

The Erie Canal



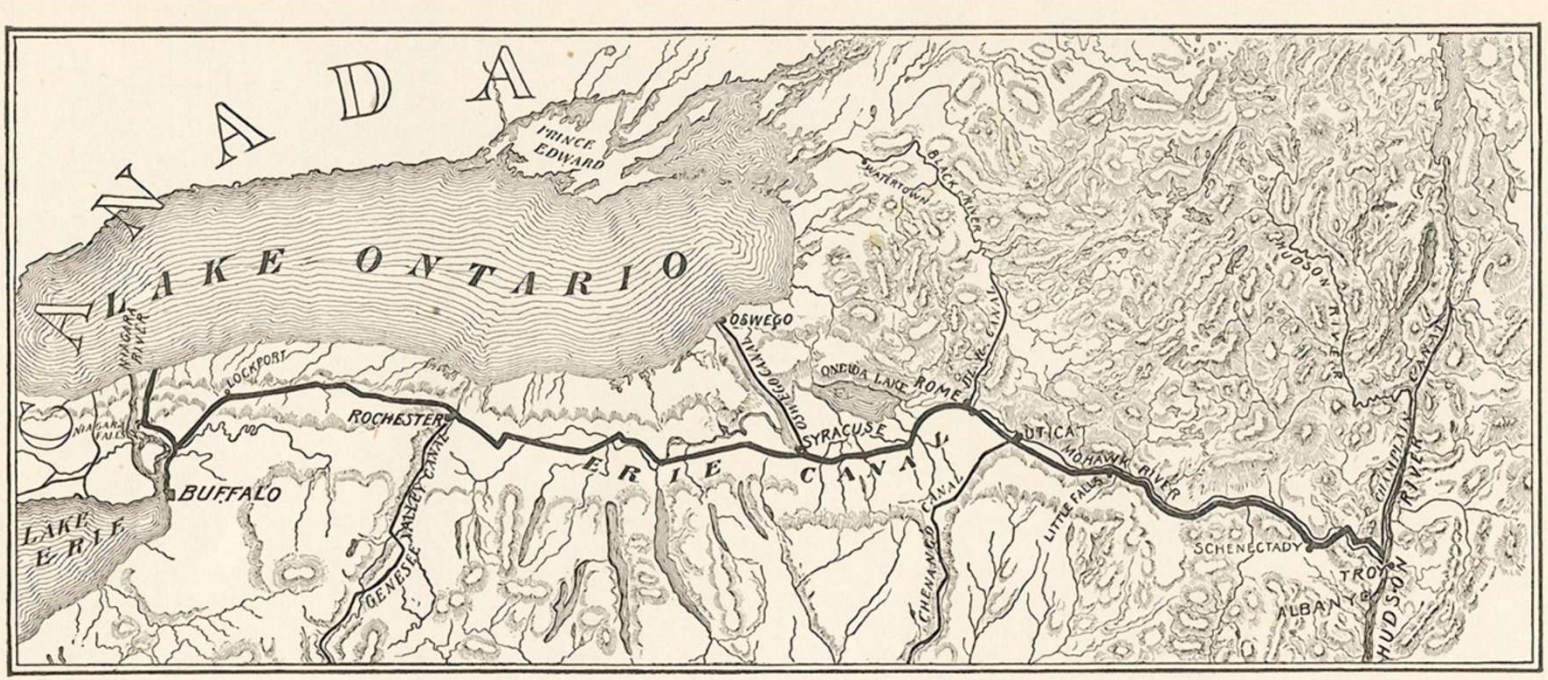
The Erie Canal

The single most important
public work
ever built in the United States

It accomplished all this… and much more--

- **It connected the rich agricultural lands of America's interior with the World.**
- **Slashed transportation costs and travel time by 90-percent.**
- **Enabled major Westward expansion.**
- **Made New York City America's leading Port and Financial Center.**
- **Accelerated the Industrial Revolution in America.**
- **Transformed our small country into an economic powerhouse.**

The Erie Canal



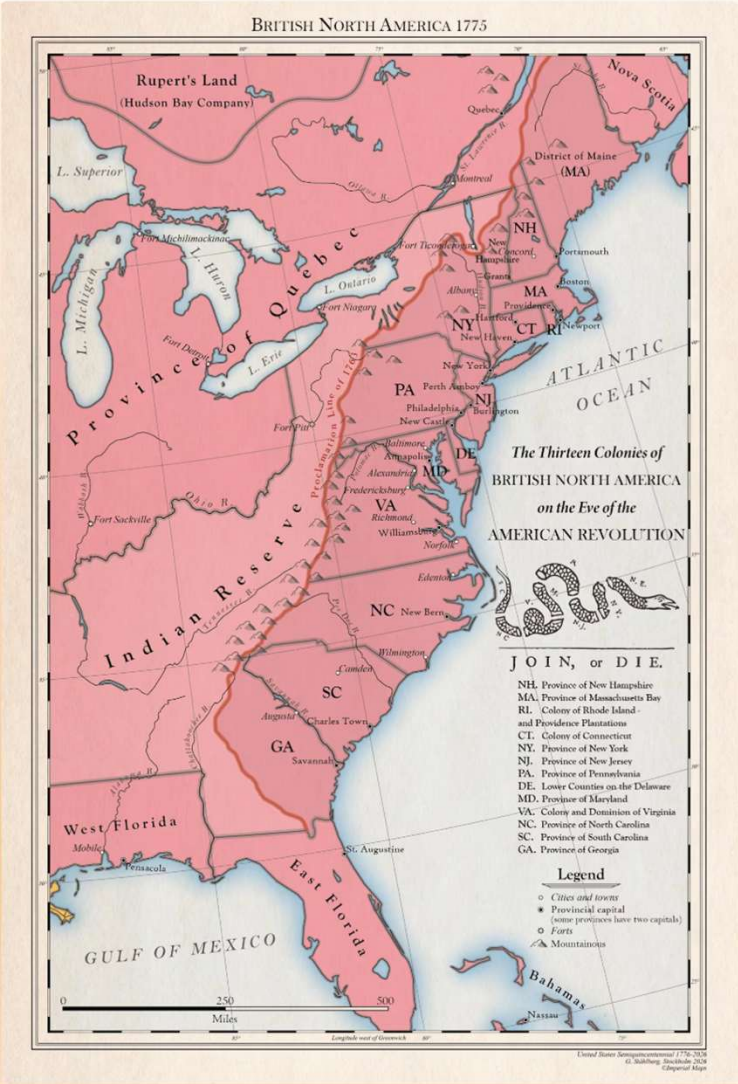
A Map of the Country Traversed by the Erie Canal.

Prepared under the supervision of the author, Mr. T. C. Clarke.

America at the time of our Founding—

The American Colonies
were forbidden to expand westward…
by Royal Proclamation.

Forbidden to settle
or purchase land west of the
Appalachian Mountains.



How things stood after we declared Independence—

- Still a small coastal country…squeezed between the sea and the Appalachians.
- While territory beyond the mountains has been explored…still very sparsely populated.





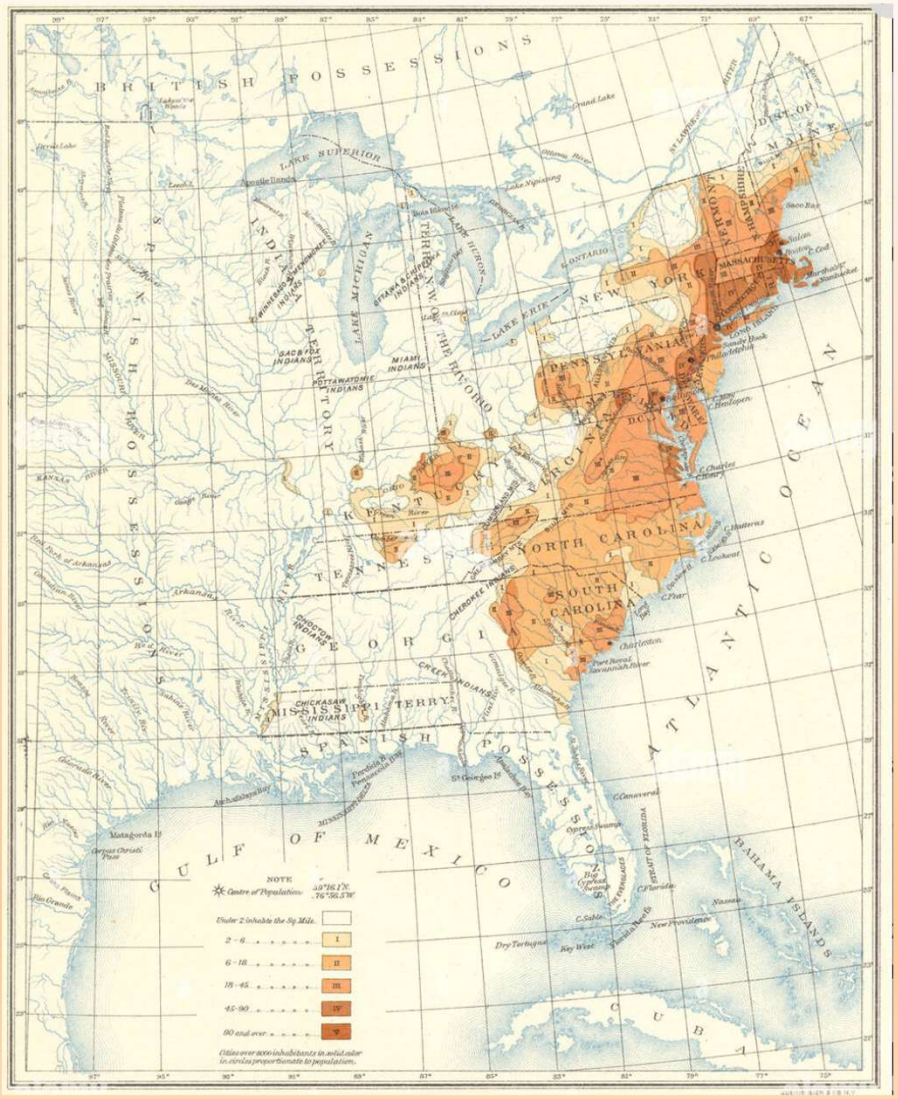
Westward Expansion was blocked by two major obstacles.

1. French owned lands.
2. The Appalachians.

”When mountains divide two peoples, they tend to become separate nations… unless some easy means of communication and travel exists between the two.”

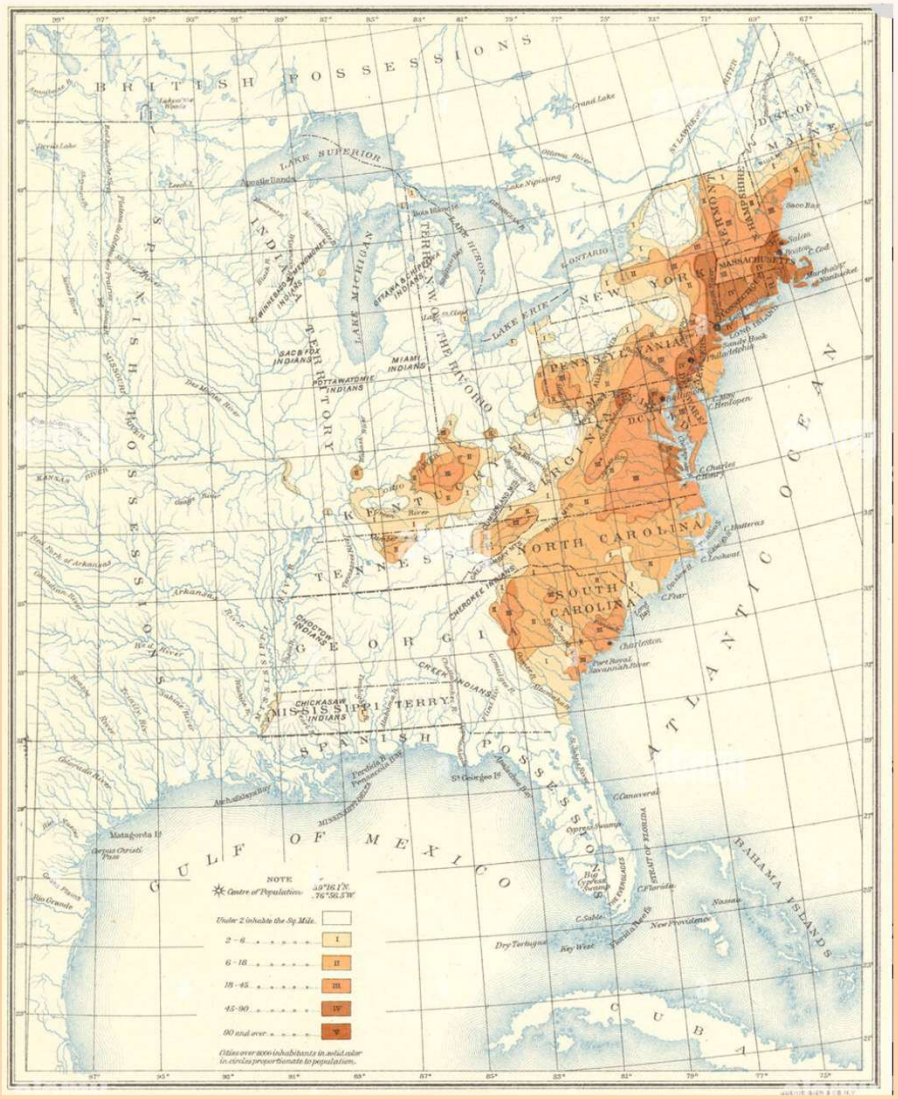


George Washington, 1775



The Impossible Dream

Creating a direct water route from the Atlantic Ocean to the North American interior.



Why a Water Route?

The fastest and easiest way to travel a distance…especially when carrying a heavy cargo.

Canals have proven their value in History

2200 BC-- The Babylonians dug a canal to connect the Tigris and Euphrates.

2100 BC-- The Egyptians dug a canal to bypass the cataract at Aswan.

1200 BC– The Egyptians dug a canal to connect the Nile with the Red Sea.

600 BC- The Chinese dug the 1,000-mile "Grand Canal" from Beijing to Shanghai.

100 BC- The Romans dug a half dozen smaller canals.

1065 AD- The Dutch dug many small canals…with simple "locks".

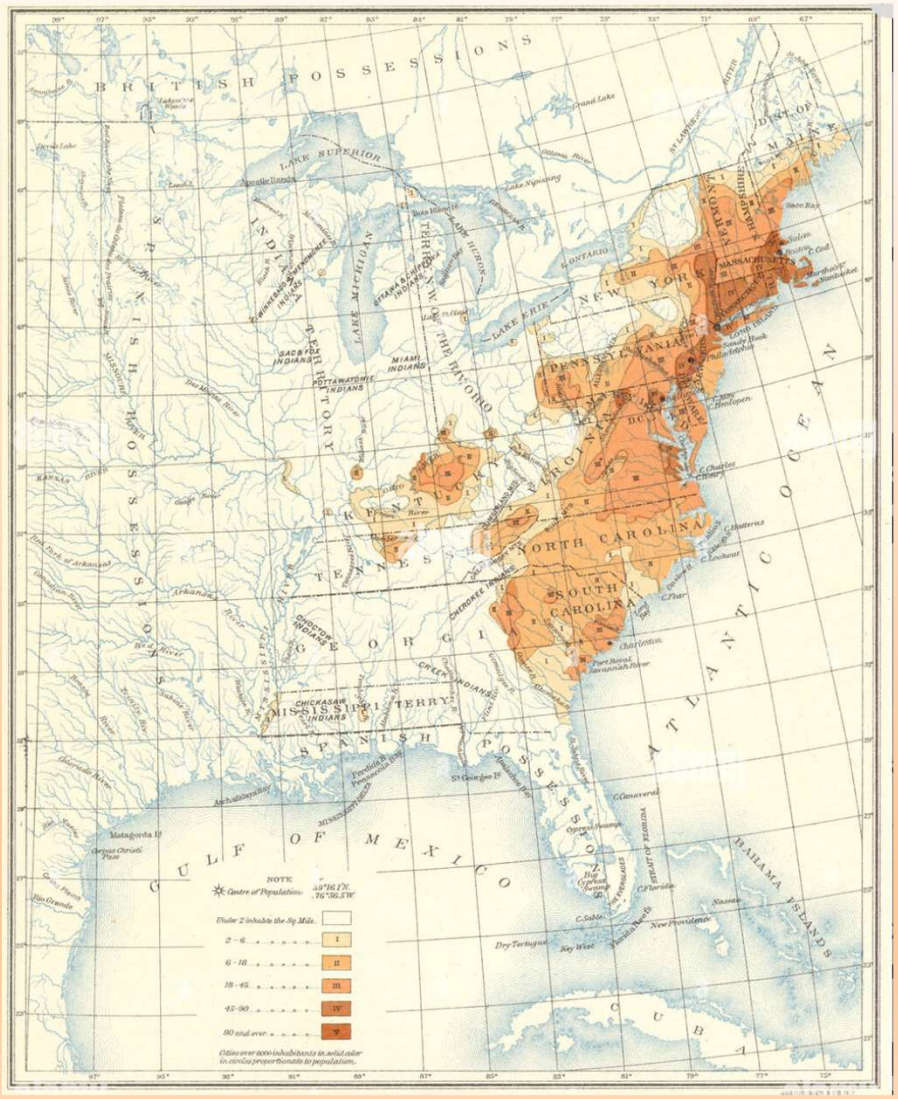
1165 AD- The Italians dug several small canals…with improved "locks".

1500 AD- Breakthrough! Leonardo's designs a lock with "V-shaped gates and sluices.

1680 AD- France…"The Canal du Midi"…connecting the Atlantic and Mediterranean.

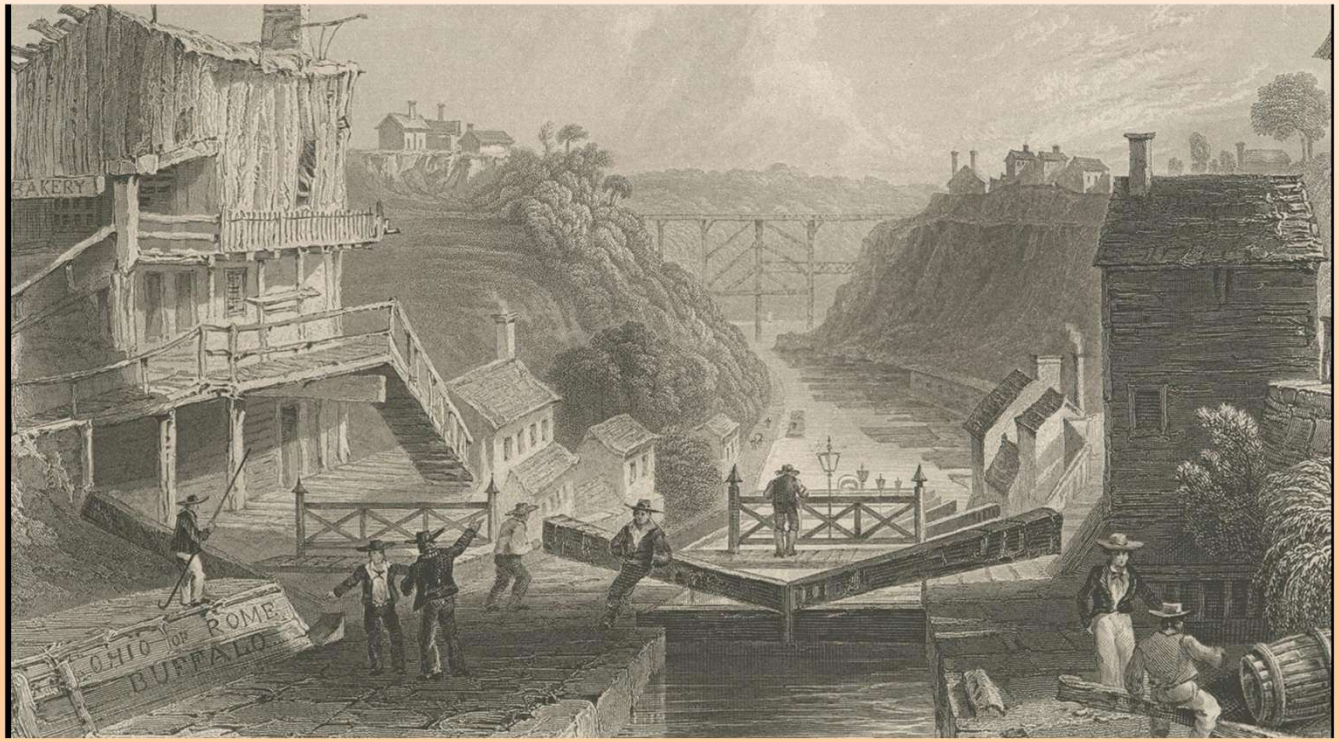
1760 AD- England…"Bridgewater Canal"…connecting the coal mines to Manchester.



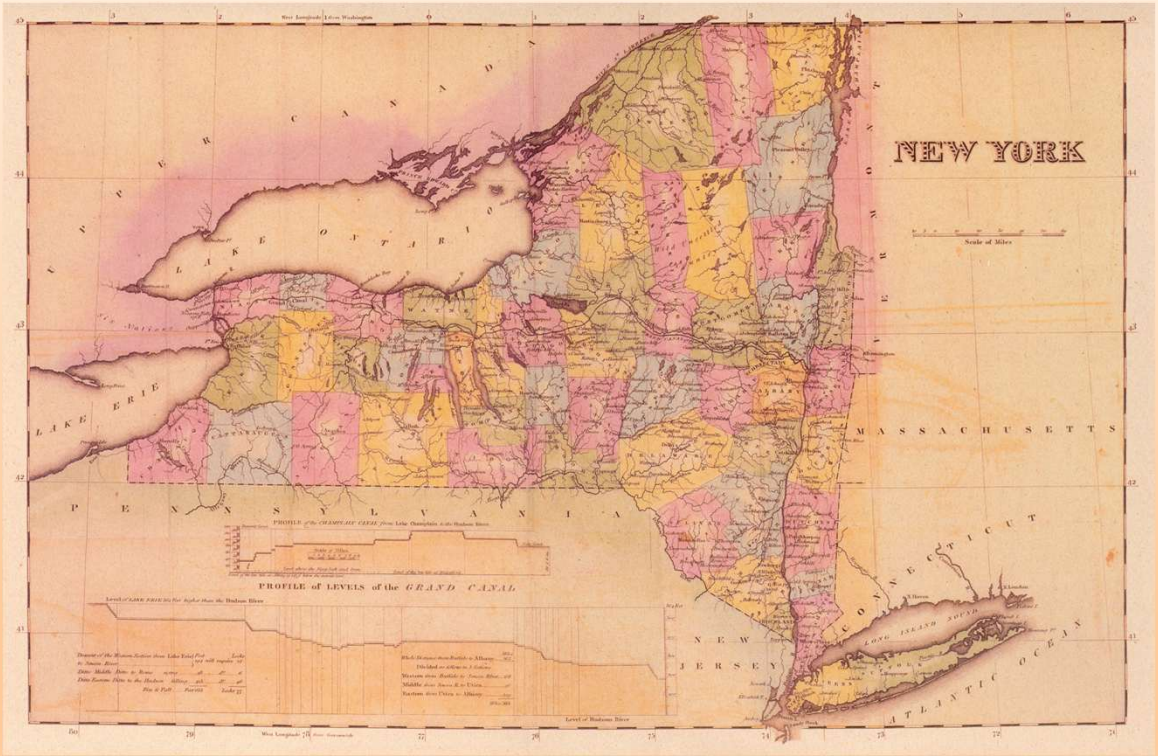


But nothing of this complexity and daring had ever been attempted in America.

How Canals work—



Finding the Appalachian ‘soft spot’—



The Mohawk River
flowing into the
Hudson
just north of Albany.

Thanks to a narrow
pre-glacial gorge…
It provides the only water
passage through
the Appalachians.

The Problem with the Mohawk River--



The Cohoes Great Falls

Waterfalls--

With a drop of over 500-feet from the River's source…149-miles west.

Huge problems beyond--

Over 200-miles of primeval forests, rugged terrain, deep valleys, swamps.

But there was no other option!

Some Erie Canal proponents…and their arguments—

De Witt Clinton– *Future Governor of New York*

"The canal will convey more riches on its waters than any other canal in the world. It will transform New York City into the greatest depot and warehouse of the western world."

Christopher Coles– *Mathematician Advisor to NY State Legislators*

"Envision the enormous potential for future wealth. The Great Lakes have five-times the coastline of all of England."

Adam Smith– *Economis*t

"By canal you can transport 300-tons or more in a single vessel, with 6 men and a few horses. It would take 100 wagons with 200 men and 400 to 600 horses to transport the same load. And take several times longer."

Plus– Gouverneur Morris…Robert Fulton…Marquis de Lafayette…Nathaniel Hawthorne

But what possibly could go wrong?

Everything!

Massive obstacles…Zero experience…Zero money.

Massive opposition on all sides!

Politicians…Bankers…Merchants…Farmers…Neighboring States.

Political enemies…Martin Van Buren…and Aaron Burr…among others.

A few of the opponents—

"It would be easier to build a canal to the Moon"

Elkanah Watson…Presidential Advisor

"It would require the revenue of all the kingdoms of the earth, and the population of China to accomplish it. Only a madman would proceed with such a wildly unrealistic project."

Peter Livingston…NY State Senator

"The State will sink under the debt whose magnitude is beyond what has ever been accomplished by any nation."

Peter Sharpe…NY State Assemblyman

"A little short of madness."

Thomas Jefferson, President of the United States

And being sung most everywhere—

"Clinton, that son-of-a-bitch…

Wants our taxes and dollars to build him a ditch."

Going it alone—

A 100% NY State Project.

Managed by a ‘blue ribbon’ “Erie Canal Commission”



De Witt Clinton

Pivotal early decisions—

- Go all the way to Lake Erie.
- 100% hand-dug canal…vs…linking rivers and lakes.
- Route to take…and where to start.
- Building specs for the canal, locks, and barges.
- Who to have build it…and how best to build it.
- Financial Plan…financing, tolls, possible taxes.
- Operational Plan…including rules and regs for Canal usage.

The Final Plan—

The Canal will be…

- 363-miles long…and climb 541-feet from the Hudson to Lake Erie.
- Require 83 locks and 11 aqueducts…plus hundreds of bridges.
- Canal will be 40’ wide at the top and taper to 28’ at the bottom.
- Depth will be a uniform 4-feet.
- Adjacent 20-foot-wide towpath for horses and mules.

The Final Plan—

The Locks will be…

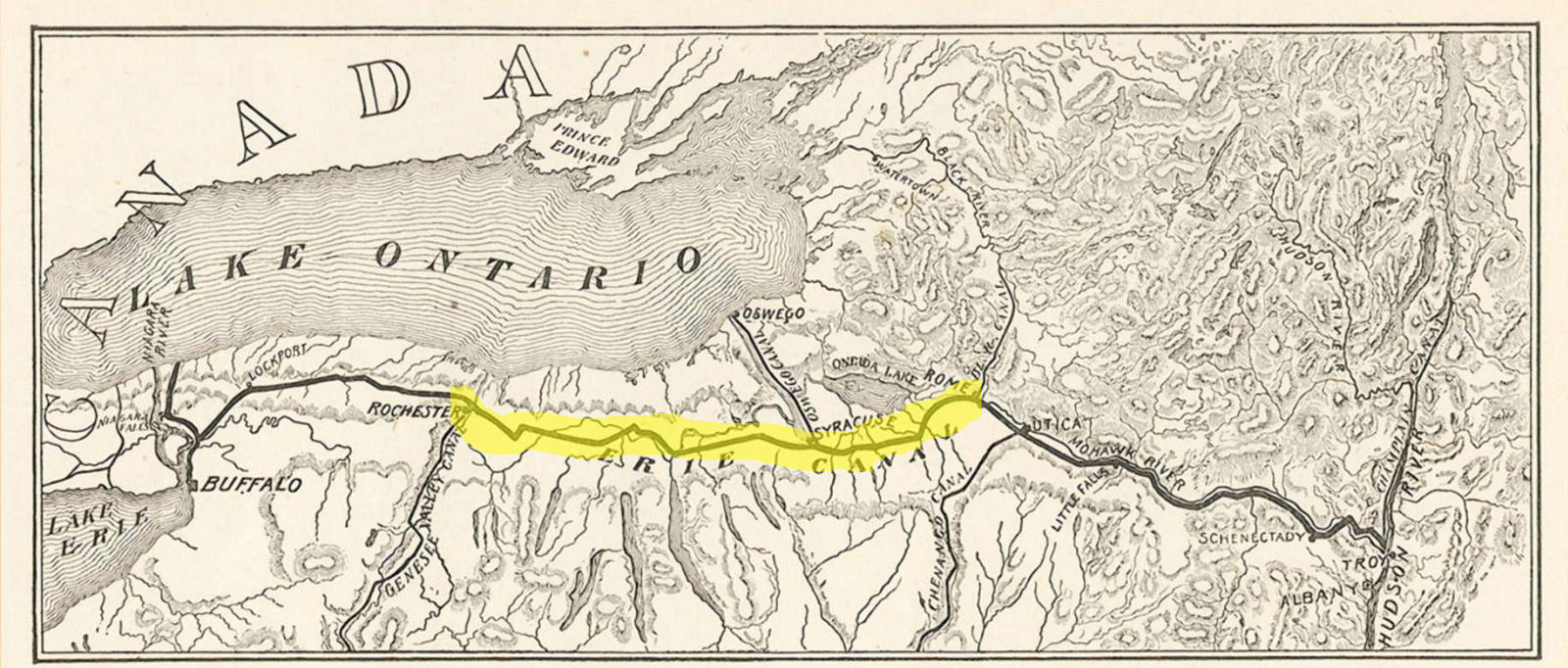
- 90-feet-long and 15-feet-wide.
- Built to raise or lower canal boats a standard 8-feet-4-inches.

The Canal Boats and Barges will be…

- A maximum of 80-feet-long and 14-feet wide…with a loaded draft of 2.5- to 3.5-feet.
- Be horse or mule towed…with their own animals and stables aboard.
- Passenger Boats do not require stables…local animals can be hired.

Three Brilliant Decisions—

1. Start in the Middle…



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Three Brilliant Decisions—

2. Contract with locals to do the building…



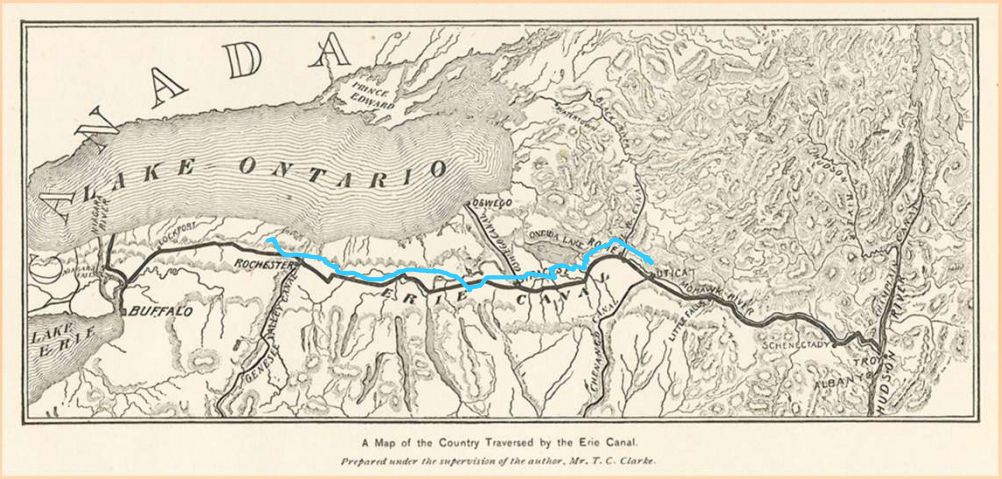
Three Brilliant Decisions—

3. Structure the Financing…

- Local Taxes and Tolls to generate income from the start.
- Bonds offered in timed phases…as the Canal expanded.
- As risk perceptions diminished…
  Bonds would be in greater demand…trade at increasing values…exciting both U.S. and European investors.

Completing the Middle Section—

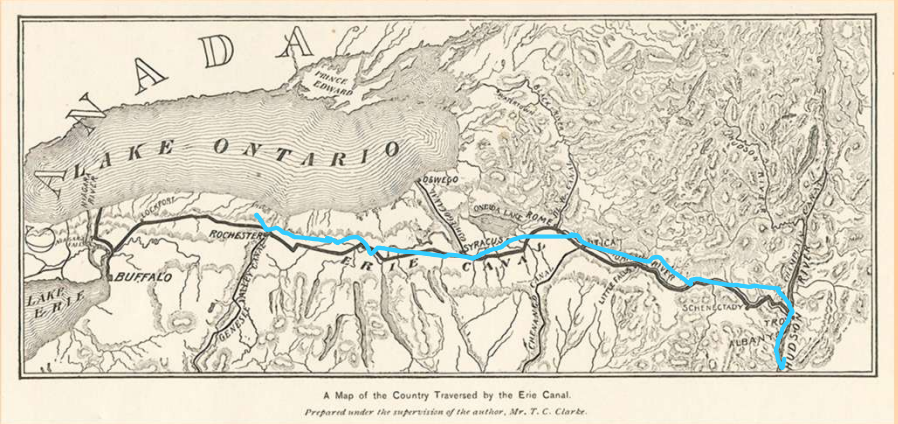
- Broke ground on July 4th, 1817, in Rome, NY…with great fanfare.
- 72-miles long…ranging 400-450-feet above sea-level.
- Completed in just <u>two years</u>…connecting Utica to Rochester.
- Almost from the start…local commerce grew along the entire route.



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Next came the Eastern Section—

- Started Spring 1819 in Utica…with even greater fanfare.
- Expanding the Erie Canal to the mighty Hudson River.
- 126-miles of difficult construction…with steep 200-foot drop near end.
- Completed in just <u>three years</u>…providing a continuous water-route from Rochester to New York Harbor and the World beyond!



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Last came the Western Section—

- By far, the most challenging section…
  165-miles long…with a 100-foot climb up the Niagara Escarpment.
- Started in January 1823…completed June 1825…just <u>two years</u> later.
- The Canal now joined Lake Erie at Buffalo.



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The incredible feat at Lockport—



The mighty Niagara Falls escarpment…
rising 180-feet above the land below.

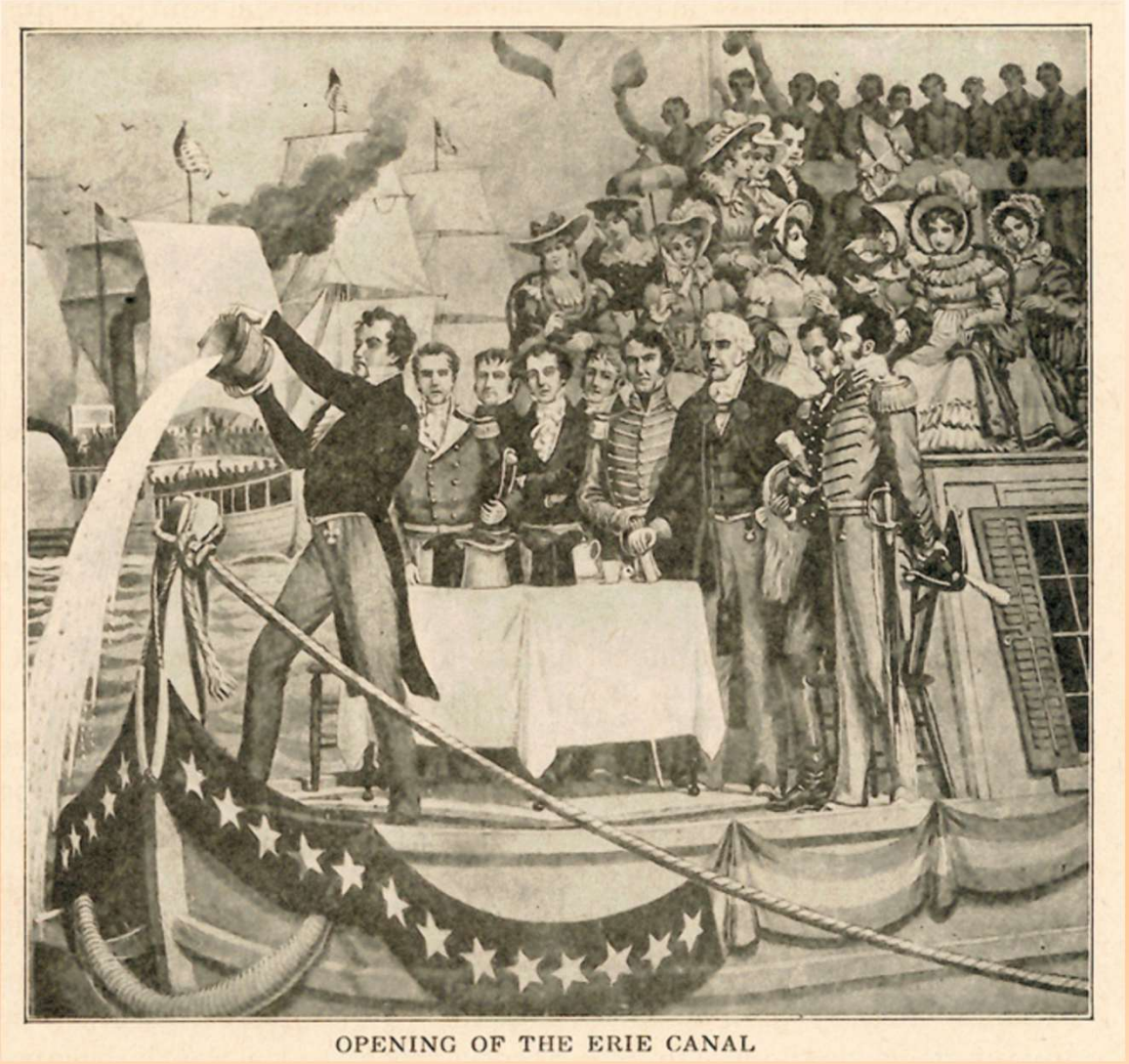


The “flight of locks”
At Lockport

The Wedding of the Waters

Officially completed
October 26, 1825

Just 8-years to fulfill
The Impossible Dream

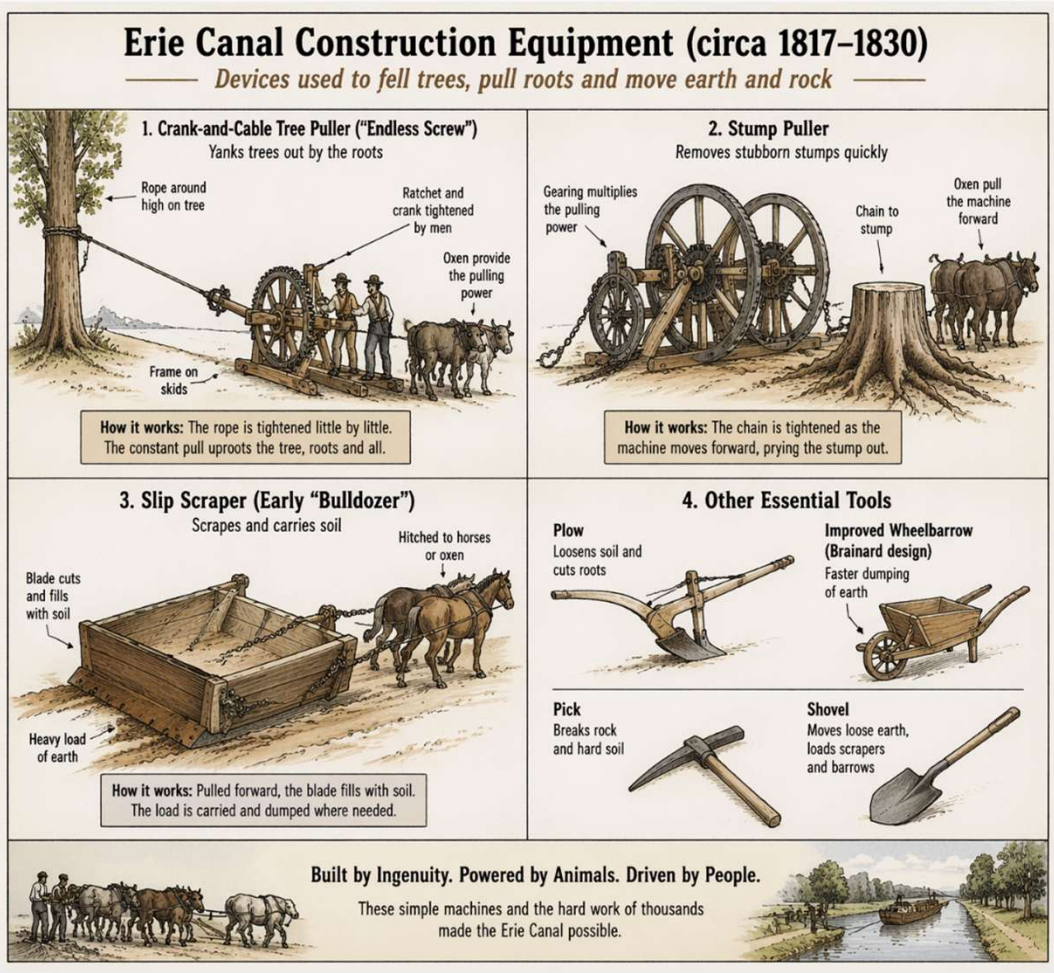


OPENING OF THE ERIE CANAL

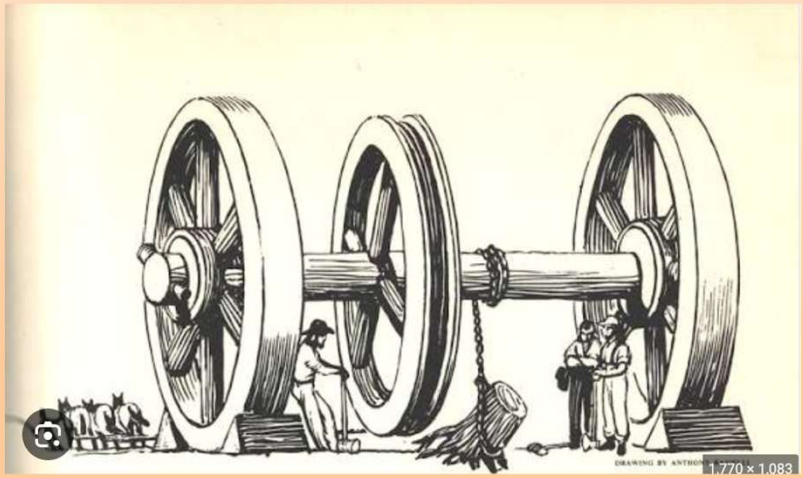
They all said it was impossible…
"A little short of madness".

So, what was the secret to their success?

- Hiring local self-taught surveyors…who knew the smartest routes.
- Selecting highly-motivated local workers who knew the land.
- Tapping into Yankee Ingenuity to create new devices to speed progress.
- Paying well and fostering a sense of personal accomplishment.
- Promoting foremen from within…to train and supervise new crews.

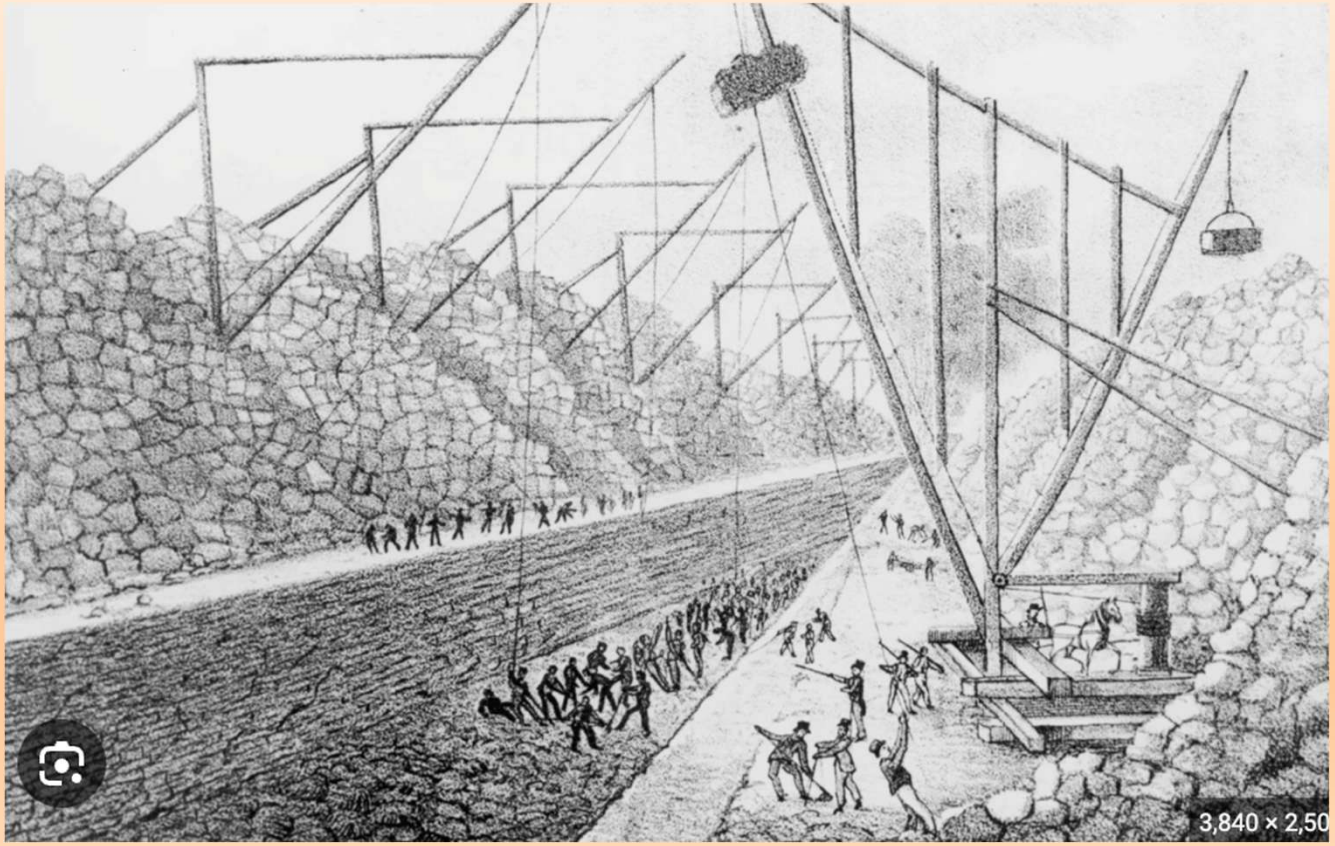


Some examples of the equipment they designed and built.



There was no end to their ingenuity...

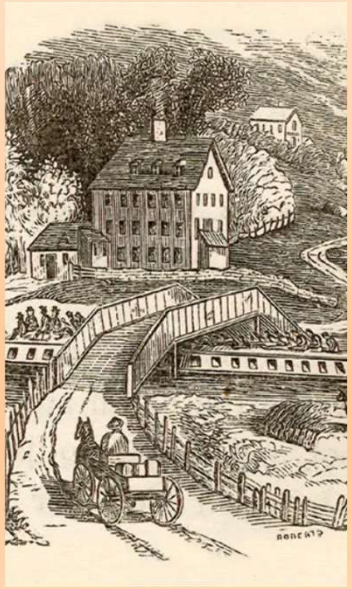
They even created a new Hydraulic Cement to prevent water leakage in the locks and aqueducts.



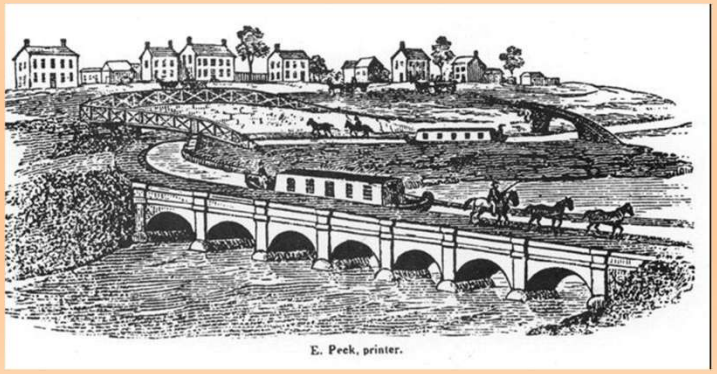
It took more than just diggers—



Hundreds of Masons and Carpenters to build 83 Locks…11 Aqueducts…Hundreds of Bridges.



Plus… Toll & Weight Stations…
Business Offices…
Worker Housing…Stables…
and Maintenance Sheds




The Erie Canal exceeded
all Expectations

Acclaimed…"The Miracle of the Age"

In the First Year of Operation—

- 7,000 boats moving between Towns…in both directions.
- Toll revenues $500,000…5-times the interest due.
- Dozens of "feeder" canals being built by local communities.
- Attracted sight seekers from across the U.S. and Europe.

End of First Decade—

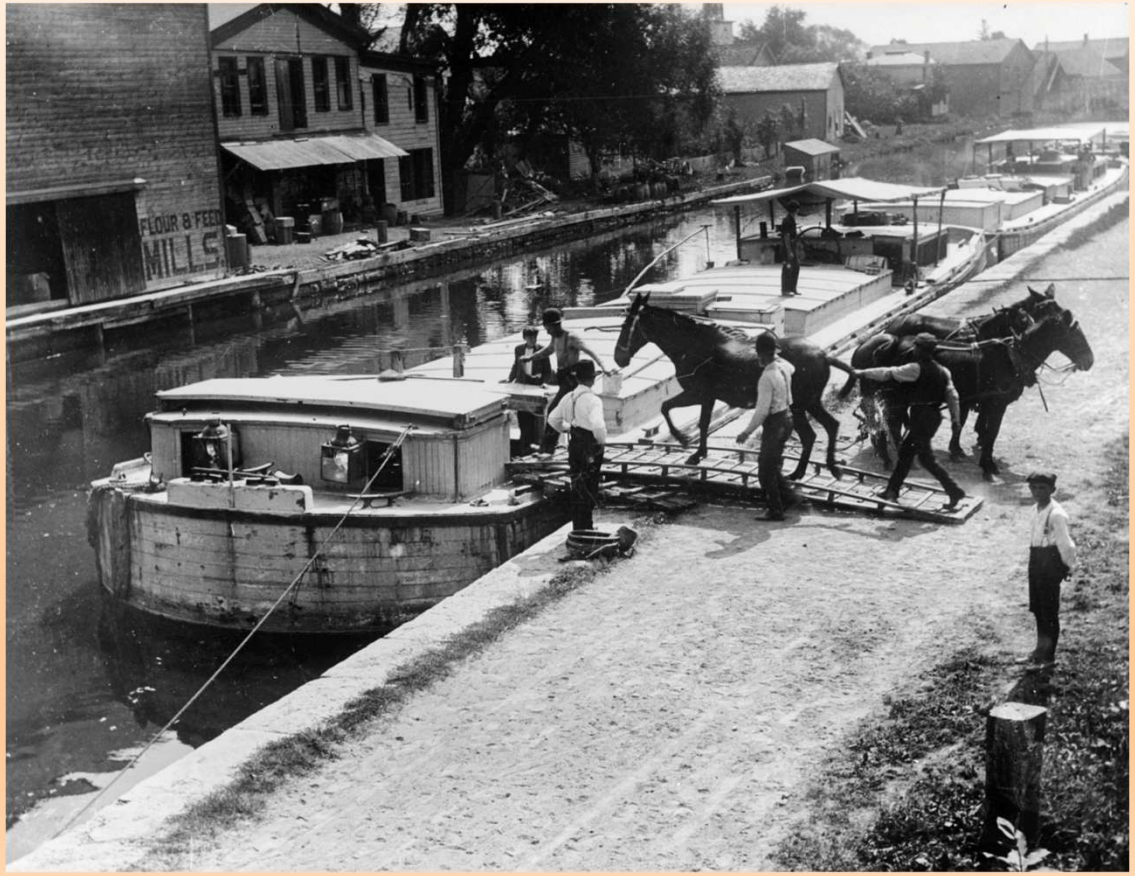
- Entire $7,000,000 debt fully paid off.
- Twice as much cargo heading West…mainly manufactured goods.

What was it like traveling on the Erie Canal?



THE PACKET BOAT.

There were three types of Canalboats…



Freight Boats

Tolls Based on weight of specific commodity carried… and distance being transported.

There were three types of Canalboats…



Packet Boats

Tolls Based on miles traveled…
Regardless of weight and number of passengers.

There were three types of Canalboats…

Line Boats

Tolls Based on miles traveled…
Regardless of weight and number of passengers.

In Addition—
Circus Boats
Mission Boats
Temperance Boats
And more!



The Erie Canal defied all its critics…

- ✓ Built in just 8 years…on budget.
- ✓ A true engineering and construction marvel.
- ✓ That reduced travel times and costs a full 90-percent.
- ✓ Opened a water pathway from the Atlantic to the Country's interior.
- ✓ Proved to be a massive financial success.

How big a financial success?

The financial success exceeded all expectations—

- With loans all paid off…and intense usage…Tolls generated huge profits.
- Became the best financial investment in America…low risk, high return.
- Provided the trading model for Wall Street…railroads, public works, etc.

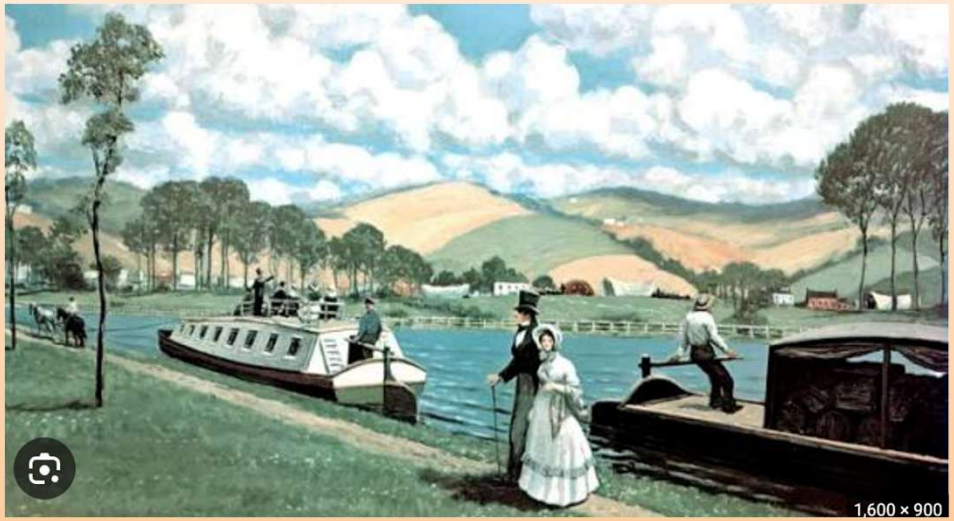
Next Step— An enlarged Canal…
1836- 70-feet-wide and 7-foot-deep…for barges with 24-times the cargo.

Then Replacement…
1903- The "Barge Canal"…for motorized barges carrying 6-times the freight.

1918- New Canal fully opens…vital to industry and the War efforts.

1959- Still in operation until St. Lawerence Seaway became too competitive.

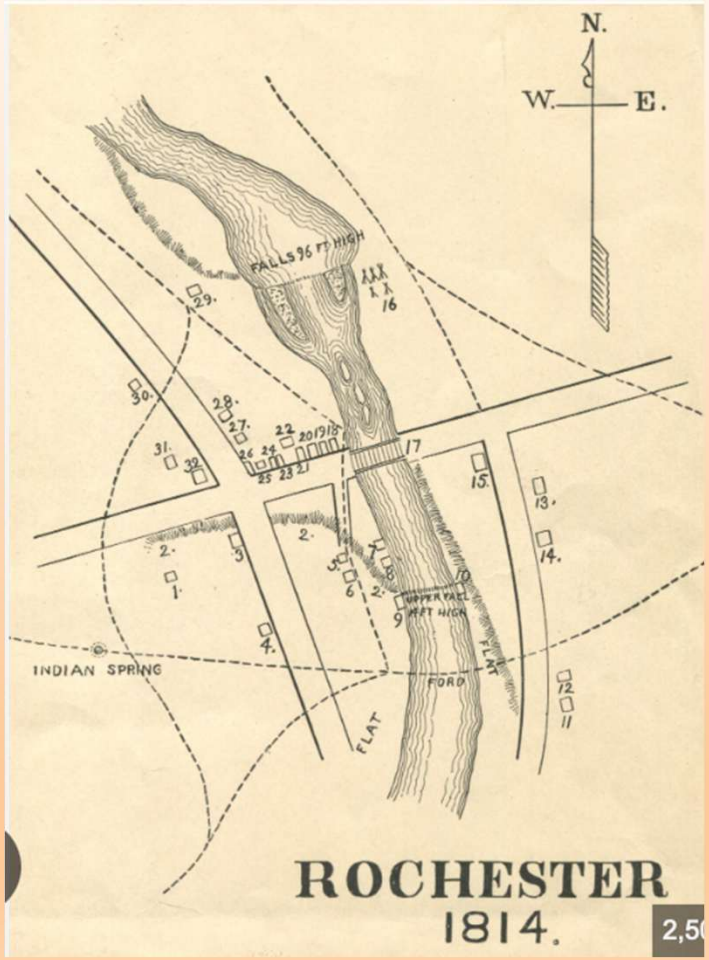
The Erie Canal transformed America...
by unleashing new economic and social forces--



Let's take a close look at Rochester, NY to see how...

❖ Rochester provides us with a microcosm for what economists today call…

Capitalism…Free Trade…and Globalization.



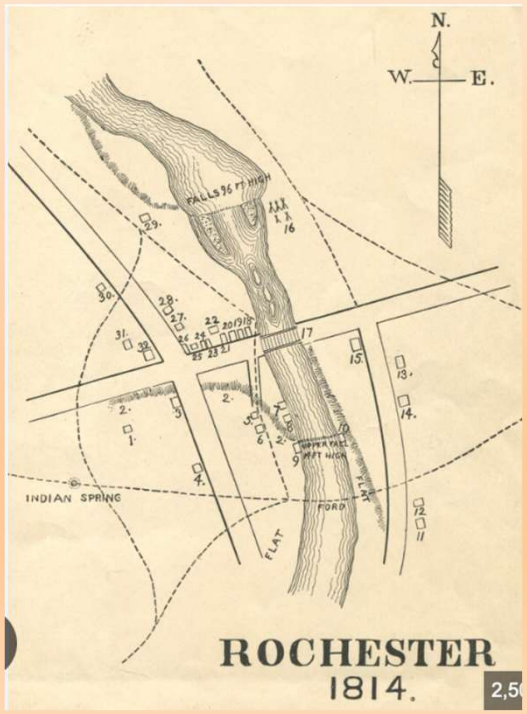
In 1809… A visiting writer called Rochester…

"A godforsaken place inhabited by muskrats, visited only by straggling trappers, through which neither man or beast could travel without fear of starvation or ague."

In 1817… at the Canal's groundbreaking…

Rochester was a tiny hamlet of just 331 people…mostly farmers…few who ever traveled more than10 miles from home.

Rochester, NY Before and After the Canal…

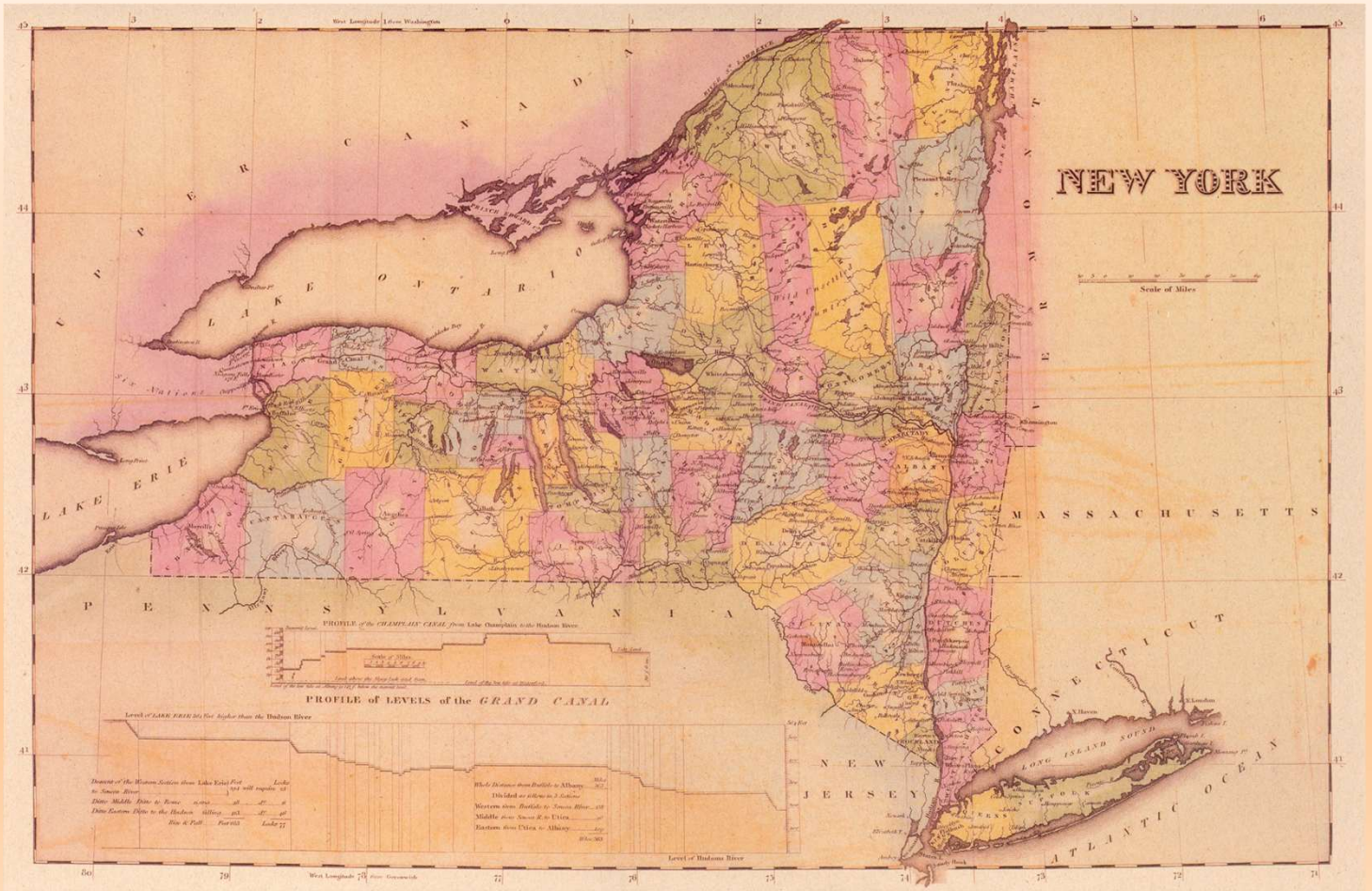




Rochester was not alone—

Big changes were occurring all along the Canal Route and down the Hudson Valley.

The Erie Canal had enabled a true "Market Economy."



‘Market Access’ kick-started the American Industrial Revolution—

- U.S. Patents jumped from 200 per year…to 700 per year.
- New Companies were forming all along the Canal’s route…

  In Rochester– Western Union, Kodak, Bauch & Lomb, Gannet Publishing, and more.

  In Schenectady- General Electric, Edison Machine Works, and more.

  In Amsterdam- Mohawk and Bigelow Carpets, and more.

  Elsewhere- Beech-Nut, Oneida Silverware, Wells Fargo, Remington Firearms, Remington Typewriters, American Express, and more.

‘Market Access’ built two great cities—

New York City became…

- ❖ America’s leading Port…displacing Boston and Philadelphia.
- ❖ The Financial Center of the United States.
- ❖ And New York became “the Empire State”.

Buffalo became…

- ❖ A booming metropolis…as the connection-point to Lake Erie.
- ❖ Up from the few charred buildings left after the British burned them during the War of 1812.

‘Market Access’ transformed our fledgling young country into a Unified Nation…



“Unity is impossible without Commerce!”

George Washington

The Erie Canal was the driving force in increasing American Commerce…
Thereby…transforming the United States from a collection of regional economies into a truly National Economy…primed for an age of growth and prosperity.

And a ‘Common Culture’ began to emerge…
as the Canal linked Eastern Cities with Western territories—

- ❖ People traveled more widely…and more frequently.
- ❖ Newspapers, books, mail, and touring public speakers spread new ideas.
- ❖ More and better schools and libraries opened almost everywhere.









And one more thing—

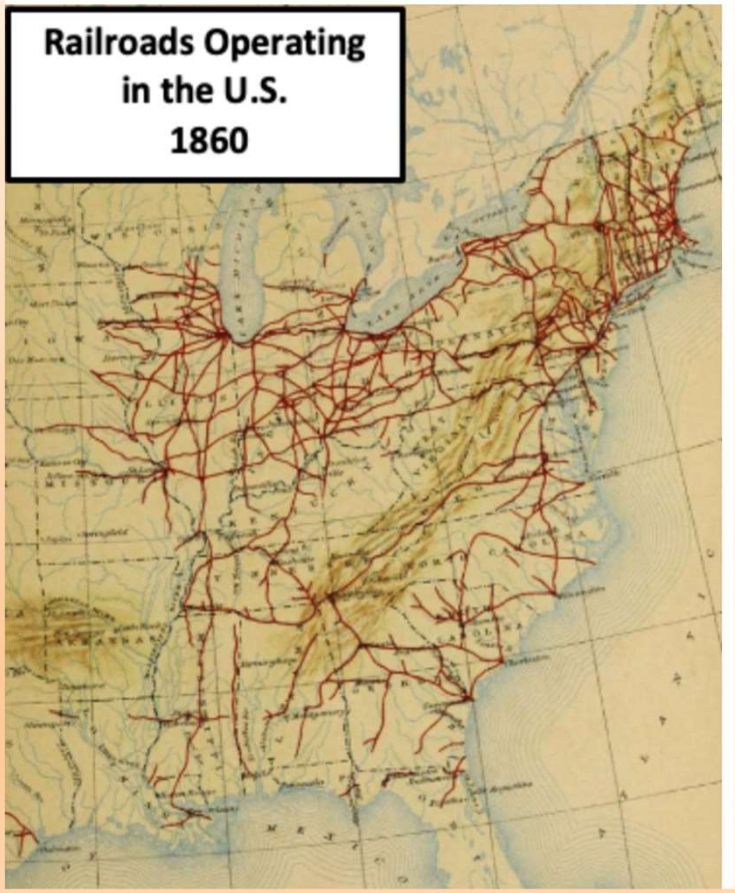
❖ **The success of the Canal fundamentally changed how Americans thought about transportation, investment and economic development…**

As a direct result of the Erie Canal— 3,000-miles of canals were built nationwide:

- Connecting Lake Erie to the Ohio River…*The Ohio and Erie Canal.*
- Connecting the Great Lakes to the Mississippi…*The Illinois and Michigan Canal.*
- To connect Cincinnati to Toledo…*The Miami and Erie Canal*.
- To connect Philadelphia to Pittsburgh…*The Pennsylvania Main Line*.
- To connect the Potomac with Western markets…*The Chesapeake and Ohio Canal.*
- To connect the Pennsylvania coal fields to the Hudson…*The D&H Canal*.

And what about the Railroads?

- **Many were started by Canal Companies… including the *Pennsylvania Railroad* and the *Baltimore & Ohio Railroad*.**
- All copied the development strategies and financial methods pioneered by the Erie Canal.
- They provided faster and wider coverage, year-round operation, and more direct routes.
- But it took them 25 years to become the dominant form of long-distant transportation in the U.S.
- The "Transcontinental Railroad" wasn't completed until 1869…44 years after the Erie Canal's opening.




The Erie Canal
The single most important
public work
ever built in the United States



A victim of…
“De Witt Derangement Syndrome”

Whatever became of De Witt Clinton?

- Start to finish…his political enemies tried to take him down.
- Even got the NY Legislature to oust him from the Canal Commission.
- In 1824, he was re-elected NY Governor.
- Presidential ambitions thwarted.
- Died of a heart attack…age 58 in 1828.