

America needs “highways” to develop its domestic marketplace, and it finds them first in its inland rivers.

In addition to triple masted sailing ships crammed with cargo headed toward European ports come simpler canoes, boats and barges heading up and down inland rivers.

The rivers cross-hatch the old and new states, and help bind them together around trade. Many flow for hundreds of miles and are easily navigated.

Some flow north and south, often defining, often transcending state borders.

Major North-South Rivers East Of The Mississippi

	Miles	States
Kennebec	170	Maine
Connecticut	419	Connecticut, Vermont, NH, Vt
Hudson	315	New York, New Jersey
Susquehanna	464	Maryland, Pennsylvania, NY
Scioto	231	Ohio
Wabash	503	Indiana, Illinois, Ohio
Pee Dee	232	South Carolina, North Carolina
Savannah	301	South Carolina, Georgia
St Johns	310	Florida
Alabama	318	Alabama, Georgia
Oconee	220	Georgia

Others flow east and west, and play a crucial role in opening up the new states west of the Appalachian Mountain range. The longest eastern river, the Ohio, becomes the official line of demarcation in 1787 between the “free” states of the North and the “slave” states of the South.

Major East-West Rivers East Of The Mississippi

	Miles	States
Ohio	981	Pa, Ohio, WVa, Ky, IN, Illinois
Cumberland	688	Kentucky, Tennessee
Tennessee	652	Tennessee, Ala, Miss, Ky
James	348	Virginia

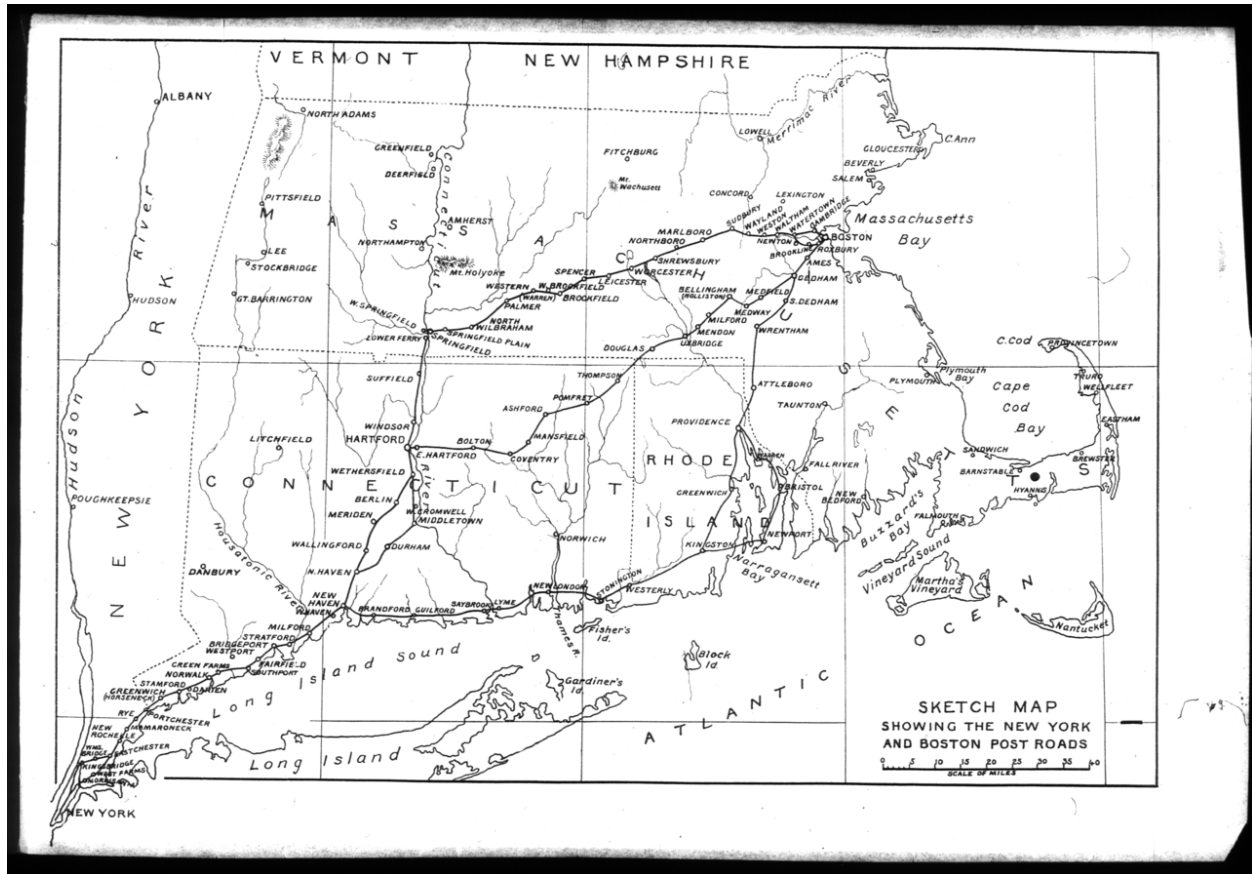
To the north, across eastern Canada, the St. Lawrence River – Great Lakes system, runs 2,340 miles from the Atlantic coast to the tip of Lake Superior. This route will prove very important to the fur trade, which is already booming in 1820.

The St. Lawrence To Great Lakes System

	Miles	
Canada	2,340	Atlantic Ocean To Lake Superior

Time: 1820

Major Roads And Turnpikes Evolve



America's First Major Highway: The Boston Post Road (Boston to New York City)

In addition to increased river traffic, growth of the domestic marketplace is also fueled by advances in the nation's roads, turnpikes and bridges.

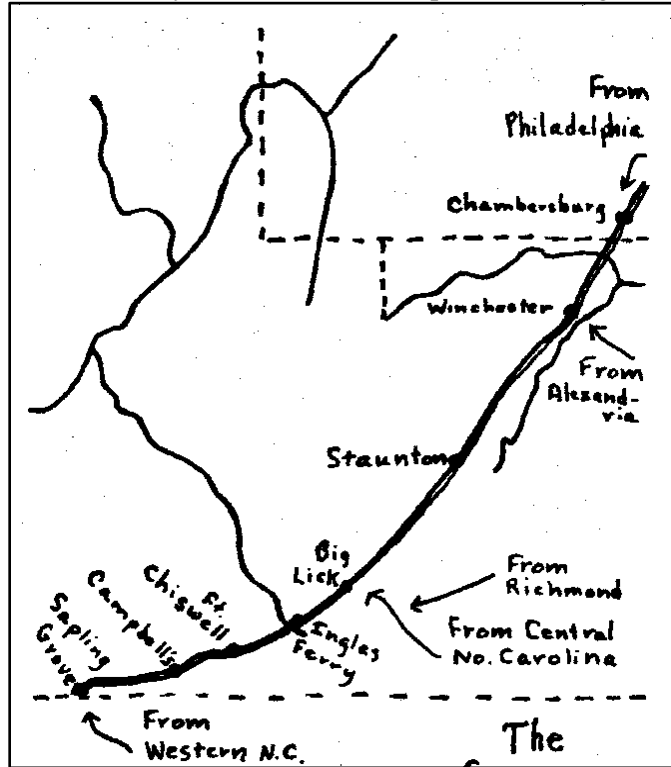
Many of these roads originate as Indian trails, and are gradually upgraded to handle increased traffic, including the mail (or "postal letter").

During the colonial period, most run roughly north and south, linking the colonies along the Atlantic coast.

The first true thoroughfare is known as the Boston Post Road, from Massachusetts through various "upper and lower" routes in Connecticut, all the way to New York City. Its name derives from the role it plays in delivering mail across the region.

The Great Wagon Road (also known as the Valley Road) opens the way for settlers and commerce moving into the southern states. It originates at the port of Philadelphia, heads west to Chambersburg and then swoops south through the Shenandoah Valley of Virginia to the Roanoke River and into North Carolina.

The Great Valley Road From Philadelphia To Lexington, Va.



Note: Map by Beverly Whitaker

Other important north-south roads include the original King's Highway, which reaches Charleston South Carolina, and the Fall Line Road, linking Fredericksburg, Virginia and Augusta, Georgia.

Important North-South Trails And Roads In The East

Name	Opens	From	To	Distance
Lower Post Road	1678	Boston	Greenwich, Conn.	180
Upper Post Road	1673	Boston	New Haven, Conn	135
Boston Post Road	1772	Boston	New York City	215
King's Highway	1650	Boston	Charleston, SC	975
Albany Post Road	1703	New York City	Albany, NY	150
Great Wagon/Valley Road	1744	Philadelphia, Pa	Lexington, Va	330
Fall Line Road	1735	Fredericksburg, Va	Augusta, Ga	500

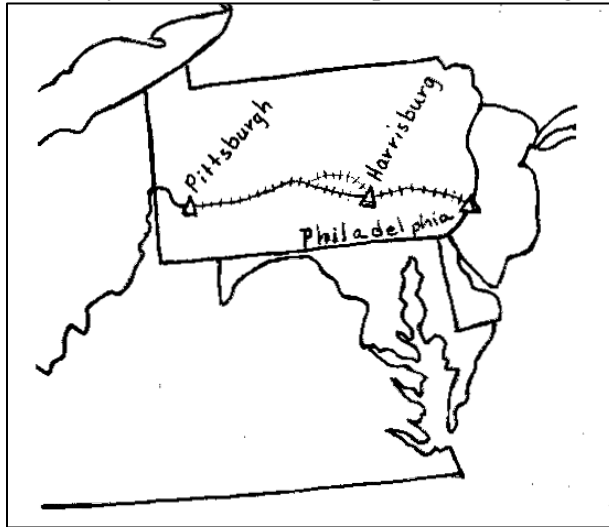
Opening up new land across the Appalachian Mountain barrier hinges on development of east to west roads.

Important East-West Trails And Roads

Name	Opens	From	To	Distance
Mohawk Trail	1664	Albany, NY	Buffalo, NY	288
Allegheny Path	1755	Philadelphia	Pittsburgh	305
Pennsylvania Road	1775	Harrisburg, Pa	Pittsburgh, Pa.	200
Braddock's Road	1755	Cumberland, Md	Braddock, Pa	95
National Road	1811	Cumberland, Md.	Vandalia, Illinois	615
Federal Road	1806	Washington, DC	New Orleans, La	1,085
Wilderness Road	1775	Bristol, Va.	Frankfort, Ky	255
Zane's Trace	1796	Wheeling, WVa	Maysville, Ky	230

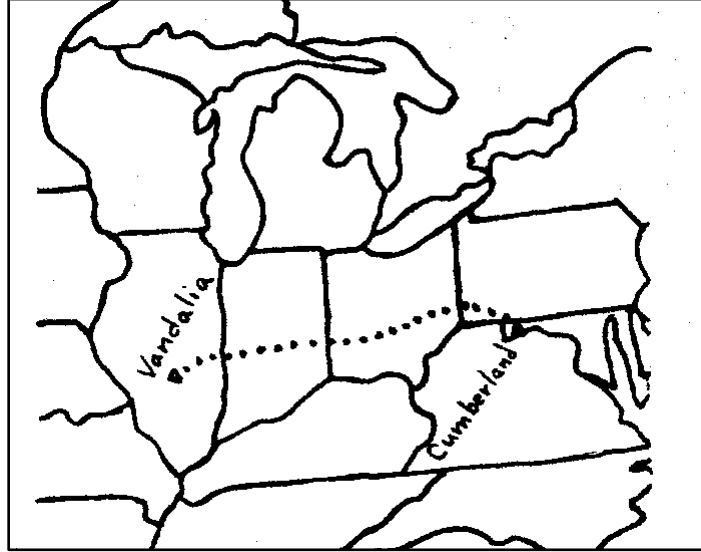
The state of New York is transversed by the Mohawk Trail road, from Albany to Buffalo, on Lake Erie. Travelers move west from Philadelphia to Pittsburgh along the Allegheny Path and the Pennsylvania Road.

Pennsylvania Road: Philadelphia To Pittsburgh



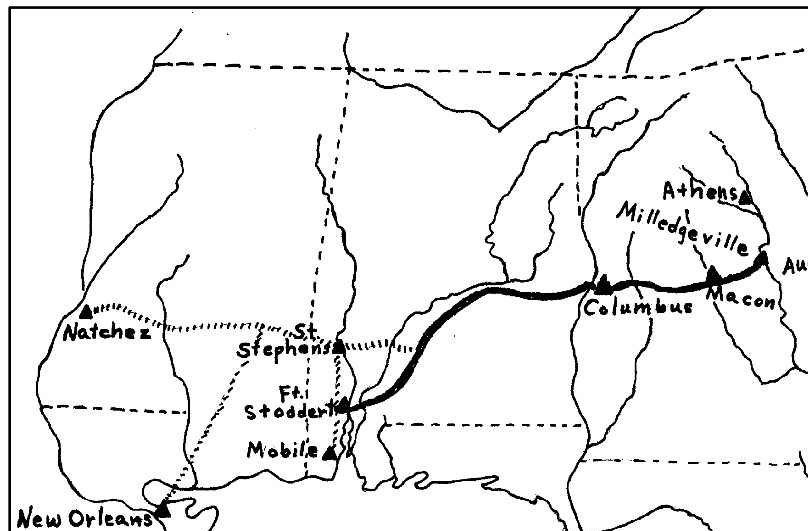
The most famous east-west thoroughfare of the time, the “National Road” is about half-way finished in 1820, extending west from Cumberland, Maryland – at the “gap” in the Appalachians – to Wheeling, in western Virginia. Eventually it will run some 611 miles, all the way west to Vandalia, Illinois.

National Road: Cumberland, Md. To Vandalia, IL



The Federal Road will become another critical east-west juncture, eventually linking Washington, DC to New Orleans, over 1,000 miles to the southwest. It comprises a series of roads, dropping down from the capital through the piedmont region of Virginia and the western Carolinas to Augusta, Georgia – where it swings across Alabama and Mississippi to Louisiana.

The Federal Road: Extension From Augusta To New Orleans



The condition of these major roads varies widely in the 1820's.

Most remain dirt paths, albeit smoothed and widened by decades of use.

By some, however, are already being “macadamized,” according to construction guidelines developed by the Scotsman, John MacAdam, around 1815 in England. MacAdam's idea is a simple one that involves

laying a bed of finely crushed stones over a carefully leveled dirt path, slightly bowed in the center to facilitate the run-off of rain and snow.

The use of stones enables Macadamized roads to avoid the bane of travel along dirt paths, which easily turn into mud in the presence of rain.

The benefits of these new improved stone roads are so obvious to users that some become “turnpikes” – built by entrepreneurs who line them with “toll booths” to collect fees and turn a profit.

Bridges, too, facilitate transportation, with those crossing sizable rivers often built by corporations with the intent to reap profits from user fees.



A Bridge Under Construction

President Monroe proudly reports progress in the construction of “post roads” in his December 2, 1821 address to the Congress:

There is established by law 88,600 miles of post roads, on which the mail is now transported 85,700 miles, and contracts have been made for its transportation on all the established routes, with one or 2 exceptions. There are 5,240 post offices in the Union, and as many post masters.

Time: 1810 Forward

The Erie Canal Transforms East-West Shipping

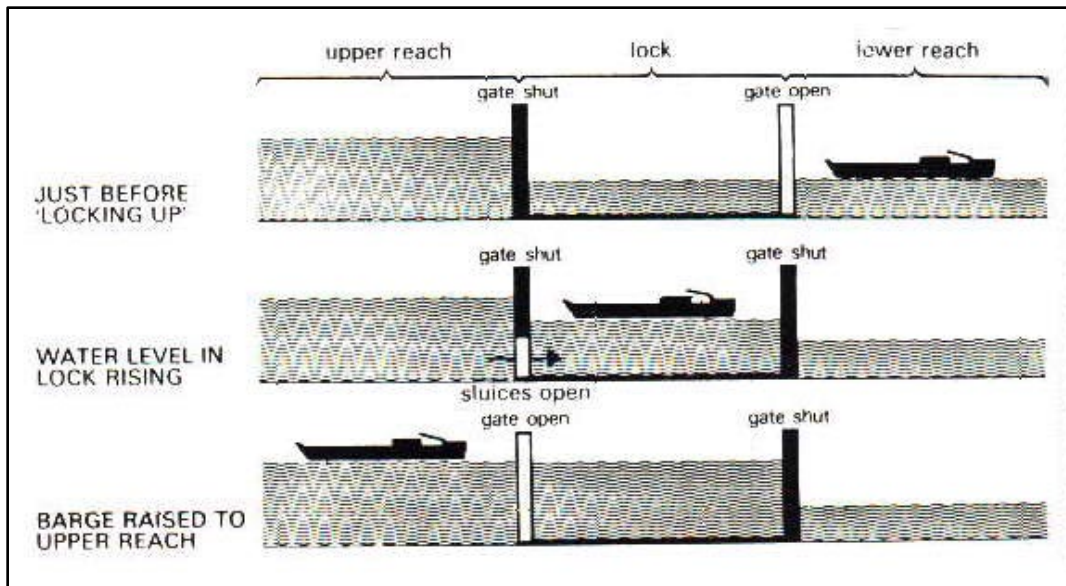


An Early Canal In Bethlehem, Pennsylvania

The profit motive also prompts America’s first major engineering feat, construction of the Erie Canal, a 363 mile waterway that reduces the cost of shipping grains across New York by 90% vs. road transport.

Development of canals in Europe during the 18th century prompts early investigations into use of the technology in America. Both George Washington and Gouverneur Morris express interest, and corporate charters are set up for several companies specializing in “navigational lock” construction.

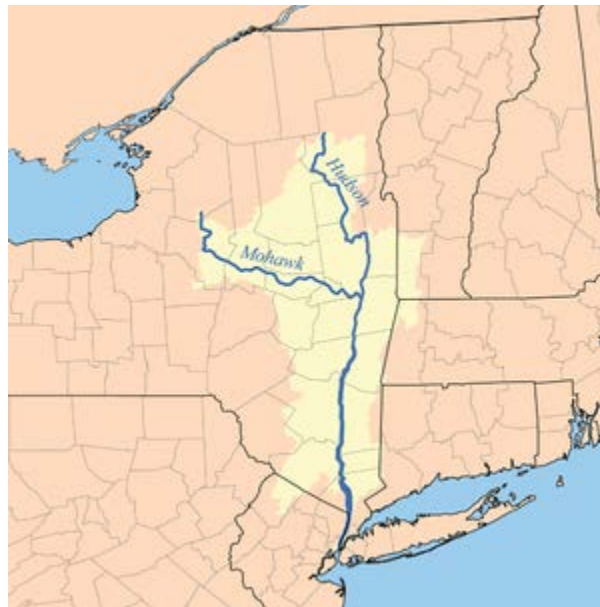
“Locks” are a necessary part of the canal building process. Their role is to enable barges or boats to pass through sharp rises or drops in land and river elevations (e.g. “falls or rapids”) without damage. They do this by “locking” the barge in a contained tank of water, which is then flooded or drained to allow it to rise or fall to a desired height, before an exit door opens to pass it along.



The “grand vision” for the project involves ~~locking the river~~ ^{locking the river} Schematic

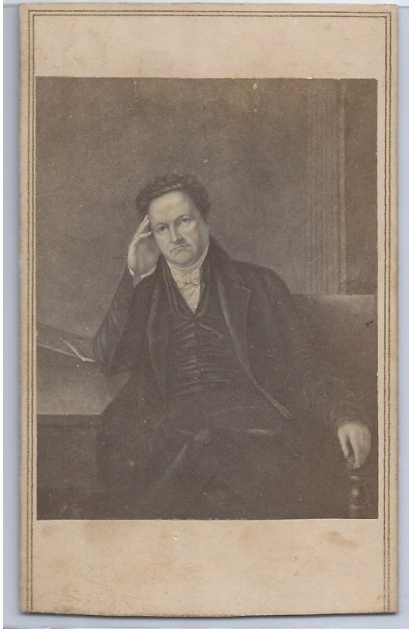
- First, “taming” the Mohawk River, which flows 149 miles east and west through the Appalachian range, between the Adirondacks to the north and the Catskills to the south.
- Then “extending” the flow all the way west to the city of Buffalo on Lake Erie.

Once completed, New York will enjoy a continuous, navigable waterway east from Buffalo to Albany, and then south along the Hudson River into the harbor of Manhattan.



Junction Of The Mohawk And Hudson Rivers Into Manhattan

President Jefferson hears of the scheme in 1808 and calls it “little short of madness.”



DeWitt Clinton (169-1828)

His conclusion is prompted by the fact that land elevation drops some 600 feet between Buffalo to the west and Albany to the east. With each individual “lock” able to accommodate no more than a 12 foot change in water height, this means the canal will require construction of over 50 such individual stations – at a total cost deemed unaffordable by all who assess it.

All except for one Jesse Hawley, a flour merchant in Geneva, NY, who begins to calculate the cost savings the canal could deliver, especially to grain merchants in the Ohio valley. Hawley shares his estimates with Joseph Endicott, whose Holland Land Company owned land in central and western NY, and hopes the canal will boost its value.

Together these two take their plan to the powerful politician, DeWitt Clinton, who serves as Mayor of New York City between 1803 and 1815, and barely loses out to Madison in the 1812 presidential election. Clinton sets up The Erie Canal Commission in 1810, and becomes a fierce and tireless supporter of the venture. His assessment of the project’s effects on the city will prove prescient.

The city will, in the course of time, become the granary of the world, the emporium of commerce, the seat of manufactures, the focus of great moneyed operations...and before the revolution of a century, the whole island of Manhattan, covered with inhabitants and replenished with a dense population, will constitute one vast city.

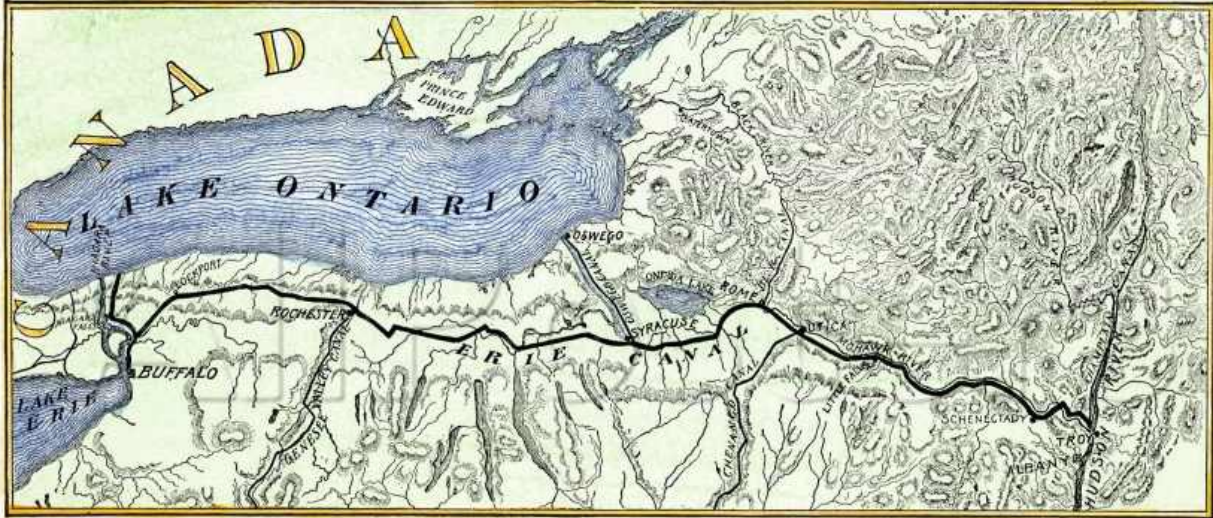
But opposition to the effort – soon labeled “Clinton’s Folly” – remains staunch. He perseveres, however, getting some 100,000 New Yorkers to sign a petition supporting the canal and securing \$7 million to fund construction.

Work begins on July 4, 1817 in Rome, New York, heading east some 15 miles toward Utica. Completion of just this phase requires two years, which again raises concerns about feasibility. But the early construction lessons prove the hardest, and the building pace picks up sharply.

The canal specifications call for a breadth of 40 feet and a depth of 4 feet. Tow paths are laid out along both sides of the canal, enabling cattle or manpower to tug the barges forward.

The work is backbreaking in many ways. Trees need to be felled and their stumps pulled out; primitive bulldozer-like plows scrape the soil; clay and limestone linings form the channel; and complex aqueducts are required to steer the water. The effort continues through the intense summer heat and the frigid winters.

In the end, almost eight years and 57 locks are required to complete the project, one of the engineering marvels of the 19th century. Clinton celebrates with a ten day voyage over the canal, from Buffalo to New York City – ending with a ceremonial “wedding of the waters,” pouring a vial from Lake Erie into Manhattan harbor.



The Erie Canal Stretching 363 Miles From Albany To Buffalo, New York

The Erie Canal will transform economic prosperity throughout the state. Wheat transport on the waterway jumps from some 3500 bushels in 1820 to over a million bushels in 1830, with costs per bushel cut by 90%.

Tolls collected for use of the canal pay off the \$7 million cost during that same time -- and New York becomes the busiest port in America, surpassing Philadelphia, Boston, Baltimore and New Orleans.

Unfortunately, DeWitt Clinton dies suddenly of heart failure in 1828 and, despite his public prominence, lacks the personal funds even to be properly buried, much less care for his surviving family. Despite this, his famous canal will be forever immortalized in American folklore and song.

Low Bridge

By Thomas S. Allen

*I've got a mule, her name is Sal
Fifteen years on the Erie Canal
She's a good old worker and a good old pal
Fifteen years on the Erie Canal
We've hauled some barges in our day
Filled with lumber, coal, and hay
And we know every inch of the way
From Albany to Buffalo*

Chorus:

*Low bridge, everybody down
Low bridge cause we're coming to a town
And you'll always know your neighbor
And you'll always know your pal
If you've ever navigated on the Erie Canal*