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The Erie Canal is a waterway that revolutionized the transportation industry in the early nineteenth century. Its intricate design of locks, lining, and aqueducts make it an engineering marvel. Constructing this water passage almost did not occur. Through the tenacity of DeWitt Clinton, the governor of New York State, the idea of building a waterway linking the Atlantic Ocean with Lake Erie became a reality. He was able to transcend conflicting political ideas about economics as well as ascertain proper funding for this project. The canal transformed New York State economically with the growth of major canal cities such as Buffalo, Rochester, Utica, Albany, New York City and Troy. A vitally important waterway to the Erie Canal was the Hudson River, also altered by the canal's building. As New York State developed there was growing concern about the operators and groups of people affected by this aquatic monument.

As a member of the Federalist Party, DeWitt Clinton strongly believed in a federally funded canal project that linked Lake Erie with the Atlantic Ocean. In 1810 he served on a canal commission, initiated by Governor Morris, sent to Washington. The proposed bill failed to pass in the House of Representative because of the stronghold of Anti-Federalists. President James Madison personally killed the legislation. Despite this setback, Clinton did not relinquish his idea of a great waterway. To garner support of the canal, he invoked a spirit of camaraderie associated with the American Revolution. He strongly believed citizens of New York State could work together to improve their standard of living. Thus constructing the Erie Canal served to unite the people and various regions of New York. In addition, Clinton also desired to infuse the principles and philosophies of the Founding Fathers into his grand project. He clearly

acknowledged Federalist rhetoric by contending the canal symbolized economic expansion. A waterway such as the Erie Canal would open up markets in the western United States, and connect various cities along the way thus promoting industrial growth. Clinton, however, addressed Anti-Federalist thought regarding economic growth. He advocated a policy of providing moral goodness for the public without hindering progress in New York State. As he prepared to go to New York City to discuss his canal plans, Clinton continued to trust that his home state could accomplish the task.[1]

As part of the five man a five man commission summoned, it was Clinton who made the vital decisions. He first determined the length of the canal to be 363 miles which was then divided into an eastern, middle and western section. The western section, 165 miles long stretched from Lake Erie to the Seneca River, while the middle section, spanning seventy-two miles, from Seneca River to Rome, and finally the eastern parcel, 126 miles went from Rome to Albany. The soon to be governor Clinton entrusted his two engineers James Gedds and Benjamin Wright with the task of designing the canal. Next, he had to grapple with the question of appropriate financing of such a gargantuan project. There was opposition to having the canal funded privately because the Western Inland Lock Navigation Company had failed. Clinton ultimately believed that public support of the waterway was best. He argued public funding allowed every individual to contribute to the development of New York State and reap the benefits of the canal. The final task was finding supporters and opponents of the waterway throughout the region. For this, he appointed Samuel Young canal commissioner. In order to begin construction, Clinton and the commission had to be certain that there was strong public in many areas.[2]

Opposition was strongest in eastern New York particularly in the Hudson River Valley as well as Delaware and Renesaler counties and New York City. New York City was seen as the principle backer for construction, but at that time was opposed because of Western Inland. The Commission recommended, "a real estate tax on the property of those who would benefit most from the construction of the new canal."[3] Both William A. Duer and Nathaniel Pendleton of Dutchess County seized the opportunity. It was purposed that that the canal law should include "a tax on land and property within twenty-five miles of the middle section of the Erie."[4] This purposed legislation was adopted by the commission becoming law in 1817. Although no taxes were ever collected, Duer and Pendleton played a part in cementing eastern state support for the canal. As a result of the canal law, New York City decided to invest because it provided solid financial backing through the borrowing of state credit. The city's Bank for Savings consisted of three important investors, Janet Cheever, William James and Laurent Salles. Together they held approximately 30% of canal stock by 1821. Other important financial contributors included attorneys, doctors, butchers and carpenters who helped raise over $650,000 to aid canal building. Now that support had been attained in the east, construction of the canal began.[5]

Designing the waterway was a rather daunting task with a total rise in elevation of 541 feet going from the Hudson River to Lake Erie. In order for boats to use the canal there had to be a system of locks that would raise and lower boats a total of 661 feet. The middle section of the canal was done first because it was the easiest section to dig and did not require locks. Clearing the forest, however, was still an arduous task, but due to newer technology the process was simplified. Wheel machinery allowed for the easy removal of large tree stumps while horses were used to dig the earth and hall the excess dirt away from the ditch. Sharp iron plows were also used instead of shovels making the clearing process easier. Lining the ditch was also a

significant task, in Europe wood had been used to create a barrier between the earth and the water. This material, however, was impractical because it easily rotted soon after it was put in. Instead of using wood, the brilliant Canvass White ingeniously designed cement to line the bottom and sides of the Erie Canal. He found a way to pulverize limestone and combine it with sand to make an impervious material. By the middle of 1820 the central section of the Erie Canal was completed attention was now directed to the eastern and western sections.[6]

Construction of the eastern section (Utica to Albany) entailed a more sophisticated engineering design. It is important to note that not all of the eastern building was arduous. By the close of 1821, the region from Utica to Little Falls was finished and was operational. There were some low and high regions which required a total of thirteen locks. The most difficult region was from Little Falls to the Hudson River because digging involved the cutting through solid beds of rock and steep drop offs. Little Falls was a narrow gorge where the Mohawk River cut through mountainous terrain. The steepest part of the canal to be constructed was a drop from Schenectady to Cohoes Fall near the city of Troy. It was decided by both Benjamin Wright and Canvass White to follow the flow of the Mohawk River because there was no other feasible way to bypass this obstacle.[7] There was still difficulty in building the Erie Canal because the surfaces between Little Falls and the Mohawk River were rocky and uneven. Thirteen locks had to be designed because of the ninety foot drop off between Little Falls and Schenectady. Designers faced an even bigger challenge below Schenectady; the land dropped 200ft over the course of sixteen miles. As a result, twenty seven locks had to be installed from Schenectady to Troy to compensate for the decrease. To link Troy to the Hudson, the canal would parallel the southern bank of the Mohawk which was very hilly. The idea was to cross the Mohawk to the northern side and then cross it again to move to the south. This entailed the construction of two

major aqueducts. The northern aqueduct measured 748 feet and was supported by sixteen piers while the southern measured an impressive 1188 feet with twenty-six piers supporting it. By 1824 the eastern section of the Erie Canal had been completed with all the major feats accomplished.[8]

Designing the Western portion was also an architectural masterpiece. When the waterway was created in Rochester, it required a crossing of the Genesee River. A Roman style aqueduct was constructed spanning three city blocks. It was completed in 1823. Next, architects had to find the most direct route from Rochester to Lake Erie, the place of choice Buffalo. The idea was to go straight from Rochester then turn ninety degrees to Buffalo. A major problem was the close proximity to Niagara Falls; the elevation of the land significantly lowered. Architectural planner Nathan Roberts thought to carve the bedrock into an escarpment with the canal sixty feet above the embankment of the Niagara. In additions, locks were made twelve feet high in sets of five, allowing for the movement of up and down traffic. These stairs however did not bring boats to the very top of the cliff. Both Roberts and Geddes sought to cut through the rock and divert the route toward the town of Pendleton and connect with the Tonawanda Creek that flowed into the Niagara River. Rock was removed through blasting powder. By June of 1825 the western part of the Erie Canal had been done.[9]

The Erie Canal was an instant economic success for the State of New York. Cities such as Rochester, Buffalo, Syracuse, Albany and Troy experienced a massive population growth as well as the rise of textile mills, factories, and iron works. In Rochester, about 10,000 barrels of flour made its way westward. Syracuse was able to mine its salts and quickly transport it to world markets and soon out produced Portugal, Turkey, and the Cape Verde Islands. This waterway allowed Buffalo to become a vital industrial city because of its location on Lake Erie.

Buffalo also served as a link between the cities of Chicago and New York. Its influence spread westward and many surrounding states such as Pennsylvania desired to replicate New York's success. Despite facing close competition with the railroad many still preferred to use the canal to ship goods because the train was prohibitively expensive. By 1845 the amount of tonnage flowing in the canal topped one million and just two years later topped two million. During the Civil War tonnage increased to three million, and by 1880 it further increased to four million. Before its decline in the late nineteenth century, the tonnage peaked at 4,608,651. The Hudson Valley increased economically as materials flowed in and out of the canal facilitating industrial growth.[10]

Although the Erie Canal brought power and prestige to New York State there were social and political concerns. A substantial amount of farmers were very worried about the agricultural loss of land during the construction of the Erie Canal. They firmly believed in the right to private ownership of land; the basic belief of the Founding Fathers. Some of them, however, were indifferent to commercial ventures. The Canal Board was formed to deal with any complaints or questions that arose as the canal continued to be constructed. It is important to note that the Canal Board became a truly democratic institution, in that commoners had a voice in policy surrounding the canal's erection.[11] Appraisers served as the go betweens of the board and the government of Albany. These individuals desired to balance individual property rights with those of the public. A good number of agriculturalists were remitted payment in the form of a bridge if the canal cut their farmland in half. Another pressing issue that this panel faced was that of excess water. Struggling settlers sought to use the water to generate mills and to move produce. To solve their plight they often utilized the "public good" phrase, arguing unused and

stagnant water would breed disease. As the canal continued to transform New York State the political and economic landscape changed as well.[12]

Many feared a continued deepening of class division as the commercial market expanded. As a direct result of the canal, areas along its shores developed rapidly, leading to the building of numerous warehouse and mills. By 1835 the Canal Board faced the decision to expand the Erie Canal to seventy feet across and a depth of seven feet. The idea of whether or not to expand is a clear example of the clash between the Jeffersonian Democrats and the Whig Party. Jeffersonians favored geographic as opposed to market expansions. In New York State, political ideology surrounding the Erie Canal was not as clear cut. In some instances Whigs sought to halt any further augmentation of the waterway, while Democrats deemed it necessary to enlarge it.[13] By the 1830s many farmers had grown weary of arguments justifying land loss in the name public good. Persons such as Anson Cary believed that property rights would continue to be usurped. He and others charged that the state had become wedded to the merchants as opposed to producers. Internal improvements were not benefiting the common good. Some of the suspicions were warranted because not every town near the canal shared in the wealth. Towns somewhat farther removed from the canal, such as Rome and Schenectady took an economic loss as merchants went to dwellings on the shore. With renewed expansion eminent, the Canal Board could change the direction of the canal if necessary.[14]

For the middle class, the Erie Canal came to symbolize a place of moral depravation and vice. They believed that the developing merchant was slowly destroying the moral fabric of the country. About 30,000 workers were needed to keep the waterway operational as 3,400 boats made their way through the various towns and over the locks. Canal servicemen included urban and rural workers as well as aspiring businessmen, boatmen, diggers, and available laborers.

Blacksmiths continually made horseshoes, while farmers grew oats to feed the animals. Boatmen included longshoreman, lock operators and animal drivers. Locals also expressed concern over the high incidences of alcohol abuse and poverty that characterized the winter months among canal workers. The middle class in particular thought canal work was highly distasteful and discouraged their children from partaking in such a trade. This working class of canal personal mutually hated those higher up in society.[15]

Religious leaders of the Second Great Awakening felt drawn to help workers of the canal. The Bethel Society wanted to see the waterway shut down on Sundays and to bring its operators closer to God. Jacksonian Democrats outright rejected any sort of religious intervention on secular manners. There was, however, mixed success with religious conversion during the 1830s and 1840s. Often Protestant religious leader found themselves at odds with Irish Catholics, especially over the issue of alcohol. As a consequence, many Irish Catholics workers were subsequently attacked. One of the most famous Erie Canal preachers was Joseph Smith, the founder of Mormonism. Another minister was Charles Finney who believed it was necessary to profess the moral words of God to the downtrodden workers. Religious individuals of this time period desired to have moral values while still allowing for material progress to be made.[16]

The Erie Canal transformed the United States during the early to middle 1800s. Although at times construction proved to be difficult, “Clinton’s Ditch” was completed. This waterway did symbolize the different political attitudes of the Federalist and the Anti-Federalists. Clinton and the Canal Commission, however, were able to transcend competing political ideologies and construct this architectural masterpiece. Credit is given rightfully given to DeWitt Clinton, but the contribution of laborers should also be acknowledged. This canal also symbolized technological progress with the ingenuity of various designers such as Nathan

Roberts, Canvass White, James Geddes and Benjamin Wright. As a result of the building, New York State became an economic power in the young United States. A wide variety of materials could easily be sent from Western New York to New York City. The Hudson River also became a major economic beneficiary to the canal because it was the critical connecting piece from the Atlantic Ocean to the Erie Canal itself. In addition to progress, there was also social political and economic concern for the people involved in canal operation as well as groups of individuals and communities surrounding it.

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[1] Miller, Nathan. *The Enterprise of Free People: Aspects of Economic Development in New York State during the Canal Period, 1792-1838* New York: Cornell University Press, 1962: 3-20; Bernstein, Peter L. *Wedding of the Waters: The Erie Canal and the Making of a Great Nation*. New York: W.W. Norton & Company, 2005: 109-126; Larkin, Daniel. *New York State Canals: A Short History*. New York: Purple Mountain Press, 1998: 16-17; Shaw, Ronald E. *Canals for a Nation: The Canal Era in the United States, 1790-1860*. Kentucky: University Kentucky Press, 1990: 30-34; Cornog, Evan. *The Birth of Empire: DeWitt Clinton and the American Experience, 1769-1828*. New York: Oxford University Press, 1998, 106-108. Drago, Harry Sinclair. *Canal Days in America*: *The History and Romance of Old Towpaths and Waterways.* New York: Crown Publishers, 1972: 161-166.

[2] Bernstein, 142-200; Larkin, 17-18; Shaw 34-38; Miller, 20-40; Drago, 166-169; Kimball, Francis P. New York: *The Canal State. New York:* Argus Press, 1937, 9-11; Cornog, 109-117; Sheriff, Carol. *The Artificial River*: *The Erie Canal and the Paradox of Progress, 1817-1862*. U.S.A, 1996: 10-26

[3] Miller, 68.

[4] Miller, 70.

[5] Miller, 59-73.

[6] Bernstein, 201-219; Cornog, 158-160; Sheriff, 27-38; Kimball, 11-12; Drago 172-178; Larkin 18-19.

[7] Bernstein, 258-262;

[8] Bernstein, 262-266; Larkin, 19-20. Shaw, 39-40, Drago, 186-188.

[9] Bernstein 266-273; Sheriff 41-45; Larkin, 20-21; Shaw 41-42, Drago, 188-191.

[10] Larkin 22-40, Kimball, 14-24; Bernstein 293-307; Cornog, 160-164; Shaw 45-49;Lewis Thomas. *The Hudson: A History*. *New Haven*: Yale University Press, 2005: 169-173.

[11] Sheriff, 79-109.

[12] Sheriff, 110-120.

[13] Sheriff, 120-137.

[14] Sheriff, 137-145.

[15] Sheriff, 145-154., Cornog; 164-166.

[16] Bernstein, 338-340; Cornog, 166-168; Sheriff, 154-171.