
Rem. North (Del,NY,NJ,MD,DC,Oh,Mi,In)	---	1,484
West (Il,IA,Wis,Minn,MO)		
South/Border (Va,NC,SC,Ga,Fl,Al,Ms,Ky,Tn,La)	10	758

Taken together, these improvements in transportation support the creation of more vibrant towns and cities across America.

Sidebar:

Transportation Tycoon Commodore Cornelius Vanderbilt



Cornelius Vanderbilt 1794-1877

Cornelius Vanderbilt's life is symbolic of "the American dream" – the individual man, rising from humble origins to achieve fabulous wealth and power based on his own ideas, his determination and his mastery of capitalism and its offspring, the "corporation."

He revolutionizes the transportation industry in America, first on the waterways with his steamboats, then on land with his railroads. He dominates real estate development in Manhattan and assures its place as the nation's financial capital. In his ability to create businesses that anticipate and efficiently meet the needs of the marketplace, and deliver steady profits to "shareholders," he emerges as America's first entrepreneurial giant.

Vanderbilt is born of Dutch settlers in 1794, and at age 11 begins to operate a small boat that transports local goods from his village on Staten Island across the Hudson to Long Island, in exchange for pennies. By 1828 he has expanded his "fleet," added steamboats, and ventured up the river to service the booming docks of Manhattan. He soon earns his nickname, The Commodore, with his Staten Island Ferry and other lines dominating water transit in and around Long Island Sound.

In the 1840's, he decides that his successes in transporting people and goods on water can be replicated on land, and he begins to invest his wealth in acquiring a string of railroads. By 1847 he has control of the Stonington Line, which links NY to Boston and Providence. Later he will acquire and turn around the Harlem Line, which runs through the middle of Manhattan, and then the NY Grand Central Line, which earns him his second name, The Rail King. During this period he is also acquiring real estate in Manhattan, for personal residences and for the Grand Central Station Depot, which he builds with his own money.

In the 1850's he launches an ocean-going fleet of vessels that links the booming "gold rush" state of California to the east coast, via transit routes in Central America. In the 1860's he contributes his personal steamship, *Vanderbilt*, and his transportation know-how to the North. And then he lives on, doing one Wall St. deal after another, until 1877, when he dies at 82 with an estate of \$100 million, arguably making him the richest man in U.S. history.

Along the way, Vanderbilt exhibits mastery over many of the tools of modern capitalism: vertical integration (building his own engines and vessels for his fleet); reframing (moving out from water to land transport); mergers and acquisitions (both ships and railroads); stock market plays (short-selling and buying back); an ongoing search for competitive advantage to achieve the pricing and profitability associated with monopolies; and constant efforts on behalf of laissez-faire policies that keep government out of “his” free market.

You Are There

1810	At 16 he is ferrying freight and passengers between Staten I and Manhattan
1814	Moves to Manhattan with wife, and begins to buy city land.
1817	Adds first steamboat and captains it between NY and NJ
1824	Breaks NY insider monopoly on routes via Supreme Court win (Gibbons vs. Ogden) – “states have no right to interfere in interstate commerce.”
1834	Expands routes across Long Island Sound
1838	In control of Staten Island Ferry, and given nickname “The Commodore”
1840	Sees potential to also dominate land transport; begins to acquire railroads
1847	Uses short-selling of stock to buy the Stonington rr (NY-Boston-Providence)
	Proposes canal across Nicaragua to link east with west
1848	Starts ocean-going steamship line to service California “gold rush” demand
1850	Proposes to carry US mail to west coast at low price via Nicaragua canal
1855	When Nicaragua stalls, gains control of Panama rr as overland solution
1857	Crushes William Walker filibuster in Nicaragua
1862	Donates personal steamship Vanderbilt to civil war effort
1863	Begins NY & Harlem rr turn-around and building Grand Central Depot
1867	Acquires NY Central rr and earns second nickname “Railroad King”
1869	Immense power of Wall St. on economy seen in Black Friday gold scandal
1877	Dies at 82, possibly richest ever with \$100MM (est. at \$143B in 2007 \$)