

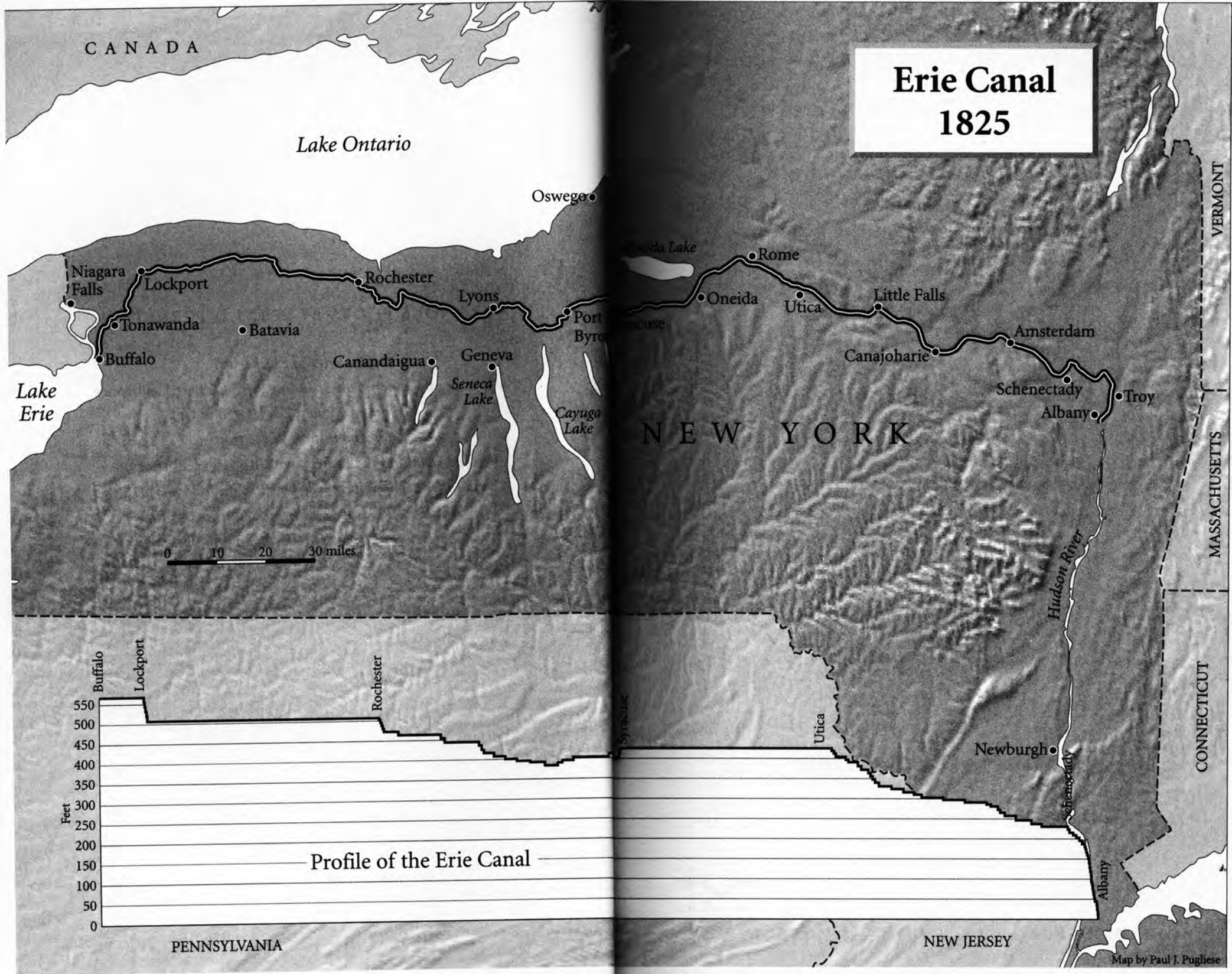
WEDDING
of the WATERS

The Erie Canal and the
Making of a Great Nation

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hilly town with streets lacking pavements and ungraded, and no street lamps. The houses were equipped with long spouts that on rainy days poured water on the heads of unwary passersby. He was later to be known by some of the locals as "that infernal paving Yankee."¹⁸ But he knew what he was about, for he was going to play a major role in converting this primitive village into a thriving and cosmopolitan center of commerce and trade.

CHAPTER 5

"A CANAL TO THE MOON"

Elkanah Watson had seen enough to convince himself that a canal across New York State was feasible and would work economic miracles. But his irrepressible enthusiasm and impeccable contacts with the high and mighty were not enough to get the job done. The time had come to orchestrate political support, and that in turn meant preparing documentary evidence and credible witnesses to support his case.

In September 1791 he gathered a small contingent of influential friends and a staff of servants to accompany him from Albany on a six-week trip up the Mohawk and beyond, traveling wherever possible by water, on rivers and across lakes. The most important of his companions was Jeremiah Van Rensselaer, one of the largest landowners in the state and a resolute supporter of Watson's plans. The terminus of the tour was at Geneva, which is situated on Seneca Lake, about ninety miles beyond Watson's stopping point three years earlier at the headwaters of the Mohawk. At that point, having started from Albany, the group had covered about half of what would one day be the route of the Erie Canal.

Although some of the towns the travelers passed through had inns and occasionally churches and law courts, the countryside was more

populated with fur-bearing creatures, fish, and eagles than with human beings.* The first national census of 1790 reported the total population of the state as only 340,000 people, including New York City, which worked out to a density of only 6¼ individuals per square mile; even this, however, was more than double the estimates for 1771 under the colonial regime.¹ Nevertheless, more than a quarter of a century after Watson's escorted tour, no town in western New York had a population greater than 6000 and most were less than 3000. Just a tenth of the eight million acres of land along the future route of the canal was under cultivation.² We can only wonder how this sequence of sightseers, from Colden to Watson's group, could pass through such a wilderness and still visualize how an extended waterway could create the tremendous economic development that lay ahead.

Watson set to work drafting a report of the trip as soon as he returned to Albany, explaining in detail everything they had seen and done. There was an extended catalog of the landscape, the attractive climate, the economic activity of the areas they visited, and estimates of the work needed to improve the navigability of the waterways they had traveled over.³ The group had been especially impressed by the abundant output of the farmlands and by the large salt deposits lying just to the north of the Finger Lake region. They expected both to make good use of improved waterway routes to the New York City area and to generate substantial tolls toward making the improvements on these waterways pay for themselves.

Watson summed up his case by asserting that the more he and his companions observed on their way west, the more convinced they became of the necessity to "assist nature" so that loaded boats could travel from the Hudson to the borders of New York State without inter-

*Watson's group spent their first night just west of Schenectady at an inn known as the Mabee House. This tiny structure and neighboring enormous barn were built in the seventeenth century and remained in the same family until the 1970s, when the property was donated to New York State as a most unusual and interesting tourist attraction.

ruption. Then he proceeded to turn up the volume: "The first impression will not fail to be heightened into a degree of enthusiasm, bordering on infatuation."⁴

Watson was not a man to mince words. Nevertheless, there is some question as to how far his imagination reached. A careful reading of what he had to say suggests that his vision of a canal stretched only from Albany to Utica, about a third of the total distance out to Lake Erie. In later years, when the canal was already under construction and Watson was busy defending his view of himself as the first to propose a canal across New York State, he made a revealing confession in the course of recalling his trip west in 1791: "The utmost stretch of our views, was to follow the track of Nature's canal [the rivers and lakes] and to remove natural or artificial obstructions; but we never entertained the most distant conception of a canal from Lake Erie to the Hudson. We should not have considered it much more extravagant to have suggested the possibility of a canal to the moon."⁵ This sentence floats alone in all of his vast writings, with no hint of it before he revealed it and no mention of it in any subsequent work.

* * *

As soon as he had finished drafting his report, Watson arranged to meet with his Albany friend and neighbor State Senator Philip Schuyler at their favorite local tavern. By then, Schuyler was already a convert to the wonders of canals, having visited England in 1761 in the midst of the roaring canal boom unleashed by the success of the Bridgewater Canal. Now he was eager to help Watson in getting some action on the canal front in New York. As Schuyler was a war hero, a wealthy property owner, Alexander Hamilton's father-in-law, and a member of an old Dutch family, he was the ideal member of the rich and famous to join Watson's team.

Three days after receiving Watson's report, Schuyler told Watson to prepare a second copy for a Mr. Lush, a member of the legislature, assur-⁴

ing Watson, with much enthusiasm, that he would do everything possible to get a canal law passed during that winter's legislative session.⁶ Watson was prepared to go further, however. He submitted lengthy articles on the subject to the *Journal and Patriotic Register* in New York, the *Albany Gazette*, and, anonymously, the *Albany Northern Centinel*.

To top it all off, Schuyler arranged for Watson to send a long document to the legislature in December 1791, which Watson signed as "A CITIZEN." Here Watson proclaimed that the configuration of the land and waters from the mouth of the Hudson north to the branches of the Mohawk and from thence to the "utmost limits of this state . . . are disposed by the *Great Architect of the Universe*, just as we would wish them." Indeed, by merely opening a short canal between the headwaters of the Mohawk and the neighboring Wood Creek—over the Great Carrying Place or Wood Creek Carry—New York State could open a water communication from the Atlantic that would be the most extensive in the world. "Suffice it to say," he concluded, "the [result] would be more precious than if we had encompassed the [Bolivian gold] mines of Potosí."⁷

Watson's eloquence was mighty, but the Great Architect of the Universe had been nowhere near as cooperative as Watson would have wanted his audience to believe. In 1804, Timothy Dwight, president of Yale College and an intrepid traveler through the northeastern United States, declared that navigation on the Mohawk was "so imperfect merchants often choose to transport their commodities along its banks in wagons."⁸ And a report of 1818 from De Witt Clinton and the authorities in charge of building the Erie Canal would describe the Mohawk as a "serpentine route" where the entire waterway "became a portage" in the dry season.⁹ They would build an artificial waterway over the entire distance from Albany to Buffalo.

Yet, from the vantage point of 1791, improving the navigation of the Mohawk appeared as a compelling project because the payoff could be so enormous. Merchandise as well as humans traveling west from Albany had to begin by wagon instead of boat because no boat could

mount the steep slopes to Schenectady, twenty-four miles away; this segment would require twenty-seven locks when the Erie Canal was built. The passage from Schenectady to Little Falls, sixty-two miles up the river, was manageable for small boats of limited capacity, although more than fifty shallow rapids, or "rifts," would provide formidable obstacles. At Little Falls, another portage of over a mile was necessary as crews and passengers had to carry all the gear and all the cargo around the falls and over the hilly countryside. Beyond Little Falls, the forty miles westward to Rome involved another twenty-two sets of rapids. And after that, the westernmost reaches of the Mohawk turned into little more than a mushy creek.

Watson's ringing phrases, accurate or not, seduced a willing audience. A navigable river all the way from Schenectady, or even Albany, to Rome would change the whole course of the nation. The legislature promptly passed the Mohawk Improvement Bill, which had been drafted and sponsored jointly by Senator Schuyler and Governor George Clinton, accompanied by the governor's recommendation that the company established by the act be provided with "every fostering aid and patronage."¹⁰ A sequence of bills established the Western Inland Lock Navigation Company to develop the route up the Mohawk and beyond to Lake Ontario and, if possible, as far west as the Finger Lakes.¹¹ Another piece of legislation established a Northern Inland Lock Navigation Company to create a navigable waterway due north from the Hudson to Lake Champlain on the border of northern New York State and Vermont.* Senator Schuyler was named president of both companies; the Western Company board of directors included Elkanah Watson and Thomas Eddy, a wealthy Quaker merchant and insurance agent deeply involved in social movements such as prison reform and public welfare.

*One of the surveyors for the Northern Inland Lock Navigation Company was Marc Isambard Brunel, later to become world famous for designing a tunnel under the Thames in London.

* * *

Neither the Western Company nor the Northern Company considered its goal to be canal building. The word "navigation" in these contexts had long meant improving the navigability of the rivers and nothing more than that. Locks to circumvent major obstacles like waterfalls and rapids might be included, but only as devices to bypass rapids, falls, and long stretches of shallow water, with the river itself always as the primary route. This was essentially the structure of Washington's Patowmack Canal Company, even though it contained the mighty word "canal" in its title. Nothing in the Mohawk Improvement Bill and its successors included any possibility of a point-to-point waterway fed by the river waters but otherwise completely separate and apart from them.

Each of the companies was authorized to take subscriptions for a total of one thousand shares at \$25 a share, in addition to receiving a grant of \$12,500 from the State.* The provisions for the shareholders provided for payments spread over time, as is customary in today's venture capital investing: "The directors of the incorporation shall, from time to time, as occasion may require, call on the subscribers for additional moneys to prosecute the work to effect," but then they added, "whence the whole sum for each share is left indefinite."¹² Not many venture capitalists today would accept that open-ended provision. On the bright side, the legislation provided for an annual dividend of 6 percent of the capital together with authority for the company to raise tolls until the profits were sufficient to cover that dividend. After attempting to guarantee some minimum amount of profitability, the provisions also set the dividend's upper level at 15 percent.

Many of the subscribers were merchants, businessmen, and bankers from New York City. But fifteen out of the original thirty-six had lands along the Western Company's route and stood to benefit from the proj-

*The New York State Museum Web site on the Internet has designs of these shares, providing rare glimpses of the boats in use as well as the construction of the locks at the time.

ect. Their participation was significant. Unlike the great landowners in Britain, who looked down their noses at "industry" while clinging to their pastoral enterprises, American landed aristocrats had a taste for the adventure of commercial enterprises.¹³

Despite the bright expectations, these investors were in no hurry to deliver the hard cash to which they had committed themselves. In an effort to galvanize more support, Schuyler announced in May 1792 that he would increase his own subscription from ten shares to one hundred. Schuyler also enlisted the participation of the famed financier and land speculator Robert Morris (no relation to Gouverneur) whose personal credit had financed a significant portion of the American Revolution. Morris had also served with distinction as a delegate to the Constitutional Convention in 1787 and had been a member of the first U.S. Senate.

There was never enough money, even with this high-powered backing. In the end, 743 out of the authorized 1000 shares were sold, but 240 of those were forfeited because their owners refused to meet the calls for additional capital. By 1801, the stockholders had been called nine times to increase their investments. The State had to donate an additional \$10,000 in 1795 and then lend the company another \$37,500 the following year. Total outlays for construction amounted to \$400,000, but the investment was never a rewarding one. The company paid only two dividends in its lifetime, one of 3 percent in 1798 and another in 1813.

* * *

The novelty of the project and the lack of skilled personnel created problems from the start. Poor Schuyler had to appoint himself chief engineer, although he was suffering from gout and was still active in the State Senate.¹⁴ De Witt Clinton, one of Schuyler's political opponents and then secretary to Governor George Clinton, his uncle, took a dim view of Schuyler's decision and castigated Schuyler in a newspaper article as a "mechanic empiric . . . [who is] wasting the property of the stock-

holders."^{15*} Schuyler's feelings may have been hurt by the intended insult—and he was doubtless fully aware of Clinton's political ambitions—but he could hardly have disagreed. As he complained in 1793 to William Weston, a British engineer he hoped to employ, taking on this responsibility was a counsel of despair, for he was "without the least practical experience in the business."¹⁶ Then Schuyler and Watson began to quarrel over Schuyler's salary and Schuyler's "tyrannical manner," bringing to an end both a beautiful friendship and Watson's active participation in the company's affairs.¹⁷ Watson soon moved himself from New York to rural Massachusetts, where he would launch the first livestock and agricultural fairs, which developed into major annual events throughout New England.[†]

Meanwhile, the clearing of the Mohawk and the building of locks moved ahead despite the obstacles, the interruptions, and the inexperience of the designers, contractors, and work crews. More than four hundred men, recruited from Pennsylvania, Vermont, Connecticut, and Canada, worked on the project at a time, but the labor supply on the Mohawk was as stubborn an obstacle as it had been for Washington on the Potomac. Although the New Yorkers did not follow Washington in reverting to slavery to overcome that difficulty, they did employ Irishmen who emulated their fellow countrymen on the Potomac by engaging in riots against the local population.

The effort of building locks between Albany and Schenectady, which

*At a later date, Clinton was more generous to Schuyler. Still insisting Schuyler was "not a practical engineer," Clinton, writing pseudonymously, went on to say, "Without his talents and services, [the Western Company] would never have been commenced and prosecuted." See Tacitus, *The Canal Policy of the State of New York*, p. 18. †Watson was convinced that by encouraging competition among farmers, he could make a significant contribution toward improving both the quality and the quantity of New England's agricultural production and stimulate American industry at the same time. The appearance of prizewinning animals and awards to the finest produce at Watson's fairs attracted increasing attention and had a lasting influence on agricultural practice in the northeast United States. On occasion, Watson would display broadcloth made up by "the best artists in the country" and woven from the wool of his fairs' prizewinning sheep. See Watson, *History of the Rise, Progress and Existing Condition . . .*, pp. 10 ff., for a long and interesting account of this ambitious effort to stimulate economic development.

included bypassing the massive Cohoes Falls, was beyond the limited engineering skills available. This stretch would also pose a major challenge thirty years later when the Erie Canal itself was under construction. Work therefore started in a westerly direction from Schenectady, the true gateway to the Mohawk valley. The most significant improvements to navigation on the Mohawk were at Little Falls, sixty-two miles farther west, where the river fell over forty feet in three-quarters of a mile. The company bypassed the falls with five locks over a reach of about a mile, with each lock lifting boats by nine feet. It also built two miles of canal with two locks near Rome to fulfill Watson's dream of a connection between the Mohawk headwaters and Wood Creek, cutting the travel time at this crucial link from a day to an hour and opening the way by water to Oneida Lake and thence up to Lake Ontario.

The locks were built out of wood, which soon leaked and rotted even though cut from the excellent timber growing in profusion in the virgin forests on either side of the Mohawk. Later on, around 1803, the builders used bricks and then stones. Although some of these stone locks were elegantly put together, they lacked a durable mortar to keep them from leaking. After William Weston came on the job in 1795, he developed an effective mortar that managed to bind the locks in more permanent fashion—but leaks never ceased to be a problem.

The tolls, although high enough to provoke complaints from users of the waterway, were never sufficient to finance expansion and improvement; maintenance swallowed up just about all the revenue. The company increased the tolls in the summer, when the water flow of the Mohawk was low, but the traffic flow then diminished in response. Significant amounts of output from the local farms continued to move eastward by road instead of on the waterway.¹⁸

In 1803, Schuyler left the Western Company to serve as U.S. senator from New York. As an odd coincidence, he was going to fill out the term of De Witt Clinton, who had decided he would prefer to be mayor of New York City than stay mired in the primitive living conditions and political swamp of Washington, D.C.

* * *

Despite all its shortcomings, the Western Inland Lock Navigation Company was able to accomplish a great deal. It was, after all, the first meaningful effort to improve water navigation to the west since "the neck digged through in 1730." The results are all the more remarkable because they were achieved at a time when civil engineering was a non-existent profession in the United States, and only a few individuals like Schuyler and Watson had studied as well as visited the canals of England and France. Almost everything was done on an ad hoc basis, with hardly any plans drawn out on paper. These informal methods of "American ingenuity" continued to provide solutions to the most complex problems even when the Erie Canal was under construction.

In addition to constructing the locks, the company substantially improved the navigability of the Mohawk by clearing out sandbars, stones, and sunken timber and by erecting a series of small dams to increase the water flows on the many rifts that characterized long stretches of the river, especially between Schenectady and Little Falls.

The locks may have been fragile, but they did bypass Little Falls, and the ones farther west linked the Mohawk and Wood Creek by water. Boatmen no longer had to face the backbreaking and dreary business of dragging their boats overland around the falls. And, thanks to the short canal linking the Mohawk to Wood Creek, the Wood Creek Carry became history.

These were no minor achievements. With an uninterrupted waterway available, the boatmen could replace their simple bateaux, carrying less than two tons of cargo, with flatboats called Durham boats that could transport up to twenty tons of iron or 150 barrels of flour on their downstream runs. The Durhams provided dramatic proof of the superiority of waterways over the bumpy land route for transporting heavy cargo or large numbers of people.

These extraordinary vessels, which had played a crucial role in Washington's crossing of the Delaware in December 1776, were named

after the engineer Robert Durham, who developed them in Pennsylvania in 1757. With flat bottoms, they were often as long as 65 feet and about 8 feet in the beam. Aided by 18-foot oars, the Durhams traveled swiftly downstream and steered easily through the rapids, while their 30-foot masts enabled them to glide along through calmer waters under sail at high speed. On the upstream trips, the Durhams carried a crew of six men and a captain, with two men pushing against the currents with poles and the other four rowing against the current.¹⁹

The Durhams were the Mack trucks of the era, and the significant improvements to the navigability of the Mohawk carried out by the Western Inland Lock Navigation Company made it possible for the Durhams to negotiate the entire distance from Schenectady to Lake Oneida by water, except when the river froze or flooded. The greater capacity of the Durhams, in turn, enabled the boatmen to reduce the fares they charged for people and for cargo, thereby expanding the volume of westward movement. According to a 1798 report of the Western Company directors, the cost of transportation from Albany to the environs of Geneva, a distance of almost 200 miles, fell from \$100 a ton to \$32, while the cost from Albany to Niagara Falls was sliced in half.²⁰ Other papers of the directors comment on the downstream cargoes of meat, flour, furs, lumber, pearl ash (a kind of potash), wheat, butter, lard, and salt; manufactured goods included cotton, linen, and glass. Meanwhile, European and Indian products and manufactured goods moved upstream.²¹

These reductions in cost and the mention of the growing number of products on the Western Company waterways represent profound change that would reverberate for many years to come. As a rule of thumb, the cost of transportation should equal no more than 50 percent of the price charged to the final customer. But at that time, the cost of transporting commodities by wagon over the rough roads from Buffalo to Albany often involved sums equal to five or six times the values of the goods themselves.²² By so dramatically reducing transportation costs, [▲]

the waterway constructed by the Western Company greatly widened the variety of commodities that could now come to market, and a nationwide economy began to bud from the small seeds the company had planted.²³

Not incidentally, this increase in activity ignited an outburst of speculation in land along the route and even beyond to the farther western reaches of New York State. This was a classic bubble, but it popped in only a short time. Speculative bubbles need a constant inflow of capital to keep driving prices upward, and capital was scarce in the United States of the 1790s. When the bubble burst in 1796, the reaction was so violent it caught even the renowned financier Robert Morris in a mess of confused titles, with taxes and debts unpaid. Morris ended up in debtors' prison. It was a tragic end to the career of a man who had labored to help the young American nation finance the Revolution, had served with distinction as a delegate to the Constitutional Convention in 1787, and was a member of the first U.S. Senate.²⁴

* * *

The Western Inland Lock Navigation Company's failure to do much work beyond Wood Creek was not a result of shortsightedness but of money. Watson was continually pressing for an extension beyond Wood Creek at least to the Finger Lakes, but he got nowhere. In 1796, Thomas Eddy, one of the directors and among Watson's companions on the 1791 expedition, teamed up with the English engineer William Weston to study the possibilities of a canal that would avoid Wood Creek and Oneida Lake by cutting right through to the Finger Lakes from the headwaters of the Mohawk. In response, the legislature shelved their report, leaving the few hardy pioneers in the western part of the state in the primeval wilderness, without any transportation system to move their crops to market or to bring in their necessities. Farming remained a home-based function rather than the substantial commercial enterprise it would become when the Erie Canal was finally in operation.

Yet the Western Company was in many ways a proving ground and training school for the great artificial waterway that would one day span the state all the way from the Hudson to Lake Erie. Within eleven years after its charter was issued in 1792, a group of men with only the most limited kinds of engineering experience converted the unstable and treacherous Mohawk River into a continuous deep water channel for large Durham boats as far as the Wood Creek Carry. It is fair to speculate how much acceptance the Erie Canal would have achieved without the experience of the Western Company to build upon.

At one time or another, and either directly or indirectly, many of the leading engineers and politicians involved in the creation of the Erie Canal had been associated with the Western Company. The papers of the directors repeatedly emphasized the importance of settling the western part of the state, the possible development of other routes to Lake Erie, and the benefits to both state and nation that lay ahead. The Western Inland Lock Navigation Company's accomplishments did serve the important purpose of keeping the public's attention directed toward the notion of a navigable waterway through the mountains. All its difficulties and shortcomings only made the designers of the Erie Canal even more certain that an artificial waterway would be superior to a combination of canal and navigable river waters.

The financial sorrows of the company provided the most important lesson for the future. Jefferson may have opined to Washington that "public undertakings are carelessly managed, and much money spent to little purpose," but the experience of the Western Company made it clear that ventures this large would overwhelm the limited resources of private investors in the United States. Other and radically different forms of finance, including public finance, would have to be developed.

* * *

Nevertheless, the Western Inland Lock Navigation Company occupied so much of everyone's attention in the 1790s that discussion of cut-

ting through to the west with something even more ambitious subsided into little more than occasional sputters. One of those sputters came from Gouverneur Morris. In the course of a conversation in 1803 with New York State Surveyor General Simeon De Witt (a cousin of De Witt Clinton), Morris mentioned the possibility of "tapping Lake Erie . . . and leading its waters in an artificial river, directly across the country to the Hudson River."²⁵ De Witt considered Morris's fantasy a "romantic thing, and characteristic of the man."²⁶ James Geddes, who had started out in life in the salt business but later become a local judge and an assistant in the surveyor general's office, also discussed the matter with Morris. After listening to Morris for longer than he wished, Geddes observed that "it was almost impossible to call his attention to the impracticality of such a thing."²⁷

In an odd coincidence, two years later in 1805, Geddes appears to have discussed the idea of a canal from the Great Lakes to the Hudson with a local merchant named Jesse Hawley. Hawley was then a boarder in Geddes's home in Geneva. If Gouverneur Morris and Elkanah Watson were the spiritual grandfathers of the Erie Canal, Hawley would turn out to be its first really hardheaded proponent.

Hawley's son claims that the idea of a canal between the interior and the east occurred to his father in 1805 during a discussion with one of his suppliers over the difficulties and uncertainties of shipping flour east by road. Hawley knew whereof he spoke, for the roads in New York at that time were a disaster. Most roads were the old Indian trails, widened and packed down with dirt where necessary but brutally dusty in dry weather and often swampy in wet weather. Travel through the muck of the spring thaw was next to impossible and then the ruts and potholes of the spring remained to torment summertime travelers as well. In the most marshy areas, the roads were composed of logs set across the route with earth between them in a pretense at smoothing. Although this device kept the road from sinking into the marsh, it earned the nickname of "corduroy," and for good reason. To make matters even worse,

many streams lacked bridges connecting a road from one side to the other, so that cargo had to be forded across rushing waters.²⁸ These hurdles were not about to disappear. In 1816, a traveler through western New York would describe the main road as "a causeway formed of trunks of trees . . . we could by our feelings have counted every tree we jolted over."²⁹

Hawley's supplier agreed enthusiastically with Hawley's suggestion of a canal across the state but then pointed out that a waterway like the one Hawley envisioned would be impossible without a large head of water to keep it filled. When Geddes raised the subject with Hawley over the dinner table one evening shortly after that conversation, Hawley grabbed Geddes's map, spread it out on the table, and, as he later described the moment, "ruminating over it, for—I cannot tell how long—muttering *a head of water*; at length my eye lit on the falls of Niagara which instantly presented the idea that Lake Erie was *that head of water*."³⁰ Hawley was hooked. He soon had no other topic of conversation, but when he mentioned his suggestion of connecting the Hudson to Lake Erie "*by a canal!* [I was] generally laughed at for my whim!"³¹ He was not to be deterred by ridicule.

Hawley was in many ways a most unlikely individual to have played such an historic role. His education never went beyond a country school: he was neither an engineer nor a surveyor. He was not even a high-class dreamer like Morris.

Hawley earned his living in the humdrum business of forwarding flour to New York City from mills in the interior near where Rochester would one day thrive. This trade made him a good and steady customer of the Western Company, despite his constant complaints about how the higher tolls of the summer season cut deeply into his company's profits and pushed him and his partner into debt. The debts grew so heavy that he and his partner finally fled to Pittsburgh to elude their creditors. Even flight would not cool Hawley's ardor for the notion of a canal. Once settled in Pittsburgh, he went into print about his obsession for the first

time, submitting an article to a local newspaper. But then Hawley's conscience got the better of him. He returned to New York, surrendered to the authorities in August 1807, and spent the next twenty months in debtors' prison in Canandaigua on the Finger Lake of the same name.

Incarceration was hardly a waste of time. After recovering from "despondency at the thought that hitherto I had lived to no useful purpose," he resolved to "publish to the world my favorite, fanciful project of an overland canal, for the benefit of the country, and endure the temporary odium it would incur."³² Only three months after he had entered prison, the first of Hawley's fourteen essays on the subject appeared in the *Genesee Messenger*, a paper published in Canandaigua; the series ran all the way to April 1808. Hawley used the pen name of Hercules, an appropriate choice for the tone of his work.

A sense of destiny and greatness pervades these essays. Consider the following: "The trade of almost all the lakes in North America, the most of which flowing through the canal, would centre at New-York for their common mart. This port, already of the first commercial consequence in the United States, would shortly after, be left without a competition in trade, except by that of New-Orleans. In a century its island would be covered with the buildings and population of its city."³³

Although Hawley grumbled that the public treated his work as "the effusions of a maniac," these lengthy essays are extraordinary for the way they combined the boldness of vision with his painstaking attention to an immense compendium of detail. He goes on at length about methods of construction and provision of water supplies, the most minute parts of the route such as the shifting altitude from sea level as well as distances, the powerful buildup of arguments as to why the national government should finance the venture, an estimate of the total cost at \$6 million (strikingly close to the actual figure), and helpful comparisons with British canals and the Canal du Midi, to mention just a few of the matters that he subjects to his tireless analysis.

How did Hawley manage the task he set for himself with such

superb skill, given his background and the limitations under which he prepared these essays? Although he may have had willing and enthusiastic research assistants among the guards and other employees of the Canandaigua prison, they were hardly likely to have been scholars or surveyors. The true source of much of his amazing achievement remains a mystery.

Hawley's fecund imagination is not satisfied with projecting only a canal across New York state. In Essay XIII, titled "Other Improvements Proposed," he explores the many possibilities of developing the waterways in other states, including Virginia (he approved of Washington's efforts), South Carolina, Georgia, Ohio, and Tennessee, as well as the Mississippi River itself. He follows this set of recommendations with a remarkable prediction: "A marine canal, the most noble work of the kind on this 'ball of earth,' would be a cut across the Isthmus of Darien. Were the Mexican empire under an independent government—or even under an enterprising one—this would be done in less than half a century, and those provinces opened to a liberal trade, under which their abundant resources would make them immensely wealthy."

Hawley concludes his essay with a comment on the importance of freedom for human advancement that is as relevant to today's world as it was in 1807: "Nature never has, nor will, endure the jealousy and selfish dogmas of man with impunity. From the huckster's shop to the chartered company's shipping warehouse, the principle continues the same. Wherever the avarice and vanity of man has imposed his restrictions—whether in religion, politics, or commerce—she has entered her caveat to them."

Hawley typifies the view of life and the Almighty held by Americans in the early years of the nineteenth century, some of which lingers on into our own time. He did not dodge the consequences of his acts. No one was promised a rose garden. Nevertheless, God has provided Americans with the setting, the essential tools, and, above all, the intelligence and drive to accomplish whatever the appointed task may be (a gift the

early Americans were certain had been denied to the natives of their land). Thus:

[When] we turn our reflections to the fatigue and toil of so much land transport, we are apt to exclaim—Why was not the parent of nature so thoughtful—why was he not so kind, as to give this country a river navigation from the Atlantic to the lakes, like that to Albany? Why these murmurs? The Creator has done what we can reasonably ask of him. By the Falls of Niagara he has given a head to the waters of Lake Erie sufficient to flow into the Atlantic by the channels of the Mohawk and the Hudson, as well as by that of the St. Lawrence. He has only left the finishing stroke to be applied by the hand of art, and it is complete! Who can reasonably complain? . . . If the project be but a feasible one, no situation on the globe offers such extensive and numerous advantages to inland navigation by a canal, as this! . . . It would be a burlesque on civilization and the useful arts, for the inventive and enterprising genius of European Americans, with their large bodies and streams of fresh water for inland navigation, to be contented with navigating farm brooks in bark canoes.³⁴

Jesse Hawley, bankrupt businessman and jailbird, accomplished more than anyone up to that point in provoking action to build an uninterrupted waterway across the State of New York. His eloquence, analytical abilities, and the massive amount of critically significant information in his essays attracted attention in the highest places. Later the essays would serve as a kind of guidebook for the series of commissions sent westward to arrive at definitive plans, budgets, and supply lines for the canal that many commentators would repeatedly call a “stupendous” achievement. Indeed, almost immediately after the appearance of Hawley’s essays, deeds finally began to replace words.

PART II

The Action Begins



CHAPTER 8

THE EXPEDITION

De Witt Clinton and Thomas Eddy traveled together from New York to Albany in early July 1810, where they would join the rest of the newly appointed commissioners. Although they could have taken the usual sloop up the Hudson River to Albany, there was a more tempting alternative: Robert Fulton's steamboat, *The North River Steamboat* (later known as the *Clermont*), which had been running the New York–Albany route for nearly three years. They signed up for the steamboat, looking forward to the historic breakthrough of traveling on a boat that could go upstream as well as downstream without sails, oars, or poles.

The North River Steamboat was scheduled to leave for Albany at noon on June 30, but Clinton nearly missed the boat while waiting for a new servant to whom he had paid a month's wages in advance. The man never showed up. Clinton must have started off on this adventure in a high state of aggravation. All he has to say in his exceptionally verbose journal about one of history's early steamboat rides was that the weather was warm and the boat was crowded.

The voyage must have been amazing. Fulton's creation was a paddle wheeler, 149 feet long, almost 18 feet broad, and 182 tons in weight.

These boats were no objects of beauty. An English traveler as late as 1830 described them as "the least picturesque [of vessels]. . . . Their smoking chimneys[, and] their ungraceful and worse than dromedary projections, give the idea of a floating foundry."¹ Nevertheless, belching copious quantities of flame and steam, these floating foundries swished their way along at four to five miles an hour, much faster than poling or rowing and more certain and direct than a sloop in their passage.

The interior height of *The North River Steamboat* was 6½ feet, "sufficient for a man with a hat on," as Fulton described it (and most hats were stovepipes).² The fare was \$1 for every twenty miles and \$7 for the full 150-mile trip to Albany—about what the 152-mile trip from Utica to Rochester on the Erie Canal would cost in 1825. Anticipating the Mississippi paddle wheelers, to say nothing of the great ocean liners of the future, Fulton had designed his vessel to be, in his words, "a floating palace, gay with ornamental paintings, gilding, and polished woods." There were provisions for fifty-four berths divided among three cabins, as well as cooking facilities and a bar. Dinner was served at two o'clock, followed by evening tea with meats at eight o'clock, each meal costing 50¢. An awning provided cover from rain and sunshine, so that the passengers could "dine in fine weather and the place is so spacious it will be charming. . . . All dirt [will be] out of sight."

Berths were assigned in order of arrival. Fulton set up rigid rules of decorum, with fines for breaching them, such as \$1.50 for the first hour anyone lay down with his shoes or boots on, plus 50¢ for each additional half hour "they may offend against this rule." The fines financed wine for mealtimes. Smoking was forbidden belowdecks and women were forbidden to smoke anywhere.* Card games were to end at 10:00 p.m. so as not to disturb sleepers.³

Although Clinton's journal tells us nothing of substance about his voyage up the Hudson, it would be interesting to know what went

*Women were smoking in public places in 1810!

through his mind as *The North River Steamboat* chugged along toward Albany. Did he think about the glorious scenery he passed by, such as the steep palisades on the New Jersey side just north of New York City? Did he recall the British and Hessian troops who had scaled those heights in pursuit of Washington's army in late 1776—and failed in their mission? Or, about seventy-five miles farther on, did he take note of Newburgh on the western bank of the river, just eight miles from Little Britain, where he was born forty-one years earlier and where the purplish haze of the Catskill Mountains first becomes visible to the traveler heading north? Did he recall that George Washington was at Newburgh in 1783 when word arrived that Britain had signed the Treaty of Paris and recognized the independence of the United States of America? Did he admire the point and the steep cliff sticking out into the river as the steamboat passed West Point, the home of the young republic's military academy? Did he think about the remarkable character of the Hudson itself, which is not really a river but a great estuary of the Atlantic Ocean, reaching nearly two hundred miles into the interior of New York State with ocean tides felt even at the most northern reaches of the river? Did he ask amuse himself by considering that the great project inspiring this expedition would in all likelihood bypass the entire length of the Mohawk River but that nobody would dream of ever bypassing the mighty Hudson?

Whatever his thoughts, Clinton had to put up with about forty hours of the crowd and the heat he complained about, as well as Fulton's elaborate rules and regulations, until *The North River Steamboat* arrived in Albany shortly before daylight on Monday, July 2. After finding accommodations at an inn, he and Eddy joined the other commissioners at the office of Clinton's cousin, Surveyor General Simeon De Witt, to settle on the plans for the trip up the Mohawk and then across the western half of the state. The group spent the afternoon searching for the equipment they would need in the days ahead—a mattress, a pillow, and a blanket for each. Clinton later complained that they neglected to

provide themselves with “marquees and camp-stools, the want of which we sensibly experienced.”^{4*}

The trip they were about to commence would turn out to be both more and less than they anticipated. They would experience frustration and excitement, as well as fun, hilarity, boredom, and bugs. In many ways, the trip sounds like an adventuresome jaunt by a bunch of men liberated from the constraints of office work for the joys and the freedom of the great outdoors. On the serious side, the commissioners would arrive at a sequence of important decisions that would set the foundations for their future work. Controversy, however, would persist.

* * *

The group—William North, Simeon De Witt, and James Geddes, in addition to Clinton and Eddy—departed by carriage for Schenectady at five the following morning, expecting to find their bateaux waiting there to transport them up the Mohawk. Then they discovered that Eddy had failed to order the boats, so the group had to spend the Fourth of July in Schenectady. Once again, Clinton was in ill temper. Always impatient, he scorned Schenectady and could not wait to leave it: “The true reason for our anxiety was the dullness of the place. Imagine yourself in a large country village, without any particular acquaintances, and destitute of books, and you can imagine our situation.” The commissioners passed “the gloomy interval” in Schenectady by watching the local holiday pageantry but found nothing to please them in the show.⁵

Poor Schenectady—S'coun-ho-ha! The Dutch had settled the town, the first of them exclaiming on his arrival in 1642 that this was “the finest land the eyes of man had ever rested upon.”⁶ Schenectady suffered a horrible massacre in 1690, when Indian raiders murdered or took prisoner every single resident of about sixty houses and then set each of the

*A marquee is in all likelihood a tent, although it may have been a simple stand to provide shade.

homes ablaze. The entire community would succumb to fire once again in 1819, when the Erie Canal was already two years into construction.

To their happy surprise, the commissioners found two bateaux were ready and waiting for them by four o'clock in the afternoon, with one for the commissioners and one for their baggage. The passenger boat was furnished with an awning, curtains, and enough seats for the four commissioners (Van Rensselaer and Morris would meet up with them farther west) and the captain. The boat also carried a small crew to handle the sail or to do the poling when conditions made sailing impossible. Three servants and over a ton of baggage were lodged on the other boat.

This was not exactly luxury travel. The men could sightsee and fish from their bateaux, but they could not cook, eat, or sleep aboard. The records are silent, but they doubtless had to go ashore to take care of other human needs as well. Yet a trip by water was certain to be more comfortable than the stagecoach, with its open sides, leather screens let down in stormy weather even in the oppressive heat of midsummer, and uncertain springs as the only cushion against the violent bumps of the roadway; bruises to passengers were not unusual.⁷

The group was enthusiastic about the arrangements. In honor of their leaders, they christened the passenger boat *Eddy* and the other boat *Morris*. As Clinton described their merry departure from Schenectady, "A crowd of people attended us at our embarkation, who gave us three parting cheers. The wind was fair, and with our handsome awning, flag flying, and large sail . . . we made no disreputable appeal."

Adventures and mishaps assailed them almost immediately. They discovered the mast was too high and the ballast too light to hold the boat steady in the face of heavy and sudden gusts of wind. The crew soon had to pull down the sail and the mast and, at great effort, start poling the boat upstream. Then, as evening approached, they discovered they had failed to bring everything with them from Schenectady. Consequently, the first day ended without much progress: they spent the night of July 4 at a small tavern just three miles up the Mohawk from Schenectady.

* * *

Clinton's handwritten journal—all 170 pages of it as we have it today in print—narrates this expedition in a detailed and colorful manner. Quite aside from the careful account of the business of the trip and a precise record of mileage covered from each point to the next, he reports, among other things, on the ancient Indian monuments they found and the meaning of these works for Indian history and culture; on the geology of the country they passed through; on the birdlife and the fish; on the history, features, and inhabitants of nearly every town; and on the taverns, on the meals, on the amounts farmers have paid for the lands and on the amounts they receive for their crops. He lists twenty-three kinds of birds they spotted along the Mohawk and eleven kinds of delicious fish that abound in the clear and uncontaminated waters of Lake Erie.⁸ The habitat and behavior of the eels of Niagara Falls interest him more than the gigantic flow of water, foam, and spray. In a typical observation, he describes Chippeway, near Niagara Falls, as "a mean village of twenty houses . . . [but] the most opulent man does not pay more than three dollars a year in taxes. . . . The race of a mill-dam here conceals a boiling spring, which will boil a tea-kettle."

The rivers and the produce of the towns supplied some delicious meals. Just above Utica, the commissioners bought a basket of eggs at a shilling a dozen, excellent butter at fifteen cents a pound, plus nine fish speared from the river and weighing around a pound each, and all this in addition to a small nocturnal heron they shot and a snapping turtle they speared.* But the elements prevented them from full enjoyment of this tempting repast, as a monster thunderstorm suddenly assailed them,

*The reference to both shillings and cents in one transaction was not unusual in those days. Before 1788, each of the colonies, and then the states, had its own currency, denominated in English pounds, shillings, and pence but not 1:1 with British pounds. The customary exchange rate between the U.S. dollar, launched in the early 1790s, and the old New York State shilling was 1:8. Hence, the shilling, or twelve pence, the commissioners paid for the basket of eggs was equal to 12.5¢ in U.S. currency. (I am grateful to Professor Richard Sylla of the Stern School at New York University for this explanation.)

forcing them to moor the *Eddy* under a bank, where they huddled over a cold dinner and sipped hot wine to sustain their spirits.

Clinton provides a veritable handbook of accommodations from one end of the state to the other. There were occasional luscious meals at the inns. At one breakfast, they were offered three kinds of bread, three kinds of fish, plus "fried pork, ham, boiled pork and Bologna sausages, old and new cheese, wood-duck, teal and dipper."⁹ Some places were less appealing than others. In one small town in the salt country around Syracuse, after a long and tiring day, the party put up in a house crowded with drunks, including the landlord, his wife, and his son. None of the sleeping arrangements was inviting when the companionship of the bunks included a collection of dirty and obnoxious occupants. Clinton and Eddy finally settled down in a room where they were promised quiet and no risk of bugs. But soon "a thousand villainous smells" like boiled pork assailed their noses, the noisy crowd of drunks filled the social rooms, rats were scratching their way through the walls, dogs crawled in and out from under the beds, and even bats were among the occupants of the inn. To complete the evening's discomforts, Clinton reported that they had been "assailed by an army of bed-bugs, aided by a body of light infantry in the shape of fleas, and a regiment of mosquito cavalry."¹⁰

Clinton fled outdoors, where the moon was full, with a "blaze of unclouded majesty." As he gazed on the wide view of the hills and the flocks of white geese sporting on the river, he noted an Indian hut and fire on the opposite bank, with the occupants preparing for the day's work of hunting and fishing. He listened to "the bellowing of thousands of frogs in the waters, and the roaring bloodhounds, in pursuit of deer and foxes. . . . My mind became tranquilized, and I availed myself of a vacant mattress in the tent and enjoyed a comfortable sleep of two hours."¹¹ After departing this town, the commissioners dubbed it Bug Bay, a name that, Clinton predicted, it would retain for a long time to come.

There were also long stretches of boredom. At one point, Eddy—now dubbed Commodore by his colleagues—discovered a towel which he had inadvertently slipped into his pocket at the inn where they had slept the night before. He was instructed to walk back and return it to its rightful place. Although hardly an incident of any importance, the slow progress, the monotonous scenery in that stretch, and the merciless heat made almost any event a welcome interruption to the tediousness and slow progress.

There were thrills of a special kind. At a clear spring a few miles up the Mohawk from Schenectady, the country was so romantically wild, so lacking in any sign of human habitation, that the group recalled the time when all of New York was a land of "roving barbarians and savage beasts." At Little Falls, where the great gorge between the mountains would make the entire Erie Canal possible, they were in awe of the massive rocks of solid granite that created the great gorge through the mountains. "You see them piled on each other, like Ossa on Pelion," Clinton wrote, evoking the classical myth of two huge mountains, one set on top of the other.¹² Many of these rocks were thirty or forty feet thick, and worn over time by the violence of the waters rushing over them or driving them from one position to another into every shape imaginable.

The commissioners were impressed with many of the towns where they stayed overnight, and especially with Utica, which they reached on July 10, six days and eighty-six miles from "the gloomy interval" at Schenectady. There were three hundred houses and 1650 inhabitants in Utica, a town with churches for Presbyterians, Episcopalians, Welsh Presbyterians, and Welsh Baptists. In addition to six taverns, fifteen stores, two breweries, and three printing offices, Utica also had a bank—a branch of the Manhattan Company masterminded by Aaron Burr—a post office, and a state supreme court as well as the county court.¹³ Most impressive to Clinton, the townspeople enjoyed a choice of two newspapers.

Clinton takes note of the elegance of some of the houses in Utica as

well as the numerous stores and the variety of merchandise they displayed. He was impressed with the bridge over the Mohawk and a turnpike of two miles through the town. Nearby, at a large cheese factory, thirty-six cows produced enough milk for four hundred cheeses a year plus milk to support a great number of hogs. There was also a substantial manufacturing establishment for spinning cotton, with 384 spindles on six frames. Shares in the cotton factories were selling 40 percent over their original offering price, but Clinton noted that the forty young girls employed there had "an unhealthy appearance." As a result of all these facilities, real estate appeared to be priced very high indeed in Utica in 1810: lots, corresponding to double lots in New York City, were selling from \$400 to \$800. Ten years earlier, a judge named Cooper had bought fifteen acres for \$1500; they were now worth more than ten times that price.

Rome, on the other hand, was much less impressive than Utica, even with its excellent position between the headwaters of the Mohawk and the rising of Wood Creek. With seventy houses, it had a post office, a courthouse, and only one church but four lawyers. The town had little appeal for Clinton: "Rome being on a perfect level, we naturally ask from what has it derived its name? Where are its seven hills? Has it been named out of compliment to Lynch [the largest property owner], who is a Catholic?"¹⁴ Rome was in fact originally known as Lynchville. Transforming Lynchville to Rome was minor compared with replacing Mud Creek with Palmyra. Rome did provide one exciting event, when they shot a bald eagle with a wingspan of eight feet and formidable talons.¹⁵

The group was impressed with the huge salt deposits spread out over a large area about halfway between Albany and Buffalo and centered around what would one day be the city of Syracuse. These resources had provided much of the wealth of the Iroquois and were still an important feature of the local economy. The salt deposits would be even more important after the opening of the Erie Canal, which greatly facilitated the transportation of large quantities of salt both west to Lake Erie and east to the growing industrial economy of New York City.

The commissioners reached their final destination and turnaround point at Buffalo and Lake Erie on August 4, having traveled the 363 miles from Albany in thirty-two days. Here they put up at a tavern, where they were "indifferently accommodated in every respect."¹⁶ Buffalo contained only thirty to forty houses, a courthouse, a few stores and taverns, and a post office, but appeared to be busy as a base for sightseeing. Just about everyone traveling westward toward Ohio and beyond came through Buffalo, and few could resist the opportunity to visit the wonders of Niagara Falls just a few miles away.

On Lake Erie, the commissioners visited the only United States naval vessel on the lake, the *Adams*, a brig of 150 tons and four guns. This ship could travel to Fort Dearborn at the southwestern corner of Lake Michigan and back in two months. The British had two gunboats on Lake Erie, one with sixteen guns and the other with twelve, as well as a fort southwest of Black Rock, a town just north of Buffalo. During the War of 1812, the waters of the lake would become a major battleground between the Americans determined to invade Canada and the British equally determined to prevent them from doing so.

The commander of the *Adams* informed Clinton that vessels drawing up to seven feet of water could continue on from the western end of Lake Erie to "Chaquagy [Chicago] and then up a creek of that name to the Illinois River . . . and so down to the Mississippi."¹⁷ With an uninterrupted canal from New York City to Lake Erie, Gouverneur Morris's dream of 1800 could now come true: the way would be open for travel by water from London all the way to the Mississippi River.

* * *

The seven hundred miles across New York State and back took the commissioners fifty-three days. Now it was time for them to get down to business and settle on the contents of the report they would submit to the legislature. They faced a daunting task. In view of the magnitude of the undertaking and its prospective impact on New York State and,

indeed, the entire nation, their report would have to be authoritative, complete, and compelling. They would have to provide specific recommendations, with full supporting arguments, for the enormity of the job ahead, the technology to be employed, the route of the canal between the Hudson and the Great Lakes, and the methods of financing the record-setting outlays that would be necessary. Above all, the report should articulate and underscore the grand theme underlying the whole concept: the necessity of binding the new western communities to the original thirteen states strung out along the Atlantic. As a result, it would take six months, until March 1811, before the report of the commissioners was ready for presentation to the legislature.

During the deliberations of the commissioners, Gouverneur Morris turned out to be the most stubborn obstacle to progress. The group looked to Clinton as their leader, but they had named Morris as the senior member of the commission because he was the oldest and in all likelihood the best known among them. This role was largely ceremonial while the expedition was under way, but as senior commissioner, Morris was responsible for drafting the report of the commission's findings and decisions. He had, after all, drafted not only the constitution of the State of New York, but the Constitution of the United States of America; "We, the people" launch his words, which come down to us today.

Now Morris had every intention of putting his handprint on the report in big, bold letters.

In 1803, when Morris had described to Simeon De Witt his idea of "tapping Lake Erie . . . and leading its waters in an artificial river, directly across the country to the Hudson River," he meant precisely what he said. At an early commission meeting at Rome, Morris urged breaking down the high grounds along the eastern banks of Lake Erie and letting the lake's waters follow the level of the country down as far as Utica, providing uninterrupted navigation for that entire sector of the route without dependence on any supply of water other than the lake. For this purpose, and to avoid the complexity of building locks, Morris proposed

the construction a single inclined plane, all of one piece, starting at the eastern shore of Lake Erie and carrying the Erie waters on a downward tilt as far as Utica. The drop to sea level beyond that point is so steep that locks would be unavoidable the rest of the way to Albany.

Imagine a huge downward sloping trough, about five feet deep. The trough would be filled by water pouring in at its western end from the shores of Lake Erie and emptying out into the Mohawk River some two hundred miles to the east. At the average downward slope of six inches per mile specified by Morris, the water would flow steadily eastward but so gently that towing a boat in the direction of Lake Erie, up the inclined plane against the current, would still be feasible.

Nature was not so cooperative. The surveyors could confirm Morris's calculations of the drop in the level of the land from the high point at Lake Erie down to Utica, but they had to emphasize that Morris's six inches to the mile was an *average*. The levels vary wildly from valley to flatland and up and down again. For about forty-five miles east of Rochester, for example, the land drops off steeply at a pitch of 2.8 *feet* a mile, almost six times the slope of the inclined plane. The embankments to support the inclined plane would have to be more than 100 feet high—the equivalent of at least a ten-story building in modern times—at many points over the hundred miles between Rochester and the town of Brewerton on Oneida Lake. To add insult to injury, every single creek, river, and lake on the route would have to be bridged.

Despite all these difficulties, Morris was convinced beyond argument of the superiority of this structure, undeterred by Simeon De Witt's view of it in 1803 as a "romantic thing."¹⁸ When De Witt had reminded Morris that "the intermediate hills and valleys [were] insuperable obstacles," Morris replied "*labor improbus omnia vincit* [essentially, the human mind devoted to improvisation could achieve anything], and the object would justify the labour and expense, whatever that might be."¹⁹ Years later, Benjamin Wright would recall, "I feel very confident he [Morris] had no local knowledge of the peculiar formula-

tion of that part of the state."²⁰ At the time, Morris had his way. Thomas Eddy reported that the commissioners, "believing that [Morris] knew much more than he really did, and distrusting, perhaps too scrupulously, their own judgment, signed, and therefore sanctioned, [Morris's version of the] Report."²¹

Throughout the discussions, Clinton kept urging unanimity even though he was opposed to Morris's brainchild. He was concerned that the entire enterprise would come to nothing if differing recommendations from the commission encouraged new excuses for argument in an already fractious legislature. With his unshakable confidence in the workings of the democratic process, Clinton argued that common sense would prevail once the whole matter were set before the public.

The westerner, Peter Porter, was the most stubborn in opposing the report, and not only because of the inclined plane proposal. In the deliberations of the commissioners, Porter joined the others in their enthusiasm for an east-west route by water, but he did want to make money out of the project if at all possible. Porter's booming business in Black Rock held a monopoly on trading privileges along the road, or portage, carrying freight around Niagara Falls. As a north-south canal coming down from Lake Ontario right there would be a bonanza for him, he consistently favored the route across Lake Ontario—a route that Elkanah Watson had blessed during his trip west in 1792—instead of the overland route all the other commissioners supported.²²

A graduate of Yale, Porter had been born in Connecticut in 1773 but moved to Canandaigua in western New York to practice law in 1793. He soon became a strong enthusiast and spokesman for the area. He had settled in Buffalo only the year before the expedition of 1810. Porter was the only participant who would unabashedly pursue his own self-interests throughout the whole process, from beginning right up to the end in 1825. Clinton's observation about him at this moment has a strong sarcastic flavor: "It cannot be supposed that this gentleman was governed by selfish motives on account of his interest . . . but it is

proper to say, that his conduct throughout was marked by singular inconsistency."²³

Despite the underlying validity of this accusation, Porter had been fighting in Congress, where he was serving the first of two terms, for financing of a waterway to the west. In that same year of 1810, he had warned his fellow members of the House of Representatives in Washington, D.C., that the western settlers were in desperate need of a cheap means of transporting their excess production to an Atlantic port, and that the absence of good transportation to the markets was already hampering the settlers and holding back the growth of the entire area.²⁴

* * *

Although there were moments when Morris's fantasy prompted one or another of the commissioners to threaten to withhold their signatures from the report, Clinton succeeded in keeping the group in line. After the fact, Clinton did confess to second thoughts about his commitment to unanimity. Writing in 1821, he admitted that the board could have avoided a great deal of the ridicule provoked by its report if its recommendations had been more practical. But Clinton felt they had to defer to Morris, whom he characterized as "a man of elevated genius, but too much under the influence of a sublimated imagination." Clinton's choice of the term "sublimated imagination" may sound odd to modern ears, but "sublimated" does mean diverted from an immediate goal to some higher use. In context, it is clear Clinton means an imagination tending toward the sublime but impractical. In any case, the commission was stuck with the glowing hue of Morris's "sublime" idea. When the members assembled to review Morris's draft, as Clinton tells it, they went out of their way to avoid hurting Morris's feelings, especially as they hoped his proposal would be seen as "hypothetical from its very nature, and a mere gratuitous suggestion."²⁵

On everything else, the commissioners quickly reached agreement. The decision stood—with even Porter's acceptance—that the canal ⁴

would run over land all the way from the Hudson to Lake Erie. Any other route would defeat the primary purpose of the canal, which was to join the west to the east in one seamless community, as Washington himself had envisioned many years earlier. The Lake Ontario route, which Porter had favored, exposed the Americans to the risk of losing the trade of the westerners to Canada, as much of the traffic moving eastward via Lake Ontario would continue on to the Atlantic by way of the St. Lawrence River and Montreal instead of through New York. This unfortunate pattern was already established in the western part of the state, thanks to the federal government's embargoes and non-intercourses.

With remarkable foresight, the commissioners had no doubt that a canal along the inland route they favored would soon stimulate a rapid rate of economic development along its shores. By assuring a large volume of traffic within the territory of the canal as well as traffic moving from the Hudson all the way to Lake Erie and vice versa, the interior route would fully justify the investment involved.

As any financing by way of Washington was clearly out of the question, the commissioners were emphatic on public financing, ownership, and control of the canal by New York State. They considered this matter to be paramount. Here, even Porter chimed in enthusiastically, delighted at the prospect of having the government pay for providing access by water to his properties and forwarding business in the west. None of the commissioners wanted to repeat the sad experience of the Western Inland Lock Navigation Company, with its constant need for funds. Later, Jesse Hawley would put it that Clinton's determination to make the canal a state undertaking took great courage when others were insisting that "it would require the revenue of all of the kingdoms of the earth, and the population of China, to accomplish it."²⁶

A great national interest appeared to be at stake. Although the commissioners considered the risk that private financing might turn the canal into a raw opportunity for speculators, they were more concerned about

the difficulty of raising money in a capital-short country like the young United States. Their report sounds remarkably contemporary in their recognition of the significance of the cost of capital: "Few of our fellow citizens have more money than they want, and of the many who want, few find facility in obtaining it. . . . Among many other objections, there is one insuperable: That it would defeat the contemplated cheapness of transportation. . . . Such large expenditures can be made more economically under public authority than by the care and vigilance of any company."²⁷

These unqualified assertions favoring public expenditure were among the least controversial features of the commissioners' report. The notion that government spending might tread on private interest was still many years in the future. At that moment, anything looked better than the Western Company.

Through it all ran a hope that the federal government might still participate, because New York would not be the only state to benefit from the canal. Despite the failure of Forman's mission to Jefferson the year before, Gallatin's words from 1805 still rang in the air. Gallatin's powerful report and keen analytical approach had stirred widespread anticipation of the federal government's role in financing and planning a modernized national transportation system. As Gouverneur Morris reflected this state of anticipation in the commission report, "The wisdom, as well as the justice of the national legislature, will, no doubt, lead to the exercise on their part of prudent munificence."²⁸

Finally, the commissioners insisted that the canal must be an artificial waterway over its entire distance, no matter which design would finally be chosen. To support this position, they cited the immensely successful canal networks in Britain and Holland, which had demonstrated so clearly that riverbeds were treacherous and even dangerous for internal navigation. They did not have to look to Europe to prove their point. Right in their own backyard, the Mohawk looked like an ideal east-west water route, and yet it had stubbornly fought off the costly efforts of the Western Company to tame it into full navigability.

* * *

When the commission's report finally appeared in March 1811, public response was divided. There were those who were proud that a young nation could undertake a project of such imposing size. Doubters continued to balk at the sheer size of the proposal, despite Jonas Platt's effort to discourage the skeptics by selecting some of the most famous and respected men in New York State for the commission. The most serious opposition loomed up among the settlers in the west, jealous of their thriving trade with Montreal. Joseph Ellicott, the Holland Land Company's chief representative in the west, now wrote to his superior in Philadelphia, "I have therefore much less opinion of this great object than I formerly had. . . . I am persuaded [*sic*] that it will be more advantage at once to make Montreal our market; and it makes no difference to us what Market we go to; the great object is to go to such a Place where we can make the most profits."²⁹

These were all words. The action was still in the legislature, and here the momentum was positive. A month after the publication of the report, the legislature passed the first of a long series of canal laws it would enact over the years ahead. This bill added the distinguished names of Robert Fulton and Robert Livingston, his business and engineering associate, to the board of commissioners. It appropriated \$15,000 to finance the board's further activities. It authorized the commissioners to take all necessary steps to arrange for financing the canal, to purchase the interests of the Western Inland Lock Navigation Company, to seek grants of land from property owners along the proposed route, and, most important, to approach Congress for fulfillment of the splendid promises of Thomas Jefferson and Albert Gallatin.

A few weeks later, the commissioners met to allocate their assignments. The purchase of the Western Company's properties had to be carried out and land grants had to be negotiated. Morris was given the responsibility of exploring the probable cost of loans from private investors abroad as well as in the United States. Eddy and Fulton were to

seek out the engineers who would design and supervise the construction of the canal. And the two leading commissioners, Morris and Clinton, faced the prospect of going to Washington to enlist aid from both the federal government and from the neighboring states expected to benefit from the prosperity the canal was certain to generate.

At long last, the gears seemed to be meshing. That was an illusion. Many obstacles lay just ahead.

CHAPTER 9

WAR AND PEACE

The next three years were like a roller coaster for the Erie Canal. Although De Witt Clinton and the canal's other supporters kept up the pressure in the face of stubborn political wrangling, the grim distractions of the War of 1812 nearly derailed the whole project. Like all wars, this one had its fair share of unintended consequences.

Clinton and Morris had a disastrous trip to Washington late in 1811. Even before they left New York, Clinton's local political enemies, completely ignoring Morris's strong Federalist sympathies, claimed the whole enterprise was just an electioneering jaunt for him. As one of them put it, "to construct a rail road from the earth to the moon could not be treated with more derision."¹

When they reached Washington, President Madison appeared to be cooperative at first—perhaps because he had speculated in land in the Mohawk valley some years earlier. Then he started quibbling about constitutional scruples: without explicit mention of canals in the Constitution, did the federal government have the right to appropriate money for that purpose? The president finally did send a message to Congress, reminding them of the strategic importance of improvements to the national transportation network, but the legislators were totally unresponsive.

Contrary to Clinton and Morris's expectations, the states adjacent to New York also sat on their hands instead of providing support. The canal commissioners would later describe this behavior as "state jealousy, [operating] with baleful effect, though seldom and cautiously expressed."²

Finally, Secretary of the Treasury Gallatin turned out to be as unyielding as Congress. Gallatin claimed he was enthusiastic about the Erie project, but the prospect of imminent hostilities with Britain was driving the Treasury rapidly into the red. He could no longer boast, as he had in his report three years earlier, that the government's resources were "amply sufficient for the completion of every practical improvement." In fact, the surplus of \$6.3 million in 1811—the third largest in the twenty-two year history of the United States—would swing to a deficit of \$10.5 million in 1812 and peak at a deficit of \$23.5 million in 1814 as the war forced government spending to more than quadruple.³

Morris and Clinton had not asked Gallatin for money! Fully aware of the sad state of public finances, they had suggested instead grants of federal land to all the states involved, especially in Indian territories to the west, which New York and the other states could then sell to raise money. The answer was still no.

* * *

The New Yorkers had had a surfeit of hopes betrayed in the nation's capital. The canal commissioners made no effort to disguise their wrath at the duplicity they had encountered in Washington. "It remains to be proved," they observed in a report dated March 1812, written in large part by Gouverneur Morris, "whether they judge justly who judge so meanly of our councils."⁴ Now they took the cooperative case Morris and Clinton had offered in Washington and turned it completely on its head. As the commissioners described their revised objective, "*now* sound policy demanded that the canal should be made by the State of

New York and for her own account." Any accrual to others of the manifold benefits to be delivered by the Erie Canal would be incidental.*

Despite the truculent tone of this statement, the State of New York had long experience financing projects "for her own account" as well as financing and directly encouraging enterprises in the private sector. The citizens of the state welcomed state intervention into these activities, without any misgivings about laissez-faire or government interference in private business affairs.

Aid to farmers in improving their productivity had been an interest of the state from the very beginning. In addition to authorizing start-up loans to entrepreneurs in manufacturing, the legislature had passed a general incorporation law in 1811. Seven years later, 129 charters had been granted to manufacturing firms, including in the charters such delightful perks as exemption from duty on juries or in the militia for owners of companies producing goods of cotton, linen, and wool. Manufacturers of machinery had it even better: they also were free from seizure for payment of debts.⁵

In addition to declaring the economic independence of New York State, the March 1812 report reviewed the other major matters the commissioners had considered in the first report. They declared—with no recorded dissent by Gouverneur Morris—that the inclined plane was to be just one of several methods under consideration for the design of the artificial waterway across the state. On the basis of further investigations and additional surveys, primarily by James Geddes, the commission raised its estimate of the total cost of the canal from \$5 million to \$6 million. The increase, they contended, was merely "a trifling weight" to the million people of New York State.⁶ Now backed by an expert opinion from the English engineer William Weston, the commissioners reaf-

*As the years went by, and American industry and commercial trade developed, these views would change. By the 1830s, the voices for operation of public improvements by private industry became more strident, based on concerns about public corruption and expansion in public debts. See Nathan Miller, *The Enterprise of a Free People*, chapter 1, and Ronald Shaw, *Erie Water West*, pp. 308 and 398.

firmed the superiority of the interior route over the use of Lake Ontario. Weston had no doubt about the practicability of the project and was rhapsodic about the possibilities of the "noble and stupendous plan" laid before him by the commissioners. Its success, he predicted, "would baffle all conjecture to conceive"⁷

The arithmetic employed to justify an expenditure of \$6 million was interesting. Based on an estimate of the increase in agricultural and other business activity that would develop along the route of the canal, the commissioners predicted westward traffic amounting to 250,000 tons within twenty years and a similar amount moving east, or 500,000 tons in all. At a tariff of \$2.50 a ton, the canal could service its debt without any difficulty. Even if the traffic were half this estimate, the report continued, the total revenue of \$600,000 would still take care of all the interest due on a 6 percent loan of as much as \$10 million dollars.

These were solid projections. In his contribution to the Gallatin report, Robert Fulton had estimated that in 1807, based on data in customs books, 400,000 tons of freight were moving annually up and down the Hudson River. By 1818, when the canal had been under construction for a year, Charles Glidden Haines, Clinton's secretary at one point and an official of the New-York Corresponding Association for the Promotion of Internal Improvements (De Witt Clinton, president), reported that the cost of moving freight by land from Albany on the Hudson to Lake Erie was on the order of \$100 a ton.⁸ On the fair assumption that freight traffic would grow rapidly once the canal was in place—Fulton had projected 1 million tons a year—and considering Fulton's additional calculation that one horse pulling a canal boat could perform the work of forty horses pulling wagons on land, the commission's projections appear to be eminently reasonable. In fact, they would turn out to be too conservative by a wide margin.

The commissioners were, however, fully aware of the skepticism and local jealousies still clouding the future of the canal. Morris went to the limit in piling on the rhetoric:

There can be no doubt that those microcosmic minds which, habitually occupied in the consideration of what is little, are incapable of discerning what is great . . . [and] will, not unsparingly, distribute the epithets absurd, ridiculous, chimerical, on the estimate of what [the canal] may produce. The commissioners must, nevertheless, have the hardihood to brave the sneers and sarcasms of men, who, with too much pride to study, and too much wit to think, undervalue what they do not understand, and condemn what they cannot comprehend. . . . And even when . . . our constitution shall be dissolved and our laws be lost . . . after a lapse of two thousand years, and the ravage of repeated revolutions, when the records of history shall have been obliterated . . . this national work shall remain. It will bear testimony to the genius, learning, the industry and intelligence of the present age.⁹

Three months later a special session of the legislature gave the recommendations of the commissioners the force of law. The commissioners were now authorized to purchase the rights of the Western Company, to accept land along the proposed route that might be contributed by individuals or business firms, to negotiate a loan of the necessary funds in the name of New York State, and to pursue surveys and other necessary work for the final design of the canal.

Good as all that sounded, the law was enacted within days of the declaration of war against Great Britain. The delay would be costly.

* * *

De Witt Clinton had many matters on his mind in addition to his intense concentration on transforming the canal from visions and meetings and expeditions into a functioning reality. Although Clinton's sixth term as mayor ran out in 1810, he was reappointed the next year and, at the same time, elected lieutenant governor of New York State—a position he took in preference to returning to the national Senate in order to sustain his influence in his main power base in Albany.¹⁰

The governor at the time was the curly-headed Daniel Tompkins. Tompkins cultivated the image of the humble farmer's boy from the start of his political career. He was fond of claiming, "There's not a drop of aristocratical or oligarchical blood in my veins." This was not an exaggeration. He had started out in life as a penniless student and was recruited early on by Tammany Hall. After stints in Congress and the New York Supreme Court he had been elected governor in 1807, with the backing of De Witt Clinton, and would hold the office for ten years.* But the friendship with Clinton would fall apart when Tompkins backed Madison against Clinton for the presidency in 1812.

Tompkins was also a strong patriot who contributed to the success of the wartime operations on the border between New York State and Canada, in part by extracting \$30,000 from the federal government to help finance the defense of his state from incursions from Canada. He also pledged his personal credit when the New York banks refused to lend money on the security of the United States Treasury notes without his endorsement, and then he bought the weapons of private citizens to equip the New York State militia for the defense of the state (and had himself named commanding officer of the troops).¹¹

Despite his attachment to New York, Tompkins yielded to the temptation to run on the Republican ticket as vice president of the United States under James Monroe. The first of his two terms, beginning in 1817, was much happier than the second, when he was caught up in a messy altercation over whether he had improperly handled the state's money during the War of 1812 or whether the state was indebted to him. The Federalists accused him of spending \$120,000 of the government's money for personal use, but he could not rebut the accusation because he had kept such poor records. He then proceeded to produce a personal audit indicating that the government actually owed him \$130,000. The controversy raged on, and the accusations broke his heart. His mind

*The states were where the action was: beside the examples of Clinton and Tompkins, John Jay had resigned from the U.S. Supreme Court in 1795 to run for governor of New York. He won.

began to fail him, and he died in June 1825, drunk and alone in his home on Staten Island.

* * *

At about the time he was elected lieutenant governor in 1811, Clinton and his wife moved from Cherry Street in New York City to Richmond Hill, a large estate just south of Greenwich Village. Richmond Hill had been occupied by John and Abigail Adams when John was vice president of the United States and subsequently by Aaron Burr in the same role. The Clintons now leased the property from John Jacob Astor. The property sloped down to the shores of the Hudson and was graced by a wide lawn with statues and a fine view of the New Jersey wheat fields. The spacious mansion was fronted by a two-story portico in the Greek style. Clinton also moved his working headquarters in 1811: by November, he was receiving visitors in the elegant new City Hall, which still stands at its original location.

On March 11, 1812, the canal commissioners had submitted their report, much of it in Clinton's hand, to the legislature. His beloved uncle, George, the vice president of the United States, died on April 20—and was eulogized at the funeral by Gouverneur Morris. His father, James Clinton, the Revolutionary War general, would pass away in December. On May 28, although both Clinton and Madison were officially members of the Jeffersonian Republican Party, Clinton was nominated for president by the Federalist convention in New York, which then recommended him to the rest of the party.

Gouverneur Morris, deeply concerned over the war spirit in Washington, had invited Clinton early in May 1812 to meet with him at the Morris ancestral home of Morrisania in the Bronx, ostensibly to talk about George Clinton but in fact to thrash out together what might be done about the current national political scene. Morris was for once a pessimist. "In the degenerate state to which democracy never fails to reduce a nation," he observed, "it is almost impossible for a good man to

govern, even could he get into power, or for a bad man to govern well."¹² Morris wanted to call for a convention of northern states, where the opposition to war was strongest, largely because a war would interrupt the profitable trade those states carried on with Britain. Furthermore, like Clinton, Morris was concerned that his nation of fewer than eight million people was poorly prepared for hostilities with a great power.

Morris was a Federalist and a long way from favoring "the common man" in the Jeffersonian fashion of the Republicans. Despite his strong feelings on these matters, Morris would throw his full support to the Republican Clinton in the presidential campaign. It was a sign of the times. After three Republican terms in the presidency—Jefferson's two terms and one term of Madison's—the Federalist Party was no longer the force it had been when Washington and then John Adams had led the nation. If the Federalists had any hope of defeating Madison, their best chance was to be led by a renegade Republican on a splinter ticket. What remained of the Federalists would be likely to provide whatever support they could to an opponent to Madison. This was by no means the only time that Clinton would be forced to rely on Federalist support because of defections from his side by fellow Republicans.

Less than a month after Morris and Clinton conferred in Morrisania, Madison asked Congress to declare war on Great Britain. By 1812, the continuing British harassment of U.S. ships had taken a terrible toll on American commerce. Total exports in 1810 were \$67 million, with more than two-thirds going to Europe. By the time Congress declared war in June 1812, exports had fallen by 40 percent and shipments to Europe had declined by a half. Matters would only grow worse. In 1814, total exports were a mere \$7 million, of which only \$1 million went to Europe.¹³ The economic impact of the war was not limited just to trade in goods and services. Americans' prime source of capital was cut off. As the French economist Michael Chevalier described the situation twenty years later, with some degree of hyperbole, "Bankruptcy smote them like a destroying angel, sparing not a family."¹⁴

Clinton had been outspoken in his opposition to war because he was convinced the country was not yet prepared for combat with a great power like Britain. But he was sufficiently infected by the political bug in his run for the presidency to talk out of both sides of his mouth, depending upon whether the crowds he addressed were largely hawks or doves. The Federalists' valid claim that Clinton's "herculean" mind was "enlightened by extensive erudition" counted for little when he was running against Madison, a man whose intellectual brilliance was widely recognized and beyond dispute.

Gouverneur Morris, in contrast, was unwavering in his opposition to the war and in his disdain for the president. He claimed to have been informed that Madison never went to bed sober, although "whether intoxicated by opium or wine was not said."¹⁵ Morris saw the war as an excuse to enrich the agricultural base of the slave states and inhibit the increasing industrialization in the north. In a prescient and economically sophisticated observation, in 1812, Morris sensed the growing split between north and south: "Time . . . seems about to disclose the awful secret that commerce and domestic slavery are mortal foes; and, bound together, one must destroy the other."¹⁶

Clinton lost the election to Madison by 39 electoral votes, with not a single vote from south of the Potomac River. Pennsylvania's 25 electoral votes were in doubt for a whole month as the recounts went on and on and finally ended up in Madison's favor, even though Clinton's running mate, Jared Ingersoll, was attorney general of that state. The Federalist Party never regained its national strength after this defeat. Morris was especially bitter about Pennsylvania, which "may be led to cover with her broad shield the slave-holding states: which, so protected, may for a dozen or fifteen years exercise the privilege of strangling commerce, whipping Negroes, and bawling about the inborn inalienable rights of man."¹⁷

* * *

Once war breaks out, the military spirit is hard to resist.¹⁸ Clinton now managed to have himself appointed a major general, but political enemies kept him away from any active involvement. He had plenty to do to support what came to be known as "Mr. Madison's war" in his regular job as mayor of New York City, supervising the construction of armed camps in Brooklyn and Harlem Heights as well as a fort at Hell's Gate, in addition to a search for financing to support the soldiers at those camps. All those sites had been battlegrounds leading to American defeats in the earliest stages of the Revolution.

His fellow canal commissioner Peter Porter, who had been craving an excuse to invade Canada, got himself appointed major general of the New York Volunteers even though, like Clinton, he had no military experience. He proceeded to raise his own untrained troops to join in the fighting. Unlike Clinton, he and his troops saw action in several battles, and a joint resolution of Congress dated November 3, 1814, awarded Porter a gold medal with a citation for "gallantry and good conduct in the several conflicts of Chippewa, Niagara, and Erie."¹⁹

* * *

Madison's war message to Congress on June 1 followed convention in portraying his own country as the injured party. He focused on Britain's "lawless violence" on the seas over so long a period of time. Then he drew Congress's attention to "the warfare just renewed by the savages on one of our extensive frontiers, a warfare which . . . spare[s] neither age nor sex and to be distinguished by features particularly shocking to humanity." As Madison summed up his view of the struggle, "We behold, in fine, on the side of Great Britain a state of war against the United States, and on the side of the United States a state of peace toward Great Britain."

Well aware of the constitutional constraints on the president in declaring war, Madison reminded Congress that the choice between accepting "these progressive usurpations" or fighting to defend the⁴

nation's rights was a matter for the legislative branch to decide. He nevertheless pronounced himself assured that the decision would be "worthy of the enlightened and patriotic councils of a virtuous, a free, and a powerful nation."

On June 4, the House of Representatives obliged by declaring war on Great Britain by a vote of 79–49, with almost all the New York State representatives voting against. The debate in the Senate was both more lengthy and more intense. The vote there did not come until June 18, and the margin for war was slim. In one of the great ironies of history, the British foreign minister announced just two days earlier that Britain would relax its blockade on American shipping—but that news would not reach the shores of the United States for another five weeks, by which time the opposing armies were fully engaged.

* * *

The early stages of the war were a demoralizing series of defeats on home territory, including the surrender of Detroit soon after the outbreak of hostilities. Too much time had passed since the Revolution, when many officers in the Continental Army already had combat experience fighting on the British side in the French and Indian Wars. Now the American land forces had no battle-hardened troops or commanders—Jefferson remarked he had never seen "so wretched a succession of generals."²⁰ Henry Clay observed that Madison "is not fit for the rough and rude blasts which the conflicts of nations generate."²¹ Meanwhile, the British had been at war for half a century, with few interludes of peace.

Popular support for this war was far weaker than in the Revolution. The Senate had dickered through two weeks of secret sessions before voting in favor of the war resolution, and even then the vote was close, 18–13. Opposition was intense in New England, where the business community was deeply—and justifiably—concerned about total loss of trade with Europe. Indeed, only 108 vessels entered the United States

during the entire year of 1812.²² The governors of Massachusetts, Connecticut, and Rhode Island at first refused to call up the state militias to go into combat. The New England banks, the most prosperous in the nation, even refused to lend the government money for the war effort, forcing Secretary of the Treasury Gallatin to go hat in hand to smaller banks, which then took advantage of the situation by charging usurious rates of interest.^{23*}

But on the west side of the country, sentiment was strongly in favor of the war, especially among New Yorkers. Many westerners saw the war as a perfect excuse for invading Canada, with its rich forests, fur sources, and agricultural lands. Although Jefferson, for one, expected a Canadian invasion to be little more than a matter of marching,²⁴ others felt differently. When war was declared, fear of invasion *from* Canada prompted the settlers out in Holland Land Company country to move back eastward "in droves," ignoring Resident Agent Joseph Ellicott's soothing assurances and entreaties to remain.²⁵

They were right to run. The fighting in the west turned out to be much bloodier than a matter of marching. The first effort by the Americans to invade Canada was a disaster. After Detroit fell so early in the conflict, repeated invasion efforts by both sides led to casualties with no permanent victories for either contender and shockingly stupid military leadership on the American side.²⁶

Throughout the whole struggle, the Americans had to fight simultaneously on both the western and the eastern sides of Lake Erie. Gory battles around Niagara Falls, on the Canadian and on the American sides, would resolve nothing. Many of the western New Yorkers returned to their homes in the course of 1813. The Americans themselves burned Buffalo in a December snowstorm to deny the British any hope of wintering in the vicinity—while inadvertently leaving barracks and tents for

*New England would even threaten to break up the union. In October 1814, delegates from the New England states gathered in Hartford, where they seriously considered secession and proposed constitutional amendments to redress what they considered unfair advantages held by the South under the Constitution.

1500 men in perfect condition, along with supplies of ammunition. Even Ellicott at that moment fled from his headquarters in Batavia, citing the atrocities of the British and their Indian allies in killing women and children as well as the men and the resulting "terror, consternation, and dismay" among local citizens.²⁷

Most of the American victories were scored at sea against the vaunted British navy, even though the American oceangoing navy was vastly outnumbered by Britain's. The British had 245 frigates, each carrying thirty to fifty guns, and 191 ships of the line with sixty to eighty guns.* The Americans had no ships of the line and only 7 frigates, one of which would see no action. The ingenious design of the American frigates made all the difference. These marvels of naval technology, which dated back to John Adams's time as president, could outmaneuver Britain's massive ships of the line and also carried more guns than British frigates.²⁸ The combination of greater firepower and greater maneuverability kept the British on the run. The most famous of these frigates was the *Constitution*, or "Old Ironsides," which won two skirmishes in the first months of the war against British frigates.

The American navy also achieved crucial victories in battles on the waters of Lake Erie, coveted by both parties because of its access to Canada, to the other Great Lakes, and to the Mississippi beyond. The New Yorkers were especially concerned because the lake was also the planned western terminal of their proposed canal. As neither side had enough warships to mount a proper battle on the lakes at the outset, the real struggle took the form of a shipbuilding race along the shores of the lake. This was no easy task for the Americans, with limited labor supply in the area, no sawmills and no factories in New York, and no good transportation system for bringing in the necessary supplies. The facilities at Erie, Pennsylvania, on the shore of Lake Erie about a hundred miles west of Buffalo, did manage to supply the fighting forces in the

*The expression "ship of the line" refers to a warship with at least two gundecks and designed to have a place in the line of battle.

lake with shipwrights, blacksmiths, caulkers, and common labor, as well as canvas, rigging, cannon shot, and anchors—but no cannon. The cannon had to come all the way by road from the east coast.

Commodore Oliver Hazard Perry, then only twenty-eight years old, took command at Erie of American forces on the lake in March 1813. A veteran of fighting pirates in the Mediterranean and the Atlantic, Perry managed to build a fleet of six ships by July. He had also recruited volunteers to man them—including freed blacks, farmers, and soldiers from the army. Perry named his flagship the *Lawrence* after his best friend, James Lawrence, who had recently been killed in naval combat, and then he hoisted a flag painted with Lawrence's enduring words "Don't give up the ship!" Now he was eager for battle.

On September 10, joined by a few additional small craft from Buffalo, Perry engaged a British squadron on the lake. The battle began grimly when Perry did what his friend had not: he gave up his ship as concentrated British fire killed or wounded 80 percent of his crew. He was not to be deterred, however. Carrying the precious flag, he transferred on a small boat to another ship, sailed right into the British line, and compelled surrender within fifteen minutes.

The lake was now secure for the Americans. Perry then doubled his claim to immortality. His message of victory to General William Henry Harrison proclaimed, "We have met the enemy and they are ours: two brigs, one schooner, and one sloop."

* * *

The prospects for the Erie Canal seemed to grow dimmer as the war progressed. The canal commissioners could only bide their time as hostilities proceeded. Perhaps motivated by Weston's reassurance that "from your perspicuous topographical description, and neat plan and profile of the route of the contemplated canal, I entertain little doubt of the practicability of the measure," the commissioners sent the legislature a new progress report in March 1814. They confirmed the findings of

their earlier messages, added an elaborate set of estimates of transport costs, recommended appropriate tolls to be charged, and provided detailed comparisons of shipping costs in other parts of the country, especially along the Mississippi.

This reminder that the canal was still a matter of high importance had an unexpected result. The report ignited the opposition, who had gathered strength from the dissipation of energy among the canal's supporters under the clouds of war. In particular, resistance was building up among farmers living far away from the route of the canal, who were concerned their taxes would only finance competition in their markets. A month after the publication of the 1814 report, the opposition forces in the legislature inserted a clause in a supply bill that annulled the authority to create a fund for financing the construction work on the canal. As De Witt Clinton later described this underhanded maneuver, "The commissioners were thus frittered down into a board of consideration . . . without power and without money."²⁹

"The Canal bubble it appears, has at length exploded," reported Joseph Ellicott to his superior at the Holland Land Company in Philadelphia.³⁰ In 1815, the commissioners did not even bother to make a report to the legislature. That year, Clinton's opponents in the legislature removed him as mayor of New York City; he had already lost the lieutenant governorship in 1813. Thomas Eddy described the friends of the project as "entirely discouraged, and [having] given up all hopes of the legislature being induced again to take up the subject, or to adopt any measure to prosecute the scheme."³¹

* * *

But the most important friend of the project was far from discouraged. In fact, Clinton's exclusion from political office was a blessing in disguise for the canal. Free of routine responsibilities, he was able to focus the full force of his abilities on promoting the canal, and he took up the challenge with gusto. As far as he was concerned, the case for the

canal was stronger than ever and would prove impossible to suppress once peace was declared.

The widespread fighting in the west had confirmed the area's military and economic importance. As suspicion of Canadian intentions lingered on, there was a new urgency to avoid Lake Ontario for east-west traffic. Most important, the war revealed the tragic lack of adequate transportation facilities to link the lands around Lake Erie with the east. Supply shortages constantly hampered effective military operations. Wagons repeatedly broke down on the rutty roads, and men as well as horses were exhausted by the hardships of travel over the long distances. A report issued in 1816 by General James Tallmadge, a congressman from New York, claimed that east-west transportation costs for armaments during the war were so high that a cannon manufactured at an eastern factory for \$400 cost from \$1500 to \$2000 to ship to Lake Erie, while a barrel of pork for the troops on the western frontier ended up costing the government \$126—and all that without counting in the plodding pace of horses and wagons "over roads so abominable as to make cannon balls cost a dollar a pound."³²

Another and more sophisticated theme came to the fore in the years after the war: the importance of developing a home market in the face of uncertain economic conditions among America's customers in Europe. The economic case for concentrating on American customers was clear enough. Postwar deflation abroad influenced postwar deflation at home, as prices collapsed even before the official end of hostilities. By 1821, prices were down 40 percent from the 1814 peak. American exports, after a brief upswing, fell off sharply as the slump in European economic activity gathered momentum. Meanwhile British manufacturers, deprived of the insatiable wartime market of their government, now turned aggressively to exports, especially to their former enemies across the seas.

Although the development of the home market appeared as a natural priority under these conditions, the appeal ran deeper than the eco-⁴

nomics involved. Americans were proclaiming to the world that their United States was destined to become a first-class power—a motif they would repeat on many occasions over the next hundred years. Adam Smith himself had declared in 1766 that “good roads and canals and navigable rivers, by diminishing the expense of carriage, put the remote parts of the country more nearly upon a level with these in the neighborhood of large towns; and that they account for the greatest of all improvements.”³³

After emphasizing how waterways create networks between provinces and districts of the same country, Clinton’s protégé Charles Glidden Haines declared in an 1818 pamphlet that “those nations who have been destitute of means of inland navigation, either by rivers or canals, have remained from one age to another in the same barbarous and uncivilized state. . . . Such intercourse is vitally essential to the welfare of nations.”³⁴ Haines becomes even more rhapsodic as he expands his case: “It is evident that no country in the world, ever presented natural advantages for internal trade and canal navigation, so bold, so noble, so striking as our own.”³⁵

* * *

Almost a hundred years had passed since Cadwallader Colden had asked, “How is it possible that the traders of New-York should neglect so considerable and beneficial trade for so long a time?” Little did Colden know just how possible it was. In his wildest imagination, he could not have imagined that, quite aside from two wars with the British, it would take nine decades of successive explorations, passionate speeches, eloquent pamphlets, authoritative surveys, distinguished commissions, and elaborate reports to overcome the potent combination of vested interests and timidity in the face of bold vision.

But now the barricades to progress were ready to crumble. This particular attack on the opposition began in familiar fashion: one day in the autumn of 1815, Thomas Eddy “could not . . . resign a favorite project”

and invited his old friend Jonas Platt to breakfast. Eddy was convinced they must make one more effort to make the canal a reality. He proposed to Platt that they should reverse the strategy they worked out together back in 1810. This time around, the undertaking should begin by arousing the public instead of going directly to the lawmakers. To that end, he proposed organizing a mass meeting at the City Hotel in New York, “to urge the propriety and policy of offering a memorial to the legislature, pressing them to prosecute the canal from Erie to the Hudson.”³⁶ Platt was enthusiastic and urged Eddy to get going. Eddy once again began with De Witt Clinton, who went to work on the project immediately, attracting additional speakers and generating the necessary publicity to attract a big crowd.

The meeting, held on December 3, 1815, was a huge success, with an overflow audience. A committee was appointed to draft a “memorial” addressed to the legislature, almost all of which was the handiwork of De Witt Clinton. Armed with Clinton’s voluminous and persuasive words, Eddy and his colleagues then proceeded to organize additional mass meetings throughout the city and in twenty-five other cities throughout the state, gathering thousands of signatures to be delivered to the legislature in support of Clinton’s Memorial.*

The Memorial runs to thirteen tightly packed printed pages. Although Clinton includes important passages of his powerful rhetoric, he is equally unremitting in the provision of detail and data. He evokes the success of canals in contributing to the greatness of ancient Egypt and China as well as to modern Holland and England, but he does not linger over the glories to come from uniting “our Mediterranean with the ocean,” nor does he stop to elaborate on how “the wilderness and the solitary place will become glad, and the desert will rejoice and blossom as the rose.” All that is taken for granted. Rather, Clinton explains at

*In his *History of the Canal System of the State of New York*, Noble E. Whitford remarks, “This agitation brought before the Legislature an appeal from more than one hundred thousand petitioners to proceed at once with the work of making a canal.” The population of New York State at that time was about one million.

length the superiority of New York over its competitors as an artery to the west, the most desirable route for the canal, plans for its design, the remarkable variety of crops and merchandise that the canal will transport, itemized estimates of costs and tolls based on the Gallatin report—as well as the construction costs of other canals, ranging from the Canal du Midi in southern France to the Middlesex Canal in Massachusetts—and the ease of finance and the large acreage of lands that will be contributed by the Holland Land Company and other landholders seeking public favors.

The war, he contends, had proven beyond question the need for the canal and emphasized the “importance of this communication [via New York State] . . . through the most fertile country in the universe.” Time is of the essence. Lands and men left idle in the wake of the war are now readily available at low cost. Delay would excite “injurious speculation” on the one hand and, on the other, give the opposition opportunity to regroup.

The home market is an urgent matter: “Our merchants should not be robbed of their legitimate profits . . . public revenues should not be seriously impaired by dishonest smuggling, and . . . the commerce of our cities should not be supplanted by the mercantile establishments of foreign countries.” Then, on a strikingly modern supply-side note, Clinton goes on to argue that the canal will raise the value of “national domains,” thereby facilitating the repayment of the national debt and releasing resources “to be expended in great public improvements; in encouraging the arts and sciences; in patronizing the operations of industry; in fostering the inventions of genius, and in diffusing the blessing of knowledge. . . . [The canal will] convey more riches on its waters than any other canal in the world.” With his usual remarkable foresight, Clinton asserts that, in addition to the great good the canal would do for the state as a whole, it would transform New York City into “the great depot and warehouse of the western world.”

Clinton does allow himself to introduce his soaring rhetoric in the

final paragraphs. He bases his final arguments on the same theme Washington had struck over and over: the critical importance to the nation—not just New York State—of trade and commerce in binding the west to the Atlantic states. “However serious the fears which have been entertained of a dismemberment of the Union by collisions between the north and the south,” Clinton begins, displaying his weird sense of what the future might hold, “the most imminent danger lies in another direction. [A] line of separation may be eventually drawn between the Atlantic and the western states, unless they are cemented by a common, an ever acting and a powerful interest.” Still echoing Washington’s views, Clinton contends that the canal, by providing the channel between “the commerce of the ocean, and the trade of the Lakes, . . . will form an imperishable cement of connexion, and an indissoluble bond of union.” New York State, “standing on this exalted eminence,” is both Atlantic and western and therefore “the only state . . . in which this great centripetal power can be energetically applied.”

The case is beyond dispute: “Delays are the refuge of weak minds, and to procrastinate on this occasion is to show a culpable inattention to the bounties of nature; a total insensibility to the blessings of Providence, and an inexcusable neglect of the interests of society. . . . The overflowing blessings from this great fountain of public good and national abundance, will be as extensive as our country and as durable as time. . . . It remains for a free state to create a new era in history, and to erect a work more stupendous, more magnificent, and more beneficial than has hitherto been achieved by the human race.”³⁷

CHAPTER 15

A NOBLE WORK

The most direct course from Rochester to Lake Erie was a southwestern diagonal ending up in the vicinity of Buffalo. This choice had the additional attraction of passing through Batavia, the local headquarters of Holland Land territory, where Joseph Ellicott and his property owners would welcome the additional trade from the canal as a nice payoff for their donation of 100,000 acres to help defray the cost of building the canal.

Unfortunately, the summit of this route was seventy-five feet above the level of Lake Erie, which blocked the lake from serving as a source of water for the canal. The local streams were much too small to serve the purpose. The diagonal course through Holland Land Company territory would not have brought much satisfaction to Ellicott or anyone else if the ditch ended up with no water running through it. Gouverneur Morris would have been amused. Others may have considered his vision of "tapping Lake Erie . . . and leading its waters in an artificial river, directly across the country to the Hudson River" to be a romantic dream, but here tapping Lake Erie's waters was essential.

There was an alternative route, which would run due west from Rochester, staying close to the shores of Lake Ontario for seventy miles;

at that point, the canal would make a ninety-degree turn southward and head on down to Lake Erie, thirty miles away. Although this route was longer than the diagonal through Holland Land country, it would carry the canal without any locks through flatlands between Rochester and the turn to the south. Between the turn and Buffalo, there was plenty of water, most of it coming from Lake Erie and the nearby Tonawanda Creek.

But the turn itself would be the most difficult and the most spectacular feature of the entire canal. Immediately after curving to the south, the canal came face-to-face with the steep and forbidding cliffs of the precipitous escarpment over which, seventeen miles to the west, Niagara Falls spills its torrents. There was no way to avoid this nearly vertical climb of over seventy feet. Even worse, the geological structure consisted almost entirely of solid rock. Yet this had to be the choice because of the inadequate water supply situation on the more direct route.

The commissioners invited several engineers to submit plans for this intimidating project. The proposal they accepted was presented by Nathan Roberts, a staff engineer; his dramatic but effective design, although modernized, functions today precisely as he conceived it nearly two hundred years ago. Roberts was forty-six years old in 1822 (which meant he was a child of 1776), a native of Canastota, New York, who had spent his younger years both speculating in land and teaching mathematics in the local schools. The combination turned him into a master surveyor, and he had recently served with much success as chief engineer on the stretch of canal between Rome and Syracuse.

The scheme was to begin by carving a flight of locks out of the escarpment, rising one immediately above the other like a giant staircase. "Flights of locks" were nothing new, but the magnitude of Roberts's design was much greater than anything attempted before. The canal would have to climb about sixty feet up the embankment. In order to reduce the number of locks necessary to achieve this daunting objective, Roberts decided to make his locks twelve feet high instead of the eight feet four inches of all the other locks on the canal. Then he built two

adjacent sets of five locks instead of just one set. With these "double-combined locks . . . working side by side," traffic could move in both directions, up and down, at the same time, preventing bottlenecks when boats headed one way would meet up with those coming the other way.¹

The experience was like a slanting fresh-air escalator ride up or down the equivalent of six stories in a modern building. A merchant who traveled on the very first boat climbing up the escarpment on these locks was bowled over by the experience: "I was more astonished than I ever was by anything I had before witnessed," he wrote.²

But Roberts's five locks did not carry the canal all the way up to the highest point of the escarpment, which still loomed another ten feet and more above the level of the fifth lock. This was no oversight. Surveys by Roberts and James Geddes had shown that the escarpment tilted gradually downward from that point. Instead of having to create at least one and perhaps two more locks to lift traffic to the very top of the cliffs, Roberts now slashed right into the solid rock face to sculpt a channel carrying the canal, and a towpath beside it, for seven miles in a straight line southward to the town of Pendleton, where the slope of the escarpment had declined to the same level as Roberts's channel. At Pendleton—whose nearby hardwood forest would become a world-famous source for ship masts and barrel staves—the canal connected to Tonawanda Creek, which flows in a gentle fashion southwesterly and empties into the Niagara River, right next to Lake Erie about ten miles north of Buffalo.

* * *

The work on this massive project began at its north end at a small settlement of 3 families, situated just eighteen miles south of Lake Ontario. Soon to be appropriately named Lockport, the town had increased to 337 families by January 1823, when the contracts had been let and the first digging had begun. Lockport's population would reach 3000 people by the time the job was done two and a half years later, not counting nearly 2000 laborers working on the construction of the locks

and digging the channel—the Deep Cut—through the escarpment. Many of these men were Irish who would remain in Lockport and give it a distinct Irish flavor for a long time to come.

Lockport became a major producer of electric power generated by surplus waters from the canal. The town was also a prime example of how rapidly the Erie Canal would stimulate economic development on a wider scale and attack the environment in the process. A vivid description of what “improvement” meant at Lockport was provided by Frances Trollope, the cantankerous mother of the famous English novelist Anthony Trollope, who came to America in 1828, just six years after Lockport came into being and only three years after the completion of the canal. Having traveled from New Orleans up the Mississippi and Ohio rivers to Cincinnati, Mrs. Trollope was now on her way to New York City. She deplored nearly everything she found here, including her trip on the Erie Canal—which was the route of choice to take her to New York—but she was especially vociferous about Lockport:

Lockport is, beyond all comparison, the strangest looking place I ever beheld. As fast as half a dozen trees were cut down, a factory was raised up; stumps still contest the ground with pillars, and porticoes are seen to struggle with rocks. It looks as if the demon of machinery, having invaded the peaceful realms of nature, had fixed on Lockport as the battle ground on which they should strive for mastery. Nature is fairly routed, and driven from the field, and the rattling, crackling, hissing, splitting demon has taken possession of Lockport for ever. We slept there, dismally enough. I never felt more out of humour at what the Americans call improvement; it is, in truth, as it now stands, a most hideous place, and gladly did I leave it behind me.³

The Deep Cut began just south of Lockport at a level of about thirteen feet below the rim of the escarpment, but over the next mile and a

half the summit of the escarpment rose to a point where the excavation was thirty feet deep. From there, the level gradually descended until it reached Tonawanda Creek. The wonder of the whole project was in digging the channel to such extended depths. The rocky composition of the escarpment was so solid and tough that the effort to drill holes for blasting often ended up with broken drills and no holes. Even special equipment ordered from New York and Philadelphia failed. Finally, a local man found a way to temper and harden the steel in a fashion that worked.

But creating a hole for the blasting powder was just the beginning. Once the gunpowder was deposited in the hole, and the fuse lit, the explosion itself was in most cases a violent and dangerous affair as huge pieces of hard rock went soaring and careening into the air in all directions, many of them landing on the streets of Lockport itself. Often a schoolboy was elected to light the fuse, on the theory he could run to safety faster and more nimbly than a grown man could make it over the jagged surface. Then there was the problem of removing the enormous heaps of rocks the explosions left lying at the bottom of the cut. For this task, the workers developed a kind of derrick, a boom for swinging buckets down into the cut to be filled with the shattered hunks of rock, after which horses pulled the cables that drew the debris up to the surface.⁴ Contemporary drawings show a long line of these strange booms, one after another, along the sides of the channel for as far as the eye can see. Even after the channel had been excavated, the narrow towpath had to be carved out of its side, often fifteen feet or more above the level of the water, so that the animals could continue to provide motive power for the boats.

The crews broke through the last few feet of the cut at Pendleton in October 1824, and the entire undertaking was finally completed in June 1825. The usual celebrations took place, with the representatives of Masonic lodges in this instance playing a prominent role, in full

regalia.^{5*} While an audience of about five thousand spectators watched the proceedings, the Masons marched down to the foot of the locks and placed a bronze capstone memorial there. It read, "Let posterity be excited to perpetuate our free institutions, and to make still greater efforts than our ancestors, to promote public prosperity, by the recollection that these works of internal improvements were achieved by the *spirit and perseverance* of REPUBLICAN FREE MEN."⁶

In 1831, when the marvels of Lockport were fully operational, an English barrister with the unlikely name of Henry Tudor wrote home that "it certainly strikes the beholder with astonishment, to perceive what vast difficulties can be overcome by the pigmy arms of little mortal man, aided by science and directed by superior skill."⁷ About the same time, a German tourist looked down from the top of Roberts's combined double locks and observed that this was "a noble work for so young a country."⁸ The work was indeed noble.

* * *

We can appreciate the magnitude of the achievement at Lockport by comparing the Deep Cut to its counterpart in the construction of the Panama Canal some eighty years later, when George Goethals connected Atlantic waters to the Pacific by hacking the nine-mile Culebra Cut through the Cordillera Mountains. The one hundred million cubic yards of earth dug out to create the Culebra Cut was the largest excavation in history. The work took six years, blew up sixty million pounds of dynamite, and moved enough dirt to build a Great Wall of China from San Francisco to New York. The crews labored in heat that seldom fell below a hundred degrees, and rock slides were a constant and devastating obstacle to progress. Hundreds of men were killed on the job. No wonder the Culebra Cut gained the nickname of Hell's Gorge.⁹

*Thirteen signers of the Declaration of Independence were Masons, and fourteen presidents, including George Washington, have been members of the group.

In the 1820s, Nathan Roberts, an engineer of limited experience, created the seven-mile Deep Cut at Lockport in three years with nothing but shovels and wheelbarrows, some animals, crude blasting powder, fragile hand-held drills, and the bare hands and broad backs of the workers. Nothing like it had ever been attempted before. Imagine what Roberts could have accomplished with Goethals's equipment, as Theodore Roosevelt reported after an inspection of the works at Panama in 1906:

The huge steam shovels are hard at it; scooping huge masses of rock and gravel and dirt previously loosened by the drillers and dynamite blasters, loading it on trains which take it away to some dump. . . . Little tracks are laid on the side hills, rock blasted out, and the great ninety-five ton steam shovels work up like mountain howitzers eating into and destroying the mountainside. It is an epic feat and one of immense significance.¹⁰

But there were significant parallels between the two projects, quite aside from digging through the mountains to make way for a canal. The driving vision of the Erie Canal was to link the Atlantic states by water with the west and make a great nation. Roosevelt, having enthusiastically promoted the Erie Barge Canal as governor of New York, envisioned the Panama Canal as the new passage between the two oceans to make the United States a great global power.¹¹ There was an echo of the Erie Canal in the slogan inscribed on the Tiffany and Company shield created for the Panama Canal in 1906: "The Land Divided—The World United."¹²

* * *

Dividing the land of New York in order to unite the Atlantic states with the west may have been a noble mission, but nobility was nowhere to be seen where the political squabbles surrounding the Erie Canal raged on. The most protracted wrangling over the route of the canal centered on the selection of the western terminus at Lake Erie.

Protracted is perhaps too mild a word to describe the brutal and seemingly endless controversy among competing business interests, politicians, and engineers.* The conflict began as far back as 1816 and was still raging while the Deep Cut from Lockport to Pendleton was nearing completion. Large economic rewards were at stake, for the canal's port on Lake Erie would be the equivalent of New York City's position on the east coast—the crucial gateway between the Atlantic states, the Atlantic Ocean, and the great territories, lakes, and rivers to the west.

Unlike the eastern end of the canal, where Albany and New York City were obvious choices, the topography of the shores of Lake Erie obscured the optimal solution rather than illuminating it. There were no natural harbors at any point down the lake's entire eastern shore. The closest configurations that just might serve the purpose were at two small communities, Buffalo and Black Rock, separated from each other by only three miles of dense forest at the northeast corner of the lake, almost due south of the Deep Cut at Pendleton. The nearest alternative for a port and harbor adequate to serve the purpose was Dunkirk, still in New York State but fifty miles away, on the southern shores of the lake.

Unlike the design of the entire distance of the canal from Albany to Lake Erie, the Buffalo–Black Rock contest provided the politicians and businessmen with a rich opportunity and strong incentives to interfere with the decisions of the engineers. The locals took every advantage of the opening provided to them.

Buffalo, close to the northeast corner of Lake Erie, was a small village of little importance at that time, with no more than two thousand inhabitants. Originally known as New Amsterdam, Buffalo's street plan and lakefront area had been laid out by Joseph Ellicott of the Holland Land Company, who at one time owned as much as one-third of the

*The controversy was so protracted, in fact, that, taking mercy on the reader, I have compressed it to bare bones.

property there.¹³ When De Witt Clinton and the other commissioners reached Buffalo in 1810 during their survey of the canal's possibilities, they found only thirty or forty houses, a courthouse, a few stores, and a tavern where the commissioners were "indifferently accommodated in every respect." Buffalo remained as a quiet place, an attraction for tourists or a stopover for pioneers heading west, until the Erie Canal came into view.

As Ellicott's map of Buffalo reveals, the town had been built right down to the shores of the lake while at its southern end a snakelike creek wiggled lethargically into the lake. Yet Buffalo was not the obvious choice over Black Rock: it did not have anything resembling a natural harbor even though it was located on the lake. The movement of the tides offshore was strong, and the lake's waters were shallow. A sandbar prevented all but the smallest of boats from reaching land, a disability that could be cured, but only at substantial expense. This was not a place where ships could easily move in and out.

Unlike Buffalo, the little town of Black Rock was not situated on Lake Erie. It was set slightly inland, just above the mouth of the Niagara River, which flows eastward from Lake Erie into the interior and then north to the precipice at Niagara Falls. Because of its location on the river, Black Rock was a much busier settlement than Buffalo. The town had a harbor of sorts, sheltered from the winds blowing across the lake by two small islands, Bird Island and Squaw Island. The black rock after which the town was named, a one-hundred-foot outcropping from the shore, formed a natural wharf, with a landing for boats somewhat protected from the force of the current.

Most important, as Black Rock's most famous citizen, Peter Porter, was fond of reminding his colleagues on the canal commission, the Niagara River was navigable all the way up to Lake Ontario, just thirty miles to the north. The only break was at the area around Niagara Falls, where Porter's firm conveniently arranged to carry the boats around the falls and then back into the river. Before the completion of the Erie Canal,

most travelers and cargo going west went by way of Lake Ontario rather than on the bumpy overland roads, with the Niagara River as their connection to Lake Erie. They kept Porter's eponymous portage operation busy and highly profitable. If the Erie Canal were to establish its terminus at Black Rock, Porter would become one of the most powerful men in the whole American economy. He would never give up trying.

But Black Rock also had problems. The current in the Niagara River flowing north from Lake Erie and past the town was too strong for sailing vessels to negotiate the short passage from Black Rock harbor into the lake. An enterprising resident, Sheldon Thompson, furnished these vessels with what he called the "horn breeze"—his team of fourteen oxen pulled the boats up the river and then delivered them into Lake Erie.

* * *

In 1816, after much discussion, the canal commissioners settled on Buffalo as the best place for the terminus of the canal. Clinton was so enthusiastic he predicted Buffalo would one day be as great and powerful as New York. But the Black Rock contingent was not about to accept this decision without a fight. They were already enjoying the prospects of business and publicity they would receive when the steamboat Peter Porter was building would be launched into the Niagara River.¹⁴ The 338-ton *Walk-in-the-Water* made its maiden voyage in 1818, with the assistance of Thompson's "horn breeze," and traveled all the way across Lake Erie to Detroit and back.

In the same year, at Joseph Ellicott's suggestion, De Witt Clinton asked William Peacock, one of the engineers assigned to the western section, to make one final survey of the area around both Buffalo and Black Rock and come up with a firm recommendation as to which would best provide for "a safe and commodious harbor" for the canal. Ellicott had not recommended Peacock just because of his engineering abilities. Peacock had done most of the surveying on the rejected diagonal route for the canal from Rochester to Buffalo by way of Holland Land Company

territory. In the process, he and Ellicott had become friends. Ellicott's interests in Buffalo had a lot riding on the decision and Peacock's friendship could make a difference.*

Peacock performed as anticipated. His detailed engineering report of January 1819 covered everything from the sand and gravel in Buffalo's harbor to the timing of the lake's currents. After recommending the construction of a pier extending a thousand feet out into the lake, Peacock concluded, in "most decided" fashion, that "Buffalo from its local situation is apparently the key which opens to the People of the State of New York a most stupendous path of navigation and of commerce extending the distance of more than 2000 miles."¹⁵

At this point, we might assume the whole matter was settled, but instead the story turns into a kind of musical comedy. In 1820 the canal commissioners reversed themselves and decided to award the prize to Black Rock. But Buffalo had no intention of giving up. An engineer named David Thomas now visited the area and persuaded the commissioners to reverse themselves yet again and anoint Buffalo as the official terminus for the canal, as they had originally decided. The citizens of Black Rock were furious, but the commissioners held fast by their decision in favor of Buffalo—at least for a while. Then, in August 1821, James Geddes and Nathan Roberts surveyed both harbors and reported back to the commissioners their judgment that Black Rock had the better facilities.

Six months later, Roberts, David Thomas, Canvass White, and Benjamin Wright went out to look over the situation one more time and recommended Buffalo. Geddes was the sole dissenter on the engineers' report and refused to sign it, but the majority prevailed. To add insult to Black Rock's injury, Porter's *Walk-in-the-Water* encountered a terrible storm and ended up a total wreck right next to the Buffalo pier. To com-

*Despite Ellicott's many successes in working for the Holland Land Company and in promoting Buffalo, his periodic depressions finally overtook him on August 19, 1826, almost a year after the opening of the Erie Canal, when he committed suicide at Bellevue Hospital in New York City.

pound the tragedy for Black Rock, the new owner rebuilt the ship in Buffalo.

In June 1822, the canal board and the five engineers met in Buffalo to make a final-final decision on the harbor and terminus. Clinton's diary reports with great detail on his trip west for this meeting, including his customary expressions of enjoyment at nature, as well as admiration of the burgeoning traffic on the canal and the enthusiastic greetings he received from the crowds along the way. He also took the time to record his complaints, as usual, which included a portrayal of the discomforts of overnight travels on the canal and his morning's reward: "Night aboard uncomfortable. Crowds of women and three children in next cabin. . . . Although like going from an oven into an ice-house, got up at night—wrapped myself up in my cloak—and stayed on deck until we passed from Oneida Creek to Rome—16 miles through gloomy swamps . . . the fog heavy. . . . Breakfasted at Rome—a good salmon."¹⁶

The commissioners arrived at Buffalo on the evening of June 7, after a stop to sightsee at Niagara Falls. Clinton notes that he conducted an interview that evening with a famous Seneca Indian named Red Jacket at the Buffalo courthouse before a large audience.

The next morning the commissioners began their deliberations on the choice of terminus. By unanimous vote, Buffalo was still the choice. Nevertheless, it would be February 1825 before the legislature finally ordered the commissioners "to continue and complete the Erie canal to Lake Erie at the mouth of Buffalo creek, distinct from, and independent of, the basin at Black Rock."¹⁷

When the legislature completed all the arrangements, Buffalo would have been unrecognizable to the commissioners who had visited there in 1810. Some of the growth was simply the result of Buffalo's location on the shores of Lake Erie and its proximity to that great tourist attraction, Niagara Falls. But by the 1820s, Buffalo was expanding in anticipation of its key role in the Erie Canal. The population of the so-called Queen City

had risen to almost 2500, there were five churches, six schools, a courthouse, a library, a theater, a Masonic hall, and over fifty shops of all kinds. Buffalonians could call on seventeen attorneys and nine physicians to attend their needs. They had four newspapers to keep them informed, and a constant flow of visitors and travelers heading west filled the eleven inns (quality not recorded).¹⁸ Buffalo lived up to Peacock's promise as the key to "a most stupendous path of navigation and of commerce extending the distance of more than 2000 miles."

Not so at Black Rock. As Buffalo was beginning to flourish in its new role, the pier built by the eager citizens of Black Rock was carried away by floodwaters in May 1826. This was Peter Porter's last gasp after fighting for over fifteen years for the Lake Ontario route and against the canal's overland route from Rome westward to Lake Erie.

In 1837, Porter moved up to Niagara Falls, where he died in 1844. We can only wonder how he would have reacted nine years later, in 1853, when Black Rock disappeared as an independent locality to become part of the city of Buffalo. Today, only the black rock gives the town any identity, except for those who are familiar with its history.

* * *

While the noble work at Rochester and Lockport and the ignoble partisan struggles at Buffalo and Black Rock were going on, the rest of the canal was progressing at a rapid pace. In 1824, over three hundred bridges were built across the canal along the stretch between Utica and Albany to connect farmlands and other properties that had been split by the passage of the canal. The junction between the Tonawanda Creek and the canal was finished. New York City was booming, with three thousand new houses completed just in 1824. At Utica, Syracuse, and Troy, elaborate mechanisms to weigh boats and their cargoes were coming into operation. These ingenious devices, operating on what were known as hydrostatic locks, measured the water displaced by a boat, from which it was possible to compute the boat's weight and appropri-

ate toll. The most handsome of these locks was at Syracuse, where the structure took the form of a classic Greek temple.

But a new outbreak of the political storms over De Witt Clinton's role in the management of the Erie Canal was gathering in Albany, a tempest that would dwarf the battle of Buffalo and threaten to delay the promised completion of the canal in 1825. The drama engulfed all the major characters in the whole long history of the Erie Canal up to that moment. No one would know until the final climax whether the ending to this drama would be a happy one or a tragedy. The dénouement had elements of both.

CHAPTER 16

THE PAGEANT OF POWER

On July 22, 1823, about six months after he had left the governor's office in a state of exhaustion and depression, purportedly ending his political aspirations, De Witt Clinton addressed the Phi Beta Kappa Society of Union College in Schenectady. His message appeared to be inspired by the ivory tower to which he had consigned himself and focused on the glories of learning. But his eloquent words reflected his true state of mind at that moment: "Pleasure is a shadow, wealth is vanity, and power a pageant; but knowledge is ecstatic in enjoyment, perennial in fame, unlimited in space and infinite in duration. . . . Its seat is the bosom of God—its voice the harmony of the world."¹

At the age of fifty-four, the pageant of power was still driving Clinton's thoughts and dreams. In October 1823, just before the elaborate ceremonies opening the canal to the Hudson River, his diary noted a recent toast by a good friend: "D.W.C. like an old brass kettle. The harder he is rubbed, the brighter he will shine."² Another entry declares, "Canalling more popular than banking."³ The diary pages that follow are full of gossip about Van Buren, John Quincy Adams (warming up for his own run at the presidency in 1824), and Representative John C. Cal-

CHAPTER 17

THE WEDDING OF THE WATERS

In response to an invitation from President James Monroe to be the first “Nation’s Guest” of the United States, the Marquis de Lafayette landed in New York City in August 1824 for a triumphal American tour. And the tour was indeed a triumph.

Lafayette was the last surviving major general from the War of Independence and a widely popular symbol of opposition to monarchical tyranny. Although sixty-seven years old and in poor health, he traveled up, down, and across the United States for thirteen months, welcomed by countless thousands of shouting crowds, and transported by every available means of conveyance. He visited all twenty-four states of the union, surveyed both Harvard and Columbia universities, dined with all three living ex-presidents, the current president, and the next president, and sat through what must have amounted to hundreds of speeches, dinners, toasts, and other forms of celebration. At Boston, for example, he rode in a carriage drawn by six white horses as part of a giant parade of seven thousand citizens and led by survivors of the Battle of Bunker Hill, who presented him with some soil from Bunker Hill to take back to France.

On June 6, 1825, Lafayette arrived at Buffalo by steamer from

Dunkirk, fifty miles down the coast of Lake Erie. It was time to pay his respects to the Erie Canal. He went by carriage from Buffalo to Lockport, where he marveled at the great works nearing completion and at the aqueducts over which the canal “pursued an aerial route.” And then he boarded the passenger boat that carried him on the canal from Lockport on to Rochester, Syracuse, and Utica. This boat was known as a packet, or packet boat, so named to evoke the same term applied to the great sailing ships carrying passengers back and forth across the Atlantic Ocean.

When Lafayette arrived at Utica on June 8, De Witt Clinton greeted him with a brand-new packet boat named *Governor Clinton*. Not to be outdone by Boston, Clinton had arranged for the boat to be pulled by white horses instead of the usual drab mules. Lafayette and Clinton spent the next three days sailing eastward on canal waters to Albany, where they passed under a triumphal arch topped with a large stuffed eagle that flapped its wings by some form of mechanism at the moment of their arrival.

None of these ornate ceremonies commemorating the Revolution and America’s independence could rival the celebrations, revels, festivities, boasts, and toasts that marked the official completion of the Erie Canal just four months later, in October 1825. All the frictions, rivalries, and bitterness of the years past would be forgotten in the avalanche of lavish entertainments and ceremonies that consumed New York State as it greeted a dream coming true.* New York was entitled to go all out. In the space of just eight years, with no financial or any other kind of assistance from the national government or any sister state, New York had created what the official chronicler of these events, William L. Stone,

*There are many descriptions of this extraordinary occasion. With minor exceptions such as contemporary newspaper commentary, all sources have drawn upon a remarkable eyewitness “narrative” of the opening of the canal by William L. Stone, which was prepared at the request of the Committee of the Corporation of the City of New York. All quotations in this chapter are from Stone—accessible at www.history.rochester.edu/canal/bib/colden/App18.html—unless otherwise indicated.

7 aptly described as “a work of which the oldest and richest nations of Christendom might well be proud.”

The celebration began on the morning of Wednesday, October 26, and continued on almost uninterruptedly into the night of Friday, November 4, followed by a huge ball on the evening of November 7. The most lavish impresarios of our own time, from Billy Rose to Franco Zeffirelli, never staged anything as elaborate or as prolonged as what came to be known as the Wedding of the Waters.

The most impressive feature of the whole series of events was the stamina of the participants, especially De Witt Clinton, now in his role of governor, and Lieutenant Governor Tallmadge, who were front row center from the very beginning through stops for ceremonies at more than twenty towns right up to the final conclusion of the celebrations. The long nights trying to sleep in the cramped quarters of their boat could hardly have been refreshing. One can only be in awe of the number of speeches Clinton and Tallmadge had to listen to, the number of speeches they had to deliver, the number of toasts they had to drink, the number of feasts they had to consume, and the number of blasts of artillery that assailed their ears at nearly every stop and nearly every departure.

Buffalo opened the festivities at nine o'clock on the morning of October 26 with a parade led by Clinton from the courthouse to the waterfront. There Clinton and Tallmadge boarded their home for the next eight days, the packet *Seneca Chief*, drawn by four gaily decorated gray horses and carrying two elegant wooden kegs decorated with eagles and filled with water from Lake Erie to be poured into the Atlantic Ocean upon arrival in New York City. The cabin of the *Seneca Chief* contained two paintings, one a view of Buffalo and its junction with the canal, but the other far more elaborate. Although the artist was a well-known miniature portrait painter, his work here was massive. It showed Hercules resting from his labors while Clinton, full length and in Roman costume, is inviting Neptune to join him. Neptune is erect in his seashell,

drawn by sea horses and surrounded by Naiades—but both Neptune and his companions appear astonished at the canal lock opening ahead of them.

The *Seneca Chief* was followed by the *Superior*, the *Commodore Perry*, a freight boat, and the *Buffalo*. A long line of other boats came along behind these first five. Among these was the *Noah's Ark*, bringing east a motley cargo of fauna from the west, consisting of birds, beasts, “creeping things,” a bear, two eagles, two fawns, several fish, and two Indian boys in the dress of their nation. The boat bringing up the end of the parade—as far away from Clinton as possible—was the *Niagara* of Black Rock, with Peter Porter aboard.

The first event before the boats were boarded was a brief address by Jesse Hawley, the man who had started the agitation for a canal across New York State twenty years earlier. It was Hawley who wrote back then, “If the project be but a feasible one, no situation on the globe offers such extensive and numerous advantages to inland navigation by a canal, as this!” Hawley now set the tone for the occasion by paying his respects to the “projectors . . . statesmen . . . legislators . . . engineers [and] men who had executed this magnificent work—an exhibition of the moral force of a free and enlightened people to the world.” But he could not resist a dig at those who had ignored his predictions for so long: “This is all the notice I have ever received from the State of the people of New York for it in any wise.”¹ Yet three years earlier, De Witt Clinton himself had written to Hawley admitting that the first suggestion he had seen of a canal from Lake Erie to the Hudson had been in Hawley's essays.²

As the *Seneca Chief* pulled away from the docks, there were simultaneously a rattle of small arms fire, a blast from a thirty-two-pound cannon, the band playing *fortissimo*, and robust cheers from the crowds on the shores answered by roars from the men packed aboard the line of boats about to sail off on the Erie Canal to New York harbor. That was just the opening sally. New York and the communities in between were impatiently awaiting word that the *Seneca Chief* was under way.

The news was signaled by artillery lined up all the way from Buffalo to New York, with each gun within audible range of the other guns on either side of it. As each shot was fired, the next gun went off, all the way from Buffalo to Sandy Hook, New Jersey, at the southern end of New York harbor, at which point the guns fired a return sequence back to Buffalo. Many of these guns had been British arms captured by Oliver Hazard Perry at the Battle of Lake Erie, and one of the gunners had served as a lieutenant in Napoleon's army. The round trip of cannonades took more than two hours (Clinton had hoped the procedure would provide a measurement of the speed of sound, but the planned arrangements failed to produce the answer). As the last returning shot boomed, the line of boats departed for Lockport—while the Buffalonians carried on their revelries well into the night.

The guns set off emotions as powerful as their explosions. Cadwalader D. Colden recalled the very moment he heard the cannon and asked himself, "Who that has American blood in his veins can hear this sound without emotion? Who that has the privilege to do it, can refrain from exclaiming, I too, am an American citizen; and feel as much pride in being able to make the declaration, as ever an inhabitant of the eternal city felt, in proclaiming that he was a Roman."²³

* * *

The parade reached Rochester on the rainy morning of the twenty-seventh. In addition to the usual bombardments and speeches, Rochester provided a new boat to join the parade, carrying Rochester's favorite description of itself, the *Young Lion of the West*. This boat waited as the others approached and then hailed the lead boat with the cry "Who comes there?" and the response came, "Your brothers from the West, on the waters of the great Lakes." The dialogue continued until the *Young Lion of the West* gave way and allowed the brethren from the west to enter Rochester's spacious harbor, where the side of the canal was lined with every possible facility for boats to dock and load or unload

their cargo and passengers. Few boats have ever enjoyed such a special kind of reception: the *Young Lion of the West* was carrying two wolves, a fawn, a fox, four raccoons, and two eagles, all creatures of the Rochester area.

The smallest villages the flotilla passed through were determined to create celebrations as elaborate as anything the larger towns could put on. Take, for example, Port Byron, a settlement not far from Syracuse and then known as Bucksville after its founder, Aholiab Buck. Even today, Port Byron has a population of only 1400 and an official area of merely 0.9 square miles.* Yet this tiny community greeted Clinton and his companions with a deafening fireworks display and musket volleys, followed by the launching of an illuminated balloon, which obligingly took an easterly direction and floated along the line of the canal. Then came a full-fledged banquet, including a fat ox roasted whole, and a succession of toasts whose length was not to be exceeded in most larger towns along the route. All that was only a prelude, as "thirty or forty ladies, always patriotic, [and] arrayed in their sweetest smiles and most beautiful attire, awaited the happy moment when they could 'trip the light fantastic toe' with the expected strangers."

On Saturday, at Syracuse, another early supporter of the canal led the reception—Joshua Forman, who in February 1808 recommended to the legislature the establishment of a joint committee to arrange for exploring and surveying the most favorable route for a canal between the Hudson River and Lake Erie. That proposal had been just the first step in the tortuous process of nine years before the state legislators would finally authorize the project they were now outdoing one another in proclaiming the masterwork of the age.

* * *

*Port Byron has had its fair share of famous residents: Henry Wells, the founder of American Express, the great Mormon leader Brigham Young, and Isaac Singer, who invented the sewing machine.

There were two notable killjoys among the celebrations. At Rome and Schenectady, the citizens claimed their towns had been short-changed by the design of the canal and expressed their displeasure by a notable absence of toasts, gunfire, cheers, and feasts.

At Rome, the Western Inland Lock Navigation Company had built a canal in the 1790s right through the middle of town, but the engineers on the Erie Canal determined that a route running along the outskirts would be more efficient. The frustrated Romans were convinced the canal commissioners had treated them unjustly, and they took the occasion of the Wedding of the Waters to make their sentiments clear. At eleven o'clock on the morning of Saturday, October 29, they formed the usual uniformed parade in front of the usual hotel with the usual bands and the usual artillery activity, but the rear of the parade featured four men supporting a black barrel filled with water from the old canal. Marching to muffled drums, the four men escorted their barrel to the new canal, where they unceremoniously dumped its contents.

Having expressed their view of the matter in such eloquent fashion, the citizens of Rome turned around and joined in the spirit of the lively celebration under way. A large throng gathered at the hotel for dinner and toasts, including a toast for the Erie Canal, "to whom honor is due." When the flotilla from the west arrived on Sunday, Rome's city fathers received De Witt Clinton and the other officials with "the usual courtesies"—but the visit lasted only about an hour, then the boats departed to a more gracious reception at Utica.

Schenectady had similar complaints about the canal's route. The leading newspaper even proposed greeting the Clinton party with a funeral procession or some other demonstration of mourning. Nobody went that far, but Schenectady made no preparations for a large-scale reception. When the boats came into sight about three o'clock on the afternoon of Tuesday, November 1, the principal citizens respectfully welcomed the governor and lieutenant governor and provided them with a dinner at the main hotel, but the crowds were silent. The occasion

developed into a kind of replay of "the gloomy interval" the commissioners had experienced in Schenectady in 1810. An hour later, the company reboarded the boats and, in a dark and dreary night, continued on their way into the formidable sequence of locks by which the canal descends into the Hudson valley.

* * *

At 10:30 a.m. the next morning, Wednesday, November 2, Clinton and his companions arrived at Albany and passed through the last lock of the Erie Canal before entering the Hudson River. Just a week had elapsed since the explosive departure from Buffalo—and the guns here were just as busy: twenty-four cannon on the pier fired a grand salute as the *Seneca Chief* and her companions left from the last lock and entered the basin leading to the Hudson. The *Albany Daily Advertiser* caught the spirit of Clinton's arrival in Albany: "It was not a monarch which they hailed, but it was the majesty of genius supported by a free people that rode in triumph and commanded the admiration of men stout of heart and firm of purpose."⁴

The Albany basin was jammed with canal boats and a huge gathering of cheering spectators massed along the wharves, the bridges, and the shoreline. After the line of boats reached the southernmost bridge across the basin, the Clinton contingent went ashore to be received by a welcoming committee that included every available local official and even delegates from the national government in Washington, including Secretary of State Henry Clay, Chief Justice John Marshall of the U.S. Supreme Court, Attorney General William Wirt, and high-ranking military men.

Accompanied by a long parade featuring carts loaded with western produce, the honored guests and their innumerable hosts walked through Albany to the Assembly chamber. Here the scene was highlighted with portraits of both De Witt Clinton and his uncle George, as well as an enormous full-length portrait, *The Father of his Country*, of

George Washington, on top of which a carved bird of victory grasped a shot of lightning. A large chorus and full orchestra proceeded to perform as a prelude to the inevitable speeches. The keynote, by a man named William James, contrasted the primitive conditions in New York before 1817 with the striking improvements over the past eight years. James's vivid description was full of flowery language, like "the dismal and savage trackways . . . through forbidding forests, where now stand . . . flourishing towns . . . celebrated for the elegance and refinement of their inhabitants, the grandeur of their scenery [and] seats of learning."

Then everyone returned to the bridge, which had been converted into a gothic cathedral, with pointed arches 14 feet high and pilasters capped by gilded gothic turrets. Elaborate lines of shrubbery decorated the sides of the bridge and the arches. Farther on, there were three circular arches topped by huge signs reading "GRAND ERIE CANAL," "JULY 4TH, 1817," and "OCTOBER 26TH, 1825." A vast tent stretched beyond these arches, containing two lines of tables, each 150 feet long, to accommodate six hundred guests.

The aisle was wide enough for another procession to march through the area. And then the guests could finally be seated and begin to enjoy "plenty of the 'ruby bright' wines of the best vineyards of Europe," which must have been mighty welcome by that time. The festivities continued on into the evening, when there was an elaborate theater performance of odes, a full drama, and a canal scene with locks, including horses and boats actually passing across the stage.

* * *

Thursday morning turned out to be one of those gleaming and luminous days, ideal for blessing the very first boats about to complete the voyage by uninterrupted waterway from Buffalo to New York City and the Atlantic Ocean beyond. The crowds along the shores at Albany were even larger than on the preceding day, with every dock, store, and vessel full of shouting multitudes.

The nautical procession to New York got under way at ten o'clock. Here there were no towpaths, so the canal boats were pulled down the river by a line of seven steamboats decorated with colorful banners and streamers fluttering in the wind, each carrying a brass band and overflowing with passengers. William Stone, a man of his own time rather than ours, greatly admired "the large columns of steam rushing from the fleet, rising majestically upwards, and curling and rolling into a thousand fantastic and beautiful forms."

While the steamer *Chancellor Livingston* took the *Seneca Chief* in tow, the *Saratoga*, a small steamboat capable of higher speeds than the others, served as a tender to transport passengers of the other boats to and from the landing places. Between stops, the *Saratoga* "sporting about like a dolphin—now in the wake of one boat, now along the side of another, and now shooting a-head of the whole." As the flotilla moved down the Hudson, additional small steam vessels joined the *Saratoga* in darting back and forth and around the majestic line of boats heading to the city, until a total of twenty-two gaily decorated steamers had joined the procession.

As the naval parade sailed down the broad river, with its high banks covered by the rich foliage of autumn, they were greeted by the usual muskets, the cannon carefully placed to signal their arrival, the bands, and the shouts. Evening was approaching as they passed Hyde Park, where bonfires, rockets, and other illuminations spiced the standard trappings of the reception. At West Point, the greeting was even noisier, with a blast of rockets plus a salute of twenty-four guns upon the arrival of the first boats and another volley of twenty-four guns when the last boat passed.

Once West Point was behind them, and all the official greeters had departed, the passengers aboard the boats were finally able to retire and get some rest. They would need it: the following day, Friday, November 4, they were scheduled to arrive in New York City waters before dawn to commence the climactic festivities of their voyage from Buffalo.

When the flotilla reached Ossining, about thirty miles from the northern end of Manhattan Island, they were met by a brand-new steamboat, the *Washington*, chartered for the occasion. The entire stern area of the ship was covered with the most elaborate kinds of decorations, flaming torches, and sculptured figures celebrating George Washington, the Marquis de Lafayette, agriculture, commerce, and even the whole globe of the earth.

A group of New York City officials stood in the bow, and one cried out to the *Seneca Chief*, "Whence come you, and where are you bound?" The answer came back: "From Lake Erie—and bound for Sandy Hook." Now the boats started ahead and immediately encountered two British warships flying the American flag along with the usual Cross of St. George. An exchange of salutes by gunfire acknowledged the occasion.

By 8:30 a.m., the distinguished guests on the canal boats and their escorts joined the city officials at City Hall and proceeded immediately from there to the line of steamships at the foot of Whitehall Street, where the trip into the harbor would begin. One of the steamers involved was the *Lady Clinton*, an "elegant safety-barge" decorated with so much foliage it must have looked like a small forest.* The *Lady Clinton* was reserved for the ladies of the party. According to Stone, the captain "paid every attention to his beautiful charge; every countenance beamed with satisfaction, and every eye sparkled with delight."

After stops at the navy yard on the East River and greetings from the crowds jamming the shores of Brooklyn Heights, the steamboats sailed past Castle Garden at the Battery and headed out toward Governors Island and Jersey City, and then, in calm seas and brilliant sunshine, sailed on out to Sandy Hook, at the very southern end of New York harbor. Here Clinton, Tallmadge, and a long procession of other dignitaries transferred to the *Washington*, while all the other boats and ships of varying sizes and shapes formed a great circle around her.

*This was the same packet boat Clinton had seen passing along in May 1822, as noted with special pleasure in his diary at that time.

As the very first act of the ceremony, Clinton filled several bottles—noted as "made in America"—with the water from Lake Erie. Then he placed them in a cedar box specially prepared for the occasion by the famous woodworker Duncan Phyfe, to be transported back to France as a gift to the Marquis de Lafayette from the people of New York.

Clinton then performed the culmination, not just of the ceremonies on that day, but of all the years of hope and anger, progress and retreat, and design and redesign that led up to this moment: from the green keg with gilded hoops, he poured the Erie waters into the Atlantic Ocean. Using many fewer words than usual, he turned toward his companions and declared:

The solemnity, at this place, on the first arrival of vessels from Lake Erie, is intended to indicate and commemorate the navigable communication, which has been accomplished between our Mediterranean Seas and the Atlantic Ocean, in about eight years, to the extent of more than four hundred and twenty-five miles, by the wisdom, public spirit, and energy of the people of the state of New York; and may the God of Heavens and the Earth smile most propitiously on the work, and render it subservient to the best interests of the human race.

At that point, Dr. Samuel Mitchill, one of Clinton's close friends, stepped up with thirteen bottles of water—one each from the Ganges, the Indus, the Nile, the Gambia, the Thames, the Seine, the Rhine, the Danube, the Mississippi, the Columbia, the Orinoco, the Rio de la Plata, and the Amazon—which he proceeded to empty into the Atlantic. Dr. Mitchill was followed by Cadwallader Colden, the extraordinarily verbose but distinguished grandson of his namesake, the man who had visited the Mohawk valley and farther west in 1724 and had enthused over the potentials there for east-west passages by waterway. Colden was there to give the mayor of New York his compendium on the history of canals and waterways, with special emphasis on the Erie Canal, a long but valuable history.

There were some present at these ceremonies who had attended a naval fête given in 1815 by the Prince of Wales on the Thames for the sovereigns of Europe in celebration of the defeat of Napoleon. According to these men, as Stone describes it, the spectacle in the waters of New York “so far transcended that in the metropolis of England as scarcely to admit of a comparison.”

While all this was going on out in the furthest reaches of the harbor, a giant parade was under way in Manhattan. As hawkers came out in force selling Clinton “kerchiefs” and Clinton hats, the procession began on Greenwich Street, moved through Canal Street, proceeded up Broadway to Broome Street and up to the Bowery at its farthest point, after which it turned back down and ended at City Hall. At its maximum, the line of participants was more than a mile and a half in length, the largest parade ever witnessed in America up to that time (and maybe since). In addition to military contingents, just about every social, occupational, and religious group in the city participated—bakers, tailors, sailors, teachers, and even a large representation from Clinton’s alma mater, Columbia University—each aiming to outdo the others in the elaborate character of their badges and in the beauty of their banners. Some groups had gigantic floats covered with rich Turkish or oriental carpets, with members of the sponsoring organization displaying how they pursued their daily activities.

As darkness fell, all the public buildings and main hotels were covered with brilliant illuminations, of which the brightest seems to have been the City Hotel on Broadway. That was most appropriate. The City Hotel had been the site of the mass meeting in December 1815, when the citizens rose up and instructed Clinton to prepare the memorial, insisting that the legislature authorize the construction of the Erie Canal to begin. There might never have been a canal without that meeting.

* * *

The citizens of Buffalo were not to be outdone by their fellow Americans at the eastern end of the canal. They had planned to follow the

New York ceremony by performing it in reverse. Early on the morning of November 23, the *Seneca Chief* completed a triumphant return voyage on the canal, bearing a keg of Atlantic waters westward to Buffalo. At 10:00 a.m., Judge Samuel Wilkeson stepped to the bow of the boat to do the deed. Wilkeson had earned the honor as the most aggressive of Buffalo’s aggressive citizens in the struggle to be named the terminus of the canal. He emptied the keg of Atlantic waters into Lake Erie amid the cheers of the crowd and the explosions of the guns.

The Wedding of the Waters was now complete. Stone’s final paragraph to his narrative of these proceedings was right to the point:

The authors and the builders—the heads who planned, and the hands who executed this stupendous work, deserve a perennial monument; and they will have it. To borrow an expression from the highest of all sources, “the works which they have done, these will bear witness of them.” Europe already begins to admire, America can never forget to acknowledge, that **THEY HAVE BUILT THE LONGEST CANAL IN THE WORLD IN THE LEAST TIME, WITH THE LEAST EXPERIENCE, FOR THE LEAST MONEY, AND TO THE GREATEST PUBLIC BENEFIT.**

Weddings are only beginnings. America’s “Mediterranean Seas” were now wedded to the Atlantic Ocean—a big step toward the northwest passage Henry Hudson had been seeking more than two hundred years earlier—but what was life like after the honeymoon and the glow of this extraordinary wedding had worn off? How well did the marriage settle down to the routines of daily activities? New York State had made an enormous investment in the Erie Canal in terms of labor and reputation as well as in money. The time had arrived to receive the payoff, to evaluate the returns, and to observe the changing future.

gold mine for people seeking to earn great profits from business, money, trade, and industry. As the French foreign minister had observed about Americans as far back as 1785, "These people have a terrible mania for commerce."⁴⁶ Most Americans shared George Washington's concern about uniting a nation, but even he had emphasized the importance of trade and commerce in achieving that vital objective.

On that score, the canal delivered everything that could be hoped for. As Hawthorne had predicted, the route of the Erie Canal would indeed turn into "one thronged street, from Buffalo to Albany."

CHAPTER 19

THE PRODIGIOUS ARTERY

In his Memorial of 1816, De Witt Clinton had predicted that the Erie Canal would "convey more riches on its waters than any other canal in the world," releasing resources "to be expended in great public improvements; in encouraging the arts and sciences; in patronizing the operations of industry; in fostering the inventions of genius, and in diffusing the blessing of knowledge." Just nine years later, this far-reaching vision was about to become a reality.

The Erie Canal would transform New York into the Empire State, standing on what Clinton had portrayed as "this exalted eminence."^{*} The national impact of the canal was even greater. The dramatic reduction in travel time on an east-west route into the heartland of the country was an imperative for building a great nation across a huge and fertile continent, where trade, money, and business were rapidly becoming second nature. This narrow ribbon of ditch, less than 375 miles long, provided the spark, the flashpoint, and the inspiration for a burst of progress in America that would eventually coin the buzzwords of the early twenty-first century: economic growth,

^{*}As mentioned earlier, this expression has no clear provenance, although it appears to have been in general use by 1825.

urbanization, national unity, globalization, networking, and technological innovation.

It was no coincidence that the Erie Canal inspired the route of the very first steam railroad in the United States, the Mohawk & Albany, which opened for business in 1831 between Albany and Schenectady, pulled by a locomotive sporting the name *De Witt Clinton* on its coal car. Although only sixteen miles long, the Mohawk & Albany took passengers in one hour past the twenty-seven locks and a full day's travel needed to cover this distance by the canal.

In time, the railroads would eclipse the Erie Canal and the complex network of canals it inspired across the country from Chicago to the eastern seaboard, but it would be a long time. Steam mattered more in powering the boats on the Great Lakes, which brought population to the lake ports and enhanced the connection between the Erie Canal and the lands farther west. And well before the railroads could make a difference, a major innovation in networking would arrive: Samuel F. B. Morse's telegraph lines, which began to weave their way across the nation in 1844, along the Erie Canal and along the new railroad lines as well. The flood of information pouring at breathtaking speed across those telegraph wires radically collapsed both time and distance.

However, as late as 1852, thirteen times more freight tonnage was carried on an enlarged Erie Canal than on all the railroads in New York State.¹ This huge disparity reflects the mix of business in the early years of the railroads, which was only incidentally to carry merchandise and primarily to transport passengers under more comfortable conditions than the crowded and often disagreeable conditions aboard the packets. The railroad system in its early days was not sturdy enough to carry the heavy bulk of grain and timber that sailed with so little effort on the waters of the Erie Canal.²

Consequently, the canal continued to put up stiff competition even as the railroads matured. When tolls were abolished in 1882, the Erie Canal was serving over twenty million people annually and had pro-

duced revenues of \$121 million since 1825, more than quadruple its operating costs.³ And it was still going strong.

After a significant enlargement in the 1840s, the canal went through a second and far more impressive enlargement at the turn of the century, when total freight traffic exceeded six million tons—triple the volume in 1860.⁴ The moving spirit in this massive project was none other than George Clinton, grandson of De Witt Clinton and the namesake of De Witt's beloved uncle. This George earned the title of "Father of the Barge Canal" for his contribution.⁴

Once again, New York State turned to the federal government for financing, as it had at the very beginning of the Erie Canal, and once again was disappointed. Governor Theodore Roosevelt was not to be deterred, proclaiming, "We [New Yorkers] cannot afford to rest idle while our commerce is taken away from us, and we must act in the broadest and most liberal spirit if we wish to retain the State's supremacy. . . . While giving all weight to the expense involved, we should not be deterred from any expenditure that will hold the supremacy of which we are all justly proud."⁵

Financed by a bond issue of \$101 million—the equivalent of a billion dollars in today's money—digging on the enlarged Erie began in 1905 and continued for thirteen years. This was more than fifteen times the cost of the original Erie Canal. It was also almost double the time required for its construction from 1817 to 1825, even though very powerful steam shovels and explosives had long since replaced the hand shovels and blasting powder of 1817. When completed, the new canal could carry huge barges with a draft of 10 feet, 250 feet long, and 25 feet wide, towed by steam-powered tugboats on an uninterrupted waterway between the Atlantic Ocean and Buffalo, leading to the Great Lakes and the Midwest.[†]

⁴For an excellent map showing both the expansion of the Erie Canal and the proliferation of canals in the post-Erie craze, see Jeremy Atack and Peter Passell, *A New Economic View of American History from Colonial Times to 1940*, p. 151.

[†]Only with the advent of this much deeper and wider barge canal did the Erie Canal commissioners finally abandon mule power along the towpaths.

By 1951, annual freight traffic on the barge canal had risen to 5.2 million tons. Today, the railroad is a much less significant competitor than the St. Lawrence Seaway as well as the New York State Thruway, which extends like a continuous ribbon from New York to Buffalo. Business on the barge canal has dwindled to almost nothing other than pleasure boaters and an occasional freight shipment of modest size.

* * *

But when the Erie Canal opened for business in 1825, it was ready to play a critically important role in the economic development of what was, in today's parlance, still a clearly underdeveloped country. The canal provided a fantastic wealth-creation machine for the powerful forces of economic change at work in the United States, motivated by the unquenchable passion of Americans for money and business and by their impatience to get ahead. This set of attitudes was well summed up by the play on words *Laissez nous faire!* (let's go).⁶

After an American visit in the mid-1830s (one that sounds remarkably like a visit to the United States at the beginning of the twenty-first century), the French economist Michael Chevalier observed that work in this country "goes on à l'américaine, that is to say, rapidly. . . . Here all is circulation, motion, and boiling agitation. Experiment follows experiment; enterprise follows enterprise." Like most foreign visitors of the era, he took a trip on the Erie Canal—"simple as a work of art, prodigious as an economic artery"—and was struck by the restlessness of Americans he encountered there. "The full-blooded American," he reports, "has this in common with the Tartar, that is he is *encamped*, not established, on the soil he treads upon."⁸

Chevalier was fascinated by the American devotion to money as the standard, the aspiration, the prime metric of everything, a view he considered alien to his countrymen's view of money. The Americans are not only determined to accumulate money, he pointed out, they consider everything convertible into money: "The maxim here is that everything has to be paid for. . . . All that [the American] has, all that he sees, is mer-

chandise in his eyes. . . . To him a waterfall is simply water power for his machinery. . . . The Yankee will sell his father's house, like old clothes, old rags." He cites Talleyrand, who said, "I do not know an American who has not sold his horse or his dog." Even crimes that would result in prison in France can be satisfied with a fine payable in money. Most astonishing to Chevalier, accused murderers and arsonists in America are allowed to go free pending trial, just as long as they can put up enough money to cover bail.⁹ But Chevalier also makes the remarkable assertion that "there are no poor people here, at least not in the Northern and Western States."¹⁰

Occasionally, Americans saw themselves as others saw them. In 1836, at the cusp of an extended business boom, an American metals dealer wrote home from London that the English "think you are all quite wild in America." And Henry Remsen, former president of the Bank of the Manhattan Company and a professional speculator, observed that Americans were "apt to do too much business [in their drive to achieve] splendor and idleness."¹¹

* * *

We have crude but impressive numbers to describe the impact of the Erie Canal on American economic development. Estimates of real gross national product—the total output of goods and services after adjustment for a changing price level—show that economic growth from 1800 to the opening of the canal in 1825 ran about 2.8 percent a year, something similar to the long-term trend in economic growth in our own time. But as a consequence of both the War of 1812 and the boom and bust of 1819–1821, there was a lot of variation around that average. Conditions changed dramatically over the quarter century following the Wedding of the Waters. The growth rate jumped dramatically, to the very high number of 4.6 percent a year, with a far lower degree of variability; this meant that total U.S. output tripled over those twenty-five years—among the highest periods of economic growth in two centuries of American economic history.

These are statistical estimates, but nothing depicts the story of economic change more vividly than the movement of Americans into urban centers. In 1820, only 7 percent of the nation's population could be classified as urban, and even that proportion was only 2 percentage points higher than it had been in 1790. But five years after the opening of the Erie Canal, in 1830, 9 percent of the country was living in urban centers, and this number jumped to 15 percent by 1850 and continued upward from there.¹²

Much of this change was occurring at the extremities of the canal, at Buffalo and Albany, and then down the Hudson to the dazzling port city of New York, with its harbor open to the lands across the seas. In 1789, Elkanah Watson was shocked at Albany's unpaved streets and lack of street lamps, and in 1831, as we noted earlier, Alexis de Tocqueville described his approach to Albany as "tilled fields [with] trunks in the middle of the corn. Nature vigorous and savage." But the population of Albany County doubled to 28,000 over the ten years after the opening of the canal in 1825; by 1850 it was up to about 90,000 people. Five years after the opening of the canal, the old city had become just the core of a much larger community of roughly one hundred new blocks.¹³

Kingston, a tiny village on the Hudson River before the completion of the canal, developed into a small city for shipping coal received from Pennsylvania but also manufacturing cement, machinery, and iron castings. This was just one step in converting the Hudson valley into an industrial network that included other river towns such as Newburgh, Poughkeepsie, Hudson, and Troy. All of these towns shipped a rising volume of merchandise westward through the Erie Canal while the trade coming to them from the other direction reached magnitudes they never would have thought possible fifteen years earlier.¹⁴

At the canal's western terminus, Buffalo provided an even more spectacular performance. A village that De Witt Clinton had scorned in 1810 for having "five lawyers and no church," and where a later visitor's bowels had been set "in an uproar prodigiously," expanded from a pop-

ulation of 2600 in 1824 to 15,600 ten years later and 42,000 in 1850. In 1830, the *Buffalo Journal* could boast that "our children are surrounded by the comforts, the blessings and the elegances of life, where their fathers found only hardship, privation, and want."¹⁵ In 1831, de Tocqueville, not easily pleased by what he saw in America, commented on the pretty shops and French goods he noted on a walk through town (although he found "not one Indian woman passable").¹⁶

At the eastern end of the canal system, New York City was one of the major metropolitan centers of the world by 1850, with a population of 700,000 people, quadruple the number when the Erie Canal opened for business in 1825. Over the eleven years from 1825 to 1836, the value of real and personal property in New York City tripled, from \$101 million to \$310 million—and from 38 percent to 48 percent of the total for New York State—while the population was increasing by "only" 63 percent.¹⁷

Meanwhile, a lot was happening along the canal between Albany and Buffalo, succinctly summed up by the rapid appearance of ten brand-new towns located between Syracuse and Buffalo and readily identified by names ending in "port"—which signified extended docking and loading facilities along the canalside. When canal construction began in 1817, Rochester and Syracuse together had fewer than 3000 people and Lockport was just making its appearance on the scene. But by 1825, the three towns had a total of about 6000 residents and by 1850 their population was twelve times that. As a result of this pace of development, land values along the route of the Erie Canal grew by 91 percent from 1820 to 1846.¹⁸

* * *

In Britain, from the 1760s to about 1800, a great canal boom had made the Midlands the center of the Industrial Revolution, attracting population, capital, and entrepreneurs from all corners of the kingdom.* Merrie Olde England—indeed, much of the rest of the world—was

*These were the canals Canvass White had visited in 1817.

never the same again. In the same fashion, the networking effect of the Erie Canal extended far beyond the borders of New York State. Although the canal terminated at the eastern end of Lake Erie, its influence spread rapidly westward as it carried almost all the people moving out to Ohio and then on to the Great Lakes. The population of the west rose from about 2.5 million when the Erie Canal was completed in 1825 to 7.5 million in 1850, or from 21 percent to 33 percent of the country's total population. Without that water route through the Allegheny Mountains, George Washington's fears that "the touch of a feather would turn them away" would in all likelihood have become a reality. Under the best of circumstances, the movement of people into the western lands would have progressed far more slowly, delaying the conversion of those lands into the breadbasket, and ultimately the industrial center, of the United States.¹⁹

In the process, the canal changed the face of the nation by transforming its primary axis from north-south to east-west, and away from George Washington's Potomac route to the mountains, with momentous consequences for its future history. As the flood of New Englanders and European immigrants moved west on the Erie Canal packets, the momentum of America shifted increasingly from the slaveholding and cotton-producing South to the free labor and Industrial Revolution of the north.²⁰ Indeed, no comparable network of canals existed in the South—a disparity that helps to explain northern superiority in the Civil War that came two decades later.

The rapid expansion of the towns and cities along the canal is only a partial view of the impact of the westward flow. The opening of the canal also led to an emphatic slowdown of growth in rural areas along the waterway at the same time that the urban communities like New York, Rochester, and Buffalo were flourishing. The canal passed through sixteen counties, from Albany County on the east to Erie County on the west; in 1820, five years before the completion of canal construction, these counties accounted for 38 percent of New York State's population.

By 1850, their share was down to 28 percent. Their population had grown by only 60 percent over those thirty years, while those of both New York State as a whole and the nation were more than doubling.

What happened? The process did not go forward in a straight line, but the outcome appears to have been inevitable. In the early years of the canal, agricultural activity boomed along its route, as the area's rich production of wheat, barley, oats, and corn found an artery of transportation to feed the east. This development explains the rapid growth of Rochester in particular, which was the center of the grain-producing area and provided north-south transportation along the Genesee as well as its facilities on the Erie Canal. Genesee flour, famous for its "sweetness and fineness," accounted for the largest share of the Erie Canal's east-bound freight until the mid-1840s.²¹ But over time, as the canal facilitated growth in the west, and as the fabulous fertility of those lands became increasingly apparent, many New York farmers caught the fever and joined the crowds of people from other states heading farther west to seek their fortunes.

Indeed, the canal attracted people to the new territories from all over the eastern states. Vermont and New Hampshire were especially affected by these forces, as the population of both states stagnated between 1830 and 1850. The easterners who stayed home had to be philosophical about this powerful shift from east to west and made the best of it by recognizing the canal's strong influence on the unification of the nation on both sides of the mountains. As Levi Woodbury, former governor of New Hampshire, wrote in January 1834 from Vermont to one of the Erie Canal commissioners, "I can almost submit to be envious. But [after] a moment's consideration, that you open your generous arms to welcome the emigrants from our frosty hills & to patronize [our] sons. . . . I feel again, friend, that we are in many respects *but one people* and that the success of a part is in some degree the success of the whole."²²

Canadians, who were similarly affected, took a less cheerful view of

the impact of the Erie Canal. As Elkanah Watson had predicted back in 1788, "The state of New-York have it within their power, by a grand stroke of policy, to divert the future trade of Lake Ontario and the great lakes above, from Alexandria [in Ontario] and Quebec, to Albany and New-York."²³ And they did. The canal diverted so much traffic that Canada was feverishly building their own canals, notably the Welland Canal to bypass Niagara Falls and connect its side of Lake Ontario to Lake Erie. The Americans were not about to accept the competition without a response. They dropped their duties on Canadian merchandise and lured the traffic back to the Erie Canal. The result was a serious loss of Atlantic traffic moving through Montreal, with accompanying bankruptcies and rising unemployment.

With all this going on, change was both rapid and pervasive in the territories to the west of New York State. Just as an example, the state of Ohio, with its fertile fields, long coastline on Lake Erie, and river connection to the Mississippi, would more than triple its population over the twenty-five years after the opening of the Erie Canal, starting from an already respectable 581,000 in 1820. This growth advanced Ohio from less than 2 percent of the total U.S. population to more than 4 percent.

* * *

Along the way, the Erie Canal performed an entirely unanticipated and unrelated function, one that developed into one of its major activities during the 1830s. The state had reported a surplus of nearly \$600,000 in the Canal Fund for the year 1829, setting in motion a wave of revenue well in excess of operating costs and the interest payments due on the outstanding debt. As a result, the commissioners began to spread the good fortune around New York's commercial banking system, some in the form of deposits but also in the form of loans. They also made efforts to buy back in their 6 percent bonds due in 1837, but the holders of those bonds, most of whom were foreigners, were too

pleased with their investment to part with any paper, except at prohibitively high prices, before the due date finally arrived.* This whole process involved the commissioners in the economic development and the financial network of the state, and many localities beyond New York's borders. In the aftermath of the shattering financial and economic crash of 1837, the Canal Fund even performed like a modern central bank by using its surplus of revenue to serve as a lender of last resort to many liquidity-strained banks in New York State.²⁴

As happened centuries earlier along the roads the Romans built across all of Europe and along the famous Silk Road to the spices of the Far East, some of America's greatest cities came into existence along the new east-west axis. In 1820, fewer than 100 people were living on the future site of Cleveland, Ohio, but within a few weeks of the opening of the Erie Canal, fifteen vessels sailed from Buffalo with merchandise from New York for Ohio. A year later, the first shipment of pork left Ohio for the seaboard, and as the years went by pork became one of Ohio's largest eastbound exports, later to be supplemented by both whiskey and potash. By 1830, Cleveland's population was up to 1000 and there were 17,000 Clevelanders by 1850. The growth spurred by the canal from the east toward Chicago was even more dramatic. Connected early on by the railroads as well as by water to all four directions of the compass, the population of Chicago reached 4500 in 1840 and 30,000 ten years later, after starting at about 100 in 1830.

By that time, Chicago had its own canal connection, the ninety-six-mile-long Illinois and Michigan Canal, which connected Chicago and the Great Lakes southwestward to the Illinois River and from there down to St. Louis and the Mississippi. Built in the canal mania that followed the completion of the Erie Canal, and finished after ten years of work

*This is an oversimplification. The Erie Canal bonds were selling at a premium—a price over par, or 100—both because of their high quality but also because the interest rate they paid was higher than going rates in the first half of the 1830s. That premium would disappear on the redemption date in 1837, when the bonds were to be paid off at par. Consequently, some holders did sell their bonds back to the Canal Fund a short time prior to redemption.

and the default of the State of Illinois on the bonds that financed it, the canal opened an additional route for the output of the midwest and the cotton in the Mississippi delta to move out to the eastern seaboard at New York City and the Atlantic Ocean.²⁵ Chicago was also just the beginning of another and even greater network. In 1835, fewer than 5000 white people lived in the huge expanse between Lake Michigan and the Pacific Ocean, but twenty years later more than 1 million had settled out there.

As population exploded in the western areas, the huge volume of raw materials in the midwest—grain and flour above all, but timber and coal as well—was liberated by the Erie Canal from the circuitous and treacherous route down the Mississippi River to New Orleans and the Gulf of Mexico. Indeed, insurance to cover a shipment over the 1600 miles from New York to New Orleans by way of St. Louis and the Mississippi was more costly than insuring a shipment traveling the 3000 miles from New York over the ocean to England or France.²⁶ The natural wealth of Pennsylvania, Ohio, Indiana, and Illinois could now move in bulk directly to the big commercial centers and ports like New York and Boston on the Atlantic coast and beyond them to the great markets of Europe. Over time, new canals in all these states, and the railroads after the 1840s, created an even larger and more elaborate transportation complex to augment the capacity of the Erie Canal, accelerating the movement of both heavy and light freight to the Atlantic coast and of passenger traffic heading west for a new life on the other side of the mountains.

None of this was instantaneous. As noted, it took time for the combination of a growing population beyond the mountains and an increasingly complex transportation system to work its miracles. At first, the level of eastbound commercial traffic moving toward New York from the west was much smaller than the merchandise of all kinds heading westbound. But once under way, the eastward flow of freight rapidly gained momentum. In the mid-1830s, the traffic moving toward New York was

still low at around 50,000 tons, only one-sixth of the tonnage moving toward the west. But fifteen years later the eastbound trickle had turned into a flood. In 1847, the tonnage of grain, meat, dairy products, and “domestic spirits” (whiskey) exceeded westbound volume for the first time, and it kept on growing.²⁷

The transition had been a complex one. First, the Hudson valley was replaced by western New York as the area’s main source of grain and flour. Then western New Yorkers succumbed to the wondrously fertile lands beyond the borders of New York, in Ohio, Indiana, Kentucky, Tennessee, and Illinois. As a result, farm productivity increased more than 30 percent between 1800 and 1840. Without the efficient and low-cost transportation facilities provided by the Erie Canal, this spectacular achievement would have happened much later or much more slowly.²⁸

By 1850, the volume of agricultural production moving eastward from the lands to the west had replaced nearly all the old sources of grains and flour in New York State (Rochester and the Genesee valley were strong survivors), which now turned instead to dairy farming and cheese, cattle raising, and growing fruits and fresh vegetables for nearby urban areas.* The tonnage of flour and grain reaching Buffalo from the west in the mid-1840s was ten times the volume just a decade earlier.²⁹ By the time the Civil War broke out in 1861, and even in the face of intensifying competition from the railroads, Erie Canal freight heading for New York from the west had reached 2 million tons annually, while fewer than 400,000 tons were moving in the opposite direction.

* * *

The spirit of change, speed, and innovation was energized along the entire route of the Erie Canal and the new localities connected to it by later canals and the railroads. Entrepreneurial activity was exploding. As

*This was not an easy choice if an unavoidable one. These forms of farming are much more labor intensive than growing grains.

a German visitor described his trip to America as late as 1857, "Ten years in America are like a century elsewhere."³⁰

This view was echoed by a British parliamentary commission that visited the United States in the 1850s. The group was especially impressed with how American workers accepted progress instead of resisting it as they "hailed with satisfaction all mechanical improvements [that were] releasing them from the drudgery of unskilled labour, [which] they are enabled by education to understand and appreciate."³¹ Coming from a British group, this was an exceptionally high compliment. But the commission went on to emphasize the contrast with their own labor force, which stubbornly resisted "mechanical improvements" for fear of losing their jobs.

The Erie Canal itself made a significant contribution to the pace of technological innovation. The most impressive and reliable evidence of the developing Industrial Revolution is in the growth in the number of patents—the legal foundation of innovation and economic development. In a detailed study of new patents granted by the U.S. Patent Office from 1790 to 1846, Kenneth Sokoloff, an economic historian at the University of California, Los Angeles, points out Patent Office that all the places with high patenting rates were either metropolitan centers or located close to a navigable waterway: "Perhaps the most vivid example is New York, where the completion of the Erie Canal in 1825 seems to have sparked big changes in the composition of output and a sharp rise in patenting along its route."³²

Change of this nature was revolutionary, in every sense of the word. As long as the movement of human beings and produce—primarily agricultural—was limited to rivers or was ambling along in a trundling and rickety wagon, as it had been for countless centuries, no one thought very much about change. But as a waterway, the Erie Canal immediately increased the expected return to inventors working near a large pool of easily reachable potential customers, competing suppliers, and a growing stream of information.³³

The impact of the patenting increased with the passage of time. While the Patent Office issued approximately two hundred patents a year from 1810 to 1825, patenting skyrocketed after the opening of the Erie Canal, hitting a pre-Civil War peak of over seven hundred patents in 1835.³⁴ New York State led the nation in new patents per capita in almost all sectors of the economy, although southern New England took the lead in manufacturing after 1830—but even then New York remained a close second.

A firsthand report on these trends is left to us from the records of the New York Life Insurance and Trust Company, whose board of directors included such luminaries as John Jacob Astor, Henry Remsen, and the hardware merchant and railroad promoter Erastus Corning. In 1832, the company sent Nicholas Devereaux of Utica to look over business conditions along the route of the canal all the way out to Buffalo. Devereaux's report was unqualifiedly enthusiastic, noting the increase in population, the growth in cities and towns, and the prosperity of the farms. He was especially impressed with the proliferation of flour mills and "manufactories." Summing up the situation, he could only flatter his superiors for being so "sagacious" in recognizing the high investment returns available in the canal area.³⁵

Devereaux ascribed the dynamics of the canal economy to "easy access to market." He had it exactly right. The manufacturing activities that stemmed from patenting and technological innovation needed large and growing markets to justify the investments and risks they involve. The Erie Canal provided the perfect linkages between expanding markets in New York City, Albany, and Buffalo and the territory in between. In time, these linkages spread to the urban centers to the west from Cleveland and Detroit out to Chicago.

All of these developments—the growth of population, the extension of the canal's stimulus to the new lands in the west, and the accelerated

*Kenneth Sokoloff shows all the patent data on a per capita basis to neutralize the rapid growth of population in those years on the volume of new patents.

pace of technological change—combined to create a multitude of new markets large enough to support production sold to buyers elsewhere or consuming products from other markets. Commercialization of economic activity spread rapidly, from simple goods for household use to the manufacture of steam engines and heavy engineering. In contrast, as we have seen, home production of textiles in New York State fell rapidly after the canal opened. Farming, too, was being transformed from “a way of life” to farming as a profit-seeking business.³⁶ There was an internal dynamic to these trends. As farming ceased feeding just the family and became more of a business, farmers with newfound cash income now joined their urban neighbors as ready customers for the tempting products coming from the factories.

One of the most careful students of the economics of this period, Columbia University historian Carter Goodrich, suggested in his 1960 study of public improvements that the opening of the Erie Canal was the dividing point between the periods of the “Frontier without the Factory” and the “Frontier with the Factory.”³⁷ Manufacturing did score spectacular growth along the canal and, courtesy of the canal, through other parts of New York State. Factories for ironworks, hats, and textiles flourished in Albany, while spinning mules and power looms were churning out textiles in Rochester. There were sixteen textile factories in Oneida County in 1827, employing seven hundred people; by 1832, there were twenty cotton mills, with over two thousand employees. In 1827, the nation’s first hardware store, dealing mainly in American merchandise, opened in New York City.³⁸ The state had 13,667 manufacturing establishments in 1835, with sales totaling \$59 million—already an increase of 58 percent since 1814. Just five years later, in 1840, revenues from manufacturing production had jumped by more than 60 percent to \$96 million, and they would hit \$237 million in 1850.³⁹

Average sales of only \$4300 per establishment in 1835 sounds tiny to our ears today, even when translated into roughly \$43,000 in current purchasing power. But these firms were still single-unit enterprises with

only a handful of employees—although they were also becoming increasingly specialized, as Adam Smith would have predicted. In manufacturing, the owner and manager was in most cases a former artisan—such as a blacksmith, tinsmith, or plumber—who was now using advanced equipment for the first time to make products varying from stoves and grates to gas fixtures and steam engines. In trade, middlemen were beginning to operate between the manufacturer and the retailer, or between the importer and the ultimate destination of the goods. These little business firms were formidable economic units for their own time, and it is interesting to note that the Industrial Revolution and technological progress came along a lot faster than changes and innovation in the structure of the business firm.⁴⁰

The influence of a shift to industrialization was especially notable in the cities on the canal. For example, Rochester was famous for its many mills and its dominance over the grain and flour trade, but the expansion in manufacturing was equally impressive. In 1835, a merchant named Henry O’Reilly could proclaim that “the flouring business for which Rochester is at present most celebrated, is by no means of such importance . . . as the other branches of manufactures.”⁴¹ But manufacturing would not have developed in Rochester without the Erie Canal’s communications system that opened the city to markets large enough to justify the capital investments in factory construction and equipment.

Edward Peck’s paper mill flourished in response to the increasing numbers of printers and the expanding market for both newspapers and books. The Cunningham carriage factory was nationally recognized and survived nearly a hundred years, ending its career as an early manufacturer of automobiles. Lewis Selye’s machine shop turned out fire engines and railroad cars for other cities and towns. David Barton’s Hydraulic Building sold water power to the toolmakers on its upper floors, who in turn supplied the needs of the growing city and the prosperous agricultural communities beyond. Tailors who had begun their careers as craftsmen sewing clothing to order transformed the men’s clothing busi-

ness in Rochester into a mass production industry, which flourished as a source for the entire country into the late twentieth century.*

The canal also transformed Syracuse from a small village into a major industrial center. Situated just about halfway between Albany and Buffalo, the area around Syracuse had been a source of salt since the 1700s. Salt has been one of the most essential raw materials in human history, because of its unique quality of preserving foods and also for curing raw meats such as pork. By opening up a transportation system that could move tons of salt at a time from the Syracuse area, the United States was able to replace the substantial imports of salt from the Turks Islands, Portugal, and the Cape Verde Islands.⁴²

The community that was to become the city of Syracuse was originally a couple of houses and a tavern. In 1800, Joshua Forman—the New York State assemblyman who in 1808 played a crucial role in starting legislative action for the Erie Canal—had moved into the vicinity to pursue a law practice. Forman's efforts for the canal ended up paying big dividends for his community, and in 1825, the same year the canal opened, Syracuse was officially incorporated as a village; by no coincidence, its chief executive was Joshua Forman, on hand to officially welcome De Witt Clinton when he came through on the *Seneca Chief* on his way to the Wedding of the Waters.

Originally, salt from the Syracuse area had moved west by pack mules to Lake Erie. But the canal immediately stimulated a steep increase in the demand for salt in the west, not just because of the growing populations of humans but also because of the urgent need for salt in curing the burgeoning supply of pork. The number of hogs to be slaughtered and cured, in turn, was increasing so briskly because they were a market for excess supplies of grain growing so abundantly in the new western lands.

*This clustering process would be immortalized in Alfred Marshall's *Principles of Economics*, the masterwork of the great Victorian English economist, who described it as "the neighborhood effect."

The combination of the Erie Canal and the salt deposits around Syracuse created a large industrial center out of what had been described by an 1820 visitor as "so desolate it would make an owl weep to fly over it."⁴³ Five years after the opening of the canal, the population of Syracuse had tripled, from 250 to about 750, but that was only the beginning. Once the canal was in operation, salt could be moved in bulk and at low cost to communities to the east as well, and the salt enterprises grew rapidly. By 1850, the population of Syracuse had grown to 22,000—almost all of it thanks to salt (and not incidentally to Joshua Forman). Huge vats and mechanized refineries turned out rising quantities of salt for many uses in addition to food and preservation, including major chemicals such as soda ash, caustic soda, and bicarbonate of soda.

The chemical industry based on salt in Syracuse grew so large it polluted nearby Lake Onondaga to the point of killing off almost all life in its waters. In May 1918, the section of the old Erie Canal running through the city was closed and covered with a boulevard—appropriately named Erie Boulevard; the route of the modern barge canal was in any case well away from the city center. Not long after, the salt industry disappeared as well. But Syracuse would continue to prosper even without salt: by 1918, its broadly based manufacturing sector produced everything from clocks and china to soda ash, shotguns, steam engines, men's shoes, and radiators.

At the canal's western terminus, Buffalo grew to be the greatest inland port in the United States, as Great Lakes shipping going east transferred its cargoes to the Erie Canal while canal traffic headed west was conveyed to ships waiting on Lake Erie. The huge volume of grain traffic from the west created the largest and most active grain-transfer port in the world there.

In 1842, Joseph Dart's invention of the grain elevator revolutionized the handling of wheat forever more. Before this, laborers down in the holds of lake cargo ships had to shovel the wheat into barrels, which Irish stevedores carried on their backs to warehouses. Dart's invention

consisted of a steam engine moving a vertical belt to which buckets were attached. On the way down, the buckets went into the ship's hold and scooped up the grain; as the buckets reached the top of the device, they tilted over and dropped the grain into the warehouse awaiting its arrival.

Buffalo's access to both Lake Erie and the Erie Canal, and its strategic location almost equidistant from Chicago, New York, and Boston, led naturally to significant industrial development quite separate from the city's strategic role in handling grain. A quarter of a century later, it was a major rival of Pittsburgh in steel and after 1900 would also play a role in the development of the automobile industry.⁴⁴

* * *

In all the towns and cities that boomed once the canal opened, a striking improvement in real wages and living standards accompanied the brisk growth in manufacturing and the accompanying improvement in labor productivity. For the first time, luxury articles were available to people in the working class. Clothes and even furniture were no longer homemade items but something to be bought in the stores, often mimicking the high fashion of the wealthy. One historian describes the pattern of social change as the "democracy of expectant capitalists."⁴⁵ Among a great mass of economic data, the most remarkable indicator of the improvement in living standards and aspirations is that an estimated 32,000 Irish women and free blacks were working as domestic servants in middle-class homes in New York City in 1855.⁴⁶

If we were to end the story of the Erie Canal with the miracle it contributed to the unification and economic development of the United States, we would have a story of daring and determination, of enormous achievement and innovation, and of a cornucopia of riches developing across a unified nation. But all that would be only part of the story. The untold part is in many ways as heroic, as audacious, and as historic as what we have already noted. To recount one without the other would deprive each of its fullest meaning for modern times.

While Buffalo was clearly the western terminus of the canal, and the opening to the lands beyond, Albany at the eastern end has always been more of a transshipment facility than a terminus. The canal's true eastern limit was New York City, 150 miles to the south along the magnificent Hudson River. The story of the Erie Canal cannot come to an end without considering the profound importance of that connection. For it was not in the canal facilities at Albany that the Wedding of the Waters took place. Rather, the festivities culminated in the harbor of New York City, where Erie waters come down the Hudson to join the Atlantic Ocean.

CHAPTER 20

THE GRANARY OF THE WORLD

In April 1824, in the course of a speech about the future of the Erie Canal and New York City, De Witt Clinton produced another of his eerily accurate forecasts. After predicting that the most productive regions of America would use the canal for transporting goods abroad or for consumption at home, he went on to describe the glowing outlook for the city: "The city will, in the course of time, become the granary of the world, the emporium of commerce, the seat of manufactures . . . the concentrating point of vast disposable and accumulating capital, which will stimulate, enliven, extend and reward the exertions of human labor and ingenuity. . . . 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."¹

Yet Clinton's glowing phrases and startling foresight were incomplete, too parochial in their vision. Clinton senses what might develop, but a crucial chapter in the future of the Erie Canal and of New York City is missing. What is it precisely that will trigger the extraordinary level and quality of economic and financial activity he foresees for one little island of merely twenty-three square miles? That the canal would have an influence on the future of New York City was beyond question.

But the influence was reciprocal. New York City's vast port and diversified economy would have a dynamic impact on the towns and cities along the route of the Erie Canal, on the increasing thousands of people sailing west on the packets for a new life, and, indeed, on the canal itself.

Even then the story is unfinished. Clinton's remarkable foresight leaves out the most exciting part of the whole story. When he predicts that New York will become "the granary of the world," he provides us with no more than a hint of the transforming events that lie ahead. Rather, he leaves us to take his forecast on faith, without elaboration or support.

The enduring success of the canal was not just in the marvel of a waterway linking Lake Erie and Buffalo with New York, nor was it only in the impressive economic development it motivated between Buffalo and lands to the west of Lake Erie. "In the course of time," to borrow Clinton's expression, the Erie Canal would turn out to be the first great bridge between the inexhaustible supplies of grain from the midwestern United States and the inexhaustible demand for food from Europe—and Britain in particular.

But how could that happen? Europe had fed itself since the beginning of time. Why should Europeans be seeking sources across the seas now, after all those centuries of self-sufficiency? And why does it matter?

Put these questions to the pioneers of the Industrial Revolution in eighteenth-century Britain—most of whom were early investors in the canal network of the Midlands that had become the new industrial heartland of Britain. Ask James Watt and Matthew Boulton, who together made a reality of the steam engine, or Joseph Priestley, the discoverer of oxygen, or the pioneer of factory production Josiah Wedgwood, or the innovator-of-all-trades Erasmus Darwin. Ask the Duke of Bridgewater, who, as we noted earlier, built a canal to connect a coal mine directly to Manchester. Or, most important of all, consult the great classical economists Adam Smith and David Ricardo, whose work involved the most careful study of the relations between food supplies, wage rates, and a nation's prosperity.

As the driving force of nineteenth-century economic activity in Britain was transformed from agriculture to industry, and from animal power to steam power, management of food supplies for factory workers would develop into the critical variable of progress and the central focus of British politics and economic policy. Doing things the old way was no longer possible in an age of rapid-fire technological change. But in 1824 even De Witt Clinton could not foresee how vital the breadbasket of the midwest would be to the Industrial Revolution's tidal wave of change. Or that the Erie Canal would be the nexus of the network that made the whole thing possible.

* * *

When Clinton delivered his dazzling picture of the future of New York City, the case for New York as the nation's key city and port was by no means obvious. In 1664, after four English frigates sailed into the harbor and seized the community of New Amsterdam from the Dutch, the settlement was renamed in honor of the Duke of York. Although this event seems a far cry from the momentum of the Industrial Revolution in the 1800s, those four frigates freed New York from its limited role as an isolated Dutch trading enclave, transforming forever the entire character of the city's economy.

Even so, in terms of total tonnage of imports and exports during the colonial era, the port of New York stood only in fourth place after Philadelphia, Boston, and Charleston.² Then New York's development was stifled once the British took the port in the summer of 1776, when a substantial portion of the little community went up in flames. The Redcoats occupied New York for the duration of the war, right up to the signing of the Treaty of Paris in 1783; meanwhile, Boston, Philadelphia, Charleston, and Baltimore were free. Although New York's export business boomed after the Revolution and especially during the early years of the Napoleonic Wars after 1800, the export trade had prospered in the other cities as well.

One easy answer to the question of why New York City finally triumphed was its deep and expansive harbor, which was more attractive to shipping than the facilities at the other eastern seaboard ports. But that response is insufficient. The others also had fine harbors leading to the Atlantic Ocean. It was what lay *behind* New York City that ultimately made the difference to the history of the city: the Erie Canal, an unbroken link from the fertile lands at the heart of the United States to the Atlantic Ocean at New York. No other Atlantic port could even begin to match that.

The clincher for New York's leadership came in 1817, when the canal's construction began, which was solid evidence the canal was going to be a functioning and strategic waterway instead of just a politician's football. Although the canal would not reach full operational capability for another eight years, in the long run it brought greater and more durable prosperity to New York City than even the opening of the New York Stock Exchange, also in 1825.

After the completion of the canal and the Wedding of the Waters that year, there was no longer any doubt that New York was the port of choice in the United States and that New York would be the leading city of the nation and, in time, of the world. Money and finance centered in New York because of the huge volume of goods that entered and left the city every single day of the week. Its large and varied manufacturing enterprises made the New York area the prime source for a variety of industrial and manufactured products, ranging from machinery, steam engines, iron foundries, shipyards, newspaper printing, clothing, sugar refining, and boots and shoes to bread, crackers, and cabinet furniture.³

And goods moved in and out of New York because of its location between the Erie Canal and the sea. New York developed into such an important port that, right up to the Civil War, more than half of southern cotton production left for Liverpool and Le Havre from there. Most of the South's imports also entered the United States by way of New York.

Soon Clinton's words would echo over and over, as people increasingly referred to New York as "the great commercial emporium of America."^{4*}

On July 4, 1828, Baltimore launched an attempt to overcome New York's advantages by reopening the route of George Washington's Patowmack Company with the Chesapeake & Ohio Canal (the project cost \$14 million—double that of the Erie Canal). But lacking a gorge like Little Falls, the C & O still had to deal with crossing the mountains rather than cutting through them. Philadelphia constructed the Main Line, an elaborate and expensive combination of canal and railroad facilities to connect the city to Pittsburgh, but the project never functioned satisfactorily and was a financial disaster.

Bostonian entrepreneurs were smarter: they passed up canal construction altogether. Starting in 1833, they simply built the Western Railroad (known as the Boston & Albany after 1867) from Boston across the Berkshire Mountains to connect their spacious harbor to the Erie Canal's eastern terminus at Albany. Even that arrangement could not match what New York offered by way of water transportation—and, later on, railroad lines running parallel to the Erie Canal.

A few numbers can illustrate the difference in outcomes. In 1830, New York was already exporting four times as much as Philadelphia. By 1850, New York's exports had grown another 160 percent while Philadelphia's had stagnated. The same is true of exports out of Boston.⁵

* * *

The key to New York's spectacular growth has always been its access by waterway through that prehistoric gorge in Little Falls to the vast farmlands in the west. As historian Robert Greenough Albion has put it, New York took off as "the flour barrel began to replace the beaver skin

*The cognomen stuck. In his 1839 book, *Observations on the Financial Position and Credit of Such of the States of the North American Union as Have Contracted Public Debts*, Alexander Trotter, an English visitor, refers to New York as "the emporium" (p. 158).

as the port's most valuable offering to the world of commerce; and would remain so for more than a century."⁶

The full significance of replacing the beaver skin with the flour barrel would become visible only gradually, as New York became the dominant center of American trade and transportation, with the accompanying elaborate panoply of financial and commercial enterprise that followed. The real meaning of this development would not emerge until the middle of the nineteenth century, in a sequence of events that moved the world.

The story begins, not in the United States but in Britain, with the defeat of France and the return of peace in 1815 after many years of warfare.⁷ The end of the Napoleonic Wars and of the intricate pattern of French and English blockades led to a return of freedom of the seas. This development was good news but there was bad news as well: the abrupt increase in supplies triggered a steep fall in commodity prices across Europe. Prices in Britain fell by a third between 1813 and 1820 and by another 25 percent by 1830. The British government took immediate action, enacting the Corn Law of 1815 (the word "corn" referred to all kinds of grain), essentially a set of protective tariffs designed to prevent cheap foreign food supplies from competing with British farm output, which the landed aristocracy had owned and controlled for centuries. As Adam Smith had expressed it so well in 1776 in *The Wealth of Nations*, "The landlords, like all other men, love to reap where they never sowed."

Legislation—Corn Laws—to discourage imports of food to Britain dated back to the late seventeenth century, but there was no need for a protective tariff as long as the British were able to export more corn and other grains than they imported. Indeed, productivity on British land had doubled and production had tripled from 1650 to 1800, as revolutionary a development as Britain's early leadership in the Industrial Revolution.⁸ The last twenty-five years of the eighteenth century changed all that. The budding age of steam led to rapid growth of the industrial towns in the north and the Midlands, luring labor off the farms and into

factory work. The result was an expansion in the demand for grains for human consumption, and England became a net importer of food for the first time in its history.

The enactment of the steep tariffs of the Corn Law of 1815 was the opening gun in what would develop into an extended battle to decide whether Britain would go on as it had for hundreds of years, as a largely agricultural economy in thrall to the landed aristocracy, or become instead the leader of the new more dynamic world of industry, manufacturing, and global trade. As Karl Marx would argue so effectively in the 1870s, food may come from farms, but its price is an integral part of the cost of industrial production because food keeps the urban working class alive and able to function in factories.

The nature of the conflict was clear. The aristocracy's standard of living depended on a high price for food. The competitive position and the profits of industrial entrepreneurs depended on a low price for food. The aristocracy was largely indifferent—even in many ways intolerant—to the social and political aspirations of the proletariat. Although industrial employers were reluctant to see workers gain political influence and economic bargaining power, they had less and less choice in the matter as the years progressed. Strikes and on occasion serious but aborted efforts at rebellion hit them where it hurt the most—in their pocket-books.

When wartime exports of flour from the United States to Britain fell from 1.3 million barrels in 1812 to 620,000 barrels in 1816—and remained around that level for more than ten years, as a result of the Corn Law of 1815—the increase in the price of food provoked the British workers to demand higher wages.⁹ The new capitalists, as employers, were not going to accept this blow without a fight. While they were prepared to resist labor demands, they recognized their more important objective was to repeal the Corn Laws that were the basic source of their troubles.

The field of battle was to be the House of Commons, where, from

1841 onward, the landlords' Tory party held a solid majority as well as the office of prime minister. The Tory majority did not mean that most British citizens favored a government dominated by the landed aristocracy. On the contrary, the large Tory majorities reflected an electoral system that discriminated against the rapidly growing number of the middle-class men who owned and managed the new factories, in addition to discriminating against their workers.* The theory behind this arrangement was as Daniel Defoe, the author of *Robinson Crusoe*, had put it in 1702: "I make no question but property of land is the best title to government in the world."¹⁰

Once launched, the attack on the Corn Laws turned out to be a stunning example of the law of unintended consequences. Forces for change broke out in tumult across a wide spectrum of Britain, lighting the fuse of discontent and frustration in a society going through revolutionary transformations in its power centers, in determining who had the right to vote, in the way people earned their living, and in the movement from the open country to the crowded slums of the cities. From the early 1830s to the late 1840s, Britain would go through a political and economic revolution every bit as profound and significant as the French Revolution at the end of the eighteenth century—although with far less bloodshed and much more gradual change.

Under the banner of Corn Law repeal, two Manchester manufacturers, Richard Cobden and John Bright, formed the Manchester Anti-Corn Law Association in 1836, which two years later combined with similar groups to compose the Anti-Corn Law League. Cobden and Bright's passionate assault on the Corn Laws had a much broader agenda than just the price of food. They perceived their battle as an integral part of the effort to transform Britain from a feudal society into a modern, aggressively competitive industrial nation bringing freedom and democ-

*The electoral system had also banned Catholics from voting. When parliamentary reform finally passed in 1838, Catholics—for the first time since Henry VIII—were given the right to vote and hold office.

racy for all. In a marathon sentence, Cobden described free trade as “breaking down . . . those barriers behind which nestle the feelings of pride, revenge, hatred, and jealousy which every now and then break their bonds and deluge whole countries with blood; those feelings which nourish the poison of war and conquest, which assert that without conquest we can have no trade, which foster that lust for conquest and dominion which sends forth your warrior chiefs to sanction devastation through other lands.”¹¹

Cobden led the attack against the Corn Laws with extraordinary zeal and tenacity. In October 1836, he declared, “It will only be done by a mighty effort of the irresistible masses. . . . *The Corn laws are only part of a system in which the Whig and Tory aristocracy have about an equal interest. The Colonies, the Army, Navy and Church, are, with the corn laws, merely accessories to our aristocratic government.*”¹² Three years later, he predicted, again in full-dress italics, “*We shall radicalize the country in the process of carrying the repeal of the Corn Laws. . . . Our lecturers shall continue to haunt [the landlords] in their agricultural fastnesses, and our circulars shall proclaim their legislative robbery to the ends of the earth.*”¹³ And this was a businessman, not Karl Marx!

The event Cobden worked so hard to bring about was a lot closer than the fifty years he was predicting. Bringing it about, however, involved nearly a decade of tumultuous struggles whose political battles and maneuvers made the conflict between De Witt Clinton and the Albany Regency twenty years earlier look like child’s play.

The impetus that finally tipped the scale in favor of repeal came out of nowhere—disastrous crops throughout Europe in 1845 and on into 1846, causing a steep jump in food prices and widespread starvation among the poor. The most dramatic tragedy occurred in Ireland, where a blight of the potato crop left almost the entire land covered with black rot. The Irish peasants were hit from two sides. First, most of them were too poor to be able to afford anything except potatoes. In addition, the blight left them without the produce they needed to sell so they could

pay the rent on their land to the absentee British Protestant landlords. Hundreds of thousands of Irish peasants were evicted. Those who survived starvation crowded into disease-infested cities or emigrated on ships on which disease and starvation also took a heavy toll. Even with British efforts to provide relief, at least 1 million Irish died from hunger and disease and another 2 million immigrated to America and Australia. By the end of the 1840s, the population of Ireland had shrunk from 8 million to 5 million.

Sir Robert Peel, the British prime minister, had always been sympathetic to the needs of the Irish, but he was the leader of the Tory party and as recently as 1841 had promised he would never repeal the Corn Laws. The catastrophic harvests of 1845 put the whole problem in a new light and forced him to change his mind on this overwhelmingly important issue. He was now convinced that repeal was essential, even if taking that position meant he would have to separate himself from his own party and join with the opposition Whigs. In a decisive speech to Parliament on January 22, 1846, Peel declared, “I am led to the conclusion that the main grounds of public policy on which protection has been defended are not tenable; at least I cannot maintain them.”¹⁴

Although Peel and Cobden had been bitter enemies in the past, Peel now followed Cobden by exerting all his energies for repeal of the Corn Laws on the basis of social considerations much broader than just the immediate problem of ruinous harvests. He made this position clear in another speech before Parliament, in May, declaring that “all of you admit . . . we wish to elevate in the gradation of society that great class which gains its support by manual labor. The mere interests of the landlords [and] occupying tenants, important as they are, are subordinate to [that] great question.”

Peel’s choice of language supports the notion, held by many historians, that the Irish famine was a mere fig leaf for reform in the face of intense social pressures in Britain at that time. According to this view, Peel’s motivation for drawing enough Tory votes to provide a majority

for Corn Law repeal in 1846 was as much to forestall further social radicalism as it was specifically to benefit the industrial business class by opening British markets to imports of cheaper food from abroad.¹⁵

Even the Tories had to be aware that Europe was on the verge of revolution in 1846. Two years later, the fury of 1848 would erupt, with bloody revolutions in France and Germany, social commotion in Italy and Austria, and the publication of *The Communist Manifesto* by Karl Marx and Friedrich Engels. One evening in 1848, when Peel was sitting in the House of Commons and heard the news of the overthrow of the King of France, he said to his informant, "This comes of trying to govern the country through a narrow representation in Parliament, without regard to the wishes of those outside. It is what this party behind me wanted to do in the matter of the Corn Laws, and I would not do it."¹⁶

After bitter debates back and forth for a full six months, Peel finally swung the House of Commons in favor of repeal on May 15, 1846; the Lords followed a month later. Peel resigned shortly afterward, but his farewell speech to the House embellished the sentiments he had expressed a month earlier: "It may be that I shall leave a name sometimes remembered with good will in the abodes of those whose lot it is to . . . earn their daily bread by the sweat of their brow, when they shall recruit their exhausted strength with abundant and untaxed food, the sweeter because it is no longer leavened by a sense of injustice."

It was a great moment. From repeal of the Corn Laws until the depths of the Great Depression nearly a century later, Britain was the standard-bearer of free trade among the nations of the world. The result was a great leap forward in Britain's rate of economic growth. As the burden of tariffs was lifted, imports of corn tripled in just the first year after repeal, the price of food was lowered, and the reduction in the cost of food encouraged the migration away from agriculture and toward the cities and factories.¹⁷ It was there that Britain's economic advantage was the greatest—in the coal-based industrial power of the Midlands and in the vast seagoing capacity that transported both export and import

trade around the world. As employment at the factories soared, the share of agricultural workers in the British labor force shrank from 25 percent in 1846 to a little more than 10 percent by the end of the century.¹⁸

* * *

Now an interesting question arises. Except for the occasional and inevitable harvest failures, the British countryside had fed the nation for centuries without meaningful supplies of grain imports from abroad. Why were Peel and Cobden so confident they could take the risk of cutting the heart out of British agriculture without driving the price of food far higher than even the Corn Laws had done? Indeed, through all the spiteful and heated debates in the House of Commons, why did Peel's opponents never demand an answer from him on this matter?

The answer to these questions must be that both Peel and his opponents were confident the rest of the world could—and would—furnish a sufficient surplus of food production to offset whatever amounts would disappear from Britain's output as a result of free trade. But what made them so confident? The massive crop failures of 1845 and 1846 battered all of Continental Europe as well as the British Isles, but eastern Europe—primarily Russia and Poland—had been a significant source of British food imports. The best way to hedge risks is to diversify, but, clearly, relying on Europe's harvests to replace the British farmer was not diversification.

Although Britain also drew on agricultural output in the colonies, especially from Canada and even more distant places like Australia and India, the unspoken justification for taking the risk of deep cuts in home production must have been the burgeoning growth of agriculture in the new American west. But the American farmer, no matter how productive, would be no help on his own. What really mattered in these deliberations was the Erie Canal, the waterway that could bring the farmer's output over the hundreds of miles to the Atlantic ports at a minimal cost of transport.

No wonder the flow of American output to Britain surged after 1846 and never again dropped to the levels prevailing before the repeal of the Corn Laws. During the buildup to the War of 1812, both Jefferson and Madison figured that Europe needed America's food more than Americans needed luxuries from Europe, ignoring the damage the embargoes would inflict on American farmers, and the arrival of the war cast doubt over the whole diagnosis. But now, after the repeal of the Corn Laws—something neither Jefferson nor Madison could have anticipated—the swelling American exports of grain validated their viewpoint some thirty-five years after they had suggested it.

The data to support this hypothesis are impressive. During the ten years from 1836 to 1846, American merchandise exports to Britain averaged \$48 million a year, with a high of \$57 million in 1839. But in 1847—the first year after the repeal of the Corn Laws—Britain imported \$87 million of merchandise from the United States. This was not just a temporary surge in response to the famines of the mid-1840s. From 1851 onward, there were only two years when American exports to Britain fell below \$100 million, and even those were at \$81 million and \$92 million. It is also interesting to note that the prices on the New York Stock Exchange surged by 20 percent in 1846 and kept right on climbing for another four years.¹⁹

Although these exports include shipments of cotton from the South, much of the merchandise heading to Britain must have moved to the seacoast on the Erie Canal. From 1837 to 1845, the canal carried an average of 1.5 million tons of freight a year, with a high of 2 million in 1845. But in 1846, the year of repeal, the number moved up to 2.3 million tons and soared to just short of 3 million tons the following year. Canal tonnage continued to climb until it was running over 4 million tons in the 1850s. As we noted earlier, eastbound volume on the canal exceeded westbound volume for the first time in 1847—and the excess kept on growing. The importance of flour and grain in these shipments shows up in receipts of these commodities at Buffalo from the west from 1837

to 1860. Here, too, large upward jumps appear in 1846 and 1847 for both commodities; as we have seen, the tonnage reaching Buffalo from the west in the mid-1840s was ten times what it had been just ten years earlier.²⁰ By 1851, flour and grain shipments reaching Buffalo from the west were up to 18 million barrels and would reach 37 million by 1860.^{21*}

Peel, Cobden, and their supporters had it right: repeal of the Corn Laws would not lead to a shortage of food in Britain.

* * *

In 1800, Gouverneur Morris had predicted that “one-tenth of the expense born by Britain in the last campaign would enable ships to sail from London through Hudson’s river into Lake Erie.” In his mind’s eye, Morris fastened on what those British ships would be bringing to America. But the more interesting implications of his vision escaped him: the vast quantities of freight traveling on the return voyages, *from* Lake Erie through Hudson’s river *to* London.

From George Washington onward, the dream motivating the construction of the Erie Canal was the vast inland navigation possible in the United States and the significance of that transportation system to the future of a country so large and so varied. Over and over, the exhortation came to cut through the mountains to bind a great nation into unity. But one of the great by-products of the Erie Canal was to knit the United States to Europe as well. In contemporary terms, globalization became the centerpiece of the story, as it is the centerpiece of so much economic activity and social change in our own time. New York City is still a primary center of the world economy a century later. Globalization is where the Wedding of the Waters renews its vows.

*The American farmer would literally save the day on two more highly dramatic occasions when Europe’s crops failed later in the nineteenth century. See my *The Power of Gold: The History of an Obsession*, pp. 169 and 179.

3. Quoted in Stacy Schiff, "Vive l'Histoire," *The New York Times*, February 6, 2003.
4. Quoted in James Flexner, *Steamboats Come True*, p. 384.
5. Quoted in *ibid.*, p. 65.
6. David Hosack, *Memoir of De Witt Clinton*, appendix, note P.
7. Nathan Miller, *The Enterprise of a Free People*, p. 4, citing Washington's *Writings*, vol. 28, p. 127.
8. *Ibid.*, p. 66.
9. <http://memory.loc.gov/ammem/gmdhtml/gwmaps.html>.
10. Rhoda Blumberg, *What's the Deal?*, p. 725.
11. Charles Hadfield, *World Canals*, p. 274.
12. Cynthia Owen Philip, *Robert Fulton*, p. 11.
13. *Ibid.*, p. 67.
14. *Ibid.*, p. 69. See also Ronald Shaw, *Erie Water West*, p. 12.
15. Quoted in World Regional Geography, "Technology, the Patowmack Canal, and National Unity," www.geog.okstate.edu.
16. John Marshall's recollections as contributed to Hosack, *Memoir*.
17. In 1791, Secretary of the Treasury Alexander Hamilton would define the metallic content of the dollar in terms of both gold and silver, setting up an implicit fixed rate of exchange between the dollar and the pound sterling.
18. Carter Goodrich, *Government Promotion of American Canals and Railroads*, p. 21.
19. Blumberg, *What's the Deal?* For more detail, see <http://nps.gov/thst/mtver.htm>.
20. <http://nps.gov/thst/mtver.htm>.
21. Quoted in Flexner, *Steamboats Come True*, p. 87.
22. Quoted in Blumberg, *What's the Deal?*, p. 744.
23. Quoted in Flexner, *Steamboats Come True*, p. 88.
24. *Ibid.*
25. Quoted in *ibid.*, p. 98.
26. Blumberg, *What's the Deal?*, p. 730.

CHAPTER 4. Canal Maniacs

1. David Hosack, *Memoir of De Witt Clinton*, appendix, note Q.
2. Charles Merguerian, Hofstra University, lecture on history and geology of the New York City aqueduct system, 2000, available at www.duke-labs.com/NYC%20Water%20Supply/NYCWaterSupply.htm.
3. This quotation and everything in the next three paragraphs is from Hosack, *Memoir*.
4. Ronald Shaw, *Erie Water West*, p. 13.
5. Quoted in Noble E. Whitford, *History of the Canal System of the State of New York*.
6. Quoted in Hosack, *Memoir*.
7. Elkanah Watson, *History of the Rise, Progress and Existing Condition . . .*, p. 175.
8. Quoted in Hosack, *Memoir*, appendix, note S.
9. Watson, *History of the Rise*, p. 164.
10. *Ibid.*, pp. 243–46.
11. *Ibid.*, p. 60.
12. *Ibid.*, p. 7.
13. *Ibid.*, p. 269.
14. *Ibid.*, p. 271.
15. *Ibid.*, p. 272. Italics in original.
16. *Ibid.*, p. 274. Italics in original.
17. *Ibid.*, pp. 15–16.
18. *Ibid.*, p. 286.

CHAPTER 5. "A Canal to the Moon"

1. Elkanah Watson, *The Expedition*, p. 95.
2. From the national census of 1820. See Ronald Shaw, *Erie Water West*, p. 5.
3. See Watson, *Expedition*, pp. 19–50.
4. *Ibid.*, pp. 57–58.

5. Ibid., p. 100.
6. Ibid., p. 19.
7. Ibid., p. 22.
8. Timothy Dwight, *Travels in New-England and New-York*, vol. 4, p. 124.
9. Nathan Miller, *The Enterprise of a Free People*, p. 23, citing Report of the Canal Commission, January 31, 1818.
10. Ibid., p. 26.
11. By far the most complete and rewarding early history of the Western Inland Lock Navigation Company is found in Philip Lord Jr., *The Navigators*, which also contains a wealth of well reproduced contemporary maps, accounts, and diagrams of the entire route from Albany to Oneida Lake.
12. Letter of March 14, 1792, from Philip Schuyler to Elkanah Watson, in Watson, *History of the Rise, Progress and Existing Condition . . .*, p. 318.
13. Miller, *Enterprise of a Free People*, p. 12.
14. The New York State Museum in Albany has a fascinating facsimile edition of the detailed survey in 1792 by the Western Company, led by Philip Schuyler, of the Mohawk River from Schenectady to Wood Creek.
15. Quoted in Evan Cornog, *The Birth of Empire*, p. 106.
16. Quoted in Shaw, *Erie Water West*, pp. 18–19.
17. Ibid., p. 19.
18. Ibid., p. 18, citing two histories of the area.
19. For a detailed, fascinating description of these boats and their many uses, see www.tencrucialdays.com/html/durham.htm.
20. Shaw, *Erie Water West*, pp. 17–18.
21. Ibid., p. 18. See also Miller, *Enterprise of a Free People*, p. 11, fn. 17, and p. 13, fn. 22.
22. See Carol Sheriff, *The Artificial River*, p. 54.
23. See Jeremy Atack and Peter Passell, *A New Economic View of American History from Colonial Times to 1940*, pp. 147–49, on transport costs for a variety of commodities and the impact of shifting from road to

- waterway on the distance producers could afford to transport their merchandise.
24. See Barbara Ann Chernow, *Robert Morris, Land Speculator, 1790–1801* (New York: Arno, 1978).
 25. Ibid. See also Cadwallader Colden, *Memoir at the Celebration. . . .*
 26. Shaw, *Erie Water West*, p. 23.
 27. David Hosack, *Memoir of De Witt Clinton*, appendix, note O.
 28. See William Chazenof, *Joseph Ellicott and the Holland Land Company*, p. 81.
 29. Quoted in Sheriff, *Artificial River*, p. 17.
 30. See Shaw, *Erie Water West*, p. 24, quoting an article Hawley wrote in 1841 for the *Ontario Messenger*, which was printed at Canandaigua. Noble E. Whitford, *History of the Canal System of the State of New York*, reports that Hawley had the brainstorm in his supplier's office rather than at dinner with Geddes. Dorothe Bobbé, *De Witt Clinton*, pp. 156–58, discusses Hawley's achievement, and Clinton's admiration, but makes no mention of his having been a jailbird. She says he studied up on the European canals, journeyed to Lake Erie, "made due obeisance to God for forming Niagara," then went home and wrote his essays.
 31. Hosack, *Memoir*.
 32. Ibid.
 33. Ibid.
 34. Ibid.

CHAPTER 6. The Sublime Spectacle

1. U.S. Department of Commerce, *Historical Statistics of the United States: Colonial Times to 1970*, vol. 2, tables Y335–Y336, p. 1104.
2. Albert Gallatin, *Report of the Secretary of the Treasury on the Subject of Public Roads and Canals*, p. 3.
3. Ibid., p. 4.
4. Ibid., p. 6.

CHAPTER 8. The Expedition

1. Roger Haydon, ed., *Upstate Travels*, p. 17, citing Alexander Bell, *Men and Things in America*, p. 40.
2. Cynthia Owen Philip, *Robert Fulton*, p. 193.
3. See *ibid.*, pp. 224–26, although the whole chapter is worth careful reading. See also James Flexner, *Steamboats Come True*, ch. 14, which was the source for the quotations in this paragraph and the preceding paragraph.
4. William Campbell, *The Life and Writings of De Witt Clinton*, p. 30.
5. *Ibid.*, p. 31.
6. Andy Olenick and Richard Reisem, *Erie Canal Legacy*, p. 36.
7. For an entertaining description of stagecoaches, see Haydon, *Upstate Travels*, pp. 19–20.
8. *Ibid.*, pp. 56–57 and 137–38.
9. *Ibid.*, p. 73.
10. *Ibid.*, pp. 70–71.
11. *Ibid.*, p. 72.
12. *Ibid.*, p. 43.
13. See William Chazenof, *Joseph Ellicott and the Holland Land Company*, p. 96.
14. *Ibid.*, p. 53.
15. *Ibid.*, p. 69.
16. *Ibid.*, p. 136.
17. *Ibid.*, pp. 140–41.
18. David Hosack, *Memoir of De Witt Clinton*, appendix, note O.
19. *Ibid.*, citing a pamphlet by John Rutherford called *Facts and Observations in Relation to the Origin and Completion of the Erie Canal*.
20. *Ibid.*
21. *Ibid.*
22. See Elkanah Watson, *The Expedition*, p. 100.
23. De Witt Clinton, *The Canal Policy of the State of New York*, p. 24.

24. See <http://bioguide.congress.gov/scripts/biodisplay.pl?index=P000446>.
25. Clinton, *Canal Policy*, p. 24.
26. See Dorothie Bobbé, *De Witt Clinton*, pp. 210–11.
27. This and other quotations from the commission's report are found in Nathan Miller, *The Enterprise of a Free People*, p. 32.
28. Richard Brookhiser, *Gentleman Revolutionary*, p. 189, citing the *Journal of the Senate*.
29. Quoted in Ronald Shaw, *Erie Water West*, p. 43, citing Ellicott's *Letter-books*.

CHAPTER 9. War and Peace

1. Jabez Hammond, *The History of the Political Parties in the State of New-York*, vol. 1, p. 302.
2. Nathan Miller, *The Enterprise of a Free People*, p. 38.
3. U.S. Department of Commerce, *Historical Statistics of the United States: Colonial Times to 1970*, vol. 2, tables Y336–Y337, p. 1104.
4. Ronald Shaw, *Erie Water West*, p. 47, without citation but from the 1812 report of the commission.
5. Chapter 1, "The Tradition," of Miller's *Enterprise of a Free People* has an extended and highly interesting overview of economic development in New York State and the central role played by the state government in the process.
6. I draw heavily here from Shaw, *Erie Water West*, pp. 48–49.
7. John Rutherford, *Facts and Observations in Relation to the Origin and Completion of the Erie Canal*.
8. Charles Glidden Haines, *Considerations on the Great Western Canal from the Hudson to Lake Erie*, pp. 26–27.
9. Shaw, *Erie Water West*, pp. 49–50.
10. Hammond, *Political Parties*, vol. 1, p. 289.
11. See <http://famousamericans.net/danieltdompkins>.
12. Richard Brookhiser, *Gentleman Revolutionary*, citing Henry Adams's biography of John Randolph, who was then Morris's brother-in-law.

13. Department of Commerce, *Historical Statistics of the United States*, vol. 2, pp. 904–5, #U317 and U324.
14. Michael Chevalier, *Society, Manners, and Politics in the United States*, p. 225.
15. Brookhiser, *Gentleman Revolutionary*, p. 195, citing Morris's diary and correspondence.
16. *Ibid.*
17. *Ibid.*, p. 194.
18. For a lively and compressed recital of the War of 1812, especially in New York, see Walter McDougall, *Freedom Just Around the Corner*, pp. 413–21.
19. <http://bioguide.congress.gov/scripts/biodisplay.pl?index=P000446>.
20. Quoted in Garry Wills, *James Madison*, p. 116.
21. *Ibid.*
22. Department of Commerce, *Historical Statistics of the United States*, vol. 2, p. 760.
23. See Wills, *James Madison*, pp. 126–27.
24. *Ibid.*, p. 97.
25. William Chazenof, *Joseph Ellicott and the Holland Land Company*, p. 122.
26. See *ibid.*, ch. 17, for a quick overview of these events.
27. *Ibid.*, p. 129.
28. See Wills, *James Madison*, ch. 9, "Frigates and a Fresh Start," pp. 107–15. Two extended Web sites also provide great and exciting detail: www.jmu.edu/madison/center/main_pages/madison_archives/life/war1812/overview.htm and www.geocities.com/Broadway/Alley/5443/supfrig.htm.
29. De Witt Clinton, *The Canal Policy of the State of New York*, pp. 26 and 28.
30. Quoted in Chazenof, *Joseph Ellicott*, p. 54.
31. David Hosack, *Memoir of De Witt Clinton*, appendix, note O.
32. Haines, *Considerations*, p. 22. Also, see Miller, *Enterprise of a Free People*, p. 41, fn. 2.

33. Adam Smith, *Lectures on Jurisprudence*.
34. Haines, *Considerations*, p. 50.
35. *Ibid.*, p. 57.
36. Hosack, *Memoir*.
37. De Witt Clinton, *Memorial . . . in Favour of a Canal Navigation*, pp. 28–41.

CHAPTER 10. The Shower of Gold

1. All these quotations are from Nathan Miller, *The Enterprise of a Free People*, pp. 66–67.
2. Noble E. Whitford, *History of the Canal System of the State of New York*, introduction.
3. Quoted in Lionel Wyld, *Low Bridge!*, p. 161.
4. William Chazenof, *Joseph Ellicott and the Holland Land Company*, pp. 209–10.
5. Evan Cornog, *The Birth of Empire*, p. 159. This whole paragraph draws in part on his discussion at that point.
6. See Miller, *Enterprise of a Free People*, p. 46, citing David Hosack, *Memoir of De Witt Clinton*, and Luther Severance, *The Holland Land Company* (Buffalo: Buffalo Historical Papers, 1924), pp. 89 and 91.
7. De Witt Clinton, *The Canal Policy of the State of New York*, p. 26.
8. *Ibid.*, p. 27.
9. See Miller, *Enterprise of a Free People*, p. 45, for a more extended discussion of this point.
10. Ronald Shaw, *Erie Water West*, p. 63, citing a letter dated April 24, 1816.
11. Miller, *Enterprise of a Free People*, p. 53, citing *Annals of Congress*, 14 Cong., 2 Sess., p. 854.
12. Clinton, *Canal Policy*, p. 43.
13. Miller, *Enterprise of a Free People*, pp. 9 and 10.
14. Clinton, *Canal Policy*, p. 45.
15. See Hosack, *Memoir*, appendix, note O.

38. Cornog, *Birth of Empire*, p. 143.
39. *Ibid.*, p. 146.
40. Hammond, *Political Parties*, vol. 2, p. 101; also cited in Cornog, *Birth of Empire*, p. 146.

CHAPTER 14. Unwearied Zeal

1. Noble E. Whitford, *History of the Canal System of the State of New York*, ch. 24, citing George Geddes, "The Erie Canal," in *Publications of the Buffalo Historical Society*, pp. 291–93.
2. *Ibid.*
3. *Ibid.*, citing Introduction to *Public Documents Relating to New York Canals*, p. xiii.
4. *Ibid.*
5. *Ibid.*, p. 33.
6. Ronald Shaw, *Erie Water West*, p. 99, citing *Assembly Journal*, p. 671.
7. Anonymous, "Notes on a Tour Through the Western Part of the State of New York" (originally in the magazine *Ariel*, 1829–1830), in Warren Tryon, *A Mirror for Americans*, vol. 1, pp. 104–13.
8. *Ibid.*, p. 112.
9. A superb photograph of the station appears in Debbie Stack and Ronald Marquisee, *Cruising America's Waterways: The Erie Canal*, p. 766.
10. Sibyl Tatum, quoted in Carol Sheriff, *The Artificial River*, p. 61.
11. Tryon, *Mirror for Americans*, vol. 1, p. 111.
12. Quoted in Dorothea Bobbé, *De Witt Clinton*, p. 245.
13. See Whitford, *History of the Canal System*, ch. 24, and Lionel Wyld, *Low Bridge!*, p. 49.
14. Tryon, *Mirror for Americans*, vol. 1, p. 106.
15. See Andy Olenick and Richard Reisem, *Erie Canal Legacy*, p. 24.
16. Ralph Andrist, *The Erie Canal*, p. 41.
17. From Freneau's 1822 poem "Oh, The Great Western Canal of the State of New York."
18. Blake McKelvey, *Rochester and the Erie Canal*, pp. 5–7, has a lively and extensive description of these developments.

19. Quoted in Wyld, *Low Bridge!*, p. 39.
20. John Howison, "A Tour from Rochester to Utica, 1820," in *Upstate Travels*, ed. Roger Haydon, p. 137.
21. See Wyld, *Low Bridge!*, p. 43.
22. See Francis Kimball, *New York—The Canal State*, p. 11.
23. William Chazenof, *Joseph Ellicott and the Holland Land Company*, p. 96, citing an account by Margaret Louise Plunkett called "The Upstate Cities and Villages," which he found in Alexander Flick, ed., *History of the State of New York* (New York: Columbia University Press, 1933–1937), vol. 8, p. 56.
24. McKelvey, *Rochester and the Erie Canal*, p. 7.
25. Patricia Anderson, *The Course of Empire*, p. 20, citing Nathan Parker Willis, *American Scenery* (London: George Virtue, 1840), p. 129.
26. *Ibid.*, p. 36, citing Cole's *Diary*.
27. Quoted in Bobbé, *De Witt Clinton*, p. 253.
28. See Olenick and Reisem, *Erie Canal Legacy*, p. 16.
29. For a more extended description, see David Hosack, *Memoir of De Witt Clinton*, appendix, note CC by William Stone.
30. Cadwallader Colden, *Memoir at the Celebration*. . . .
31. See Evan Cornog, *The Birth of Empire*, pp. 143–44.
32. See Shaw, *Erie Water West*, pp. 166–68, for an excellent description of the growing tension in Clinton's position.

CHAPTER 15. A Noble Work

1. Noble E. Whitford, *History of the Canal System of the State of New York*, p. 39.
2. Quoted in Carol Sheriff, *The Artificial River*, p. 31. The merchant's name was Ira Blossom.
3. Frances Trollope, *Domestic Manners of the Americans*, ch. 32.
4. I have drawn heavily here on the excellent description in Andy Olenick and Richard Reisem, *Erie Canal Legacy*, pp. 195–96.
5. See Ronald Shaw, *Erie Water West*, p. 133.
6. Sheriff, *Artificial River*, p. 35.

7. Roger Haydon, ed., *Upstate Travels*, pp. 211–12, citing Henry Tudor, *Narrative of a Tour in North America* (London: James and Duncan, 1834), vol. 1, pp. 230–34.
8. Lionel Wyld, *Low Bridge!*, p. 43, citing Frederick Gerstaecker, *Wild Sports in the Far West* (New York: John W. Lovell, 1881).
9. David McCullough, *The Path Between the Seas*, pp. 529–30.
10. *Ibid.*, p. 498.
11. *Ibid.*, p. 250.
12. *Ibid.*, p. 481.
13. See www.hlc.wny.org/buffalo.jpg.
14. www.middlebass.org/lake_erie_steam_boats_1935.shtml.
15. William Chazenof, *Joseph Ellicott and the Holland Land Company*, p. 178, citing Peacock's report.
16. Quoted in Dorothe Bobbé, *De Witt Clinton*, p. 253.
17. See Whitford, *History of the Canal System*, p. 51.
18. This paragraph draws heavily on Shaw, *Erie Water West*, p. 160.

CHAPTER 16. The Pageant of Power

1. William Campbell, *The Life and Writings of De Witt Clinton*, p. 363.
2. Quoted in Dorothe Bobbé, *De Witt Clinton*, p. 254.
3. *Ibid.*, p. 275.
4. *Ibid.*, pp. 255–57.
5. Quoted in Evan Cornog, *The Birth of Empire*, p. 147.
6. *Ibid.*
7. Quoted in Ronald Shaw, *Erie Water West*, p. 166.
8. Dixon Ryan Fox, *The Decline of Aristocracy in the Politics of New York*, p. 283.
9. Quoted in Jabez Hammond, *The History of the Political Parties in the State of New-York*, vol. 2, p. 159. Italics in original.
10. Quoted in Fox, *Decline of Aristocracy*, p. 290, fn. 3.
11. <http://en.wikipedia.org/upload/f/f9/ElectoralCollege1824-Large.png>.

12. Martin Van Buren, *Autobiography*, p. 143.
13. David Hosack, *Memoir of De Witt Clinton*.
14. Van Buren, *Autobiography*, p. 143.
15. See Gustavus Myers, *The History of Tammany Hall*, p. 65, and Cornog, *Birth of Empire*, p. 151.
16. See Shaw, *Erie Water West*, p. 175, citing Thurlow Weed's *Autobiography*.
17. Shaw, *ibid.*, p. 167, citing Weed in *Rochester Telegraph*, January 7, 1823.
18. Quoted in Fox, *Decline of Aristocracy*, p. 296.
19. Quoted in Myers, *Tammany Hall*, pp. 66–67.
20. Quoted in Cornog, *Birth of Empire*, p. 152.
21. Craig Hanyan and Mary L. Hanyan, *DeWitt Clinton and the Rise of the People's Men*.
22. Quoted in Fox, *Decline of Aristocracy*, p. 283, fn. 1.
23. Van Buren, *Autobiography*, pp. 143–45. Italics in original.
24. www.library.thinkquest.org.
25. Herbert Hoover, *The Memoirs of Herbert Hoover: The Great Depression*, p. 30.

CHAPTER 17. The Wedding of the Waters

1. Dorothe Bobbé, *De Witt Clinton*, p. 279; her source is not cited, but from David Hosack, *Memoir of De Witt Clinton*.
2. *Ibid.*, p. 157.
3. Cadwallader Colden, *Memoir at the Celebration*. . . .
4. Quoted in Don C. Sowers, *The Financial History of New York State*, p. 63, citing S. H. Sweet, *History of Canals, Assembly Documents*, (1863), vol. 1.

CHAPTER 18. No Charge for Births

1. See Nathan Miller, *The Enterprise of a Free People*, p. 115, fn. 1.
2. I have purloined the expression "artificial river" from Gouverneur Morris's use of the term in 1803.

45. Elkanah Watson, *History of the Rise, Progress and Existing Condition . . .*, p. 22.

CHAPTER 19. The Prodigious Artery

1. Blake McKelvey, *Rochester and the Erie Canal*, p. 18.
2. See *ibid.*
3. Don C. Sowers, *The Financial History of New York State*, p. 98.
4. See Dorothie Bobbé, *De Witt Clinton*, p. 297.
5. See www.history.rochester.edu/canal/bib/nys1961/historyc.htm, and also Noble Whitford's *History of the Canal System of the State of New York*.
6. Cited by Jabez Hammond, *The History of the Political Parties in the State of New-York*, vol. 1, as a "rallying cry," p. 327.
7. Michael Chevalier, *Society, Manners, and Politics in the United States*, pp. 74 and 299.
8. *Ibid.*, p. 130. Italics in original.
9. *Ibid.*, pp. 282–83.
10. *Ibid.*, p. 97.
11. Nathan Miller, *The Enterprise of a Free People*, pp. 198–99.
12. U.S. Department of Commerce, Bureau of the Census, *Historical Statistics of the United States: Colonial Times to 1970*, vol. 1, tables A-57 to A-72, p. 12.
13. Milton Klein, *The Empire State*, p. 289. For a further interesting contemporary analysis of the impact of the Erie Canal on the population, agriculture, and economic growth of New York State, see Alexander Trotter, *Observations on the Financial Position and Credit . . .*, pp. 84–86.
14. See Klein, *Empire State*, pp. 289–90.
15. Quoted in Ronald Shaw, *Erie Water West*, p. 277.
16. See <http://xroads.virginia.edu/~HYPER/DETOC/TOUR/bufftxt.html>.
17. Trotter, *Observations*, p. 85, and Sowers, *Financial History*, pp. 332–33.
18. Klein, *Empire State*, p. 315.
19. Douglass North, *The Economic Growth of the United States*, table L-IX, p. 257. Here, the west includes Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Nebraska, Ohio, Tennessee, Wisconsin, California, Nevada, and Oregon.
20. A stimulating account of this transformation (with many interesting citations to other works) appears in Algie Martin Simons, *Social Forces in American History*.
21. See Shaw, *Erie Water West*, pp. 264–65.
22. *Ibid.*, p. 413, quoting Azariah C. Flagg papers.
23. Elkanah Watson, *History of the Rise, Progress and Existing Condition . . .*, pp. 15–16.
24. For an extended and often fascinating account of the canal as a force for economic development, see Miller, *Enterprise of a Free People*, chs. 7–12.
25. For more detail on the Illinois and Michigan Canal, see <http://nps.gov/ilmi/>.
26. Evan Cornog, *The Birth of Empire*, p. 162.
27. See Shaw, *Erie Water West*, p. 261.
28. See Jeremy Atack and Peter Passell, *A New Economic View of American History from Colonial Times to 1940*, p. 13.
29. North, *Economic Growth*, table E-IX, p. 253.
30. Francis Lieber quoted in Henry Steele Commager, *America in Perspective*, p. 33.
31. Quoted in North, *Economic Growth*, p. 173.
32. Kenneth Sokoloff, *Inventive Activity in Early Industrial America*, p. 14.
33. *Ibid.*, p. 17.
34. *Ibid.*, p. 10.
35. Quoted in Miller, *Enterprise of a Free People*, p. 138.
36. See Klein, *Empire State*, p. 314, where he quotes (but does not cite) the agricultural historian David Ellis.
37. Carter Goodrich, *Government Promotion of American Canals and Railroad*, p. 350, n. 30.
38. Dixon Ryan Fox, *The Decline of Aristocracy in the Politics of New York*, ch. 10.

39. Klein, *Empire State*, p. 318, citing federal and state census data.
40. See Alfred D. Chandler Jr., *The Visible Hand*, pp. 14–26.
41. Quoted in Blake McKelvey, *A Panoramic History of Rochester and Monroe County, New York*, p. 54.
42. Robert G. Albion, *The Rise of New York Port*, p. 89.
43. Quoted in Mark Kurlansky, *Salt*, p. 248.
44. In addition to using a variety of material found on the Internet, I have drawn on Andy Olenick and Richard Reisem, *Erie Canal Legacy*, in these sketches of Rochester, Syracuse, and Buffalo.
45. Simons, *Social Forces*, p. 210.
46. Klein, *Empire State*, p. 326.

CHAPTER 20. The Granary of the World

1. From an address delivered to a meeting of citizens in Albany on April 28, 1824, and reprinted as an appendix in David Hosack, *Memoir of De Witt Clinton*.
2. Robert G. Albion, *The Rise of New York Port*, p. 5.
3. Douglass North, *The Economic Growth of the United States*, pp. 168–76, and in particular his heavy emphasis on America's accomplishments in free education and the nourishment of human capital. See also Milton Klein, *The Empire State*, ch. 17.
4. The expression appears in Albion, *Rise of New York Port*, p. 15, but it crops up elsewhere in the literature as well.
5. Algie Martin Simons, *Social Forces in American History*, citing *Hunt's Merchant Magazine*, August 1868, p. 113.
6. Albion, *Rise of New York Port*, pp. 2 and 9–10.
7. I have drawn much important information on this subject from the work of Cheryl Schonhardt-Bailey of the London School of Economics, a distinguished expert in this field—in particular, from “Free Trade's Last Hurdle: Repeal of the Corn Laws in the House of Lords,” a paper presented at the 2003 American Political Science Association Annual Meeting and scheduled to appear in her forthcoming book *Interest, Ideas and Institutions: Repeal of the Corn Laws Re-Told*. See

- also her “Conservatives Who Sounded Like Trustees but Voted Like Delegates” (2002), for which the full text is available at <http://personal.lse.ac.uk/schonhar/paper%202.pdf>.
8. For a provocative analysis of the British agricultural revolution as compared with the “new economy” of our own time, see J. Bradford Delong, “A Historical Perspective on the New Economy.”
9. Albion, *Rise of New York Port*, p. 92.
10. Quoted in Schonhardt-Bailey, “Free Trade's Last Hurdle.”
11. Quoted in Michael Howard, *War and the Liberal Conscience*, pp. 42–43, citing Cobden's *Speeches on Questions of Public Policy* (London: n.p., 1870), vol. 1, p. 79.
12. Quoted in Wendy Hinde, *Richard Cobden*, p. 61. Italics in original.
13. *Ibid.*, p. 74.
14. This and subsequent quotations from Peel may be found at <http://dSPACE.dial.pipex.com/town/terrace/adw03/polspeech/speetop.htm>, a site rich in material about Peel.
15. See Schonhardt-Bailey, “Free Trade's Last Hurdle”; I am grateful for her suggestion that the price of corn may not have been the primary motivation for Corn Law repeal.
16. <http://dSPACE.dial.pipex.com/town/terrace/adw03/polspeech/speetop.htm>.
17. See B. R. Mitchell, *European Historical Statistics*, various tables.
18. William Bernstein, *The Birth of Plenty*, p. 205, citing Angus Maddison, *The World Economy: A Millennial Perspective*, pp. 241 and 261.
19. William Goetzmann, Roger Ibbotson, and Liang Peng, “A New Historical Database for the NYSE 1815–1925,” appendix I.
20. North, *Economic Growth*, table E-IX, p. 253.
21. Percy Bidwell and John Falconer, *History of Agriculture in the Northern United States, 1620–1860*, p. 310, citing the Buffalo Board of Trade.