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The Des Moines Rapids: A History of its Adverse Effects on Mississippi River Traffic and its Use as a Source of Water Power to 1860

Donald L. Enders
Brigham Young University - Provo

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THE DES MOINES RAPIDS: A HISTORY OF ITS
ADVERSE EFFECTS ON MISSISSIPPI RIVER
TRAFFIC AND ITS USE AS A SOURCE
OF WATER POWER TO 1860

A Thesis
Presented to the
Department of History
Brigham Young University

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts

by
Donald L. Enders
April 1973
This thesis, by Donald L. Enders, is accepted in its present form by the Department of History of Brigham Young University as satisfying the thesis requirement for the degree of Master of Arts.

Eugene E. Campbell, Committee Chairman

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April 3, 1973

Typed by: Ruth K. Christensen, CPS
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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACKNOWLEDGMENTS</td>
<td>iii</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>vii</td>
</tr>
<tr>
<td>LIST OF ILLUSTRATIONS</td>
<td>viii</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td><strong>Chapter</strong></td>
<td></td>
</tr>
<tr>
<td>I. THE DES MOINES RAPIDS COUNTRY: EXPLORATION AND SETTLEMENT</td>
<td>6</td>
</tr>
<tr>
<td>II. THE PLANTING OF TOWNS ALONG THE RAPIDS, 1830 - 1837</td>
<td>28</td>
</tr>
<tr>
<td>III. THE RAPIDS: INTERNAL IMPROVEMENTS</td>
<td>39</td>
</tr>
<tr>
<td>Petitions to Washington</td>
<td></td>
</tr>
<tr>
<td>The Services of Robert E. Lee</td>
<td></td>
</tr>
<tr>
<td>IV. A RAILROAD TO BYPASS THE RAPIDS</td>
<td>58</td>
</tr>
<tr>
<td>V. COMING OF THE MORMONS</td>
<td>65</td>
</tr>
<tr>
<td>The Founding of Nauvoo</td>
<td></td>
</tr>
<tr>
<td>The Need for Industry</td>
<td></td>
</tr>
<tr>
<td>The Railroad Dilemma</td>
<td></td>
</tr>
<tr>
<td>VI. THE RAPIDS: A SOURCE OF WATER POWER</td>
<td>86</td>
</tr>
<tr>
<td>Non-Mormon Involvements</td>
<td></td>
</tr>
<tr>
<td>Mormon Interests</td>
<td></td>
</tr>
<tr>
<td>VII. NAUVOO: AN INDUSTRIAL EMORIUM</td>
<td>103</td>
</tr>
<tr>
<td>To Build a Dam</td>
<td></td>
</tr>
<tr>
<td>The &quot;Trades Meeting Association&quot;</td>
<td></td>
</tr>
<tr>
<td>Anti-Mormon Sentiment</td>
<td></td>
</tr>
<tr>
<td>Petition to Congress</td>
<td></td>
</tr>
<tr>
<td>The &quot;Living Constitution&quot;</td>
<td></td>
</tr>
<tr>
<td>The Nauvoo Water Power Company</td>
<td></td>
</tr>
<tr>
<td>Chapter</td>
<td>Page</td>
</tr>
<tr>
<td>---------</td>
<td>------</td>
</tr>
<tr>
<td>VIII.</td>
<td>132</td>
</tr>
<tr>
<td>THE RAPIDS: FURTHER EFFORTS</td>
<td>132</td>
</tr>
<tr>
<td>TOWARD IMPROVEMENT</td>
<td></td>
</tr>
<tr>
<td>Costly Obstructions</td>
<td></td>
</tr>
<tr>
<td>Private Involvements</td>
<td></td>
</tr>
<tr>
<td>The Government's Return</td>
<td></td>
</tr>
<tr>
<td>Rapids Continue Obstructed</td>
<td></td>
</tr>
<tr>
<td>CONCLUSION</td>
<td>158</td>
</tr>
<tr>
<td>APPENDICES</td>
<td>161</td>
</tr>
<tr>
<td>BIBLIOGRAPHY</td>
<td>183</td>
</tr>
<tr>
<td>Table</td>
<td>Description</td>
</tr>
<tr>
<td>------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>1.</td>
<td>Tabular Statement of the quantity of excavation required to make a channel 200 feet wide and 5 feet deep, through the rapids of the Mississippi River, showing the length of the chains, the average fall, points to be improved, and probable cost of each, as suggested by Robert E. Lee, Lieutenant, Army Corps of Engineers, 1837</td>
</tr>
<tr>
<td>2.</td>
<td>Tabular Statement showing the difference in the quantity of excavation that would be required to make a channel 100 feet wide and 4 feet deep, or 200 feet wide and 4 feet deep through the rapids of the Mississippi River, designating the stone to be removed from each chain, and the probable cost of the same, as suggested by James Kearney, Lieutenant Colonel, Topographical Engineers, 1854</td>
</tr>
</tbody>
</table>
# LIST OF ILLUSTRATIONS

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Map of the Upper Mississippi River, by Zebulon M. Pike, 1805</td>
<td>15</td>
</tr>
<tr>
<td>2.</td>
<td>Map of the Des Moines Rapids, by Zebulon M. Pike, 1805</td>
<td>17</td>
</tr>
<tr>
<td>3.</td>
<td>Map of the Upper Mississippi River, by Giacomo Constantine Beltrami, 1823</td>
<td>24</td>
</tr>
<tr>
<td>5.</td>
<td>Map of the Hydrographical Basin of the Upper Mississippi River from Astrono-</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td>mical and Barometrical Observations, Surveys, and Information, by J. N.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nicollet, Assisted by Lieutenant J. C. Fremont, of the Corps of Topograph-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ical Engineers, 1843</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Robert Edward Lee in the Dress Uniform of a Lieutenant of Engineers, after</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td>painting rendered about 1831 and credited to Benjamin West, Jr.</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Map No. 1 of the Des Moines Rapids, by Robert E. Lee, 1837</td>
<td>47</td>
</tr>
<tr>
<td>9.</td>
<td>Diagram showing cross section of Wing Dam constructed by Edward Worth for</td>
<td>89</td>
</tr>
<tr>
<td></td>
<td>Benjamin B. Gates and David Higby, 1841</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>The Des Moines Rapids and the Northwest Section of Hancock County, Illinois,</td>
<td>93</td>
</tr>
<tr>
<td></td>
<td>from a map drawn by A. Ripley and R. Campbell, ca. 1841</td>
<td></td>
</tr>
<tr>
<td>Figure</td>
<td>Description</td>
<td>Page</td>
</tr>
<tr>
<td>--------</td>
<td>-----------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>11.</td>
<td>Map of the Great Dam of the Des Moines Rapids on the Mississippi River opposite the City of Nauvoo, drawn by A. Ripley and R. Campbell, 1845</td>
<td>118</td>
</tr>
<tr>
<td>12.</td>
<td>Map of the Proposed Canal and Wing Dams of the Navigation and Hydraulic Company of the Mississippi River, 1849</td>
<td>142</td>
</tr>
<tr>
<td>13.</td>
<td>Photograph of the Head of the Des Moines Rapids, showing Kimball and Dundee Islands and north entrance to government canal, with Nauvoo, Illinois, in background</td>
<td>156</td>
</tr>
</tbody>
</table>
INTRODUCTION

During the 1830's and 1840's the United States witnessed a greater expansion in commerce and industry and a more widespread mobility of its citizens than it had in all previous decades. These increases were significantly indebted to the vast network of lakes and rivers that lay within the bounds of the continental United States, foremost among which was the Mississippi River. Designated the "Father of Waters," it became by the 1840's the chief highway over which the country's merchandise flowed. This immense waterway, meandering for more than 2,400 miles, opened for development an area rich in natural resources, and traffic along its route increased each year as a result of that region's development.

Raw materials and foodstuffs so necessary for the country's growth were continually transported over its course to ports where ships could carry them to the harbors of the nation as well as to foreign markets. Safe navigation of the Mississippi River by raft, keelboat, flatboat, pirogue, or steamer was early looked upon as indispensable to profitable business, and a constant vigilance was necessary to keep that waterway open to boats. As a consequence, millions of dollars were spent by the federal government during the nineteenth century to pay for the removal of snags, chartering, and dredging of channels.
Along the course of the Mississippi were two barriers which created considerable frustration for river men. The obstacles, the "Upper" and "Lower" (Des Moines) Rapids were the result of extensive layers of limestone crossing and recrossing the river's channel, generating swift currents capable of dashing craft onto rocky ledges that lay submerged beneath the surface of the river.

As early as 1837, the federal government undertook to clear the obstructions at the Des Moines Rapids. For forty years following, with occasional periods of interruption, the Army Corps of Engineers worked arduously to complete that work. However, economic failures born of the Panic of 1837 put long-lasting restraints on internal improvements and that problem, coupled with the nation's inability to deter civil war, made the undertaking of freeing the Mississippi's Des Moines Rapids too enormous a project prior to 1860.

There was also manifest during those years an interest in harnessing the rapids as a source of water power. Throughout the nineteenth century individuals and several groups attempted to achieve that end. Enthusiastic as any for such a program were the Mormons who had founded the city of Nauvoo at the head of the rapids. Through the early half of the 1840's, extensive plans were underway in that community for the erection of a magnificent dam and canal system. The Mormons thought the

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The "Upper" Rapids of the Mississippi River were located near Rock Island, Illinois, and the "Lower" Rapids immediately above Keokuk, Iowa.
project, if put in operation, would help develop the industrial potential of the region and establish Nauvoo as the leading commercial city on the Upper Mississippi.

Others also attempted to free the rapids of obstructions and use its water as a source of power. Little progress was made, however, until 1913. That year the Keokuk Hydroelectric Power Dam was completed. This massive structure at the foot of the rapids created a reservoir sufficiently deep to cover the once troublesome shoals, and made it possible to lay in storage enough water to produce an amount of power theretofore undreamed of by citizens of that region. The erection of the dam was in reality the end result of the attempts made earlier to use the Des Moines Rapids profitably. The study of those programs, which for the most part were activated before 1860, have been considerably overshadowed by the dam's construction, even though they had played an equally significant role in shaping the history of the Upper Mississippi River country. For that reason, the following thesis will analyze more closely the events that led to the dam's construction than to the events surrounding the actual building of the structure itself.

Though the influence of the rapids on the development of industry and commerce in the Upper Mississippi Valley was considerable, its significance has been generally overlooked by writers of the river's history. Few works have been published which suggest that the rapids played a noticeable role in shaping the history of the Mississippi River country, and for the most part, their particular objectives did not allow
for a detailed study of the subject in question. Two of the most notable works are Ben Hur Wilson's "Over the Rapids" and William J. Petersen's *Steamboating on the Upper Mississippi*.

A substantial number of works, written as histories of the upper river, refer to the rapids as an impediment to river traffic, but tend to bypass the other areas of its influence. The most significant of this category are Benjamin F. Gue's *History of Iowa* and two local histories, Thomas H. Gregg's *History of Hancock County, Illinois* and S. W. Moorhead's *History of Lee County, Iowa*.

Other than the above-mentioned sources, there is a scarcity of literature on the subject, though numerous documents regarding the rapids exist, many of which were used in compiling this thesis. Among the materials located pertinent to the study were an extensive number of manuscripts, maps, and tables, made available by the Army Corps of Engineers, National Archives, and libraries in the Midwest.

Also, within the Church Historian's Office and Brigham

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Young University library were found a considerable number of documents, illustrations, journals, and letters bearing on the subject, as well as copies of newspapers which carried articles important to a proper interpretation of the thesis topic. There were likewise made available some relatively important materials from private collections, the contribution of which enhanced the documentation of the thesis.

As is noted on the title page, the writer has limited the study of the rapids to the pre-Civil War period, feeling that the sources referring to the work conducted thereafter were too extensive and of a different character to be incorporated into the thesis narrative.
CHAPTER I

THE DES MOINES RAPIDS COUNTRY: EXPLORATION AND SETTLEMENT

Long before the European ventured into the Upper Mississippi River country, the Red Man had scattered far and wide over its terrain. The verdant grasslands and dense forests of this expansive country served as a bountiful hunting ground for the numerous tribes that inhabited the area. Large herds of buffalo shared an almost limitless pasturage with bear, elk, moose, deer, and assorted species of smaller game, and there was seemingly no end to the flocks of fowl that harbored in the woods, along the waterways, and on the open plains. The Upper Mississippi region had derived much of its character from the river that had long ago cut and shaped the valley, and its value was well understood by the Indian who lived along its course. To the Red Man the Mississippi was not only a source of fish, but also a thoroughfare connecting the distant realms of his domain. In a matter of days the canoe could carry him to any spot along the river he desired to travel. In all of his journeyings on the river, he undoubtedly came in frequent contact with the rapids

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1 Albert M. Lea, Notes on the Wisconsin Territory: Particularly with Reference to the Iowa District, or Black Hawk Purchase (Philadelphia: H. S. Tanner, 1836), pp. 11-14.
"De Moyen," which sometimes proved a hindrance to canoe travel, particularly at low-water season, which was primarily through the summer months. The eleven-mile stretch of rapids was occasionally impassable even for small watercraft, the cargo of which had to be removed and carried over land to a safe spot above or below the rapids.\(^3\)

In the early summer of 1673, white men first ventured into this interior wilderness. The explorer Joliet, along with his Jesuit companion Marquette and five others, were the first Europeans to set eyes upon the vast beauty of the Des Moines country. Benjamin F. Gue, a noted Iowa historian, suggests that this exploring party, while descending the Mississippi River, landed somewhere on the eastern border of present-day Iowa "near the head of the rapids."\(^4\)

Joliet and Marquette make no mention of passing over

\(^2\)"The Des Moines Rapids," as is noted in a pamphlet published by the Mississippi River Power Company, Electric Power from the Mississippi River (Quincy, Ill.: Monarch Press, 1913), p. 3, "represents a comparatively recent diverting of the Mississippi River, caused by a glacier damming the former channel farther to the west. The condition which caused the river to cut a valley five to ten miles wide in the preglacial age was absent in the postglacial age when the channel was cut through where is now the rapids; the result being, that the bluffs at the rapids are closer to the present river than at any other point in its entire length."


the Des Moines Rapids—rather surprising, since theirs was primarily a journey of exploration. Perhaps the water on the rapids was high at their crossing and caused no difficulty with submerged rock or, since none of the men had previously been in the area, there may have been too much confronting them to take notice of such an event.

During the next century, numerous white trappers journeyed into the region of the Upper Mississippi and exploration continued on a nominal scale, opening this wilderness area to the homeseeker who would soon follow. In time, settlements were established by the French as far south from their St. Lawrence River stations as New Orleans.

Communication between the parent colony in Canada and the remote settlements along the Mississippi was difficult and irregular. Supplies for the towns and French merchants active in Indian trade came from Canada, which necessitated delivery by keelboat. Many hundreds of miles stretched between the St. Lawrence and the settlements down the Mississippi, and a keelboat could make but one round trip per year, starting in early spring and returning in the fall.

The return trip, much of which was against the powerful current of the river, took months, and when the wind did not favor the ascent, considerable physical exertion was required. Then the boats were either "poled up the shallows or dragged forward yard by yard, by means of ropes fixed to the shores, and shifted according as the boat attained the point aimed
Upon reaching the Des Moines\textsuperscript{6} Rapids, the difficulty of ascent or descent was often magnified many fold. The delay brought on by the slow and strenuous move over the hazardous shoals of rock or the portage around the falls resulted in frequent loss of time. Father Francois Xavier, writing in 1721 from hearsay, stated that a "league above the mouth of the Moingona [Des Moines River], there are two rapids or strong currents of a considerable length in the Mississippi, where passengers are obliged to unload and carry their pirogues."\textsuperscript{7} From this statement it would seem that even then, less than fifty years after the discovery of the upper river by Joliet and Marquette, the custom had developed of lightering boats over this often troublesome segment of water.

\textsuperscript{5}Latrobe, \textit{The Rambler}, p. 172.

\textsuperscript{6}"After the French had established themselves on the Mississippi, they adopted . . . the name Moingona [the name given by Indians of the Illinois Nation to the present-day Des Moines River]; but as was the custom of the Creoles of only pronouncing the first syllable, and applying it to the river, as well as to the Indians who dwelt upon it; . . . they would say 'la riviere des Moines'--'the river of the Moines.' In later times, the inhabitants associated this name with that of the Trappist monks, 'Moines de la Trappe,' who resided on the Indian mounds of the American Bottom. It was then concluded that the true reading of the 'riviere des Moines' was the 'riviere des Moines,' or 'river of the monks,' by which name it is designated on all the modern maps [from thence also is derived the name for the Des Moines Rapids]." U.S., Congress, House, \textit{Report Intended to Illustrate a Map of the Hydrographical Basin of the Upper Mississippi River}, Doc. 52, 28th Cong., 2nd sess., 1845, pp. 22-23.

\textsuperscript{7}Wilson, "Over the Rapids," 362-63.
Prior to any permanent white settlement in the vicinity, some Sac and Fox Indians with a large number of half-breeds took up residence at the head of the rapids. With the fur trade growing around them, the chief occupation of these Indians became the guiding of nomadic traders over the rapids. Boats were unloaded, and the rugged braves, sometimes assisted by a horse or mule, but more frequently by their squaws, carried the luggage and merchandise along the shore to the other end of the rapids. In return for these services they were paid in blankets, baubles, firearms, and whiskey.

The Sac and Fox referred without poetic flare to the headwaters of the rapids as "au-wip-e-tuck," merely conveying "the top of the falls." Nor was there undue ceremony involved in describing the foot of the rapids--just "puc-i-che-tuck," meaning simply "the bottom of the falls." 8

The Sac and Fox village on the west bank at the head of the rapids was a thriving layout when Louis Honore Tesson, the first white settler, was attracted to its environs. Being a trader, he was apparently very familiar with the region and likely felt an opportunity presented itself for some successful bartering with the Indians. He requested a land grant in the area from the Spanish government, whose flag then flew over the territory. The request was honored in March of 1799, and Tesson

8J. P. Kennedy, "Early Days at Montrose." Paper read before the meeting of the Keokuk Historical Society, Keokuk, Iowa, n.d., p. 2.
became the proud proprietor of a parcel of ground.⁹

In compliance with his grant, Tesson was to erect some substantial building or buildings, construct picket and rail fences, sow a garden, and teach the Indians some rudiments of agriculture. This wily French Canadian, realizing the assignment was rather extensive for one man, apparently was able to conjure some work out of the Sac and Fox. There is evidence that the work was completed, for travelers passing through the neighborhood years after spoke of seeing the remains of adobe buildings and rail fences.¹⁰

Tesson's agrarian obligation was seemingly fulfilled when near 100 apple trees were planted. Most references credit Tesson as being the one who planted the orchard, but others refer to a half-breed named Thomas Abbot, known among the Sac and Fox as "Red Bird." Available sources at least agree that it was some white resident of Missouri who made a present of the apple saplings to either Tesson or Red Bird.

The Spanish government hoped their new appointee would also comply with their wishes of a spiritual and secular nature.

⁹Smith's Title Service, Complete Abstract of Title to Lot Five and that Part of Lots Three and Four lying Southerly of the Right of Way of the C.B. and Q. Railroad, all in Block Four, Town of Montrose, Lee County, Iowa, conveying a Tract of Ground in the District of St. Charles on the River Mississippi Above River Des Moines, Containing One League Square and Being Formerly, the Property of Louis Tesson, Alias Honore, Permission from Zenon Troudeu to Louis Honore, March 8, 1799 (Keokuk, Iowa, April 12, 1857). (Hand-written copy in possession of the writer of this thesis.)

¹⁰Lea, Notes on the Wisconsin Territory, p. 35.
They expected Tesson to use his influence to bring the Indians under subjection to Spanish rule, and to encourage them to embrace the religion of the Roman Catholic Church. But there is nothing to indicate that either Tesson or the Indians made any effort to adjust to that part of their Spanish overlords' request. They seemed chiefly concerned with the pelfry that was theirs from the rapids trade and were reluctant to respond to either government or religion.11

Tesson was quite unsuccessful as a merchant among the Sac and Fox. As the months passed, his trading business declined to an embarrassingly low level. By early 1803 his property was "attached for debts incurred in St. Louis, and sold for $150.00, at public auction, to his creditor Joseph Robidoux."12 He did, nonetheless, remain in the vicinity of the rapids for some time following and was heard of again in connection with events that transpired thereafter.

With the transferring of the Louisiana Purchase to the United States in 1803, the American flag was hoisted on the west bank of the Mississippi. President Thomas Jefferson, discerning the needs of the aborigines who now came under U.S. jurisdiction, formulated a program to incorporate these peoples into the American social system. He concluded that the biggest difficulty with governing the Indian was the vast area of land that his mode of living required. "Give him a workable sub-

11Daily Gate City (Keokuk, Iowa), n.d., 1868.
12Smith's Title Service.
stitute for his wide-ranging winter hunts, and he might be able to live in peace beside the white man."

Jefferson believed that the best way to inaugurate his program would be to instruct the Indians in the art of agriculture. Accordingly, he wrote:

When they withdraw themselves to the culture of a small piece of land, they will perceive how useless to them are their extensive forests, and will be willing to pare them off from time to time in exchange for necessaries for their farms and families.\textsuperscript{13}

A treaty was subsequently composed and signed in 1804, bearing the signatures of William Henry Harrison and prominent Sac and Fox chiefs, which gave the United States possession of the east bank of the Upper Mississippi. Article 3 of the agreement stated in part:

If the said tribes shall . . . desire that a part of their annuity should be furnished in domestic animals, implements of husbandry and other utensils convenient for them, or in compensation to useful artificers who may reside with or near them, and be employed for their benefit, the same shall . . . be furnished accordingly.\textsuperscript{14}

The "artificers" referred to were Indian agents skilled in the art of farming. According to the treaty, they were to be placed at strategic points along the frontier and be equipped with the appropriate implements necessary for the successful com-


\textsuperscript{14}Statutes at Large, VII, Pt. 1, pp. 84-87.
pletion of their assignments.\textsuperscript{15}

Among the tribes scheduled to receive agrarian aid were the Sac and Fox who resided along the upper reaches of the Mississippi, a fragment of which was located in the proximity of the Des Moines Rapids.\textsuperscript{16}

To the Indian residents at the head of the rapids came William Ewing, an inexperienced agricultural agent, in mid-June, 1805. He was led by the French Canadian Louis Honore Tesson whom he had met in St. Louis earlier that spring. Ewing brought with him "a horse, a wagon loaded with necessaries, and a mare." The site he chose to settle was later to become Nauvoo.\textsuperscript{17} Ewing was represented as being a "sober, honest, faithful young man;" a gentleman acquainted with the practical arts of simple husbandry. He had been hired by Secretary of War Dearborn, and for the job was paid $400 a year.\textsuperscript{18}

Other than the Creole Tesson and a number of itinerant traders who wandered through the area, Ewing had no outside contact until visited by Lieutenant Zebulon Montgomery Pike late in August. Pike was on a government assignment to explore the headwaters of the Mississippi, as well as to select locations for possible future military establishments.

\textsuperscript{15}Ibid. 


\textsuperscript{17}Thomas Maitland Marshall, The Life and Letters of Fredrick Bates (St. Louis: Missouri State Historical Society, 1926), p. 120.

\textsuperscript{18}Jackson, "William Ewing," p. 4.
Fig. 1. Map of the Upper Mississippi River, by Zebulon M. Pike, 1805.
Shortly after sunrise on August 20, 1805, Pike and twenty enlisted men in their keelboats "arrived at the foot of the rapids De Moyen." From his journal is gleaned the first written description of this eleven-mile system of rapids which was to trouble river traffic for another hundred years. He wrote:

Although no soul on board had previously passed the rapids ... we commenced ascending them immediately. Our boat, being large and moderately loaded, we found great difficulty. The river all the way through is from $\frac{3}{4}$ to a mile wide. The rapids are 11 miles long, with successive ridges and shoals extending from shore to shore. The first has the greatest fall and is the most difficult to ascend. The channel (a bad one) is on the east side in passing the first two bars, then passes under the edge of the third; crosses to the west, and ascends on that side, all the way to the Sac Village. The shoals continue the whole distance.  

The lieutenant and his comrades had considerable problems on the rapids and were able to pass only the first shoal before they became stranded on submerged rock. Their ascent of the river had been noticed, however, for shortly after the tie-up they were met by Ewing, Tesson, four chiefs, and "fifteen men of the Sac nation in canoes, bearing a flag of the United States." Pike noted that they came "down to assist me up the rapids; and took out 13 of our heaviest barrels and put two of their men in the barge to pilot us up."  

About dusk the weary group arrived at Ewing's establishment opposite the Sac Village, having spent the entire

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20 Ibid., p. 5.
Fig. 2. Map of the Des Moines Rapids by Zebulon M. Pike, 1805.
day struggling to maneuver the seventy-foot keelboat up the turbulant stretch of water. Pike was little impressed with Ewing, and his feelings about Tesson were even less sympathetic. In a letter written that evening to his commanding officer, General James Wilkinson, he wrote disfavorably of Ewing, and of Tesson he said, "Honore is a hypocrite, possessing great gasconism." 21

From the beginning Ewing was viewed with disfavor by government officials. His first contact with military personnel was not flattering, nor were subsequent visits to his superior in St. Louis very encouraging. Within a matter of time, even the forgetful secretary who hired him was asking, "Pray, who is Mr. Ewing who resides on the River Lemoin?" 22 Shortly thereafter, Ewing was dismissed from his duties as "utterly disqualified ... to teach the Indians the Art of Agriculture." 23

The first attempt to "civilize" the Red Men at the Des Moines Rapids was a failure and Ewing was blamed, perhaps unjustly. No one seemed to appreciate that he was a lonely stranger in a hard land, or that despite all his faults, he was up against a band of crusty chiefs who did not want him around, and perhaps he also knew within himself that the Sac and Fox women were better farmers than he.

Though the federal government's initial move to domest -

23 Coues, The Expeditions of Pike, p. 15.
cate the Indians of the Upper Mississippi was less than successful, the program was continued. With the return of Zebulon Pike to the east, after an extensive expedition up the great river, the War Department determined from his reports that it would be feasible to erect forts in that region in order to strengthen the United States' hold on the territory and on the Indians.24

The first of these military establishments was named and constructed in honor of the newly elected fourth president, James Madison. It was located twelve miles above the Des Moines Rapids on the Iowa side of the river. The fort, when built in 1808, was to be a center from which annuities could be disbursed to the Indians, where trading relations between native and trapper could be harmonized, and where protection could be offered to the settlers then in the vicinity.25

The erection of this military installation marked the inception of the "Factory System" among the Red Men of the Upper Mississippi. It was intended that the fort control all trade passing up or down the rapids, and the officials within were to allow only those merchants with proper credentials to barter among the Indians.26

The operation of the fort, however, was short-lived, and thus the garrison stationed within had little opportunity to fulfill its intended purposes. During the War of 1812, Indians

24Territorial Papers, XIII, 239.
25Statutes, II, 39.
26Ibid., 402-04.
in the surrounding parts, inspired by British animosity for Americans, made a foray against the fort and the trading house outside its walls. Both were abandoned during the siege and left to a fiery end.\textsuperscript{27}

Not until the war had drawn to a close was the United States able to move back into the area and reclaim its possessions. Considering it impractical to rebuild at Madison, the federal government selected a new location for a post and trading house. The position chosen was thirty miles south of the previous site at a point immediately below the rapids. On a bluff where is now situated the village of Warsaw, Illinois, the new establishment called Fort Edwards was raised. It was not a large and commodious post and had only the essentials for a small command. With the threat of English advancement passing from the Mississippi valley, the only anticipated duties of the soldiers stationed there would be aiding the settlers in case of Indian disturbances, the routine work of controlling the trade within the rapids environs, and the delivery of annuities to the Sac and Fox.

During its early years the outpost of Fort Edwards was a busy little complex, serving most everyone who wandered in through its enclosure. However, by 1819 the soldiers had been transferred and the post's function was reduced to that of a

trading house.\textsuperscript{28}

Headway was being made during that period to open the river above Fort Edwards to steamboat traffic. Previous to 1820, this particular Upper Mississippi region was totally unfamiliar with steam watercraft. Even below the fort only one such ship had been sighted north of the Missouri’s mouth.\textsuperscript{29}

Though steamboats had not yet crossed the rapids of the Mississippi, the sighting of the "Western Engineer" at the foot of the Des Moines Rapids on August 15, 1820, by Captain Stephen W. Kearny was an omen that the event was soon forthcoming. The captain, returning from a military expedition to Council Bluffs, recorded the following in his journal:

At 8 a.m. we embarked on board our canoe and descended [the Mississippi] one mile, to the mouth of the Des Moines, where we found the Steam Boat, 'Western Engineer' commanded by Lt. Graham, who came here a week since, for the purpose of taking observations.\textsuperscript{30}

Lieutenant Graham's orders did not authorize him to make any attempt to cross the rapids, and shortly after the arrival of Kearny, taking the captain and his command aboard, the little stern-wheeler turned south and started the descent of the river.

\textsuperscript{28}Thomas Forsyth, "Journal of a Voyage from St. Louis to the Falls of St. Anthony, in 1819," Report and Collections of the State Historical Society of Wisconsin for the Years: 1869-70-71-72, VI (1873), 190.

\textsuperscript{29}Wilson, "Over the Rapids," 362-63.

\textsuperscript{30}V. M. Porter, ed., The 1820 Journal of Stephen Watts Kearny, Comprising a Narrative Account of the Council Bluffs--St. Peter's Military Exploration and a Voyage Down the Mississippi River to St. Louis (St. Louis: John S. Taylor, 1908), p. 49.
The region of the Mississippi visited by the "Western Engineer" that August was a vast and solitary wilderness. Indeed, one had left the last vestige of civilization after passing Clarksville and Louisiana, two pretty rising villages on the banks of the Missouri 100 miles above St. Louis. The territory north of the Missouri boundary and west of the Mississippi River was distinguished only under the name of "Savage Lands," and with the exception of the forts along the way, the only dwellings one would see until reaching Prairie du Chien were the scattered huts belonging to half-breed traders and Indians.

Prior to 1820 there had been no demand for a better-than-keelboat transportation system above St. Louis. However, with the opening of the lead trade in the Fever River country some 200 miles above the Des Moines Rapids, there was engendered a large appeal for improving that service.

The federal government wanted to transport supplies to its posts on the Upper Mississippi and decided to do so by shipping the goods by steam vessel. As a result of that decision, steamboats were introduced into the lead trade and in time cap-

31 Ibid.

32 Giacomo Constantine Beltrami, A Pilgrimage in Europe and America, Leading to the Discovery of the Sources of the Mississippi and Bloody Rivers; with a Description of the Whole Course of the Former, and of the Ohio (Chicago: Quadrangle Books, Inc., 1962), pp. 131-36.

33 Galena, Illinois, on the Fever River, arose as the most prominent city involved in the lead trade.

34 Wilson, "Over the Rapids," 366.
tured the bulk of that business. That move began when a small boat dubbed the "Virginia" was contracted to carry provisions to the military station at Prairie du Chien. In April, 1823, the craft left the levee at St. Louis on her long and difficult, as well as epoch-making, voyage. Left behind were many skeptics who doubted that steamboats could cross the rapids of the Mississippi.

Aboard the vessel as a passenger was a celebrated traveler and explorer, the exiled Italian, Giacomo Constantine Beltrami, who was the sole chronicler of the events of the journey. He was wondrously awed by the panoramic spectacle of the frontier and, as the little craft churned up the placid river, Beltrami journalized concerning a number of impressions.

Early the first week of May, the 109-ton steamer anchored on the river at Fort Edwards, where the crew and passengers were entertained and refreshed before beginning the rigorous jaunt up the rapids.

On the evening of the 6th, they set out from Fort Edwards where "they had been treated with much politeness." They soon returned, however, being too heavily laden. Before the return trip became necessary, the craft had squirmed its way up to "a very difficult and dangerous passage called the Middle of the Rapids of the Moines," nine miles above the Fort and "with good luck ... escaped from a rock which might have dashed ... the steamboat to pieces," but was only "slightly damaged."

Two days later--with boilers full, wooded up, and with considerably less cargo--the "Virginia" returned to the challenge.
Fig. 3. Map of the Upper Mississippi River, by Giacomo Constantine Beltrami, 1823.
Proceeding cautiously, the craft eventually made its way to the head of the rapids through an excellent stage of water. Beltrami made note that a party of Sac and Fox Indians, encamped on the east bank of the river near Ewing's agricultural establishment, were looking on as the boat crossed the rapids' source and churned its way upstream.35

Encouraged, no doubt, by the success of the "Virginia," other steamboats conquered the rapids during the following five or six years. Some of the earlier craft, attempting the challenge, were unsuccessful, the reason being that it took considerable time before a channel was chartered which allowed steam vessels a safe passage over that obstacle. Nonetheless, by the time another decade had passed, steamers were common on the Upper Mississippi above the Des Moines Rapids, several of which operated on regular schedules. Thus, the business of river transportation gradually assumed the character of an organized industry.36

Into this picturesque domain surrounding the Des Moines Rapids moved a large number of traders and home seekers during the years immediately prior to the "Virginia's" voyage. They preceded by almost a decade and a half the rush that would send thousands of land-hungry folk across the Mississippi into the Blackhawk Purchase.

Among the earliest of these traders and home seekers was


36Lea, Notes on the Wisconsin Territory, p. 16.
a Frenchman named Lemoliese. In 1820 he established a trading post some four miles below the site where Louis Honore Tesson's land grant was situated. The place he chose was the finest to be found in the vicinity, for it was in an area of fairly deep water and was for the most part untroubled by the limestone shoals so prominent throughout the rest of the eleven-mile stretch of rapids.

The location chosen by Lemoliese also had an abundance of small game, and with the nearby Sac and Fox able to supply furs in exchange for trinkets, the table appeared set for some fruitful bartering. However, his whereabouts in the area became obscure, and within a couple of years he apparently disappeared from the scene. He left nothing of lasting notice behind but his name, in corrupted form, which was placed on a survey map by Robert E. Lee to designate one of the rapids' many limestone shoals. This memory, too, was obliterated when the rapids disappeared beneath the waters of Lake Cooper in 1913.37

Many others moved into the Des Moines country about the time Lemoliese settled there, some of whom became heavily involved in the river trade. One of the first of note was "Captain" James White who arrived at the rapids in 1824. He purchased a "... trading house and a tract of land adjacent, which was an old Spanish land grant made to Monsieur Julian ... ."38


The grounds acquired by the captain were also referred to as those once belonging to Louis Honore Tesson.\textsuperscript{39}

Shortly after their arrival in the valley, Captain James White and sons, Hugh and Alexander, launched into the keelboat business and lightering industry. They appear to have been among the first white men to introduce lightering on a large scale at the rapids, and were likely influential in wresting the business from the Sac and Fox.\textsuperscript{40}

\textsuperscript{39}Caleb Atwater, Remarks Made on a Tour to Prairie du Chien, then to Washington City (Columbus, Ohio: Jenkins & Glover, 1831), pp. 60-61.

\textsuperscript{40}Thomas H. Gregg, History of Hancock County, Illinois (Chicago: Charles C. Chapman, 1880), p. 222.
CHAPTER II

THE PLANTING OF TOWNS ALONG THE RAPIDS,
1830 - 1837

Some time near 1830 Captain James White could be found living on the Illinois side of the river at Venus, a government postal station about one mile above the old U.S. agricultural establishment. Here the captain continued in the rapids trade, aided by his sons. Eventually, a comfortable stone house was built by this family, remaining for some years as one of the most prominent structures in the area. After Fort Des Moines was raised and in operation, Captain White's home became a social center for officers of the fort who ventured across the river desiring the company of White and his "pretty daughters."

James White must have realized with the number of immigrants moving into west central Illinois and the numerous others desirous of locating in the territory of Iowa, an opportunity was present for establishing a ferry in the locality of the

1Gregg, History of Hancock County.

2A military post established on the west bank of the Mississippi River, at the head of the rapids, in 1834.

rapids, especially since the Black Hawk War had ended and a segment of Iowa would soon be open for settlement. Though already engaged in the lightering and keelboat businesses, the captain busied himself in this new endeavor. At the eighth session of the General Assembly of the State of Illinois, convened March 1, 1833, White was granted authority "to keep a ferry across the Mississippi River, at or near the head of the Des Moines Rapids."  

The Iowa side of the Mississippi at both ends of the rapids proved potentially greater as sites for river industry than did those on the Illinois bank, primarily because the river channel operated by watercraft ran parallel to the west bank. That, nevertheless, did not deter residents of Illinois from getting involved in the river trade, and along that state's side of the rapids a number of villages were born during the period between 1820 and 1840.

The only two that reached proportions of important size were Commerce, earlier known as Venus, at the fountain of the rapids, and Warsaw near its termination. Two other communities on that side of the river, Montebello and Des Moines City, hardly took root, not surprising inasmuch as neither was established near the river's channel. Furthermore, the landings at Des Moines City and Montebello were quite inferior to those at Commerce and Warsaw—another probable reason for their lack of growth.  

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4 Illinois General Assembly, An Act Establishing a Ferry Across the Mississippi River, Near the Head of the Des Moines Rapids, 8th sess., 1832, 545-46. (See Appendix I, p. 161.)

5 No. 1 Map of the Des Moines Rapids of the Mississippi River, 1837.
The river channel above the rapids approached Commerce from the north, touched upon the upper part of the village, and then swung almost directly across the Mississippi between two islands. There it turned south, passing close to the bank of the river at Montrose before entering the rapids. Eventually, a channel was located, branching from the main one above Commerce, which gave steamboats more accessibility to that community than they had previously enjoyed. 6

Speculators from the east, feeling that money could wisely be invested in land in the area of the rapids, purchased a considerable amount of acreage in the locale of Commerce and sold a number of lots to new arrivals. The new site was designated Commerce City, a name suggesting that the speculators desired to pawn the place off as a potential center of industry. 7

Also, down just beyond the foot of the rapids, a few people had located at a spot they named Warsaw, which was adjacent to the military post of Fort Edwards. Its founders, John Wilcox, formerly an officer at Fort Edwards, and Mark Aldrich, a gentleman associated with a trading firm in Iowa, envisioned for Warsaw the potential position as the leading city on the river above St. Louis.

This community, which had its inception in 1833, was directly across the river from the mouth of the Des Moines River,

and was thus in a position to tap the Des Moines River trade as well as that of the rapids. In 1836 Warsaw was advertised as a location having the benefit of good soil as well as easy access to the rivers, and by the late 1830's, some 300 or more people had gathered within its confines.  

In Iowa along the course of the Des Moines Rapids, the locations of Montrose and Keokuk had already been established as suitable places for towns. As a result, a gentleman by the name of John W. Johnson, writing to the Secretary of War in 1833, indicated the commercial value of those two sites by stating:

... during periods of low water the steamboats cannot pass the rapids, and are compelled to unload at those two places, which makes those situations more valuable than any part of the reservation.  

Aside from the enviable positions presumed for those two towns, settlement was to continue elsewhere along the rapids. A Mr. Isaac Galland had squatted upon some land in 1829 near the place where the French trader Lemoliese had established himself. There he founded Galland, a townsite purchased by the Mormons in 1840 and renamed Nashville. He was convinced that "the spot was destined to become a great commercial center ..." It seems probable that Galland was looking beyond the business of river traffic to that of using the river as a means of generating water power. He likely recognized that the swiftness and fall of the water obtained in the distance between the head of the rapids and his location was capable of propelling a number of mill wheels

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8Lea, Notes on the Wisconsin Territory, p. 34.
9Wilson, "Over the Rapids," 367.
Fig. 4. Map of the Headwaters of the Des Moines Rapids, by J. T. Sprigg, 1833.
which in turn could give motion to grinding stones, saws, and other machinery.10

The growth of Keokuk, which in time became the largest city along the rapids, followed closely behind that of Montrose, even though by 1833 only a handful of traders and their families were residing in the settlement. Eventually "five hewed log dwellings were constructed which added considerably to the layout of the town," which was then but a few dwellings. These buildings were reared near the water's edge and came later to be known as "Rat's Row." To this trading post the Indians "brought large quantities of buffalo, elk, wolf, coon, mink, otter, beaver, and muskrat skins, trading them to the whites for blankets, trinkets, and whiskey."11

With the establishment of these few towns, the future growth of the area around the Des Moines Rapids was assured, particularly since the treaty ending the Black Hawk War had released a large tract of land in the Iowa Territory to white settlement. The treaty was signed in 1832, "but as the time provided by the Indians to give possession was the 1st of June, 1833,"12 a little waiting period ensued.

Once approval was given, the land west of the Mississippi became "free pickins" for anyone who wanted to purchase a few

10 Isaac Galland, "Galland's Iowa Emigrant: Containing a Map and General Descriptions of Iowa Territory," The Annals of Iowa, XII (January, 1921), 482.

11 Wilson, "Over the Rapids," 363.

12 Lea, Notes on the Wisconsin Territory, p. 67.
acres. Amidst the opening of this new domain, the government ordered a military post to be established "on the right bank of the Mississippi, within the Indian country" near the mouth of the Des Moines.

The establishment of a military post at this point was an outcome of the Act of Congress (1833) which provided for a better defense of the frontier by the raising of a regiment of Dragoons to scout the country west of the Mississippi. This movement is outlined in a report of Secretary Case dated 29 November 1833. He said: "... we owe protection to the emigrants, and it has been solemnly promised to them; and this duty can only be fulfilled by repressing and punishing every attempt to disturb the general tranquility. Policy and humanity equally dictate this course. ..."13

As a result of this secretarial filibustering, Lieutenant Colonel Stephen W. Kearny and three companies of Dragoons were sent in 1834, by order of the War Department, to the Des Moines country. Their departure for the designated location was delayed for some time, and they did not arrive in the rapids country until the season was well advanced. A quartermaster's detachment, however, headed by Lieutenant Crosman, had preceded them to the area, selected a site,14 and begun construction of the fort. The work went rather slowly, and the buildings were not ready for occupancy until late in the fall.15

Colonel Kearny's quarters consisted of a house built of willow logs taken from an island in the Mississippi River opposite the fort. Each company occupied one long building, with a stone chimney in the center, the rooms on either side

13 United States War Department, "Fort Des Moines No. 1," The Annals of Iowa, III (1897), 354.

14 Present location of Montrose, Iowa.

15 United States War Department, "Fort Des Moines No. 1," 352.
being used as mess rooms and sleeping quarters.\textsuperscript{16}

When the colonel arrived at the post, one of his first acts was to proclaim martial law throughout the district. This action was necessary because of the number of rogues in the area who were taking advantage of well-disposed settlers. A resident who lived near the fort during its short period of use praised the colonel and his men for establishing a semblance of order for, said he, "... it was through their vigilance that civilization here in the Des Moines Rapids area received its first impetus. ..." Fort Des Moines, nonetheless, was never intended to be a permanent military layout, and shortly after civil authority was established, the post was vacated and the soldiers transferred to Fort Leavenworth.\textsuperscript{18}

Some months preceding the abandonment of Fort Des Moines in 1837, Charles Augustus Murray, a noted European-American traveler, ventured through the rapids country. He was detained a short while at Keokuk while his steamer exchanged freight, during which time he wandered on shore and browsed around. Murray considered Keokuk to be:

... the lowest and most blackguard place I have yet visited! Its population is composed chiefly of watermen who assist in loading and unloading the keelboats, and in towing them up when the rapids are too strong for the steam engines. They are a course [sic] and ferocious caricature of the London bargemen and their chief occupation seems to consist in drinking, fighting, and gambling.\textsuperscript{19}

\textsuperscript{16}Moorhead, History of Lee County, p. 66.
\textsuperscript{17}\textit{Ibid.}, p. 66. \textsuperscript{18}\textit{Ibid.}, p. 67.
Upon returning to the steamer and having made the ascent of the river over the swift current, he was landed at the wharf near Fort Des Moines. Murray was quite critical of the layout of this military establishment and said concerning it:

Fort Des Moines . . . appears to me to have been chosen with singularly bad judgment; it is low, unhealthy, and quite unimportant in a military point of view. . . .

More particularly, he was surprised at the increased expense incurred by the U.S. government simply because the post was located at the head rather than at the foot of the rapids. Murray noted that:

. . . if it had been placed at the lower, instead of the upper end of the rapids an immense and useless expense would have been spared to the government, inasmuch as the freightage of every article conveyed thither is now doubled. The freight on board the steamer, from which I made these observations, was twenty-five cents per hundred weight from St. Louis to Keokuk, being one hundred and seventy miles, and from Keokuk to the fort, being only fourteen miles farther, it was fifty cents.

The federal garrison at Fort Des Moines was not the only establishment tagged for excessive transportation costs due to the high price of lighterage at the rapids. Numerous business firms and a host of farmers bore a similar assessment. The cost of buying goods above the rapids, compared to charges below, can be gleaned from a report delivered by Joseph N. Nicollet to the Bureau of Topographical Engineers. He states that:

. . . in the winter of 1836-37 . . . [he] was a witness that $15 were paid for flour, and $25 for barreled pork at St. Peter's, Wisconsin, which at St. Louis had probably respectively cost but $5 and $8, because the steamers loaded with winter provisions had not been able to cross

20 Ibid., p. 98. 21 Ibid., pp. 98-99.
Fig. 5. Map of the Hydrographical Basin of the Upper Mississippi River from Astronomical and Barometrical Observations, Surveys, and Information, by J. N. Nicollet, Assisted by Lieutenant J. C. Fremont, of the Corps of Topographical Engineers, 1843.
the rapids during the preceding fall.22

The trade of the northern river country was confined almost entirely to the grand thoroughfare of the Mississippi. Upon its surface the bulk of the produce of the region was shipped to St. Louis, the largest port on the Upper river, thus necessitating a journey over the Des Moines Rapids. The realization that merchandise transported over the rapids increased in price by half or more was annoying to the populace living north of that point, for they for the most part bore the brunt of the inflation.

By 1835 a dozen or more steamboats were involved in the lead trade or some other aspect of river commerce, serving the communities from St. Louis to the Falls of St. Anthony, and as the traffic on the river mounted, it was natural that a demand would be made to rid the river of its impediments.23

23Lea, Notes on the Wisconsin Territory, p. 16.
CHAPTER III

THE RAPIDS: INTERNAL IMPROVEMENTS

Petitions to Washington

With the surge of trade on the Upper Mississippi River, men began to agitate the subject of improving the Des Moines Rapids so that boats could cross them with less hazard. They well knew that if the rapids were made safe for river traffic, the charge that normally went for lightering would be saved. They could then dispose of their goods at a less costly rate, which would increase their market, since many potential buyers, previously unable to purchase their commodities at the higher cost, would then feel able to do so.

Lieutenant Albert M. Lea, while in the vicinity of the rapids in 1835, unhesitatingly commented:

"... this rapid is a source of great annoyance, expense and delay; and yet it is susceptible of being so easily

\footnote{Moorhead, \textit{History of Lee County}, p. 232. According to an article published in the \textit{Iowa Journal of History and Politics}, the "... head or most northern point of the Des Moines Rapids, as seen from the western shore of the Mississippi River [was] at the southeast corner of the square of ... Fort Des Moines, and its latitude was 40° 35' 5" N. On the bank of the river the rapids were visable [sic] about one mile farther north than on the west side; but the point where the main channel of the river became first obstructed by the rapids was a few yards south of that which the latitude has just been given," and which is assumed was the proper head of the rapids. Lea, "Iowa and Missouri Boundary," \textit{Iowa Journal of History and Politics}, XXXIII (1912), 251.}
improved as to be a matter of surprise that it has not already been done.²

Prior to the mid-1830's, the federal government had confined its improvement activity on the western rivers to the removal of snags. In 1836, however, that program was revised by the adoption of additional measures.

Captain Henry M. Shreve was ordered to the Des Moines Rapids to survey and make recommendations for alleviating the rapids of its barriers.³ His appointment to that area may be credited largely to a man named Adolphus Allen, and to a memorial sent to Congress bearing the signatures of residents of Des Moines County, Michigan Territory. (See Appendix II, p. 162.) Allen, a long-time resident of the rapids country, wrote in February, 1841, that the "difficulty and danger of navigating ... the rapids and the disaster and loss of lives that occurred in 1834 induced ... [him] to seek a remedy to the problem."⁴ Therefore, during the winter of 1834-35 he "... made a survey of the rapids upon the ice, ascertained the depth from shore to shore, and obtained a correct knowledge of the bed of the river."⁵ From the data he obtained, Allen "drew a diagram of the entire rapids, delineating the channel and the obstructions to be

²Lea, Notes on the Wisconsin Territory, p. 22.
³U.S., Congress, Senate, Report from the Secretary of War in Relation to the Rock River and Des Moines Rapids of the Mississippi River, 25th Cong., 2nd sess., 1838, p. 3.
⁴Western World (Warsaw, Illinois), February 24, 1841, p. 2.
⁵Ibid.
removed, and memorialized Congress for an appropriation of money to carry it into effect."\(^6\)

The petition of the citizenry of Des Moines County which also sought federal assistance as a means to clear a channel through the rapids, reached Congress in the spring of 1836. Its appeal, combined with that of Allen’s, had a welcomed result, for within a few months Congress appropriated $40,000 for the project and sent Captain Shreve to the rapids to conduct a study. Upon completion of the survey, a report was filed with the War Department, wherein Shreve urgently recommended that the rapids be

\[\text{... improved by excavating a channel 90 feet wide, five feet deep, along the Iowa shore, ... from Keokuk to Nashville, and through the Upper Chain, ... near the foot of Montrose Island.}\(^7\]

The captain made the suggestion, feeling that once the work was completed the "natural bank of the river could be used by river pilots as a guide to direct them over the rapids," which at "any stage of water" would keep them from "going amiss" of the channel. "Consequently," stated Shreve,

\[\text{... it will not be necessary to excavate a channel more than 90 feet wide, which width can be more easily navigated than a channel 300 feet wide, following the meanderings of the natural channel that now exists between the reefs.}\(^8\]

Allen, however, was opposed to Shreve’s plans. Concluding that it called for the extraction of an enormously high

\(^6\text{Ibid.}\)
\(^7\text{Ibid., 2-3.}\)

quantity of stone, "a thousand times greater than need be removed from the natural channel." Fearing that Shreve's program, if undertaken, "would in the end, prove abortive, and defeat the whole improvement," Allen wrote to General Gratiot, the War Department's Chief Engineer. The information supplied the General convinced him of the "absurdity" of Shreve's proposal and was the means whereby "further operation at the rapids was temporarily suspended."

Within a few months General Gratiot left Washington on an inspection tour of western river projects, which by the spring of 1837 was to take him to the Des Moines Rapids. Once there, considering Shreve's proposal unacceptable, the plan was abandoned and the captain was dismissed from further duty at the rapids.9

Nevertheless, Shreve's particular mode of clearing the rapids was accepted by some river men on account of the ease with which his improvements, if completed, could be navigated. There were likewise some government engineers who agreed with the captain, feeling that his plan was feasible and would likely be less expensive than others that might be attempted. There was, however, one serious objection that undoubtedly served as the weapon that killed Shreve's proposal. It was stated thus:

All the labor bestowed upon it would be worthless till the whole was completed; and the great oppression which these rapids cause to commerce requires their immediate relief, which can only be applied by improving the natural channel, beginning at the worst passes first. This should be done, no matter what may be the improvement finally required.10

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9Western World, February 24, 1841, p. 2.
10U.S., Congress, Letter from the Secretary of War, 65.
ROBERT EDWARD LEE IN THE DRESS UNIFORM OF A LIEUTENANT OF ENGINEERS

After a painting made about 1831 and credited to Benjamin West, Jr.

Fig. 7
The Services of Robert E. Lee

Having abandoned Shreve's proposal, the War Department found it necessary to produce an alternative program of freeing the rapids. To accomplish this, another surveying party was sent to the rapids to make a study. It was headed by Robert E. Lee, then a Lieutenant of Engineers.

General Gratiot had written Lee in April, 1837, assigning him the task of overseeing the Mississippi River improvement project at St. Louis and at the Des Moines and Rock River Rapids.11 A subsequent letter from the Engineers' Department, written in July of that year, requested Lee to repair to Louisville on the Ohio River and consult with Captain Shreve in order to ascertain what arrangements had been made relative to carrying out the assignment on the Mississippi.12

Consequently, after finalizing preparations with Captain Shreve at Louisville, there making arrangements to have boats, machinery, and a crew of men sent to the Mississippi River, Lee and his assistant, Lieutenant Montgomery C. Meigs, began their journey to the Upper Mississippi by way of St. Louis, with intentions of passing on to the Upper Rapids to begin work.

The season was late when the surveying party arrived at the foot of the Des Moines Rapids. The waters were usually low and sluggish in August, and that particular year was no exception.

11Congress, Report in Relation to Rock River and Des Moines Rapids, 2. (See Appendix III, p. 164.)
12Rapids of the Mississippi, p. 4. (See Appendix IV, p. 165.)
A careful ascent of the turbulent course was begun, but hardly had the party started before their steamer ran aground on a rocky shoal just above Keokuk. Instead of examining the Upper Rapids as originally planned, they accepted the circumstances and proceeded to make a survey of the Des Moines Rapids. The expedition continued in the locale a number of weeks, observing the channel's numerous pools and shoals. Upon completion of the work at that point, Lee and company made their way by boat to the Upper Rapids near Rock Island, there to effect a study of the Mississippi's obstacles at that location.

Lieutenant Lee soon returned to St. Louis and completed the river study by surveying for a harbor at that place. By early December he had finished the survey at all three designated locations and had submitted a report to the Corps of Engineers in Washington which, in turn, was delivered to the Secretary of War by his commanding officer. When the 25th Congress reconvened in January the following year (1838), Secretary of War J. R. Poinsett submitted the report to the Senate for its consideration.

The Army Corps of Engineers had achieved a commendable work through Lee's survey. All that was left to accomplish before actual work could begin toward freeing the noble Mississippi of its troublesome obstructions was to gain the approval of Congress, which body would allocate the needed funds so essential to the project.

Lieutenant Lee's report noted that of the numerous obstacles in the Mississippi hampering navigation, the two rapids, the Rock Island and the Des Moines, were the only ones so serious that
Fig. 8
No. 1.
MAP OF THE
DES MOINES RAPIDS,
of the
MISSISSIPPI RIVER.

[Map of the Des Moines Rapids of the Mississippi River]

[State of Wisconsin, Illinois Territory]

[Map showing the geographical layout of the Des Moines Rapids and surrounding areas]

[Scale: 1 inch = 1 mile]
they demanded immediate attention. Of the two obstructions, Lee considered that Des Moines was the primary target. His report suggested that "in making the improvements herein proposed," the importance of "commencing with the lower or Des Moines rapids, need[s] no further recommendation. . . ."

Concerning the rapids' physical nature, Lee penned the following:

The Mississippi flows with great velocity, over an irregular bed of blue limestone reaching from shore to shore, at all times covered with water, and through which many crooked channels have been worn by the action of the current. Its longitudinal slope not being uniform, but raised at several places above its general elevation, divides the whole distance into as many pools or sections.  

His report informed those analyzing the survey that it was only during the low stage of water "... that passage over these reefs becomes . . . very difficult, in consequence of the shoalness of the water, its great fall and velocity, and the narrow winding channels through them."  

That being true, and feeling the shoals of rock could be removed without serious problem, Lee concluded that it would be more advantageous to river traffic to "improve the natural bed" not only because it was "more practical," but also because it was "more preferable" to any other considered solution.  

Lee agreed that the "construction of an artificial channel along the Wisconsin shore" [as] proposed by Captain Shreve, in

14Ibid.  15Ibid.
16The area which in time would become Iowa was, in 1837, still part of Wisconsin Territory.
1836, [had] many advantages," but, from the "information derived from [his] survey," it was found that it would

... require an excavation of more than three times the quantity of stone that would be necessary to make the natural channel double as wide, and of an equal depth. To make it the same width, viz: 200 feet wide and five feet deep, would require an excavation of more than a million cubic yards.17

As a result of the considerable time and expense that would be involved in following Shreve's proposal, and after analyzing the practicability of his own conclusions, Lee determined that clearing the natural channel was the only feasible solution to the problem, thus his recommendation to the Engineers' Department.

"By improving the most difficult passes first," Lieutenant Lee stated, "immediate benefit will be obtained." He suggested that when boats traveling in opposite directions on the river met, they would "not be attended with the ... danger that would result if they were confined to a continuous channel," as an advantage would be had by allowing them to pass each other in the large pools formed by the natural channel of the river. A subsequent proposal suggested by Lee was to line the natural channel with buoys that would serve as guideposts to riverboats, no matter what conditions were encountered.

Of the more than eleven miles of river comprising the Des Moines Rapids, it was estimated that over 94,000 cubic yards of stone would have to be removed from the natural channel in order to meet the survey's designated 200-foot width and five-foot depth.

17Congress, Report in Relation to the Rock River and Des Moines Rapids, 3.
The amount needed to finance the operation was calculated by the Lieutenant to be $189,622.\textsuperscript{18}

From a letter written to a fellow officer not long after leaving the Des Moines Rapids, Lee made the following observation:

I need not tell you what a beautiful country this is, and I think at some time, some future day, must be a great one. Villages have sprung up along the river and some quite pretty ones too. Stephens, between Rock Island and the mouth of Rock River, Quincy, and Burlington were the most thriving. The formation of a good channel through these rapids will be an immense advantage to the country and a great anxiety seems to be felt on the subject.\textsuperscript{19}

A desire to construct a safe route over the rapids was expressed by many living along the upper river, especially since the volume of trade on the Mississippi above St. Louis was increasing at such a marked rate. It was noted in the Fort Madison Patriot, April 18, 1838, "... that nearly 300,000 tons of merchandise had been transported over the Des Moines Rapids in 1837 and estimated that the amount to be carried in 1838 would be very much more."\textsuperscript{20} With the prospect that the growth of traffic on the Mississippi would continue, Congress reacted favorably to Robert E. Lee's survey by allocating, in 1838, the funds which would be required to clear the river of its obstructions. By

\textsuperscript{18}Ibid., 3-6.


\textsuperscript{20}Fort Madison Patriot (Fort Madison, Iowa), April 8, 1838, cited by John Ely Briggs, "The Des Moines Rapids," The Palimpsest, XIX (April, 1938), 134.
early spring steamers, workboats, supplies, and machinery needed by the Army Corps of Engineers for the assignment were being gathered in preparation for the work that would commence that summer.  

As a result of that activity, Robert E. Lee, commissioned to carry out the work proposed by his survey, sent Lieutenant Horace Bliss, an assistant, to the Des Moines Rapids to take charge of the removal of stone from the river. The boats and other machinery that had been prepared in Pittsburgh the preceding winter were now at the rapids. "A steamboat for moving the boats from place to place on the rapids," and for "towing the stoneboats, ... as well as two machine-boats for raising the stone out of the water" were the major pieces of equipment sent from the Ohio River port. There were also in the small flotilla "keelboats" for "quartering the men, and scows for transporting the stone, with necessary drills and apparatus for blasting." There was a major problem, though—the finances appropriated by Congress to carry out the work had been reduced by a sizable amount, thus making it necessary to forestall improvements at one of the three proposed locations (St. Louis, Upper, or Lower Rapids). Upon deciding that it would be more feasible to forget the work at the Upper Rapids, at least temporarily, arrangements to push improvements at the two approved sites continued.

At last the long anticipated program got under way. It was quickly realized, however, that the project was going to be

Table 1

Tabular statement of the quantity of excavation required to make a channel 200 feet wide and 5 feet deep, through the rapids of the Mississippi river, showing the length of the chains, the average fall, points to be improved, and probable cost of each.

LOWER OR DES MOINES RAPIDS

<table>
<thead>
<tr>
<th>Name of chain</th>
<th>Length in miles</th>
<th>Average fall per mile</th>
<th>Points to be improved</th>
<th>Quantity of excavation.</th>
<th>Cubic yards</th>
<th>Probable cost.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower chain</td>
<td>2.000</td>
<td>2.9</td>
<td>A B</td>
<td>17,200</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>C</td>
<td>11,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>D</td>
<td>2,500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pool between Lower and English chains</td>
<td>1.225</td>
<td>2.0</td>
<td>E F</td>
<td>30,700</td>
<td>$61,400</td>
<td></td>
</tr>
<tr>
<td>English chain</td>
<td>0.800</td>
<td>2.37</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lamelles chain</td>
<td>3.180</td>
<td>3.18</td>
<td>G</td>
<td>1,111</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>H</td>
<td>1,500</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>J</td>
<td>1,600</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper chain</td>
<td>3.800</td>
<td>0.96</td>
<td>M</td>
<td>15,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>94,811</td>
<td>189,622</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11.005</td>
<td></td>
<td></td>
<td>94,811</td>
<td>189,622</td>
<td></td>
</tr>
</tbody>
</table>
a long time in progress, for the removal of stone was not only
tedious but also very difficult. There was a constant worry that
even when everything was prepared, "a sudden flood would arrest
all operations for weeks, and the whole working season prove
unfavorable." Lee knew that so much depended upon "circumstances
that could neither be foreseen or controlled . . . ." 22

During the working season, Lee was back and forth between
St. Louis and the Des Moines Rapids overseeing the work at both
locations. The labor carried on at the rapids was confined to the
two southernmost chains of stone, the Lower chain near the foot of
the rapids and the English Chain a short distance above. 23

The closing of work that autumn occasioned by ice begin­
ning to flow in the river, saw the work boats and crews return to
St. Louis for the winter. Lee "was not able, owing to continued
high water and early fall, to work more than twenty days in 1838." As a result, the quantity of stone removed from the Des Moines
Rapids that year was rather small, totaling some 318 cubic yards.
The actual cost for removing that amount of rock was $29,028, a
very high expenditure in relation to the amount of work accom­
plished. 24

The method pursued by the Corps of Engineers in removing
stone from the river's channel was to

22Congress, Report in Relation to the Rock River and Des
Moines Rapids, 6.

23Rapids of the Mississippi, 30.

24Congress, Letter Transmitting the Inspection Report of
Colonel Long, 65.
... drill holes by means of iron tripods standing in the water with platforms on them for the workmen, and for guides to the drill. The holes were made about one and three-quarters inch in diameter, through two-thirds of the stratum—it having been found impracticable to remove more than one stratum at a time. The charge of powder used was about half a pound; it was placed in a tin tube, which was then filled with sand. The tube being prepared, was placed in the hole immediately on removing the drill; the tube rose above the water, and was supported by the tripod. The effect of the explosion was merely to "split the rock," pieces seldom being thrown out of the water.

The blasting was carried out as quickly and inexpensively as if on shore. The paramount difficulty was in removing the detached fragments of rock. Lieutenant Lee was very pronounced in his feelings that the removal of stone must keep pace with the blasting. Men employed expressly to work in the water were assigned to place the tripods, pry out the rock, and fasten the lifting gear to it. By means of a "Verring-boat" (Flying-bridge), crane boats raised the stone and deposited it in scows that were then propelled to the deep holes out of the river's channel, where the debris rock was dumped.

The work during the 1839 season progressed at a faster rate than that of the previous year, and Lee was pleased to see the results the three months of favorable weather afforded him. Rock measuring 2,000 tons was removed from the rapids, which extraction cost amounted to $18,924.98, much less than the expendi-

25 In a "Letter from John G. Floyd to the Hon. S. M. Kennett of Iowa, March 13, 1856," Rapids of the Mississippi (1856), p. 14, we learn that prior to that date the "only" tool used by the Corps of Engineers to drill holes was a "hand drill."

ture for the year 1839, interesting in light of the fact that three times the amount of stone was removed for only 60 per cent of the preceding year's cost. The two-year expense levied against the government was summed up at $47,953.20, or $35.72 per cubic yard. Nevertheless, at that rate Lee would have spent another sixty-eight years at the Des Moines Rapids, and the expense to the federal government would have climbed to $1,678,355.27

When Lee submitted his report, suggesting what improvements were needed at the Des Moines Rapids, he estimated the cost for such services at approximately $190,000. But that figure represented only the charge for removing stone, "no allowance being made for superintendence or contingencies." The figure at best was only "conjectural" wrote Lee, but what was important, he noted, was that "whatever the true amount" may be.

... there can be no doubt but that the benefits that will result would more than authorize ten times the sum, and that the community at large will be repaid an hundred fold. It will open the whole country above to the falls of St. Anthony, remarkable for its beauty, fertility, and health; abounding in minerals, and whose population is daily increasing by a constant stream of emigration .... 29

In spite of all the effort expended during the two seasons of labor, coupled with Lee's constant assurance that an immense good would be procured to the country by opening the rapids to safe river traffic, the operations were brought to a halt. The United States had just plunged into another financial

27Ibid., 65-72. 28Rapids of the Mississippi, 30.

29Congress, Report in Relation to the Rock River and Des Moines Rapids, 5-6.
depression which brought a fast arrest to all public work projects, including that at the Des Moines Rapids. With the work suspended indefinitely, Lee was recalled to Washington, returning there in 1840.30

The operations of Lieutenant Lee at the Des Moines rapids had been confined to the Lower and English Chains. At those two impediments his work proved a partial success, for river pilots were able to maneuver their steamboats over them, drawing "from nine to twelve inches more water than they could before" the work commenced.

In addition to this, his examinations at Lamalee's Chain resulted in discovering the channel ... through the upper part of it, known as Spanish Chute. The effect of his operations at the "Omega Patch" (Lower Chain) was, besides deepening the water in the neighborhood, to make the current draw more forcibly upon it.31

The swiftness of the current drawing against the Lower Chain would, however, have been alleviated had Lee been able to remain at his labors. This is attested to by Lieutenant Colonel James Kearny, of the Topographical Engineers, who stated that the "Omega Patch" would "all have been removed by" Lieutenant Lee "had the improvement been continued."32

It was with regret that people living along the Mississippi above the rapids saw the work draw to a close, for to them the setback meant a possible long postponement of the desired improvement program. Their suspicion was realized and a delay ensued that was prolonged for more than a dozen years, during

31Rapids of the Mississippi, 15. 32Ibid.
which period the rapids continued to impede river commerce. The chagrin was expressed in the following words through a report to the Bureau of Topographical Engineers:

Lieutenant Lee commenced a system of improvements that has, unfortunately, been suspended, to the great detriment of the country; for without the completion of such improvements as had been so judiciously devised and commenced, the immense resources of the beautiful region of the country north of the rapids, in Illinois, Wisconsin, and Iowa, will remain unavailable . . . .

33Rapids of the Mississippi.
CHAPTER IV

A RAILROAD TO BYPASS THE RAPIDS

The federal government’s withdrawal of work forces from the rapids did not mean that all efforts to overcome the obstacle posed by the obstructions were at an end. Other ideas were being talked of that became even more seriously considered when the Army Engineers withdrew. One program thought very feasible called for the construction of a railroad to bypass the rapids. That proposal was the result of the high-pitched fever for railroad building then prominent in the country. Before the Panic of 1837 broke upon the state, the legislature of Illinois had poured a sizable quantity of money into internal improvements. The funds had been made available to Illinois by the federal government which, in 1835, had found itself in possession of a large and growing surplus in the federal treasury.

Congress decided to award the excess revenue to individual states according to their representation in that body. Immediately upon receiving their shares, the state governments began to spend the money, mainly to encourage the construction of highways, canals, and railroads.

In 1835 and 1836 the Illinois legislature granted appropriations to more than a dozen private corporations for the purpose of constructing canals and railroads, though neither the
charters granted nor the roads proposed conformed to any logical system. It was not until early 1837 that the legislature prepared a detailed program of internal improvements that would tie together into an interrelated system all the road, canal, and railroad projects in the state. The Illinois program came at an inopportune time, however, for the economic shock arising from the Panic of 1837 left the projects without financial support. Likewise, mismanagement, careless planning, overly enthusiastic expectations, and self-interest on the local levels burdened the programs from the beginning. Those problems soon spelled the end to the projects so recently begun. All that had been accomplished when the panic struck were a few miles of disconnected track and a number of unfinished roads and canals. As a result, disillusionment reached a high peak, as did the state debt, which climbed considerably above the previous high mark.1

Among the railroad charters scheduled to receive a helping hand from the state was the Peoria and Warsaw (P & W) line. The Illinois Internal Improvement Act of 1837 had allowed for a rail to pass from the Indiana border, there connecting with a rail running west from Toledo, Ohio; thence across Illinois, passing through Peoria; then on to Warsaw at the foot of the Des Moines Rapids. That Warsaw should be designated the western terminal for a railroad passing through central Illinois was an outgrowth of the belief that it was considered to be the upper limit of uninterrupted navigation on the Mississippi River. In 1838 the

1Flanders, Nauvoo Kingdom on the Mississippi, p. 8.
P & W route was surveyed and sections at both ends were put under contract. In a few months the "road had been graded at the Warsaw end and some culverts made as far east as Carthage, with intervening portions unfinished." That was as far as the grading went, though, for when the first tremors of economic instability came, the funds to be allotted the railroad were refused and the attempt to open a carrying trade by rail to the rapids was suspended.

The panic, though severe, was looked upon as only momentary and optimism regarding the eventual realization of the railroad's construction was maintained. As a joint maneuver with the contemplated Peoria and Warsaw line, though distinct inasmuch as it would be a private endeavor, was the granting of a charter by the Illinois legislature for a road to be designated the Des Moines Rapids Railroad, which would extend in mileage along the Illinois side of the Mississippi from Warsaw to Commerce. (See Appendix V, p. 166.) That rail, connecting at Warsaw with the P & W, would be constructed for the singular purpose of capturing the business of freight transportation around the rapids. The promoters of the Des Moines Rapids Railroad envisioned that when in operation, their stretch of road would prove to be the most valuable line in the United States due to the increasing volume of traffic on the Upper Mississippi. A petition for the road had been submitted to the state legislature by a number of prominent citizens residing near the rapids. Under title "An Act to Incor-

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^2^Gregg. *History of Hancock County*, p. 985.
porate the Des Moines Rapids Railroad Company, a charter dated February 19, 1839, was issued to a group of eleven men who lived in the area of the rapids.

The charter specified that the Des Moines Rapids Railroad Company was to be administered by five directors constituting a board, elected by the stockholders of said company. The board was empowered to select from among their midst one who would serve jointly as president of the board and president of the railroad company. He, in turn, was entitled to appoint the clerk and treasurer for the organization, each of whom would serve one-year terms, as would the president and board members.

For the physical construction of the railroad, the company was granted approval to "lay out their said railroad wide enough for a single or double track through the whole length." For cutting embankments or acquiring stone and gravel for the road, permission was given to

\[
\ldots \text{take as much more land as may be necessary for the proper construction, and security of said Rail Road provided, that all damages that may be occasioned to any person or corporation by the taking of such lands or materials for the purposes aforesaid shall be paid for by said company.} \ldots
\]

Though not unique, the authority given the company to acquire materials for the road was the same as that granted public rights-of-ways.

A limited period of time was allotted the company to begin construction of the rail, and in like manner a specific

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period for completing the same was stated. From the date February 19, 1839, two years were permitted for starting the project and five years following its commencement, it was to be finalized or the charter would be voided.

One stipulation carried within the charter served to benefit the state if it desired to take advantage of it. It was written:

The legislature reserves to itself the right to purchase the stock of said corporation at any time after the expiration of twenty years from the passage of the act together with the right of way, depots, fixtures, cars and the other apparatus necessary for carrying on the business of said corporation by paying to said company the value of said railroad depots, cars, fixtures, etc. . . .

A capital stock of $100,000 was approved by the Illinois legislature to float the enterprise, and liberty was granted to increase that figure, if necessary, by subscriptions or borrowing. The charter definitely stated, however, that the company would have no authority to "issue any draft, check or instrument as a circulating medium" as a means of raising revenue, though shares numbering one thousand and selling for one hundred dollars each could be sold for that purpose. Such stocks, requiring a five-dollar down payment, could be offered to the public on an installment basis. That method was adopted due to the strained condition of finances in 1839—few people having one hundred dollars in ready cash.

Averse to the business practices that led the nation into depression, Section 13 of the act incorporating the railroad

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Ibid., pp. 6-7.
warned that when selling stock, the acceptance of promissory notes in place of specie would be illegal. Also, the collection of the initial installment of five dollars on each of five hundred shares, a sum totaling $2,500, was required before the directors could be elected, the company could be organized, and work on the railroad could commence.\(^5\)

Now that the charter had been granted and the rights of the company spelled out, the initial step toward launching the Des Moines Rapids Railroad was accomplished. The next major obstacle to overcome was raising the funds required to finance the road. The success of that endeavor depended largely on how well the railroad program was presented to the public. To meet that objective, a large-scale advertising program was needed, and in 1839 newspapers were the only media which could effectively reach a large number of people. With regard to both newspaper and population, the rapids country was embarrassingly deficient. It did not acquire a newspaper until near the end of 1839, and whether it had a population large enough and capable of supporting a $100,000-plus railroad program was questionable. As a consequence, the hopeful feelings manifest for a railroad during the early months of 1839 may have subsided had it not been for events that were then in motion some 200 miles west of the rapids country—events that soon brightened the prospects of railroad building in Hancock County. The reviving enthusiasm quickened within the road's promoters was the result of a large and steady

\(^5\)Ibid., pp. 1-9.
movement of people called Mormons into the rapids region.\textsuperscript{6}

\textsuperscript{6}\textit{Times and Seasons} (Nauvoo, Illinois), December, 1839, p. 24.
CHAPTER V

COMING OF THE MORMONS

The Founding of Nauvoo

Some forty miles down the Mississippi below the mouth of the Des Moines River is situated Quincy, a pleasant old town of Adams County, Illinois. This sprawling community during the nineteenth century was an important river village along the Upper Mississippi, and from its wharves numerous steamers loaded freight and carried it to the hamlets above the rapids.

Throughout the winter of 1838-1839, many strangers were arriving in that city, mostly from the frontier country across the river to the west. Winter was, with little exception, a dreadful time to travel, and during that part of the year nearly every means of conveyance was slowed to a standstill. Even steamboats with powerful engines had to give way to the season of snow and ice and were forced to harbor at the docks along the banks until the streams were once again clear and cold weather had departed. The arrivals in Quincy were not traveling under normal circumstances, however, but were of necessity moving out of Missouri in order to escape a judgment of extermination levied against them by the state's governor.

The newcomers were Mormons and had found their society to be incompatible with that of Missouri's. Their religious tenets,
in some respects unique, had made them subject to suspicion by
the older settlers of the state. Particularly distrusted was
their doctrine of "gathering," the outgrowths of which forced
the Mormons and their "gentile" neighbors into open conflict,
which resulted in a substantial loss of life and property.
Being a distinct minority, the Mormons had no choice but to
leave the state, doing so at the peril of their lives.

Most of the Mormon exiles (members of The Church of
Jesus Christ of Latter-day Saints) left Missouri along routes
that led east to the Mississippi River. Since Quincy was more
accessible and willing to receive the outcasts than other
Illinois communities of like proportions, it understandably
became the point toward which the exodus flowed. There much
relief was extended the Latter-day Saints who arrived that winter.
A deep sense of gratitude was expressed to those Illinois citizens
in return, for the sustenance gave the "Saints" a chance to re-
group and make preparations respecting their future. The relief
of the Mormons' immediate wants by the folk of the surrounding
area was a sample of the hospitality they were to receive in the
state into which they had wandered by accident. As prospective
settlers, they were welcome in Illinois, for new people were con-
sidered a great asset to the state's future prosperity.

As evidence of spring appeared, the outlook brightened
considerably for these aliens, particularly in April when their
young prophet-leader Joseph Smith, fresh from a trying ordeal in
an inhospitable Missouri dungeon, arrived in Quincy. New vigor
and dedication were aroused among his people when once again they
were able to greet him under favorable conditions, and little
time elapsed before they began looking for a new dwelling place.
Contact with proprietors of suitable locations was made, and
finally a decision as to where the Latter-day Saints should settle
was agreed upon.

At the head of the Des Moines Rapids where the Mississippi
makes a wide, graceful arc around the promontory partially occu­
pied by Commerce, Illinois, is where the Mormons chose to gather.
The selected spot was attractively nestled in the bosom of the
Mississippi and was guarded in many directions by tree-covered
hills that rose abruptly at various distances from the water's
edge. From the long line of bluffs that meandered from north to
south across the entire promontory, the land fell away to meet
the river's horseshoe sweep. Those lowlands would shortly become
the center of a new city where homes, shops, public buildings,
and mills would be built. In time, even a large and commodious
religious sanctuary called a temple would be reared, the notoriety
of which would pass beyond the bounds of America to England and
Europe.¹

When the Mormons began to arrive at their new gathering
place in the spring of 1839, slightly more than a hundred people
were living within the limits of the promontory.² The first new­
comers, most of whom were without the necessities that would be

¹Times and Seasons, January 1, 1841, p. 259.
²Interview with Mrs. Rowena Miller, Assistant Research
Historian, Nauvoo Restoration Inc., Salt Lake City, Utah,
April 15, 1970.
required to sustain them through the next few months, were exposed to rather raw conditions. However, soon the addition of new citizens would mount into the thousands, and the benefits of a settled society would more readily be available, for the rising city would attract nearly every craft and trade known to America of the 1840's.³

The site selected for the building of the Mormon kingdom was named Nauvoo, a Sephardic Hebrew word denoting a beautiful location.⁴ With new converts continually pouring into the struggling community, Nauvoo became by 1845 the largest populated city in the state, its rapid growth being greatly augmented by numerous English Mormons who came to America to join their religious cohorts.⁵

The Mormons, when arriving at their newly chosen settlement in Illinois, were predominantly of New England origin and as such, they were generally an industrious lot. Joseph Smith, their prophet-leader, though considered a "visionary," tended frequently toward the practical. Among his ambitions was the hope that Nauvoo and its people would rise to a place of distinction and honor in the world, and the wheels he envisioned capable of grinding such success were the wheels that ground wheat into flour, powered the machinery that milled lumber, turned lathes, and performed the

³ *Times and Seasons*, January 1, 1841, p. 259.


⁵ *Nauvoo Neighbor* (Nauvoo, Illinois), October 25, 1843, p. 2.
countless other labors of a maturing economic society.\(^6\)

**The Need for Industry**

Mormon leaders concluded that in order to establish Nauvoo on a sound, economic footing, industries would have to be developed within the community which could produce sufficient merchandise to supply the city’s population while at the same time attracting outside revenue. Toward achieving the desired end, various possibilities were considered. One potential source thought feasible for development was the Des Moines Rapids. The Mormons were aware of the advantage that a position at the head of the rapids offered, as is evidenced from a letter written by Joseph Smith to John C. Bennett, in August, 1840. Respecting Nauvoo, Smith commented:

> Our principal location is at this place, Nauvoo, . . . which is beautifully situated on the banks of the Mississippi, immediately above the Lower Rapids, . . . a situation in every respect adapted to commercial and agricultural pursuits . . . .\(^7\)

An enormous volume of trade passed up and down the Mississippi each year, and immediately at Nauvoo’s front door a large tonnage of goods had to be reshuffled to and from the steamers in order to get them over the rapids. It was evident that Nauvoo was in a position to benefit from the trade if it could but draw the lightering industry to its side of the river.

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\(^6\) *Times and Seasons*, April 1, 1841, p. 368.

Lightering by keelboat had not solved the problem, though, for that transportation service had long been in existence and had proven itself incapable of handling the trade. What was needed was a conveyance system that could move merchandise over or around the rapids and do so throughout most of the year. The solution to the problem appeared to be the Des Moines Rapids Railroad. Smith's letter to Bennett mentioned that a "charter" had "been obtained from the legislature for a railroad from Warsaw" to Nauvoo, and added that if "carried into operation," would "be of incalculable advantage to . . ." the Mormon city. He must have felt that once a rail line was put into operation from Nauvoo to Warsaw, merchandise from the upper river region would inadvertently flow into those communities for reshipment over the rapids, rather than follow the slower, less safe, and supposedly more costly route of lightering along the Iowa bank.

The Railroad Dilemma

The Mormons became aware of the proposed railroad soon after moving to Illinois. The rails promoters wasted no time in contacting them, anticipating that they were a good source on whom to unload a sizable number of shares. Also, Isaac Galland, a charter member of the railroad company, moved with his family to the Mormon community in July, 1839. Whatever else may have drawn him there, it is rather certain he planned to involve himself

8Lea, Notes on the Wisconsin Territory, p. 22.
9Smith, History of the Church, p. 178.
heavily in financial pursuits. He had already sold an extensive tract of land to the "Saints" and undoubtedly felt he could further their interest in the railroad. Apparently his efforts along that line bore little fruit, for other than Smith's letter to Bennett, there appears to have been little enthusiasm around in behalf of that project.

A question arises. If the prophet of Nauvoo envisioned the promotion of a railroad as a valuable economic venture for his city, why the total lack of editorializing on the subject in the Times and Seasons of which he was editor-in-chief? Neither did the Wasp nor its successor, the Nauvoo Neighbor, both news sheets of the Mormon community, carry a word about the rail line.

It would seem logical to conclude that even though Joseph Smith was anxious for Nauvoo's involvement in economic enterprises, including a railroad, there was not sufficient capital available to promote any large-scale commercial ventures. The problems caused jointly by recent troubles in Missouri and the lingering depression of 1837 left the citizens of Nauvoo in a difficult position relative to railroad speculation.

Not only did the railroad promoters find it difficult to obtain financial assistance at the proposed northern terminal, but they were likewise unable to realize adequate support from its southern sector. They had, however, been able to do something respecting a promotional scheme, and that was by attracting a newspaper to town. Daniel S. Witter, a charter member of the

10 Galland, "Galland's Iowa Emigrant," 482.
railroad, was able to persuade a brother-in-law, who owned a press, to move from Pennsylvania to Warsaw to begin circulation of a news sheet entitled the *Western World*.\(^\text{11}\) That periodical became the only large-scale advertising source for the railroad. Its first article introducing the proposed project to the public appeared May 13, 1840. It stated that Warsaw, at the foot of the Lower Rapids and adjacent to the mouth of the Des Moines River, was so advantageously situated that it was unquestionably "destined to attain a high rank among the towns of the west." That announcement was rooted in the belief that river traffic would continue to be impeded at the rapids and that the proposed rail line from Warsaw to Nauvoo would serve to remedy the problem.

The editorial affirmed that

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\ldots\text{obstruction[s] to Steam Boat navigation on the rapids are so great, that the greatest part of the navigable season Steamboats cannot ascend or descend with their cargoes with safety, and are under the necessity of lighting [sic] over the rapids in keel or flat boats drawn by team power.}\]

\(^\text{12}\)

The article further noted that as

\[
\ldots\text{settlements on both sides of the river above this town increase for a distance of some 5 or 600 miles} \ldots\text{and as the resources of the upper country are brought into action, it is reasonable to suppose the trade and navigation on the Upper Mississippi will increase in the same proportion. If so, the importance of a railroad from Warsaw to [Nauvoo], around the rapids, must be evident to every reflecting mind.}\]

\(^\text{13}\)

Because of "this potential source of business," continued the *Western World*, the Des Moines Rapids Railroad will likely "be the

\(^{11}\text{Gregg, History of Hancock County, p. 390.}\)

\(^{12}\text{Western World, May 13, 1840, p. 3.}\)

\(^{13}\text{Ibid.}\)
most profitable Railroad stock in the United States," and it is expected

... that all stock will be taken and the road commenced before the close of the present year, which, when completed, will add much to the business and prosperity of the towns of Warsaw and [Nauvoo] ... .

The mention of both cities as joint recipients in the enterprise was likely a scheme on the part of the newspaper to arouse interest in both towns toward advancing the road.

Information regarding the time when and the place where stock was to be sold was announced in succeeding issues of the weekly. June 29, 1840, was specified as the day that sales would commence, and notice was given that subscription books would open first at Warsaw and then on successive weeks at Nauvoo, Galena, Burlington, and St. Louis. They were to remain open for periods of five days at each location, at the conclusion of which time it was expected that all stock would be subscribed to.

The roads promoters must have had little confidence that sufficient capital could be raised from the sale of stock in any of the communities but St. Louis, for three weeks before shares were to be offered to the public, they turned to that city for support. Through the Western World's editorial of June 10 was carried the appeal. "We would beg leave," stated the article,

... to suggest to enterprising merchants of that thriving city, the propriety of sending up a delegation to examine the proposed route and the advantages it will be to the commerce of that place. ... St. Louis cannot better spend a hundred thousand dollars to increase her prosperity, and there is no doubt the stock will yield a good interest.

\[14\] Ibid. \[15\] Ibid., May 20, 1840, p. 2. \[16\] Ibid., June 10, 1840, p. 2.
Though the solicitation for support was not immediately accepted by the business element of St. Louis, there was in the course of a few months some interest aroused there.\textsuperscript{17}

From the end of July, 1840, when the subscription books were to have closed, until mid-January the following year, the \textit{Western World} was silent regarding the railroad. Therefore, to what extent success was realized from selling the stock, one can only guess. Silence on the part of the newspaper would tend to indicate that the support hoped for was not realized, even though some finances must have been acquired, for partial grading was said to have been done during the latter months of 1840.\textsuperscript{18}

In January a lengthy editorial appeared in the \textit{Western World} with respect to the railroad's future. By this time the news sheet was owned and published by Thomas C. Sharp and an associate named Gamble, both avid in their promotion of the railroad. Their editorial of January 13, 1841, informed the public that the charter for the Des Moines Rapids Railroad had "lately fallen into the hands of one of the wealthiest and most enterprising firms in St. Louis, who," declared the article, "design to take measures to insure the completion of the work. . . ."\textsuperscript{19}

That announcement by Sharp and Gamble was too simply put, however, for it left the reading public with a false impression. The editorial in more correct terms should have stated that the

\begin{itemize}
\item[\textsuperscript{17}]\textit{Ibid.}, January 13, 1841, p. 1.
\item[\textsuperscript{18}]\textit{Ibid.}, February 24, 1841, p. 3.
\item[\textsuperscript{19}]\textit{Ibid.}, January 13, 1841, p. 1.
\end{itemize}
St. Louis company had only taken upon itself the position of financing the rail, leaving the charter still entrusted to the original corporation in Warsaw. The editors, it is reasonable to conclude, made the oversight unintentionally, knowing that a charter, authorized to function within the State of Illinois by power of the State of Illinois, could not legally be transferred to a "foreign" firm residing in the limits of another state. What was acknowledged by the Western World that one may assume to be correct, was that support necessary for constructing the rail would have to come from a source outside the rapids' environs.

The editorial of January 13 likewise intended to establish the railroad program as the most feasible solution to the rapids dilemma. In attempting to do so, it criticized those projects not in harmony with railroad building, particularly the government program aimed at clearing the river's channel through the rapids.

"Various plans have been from time to time proposed," wrote Sharp and Gamble, "to surmount the difficulties caused by the rapids." The "United States government," as is well known, attempted to clear these rapids of the reefs of rocks which extend from shore to shore, and to deepen the channel by narrowing the current. After thousands, however, has been expended, the work has been abandoned.

The editorial suggested with respect to the "practicability of the project," even had it been prosecuted as far as was designed, the opinion of ". . . those who are best acquainted with the matter, is, that the navigation could never have been rendered safe and

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20 Ibid. 21 Ibid.
The reason given for that conclusion was since blasting and dredging had taken place on the rapids, the rocks had been "rendered sharp and craggy," and any contact with them by boats would be extremely dangerous. Before the attempted clearance, the rocks were worn smooth by the friction of the water," but the government's work being only partially completed it had, in the long run, only "added greater impediments and dangers" to the rapids passage. "Therefore," the editors of the *Western World* concluded, "... the only practicable plan of overcoming the difficulties is to complete the Rail Road already commenced and it is the only one, in our opinion, which will ever be prosecuted."  

In stating that the road was already under construction, it was apparently hoped that interest in the rail project would be prolonged. Sharp and Gamble even went so far as to state that twelve miles of road had been graded and that only seven miles of level prairie remained to be worked before the grading phase of the program was completed.

What they did not mention was that much of the twelve miles of graded road, if not all, was the bed for the Peoria and Warsaw line. Since the P & W was to exit from Warsaw to the north and extend a distance of five miles in the direction of Nauvoo before turning east toward Carthage, it is understandable that people could be made to believe that the graded segments were

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22 Ibid. 23 Ibid.
actually the bed for the Des Moines Rapids Railroad. The editorial was also erroneous in intimating that the State of Illinois would likely be generous enough to supply the needed iron for the rapids rail line. The state was still suffering heavily from the panic and had no intention of making a gift of iron for which it had paid so dearly.

That the railroad was supported editorially by the Western World is not difficult to accept, for it was the only logical program that would benefit Warsaw. If the rapids remained unimproved and no railroad was constructed, the lightering of freight would likely continue from Keokuk and Montrose. On the other hand, if the proposed railroad were put in operation, Warsaw was in a position to benefit, for to its wharves much of the river traffic would inevitably flow for reshipment to the head of the rapids. It would likewise receive a large quantity of goods that were reshuffled at Nauvoo for shipment south. If either the natural channel in the river or the bypass canal were the means resorted to, to aid river traffic, the trade of the Upper Mississippi would largely pass out of Warsaw's grasp and its economic growth would be greatly hindered.

The river projects, particularly the one commenced by Lee, were the ones most enthusiastically desired by merchants not economically tied to the communities of Warsaw, Keokuk, Montrose, 

24Ibid.

and Nauvoo. Those businessmen unquestionably preferred to see the Mississippi's natural channel improved for if that were accomplished, reshipment charges which would have to be paid to rail or canal companies could be avoided. That program also promised to eliminate the delays resulting from reshuffling, bad weather, and low water.

Through the next few weeks the views of those supporting either the railroad or river improvements were aired in the *Western World*. William M. Grover, the railroad's Chief Engineer, was asked by the editors of the paper to comment on both the progress of the road and on the cost necessary to put it in operation. His reply was carried in that newspaper February 10, 1841.

The following figures, supplied by Grover, represent the information requested by the *Western World*:

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of putting road in operation</td>
<td>$135,640</td>
</tr>
<tr>
<td>(grading, laying the iron, and building bridges)</td>
<td></td>
</tr>
<tr>
<td>Cost for rights-of-way and agents' salaries</td>
<td>$13,564</td>
</tr>
<tr>
<td>Depots, warehouses, and fixtures</td>
<td>$16,000</td>
</tr>
<tr>
<td>Two locomotives</td>
<td>$18,000</td>
</tr>
<tr>
<td>Four passenger cars</td>
<td>$18,000</td>
</tr>
<tr>
<td>Forty baggage cars</td>
<td>$11,200</td>
</tr>
<tr>
<td><strong>Total cost</strong></td>
<td><strong>$202,404</strong></td>
</tr>
</tbody>
</table>

Grover estimated that the iron for the road would cost approximately $29,000. If the state supplied the rails, as was still hoped, the total amount for putting the railroad in service would be reduced to $172,000. It was calculated that the railroad would carry thirty tons of freight and twenty passengers each day during a yearly season of 150 days. Since freight would be

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*Western World*, February 10, 1841, p. 2.
charged "6¢ per ton per mile" and the cost of transporting it would be about "3¢ per ton per mile," the railroad could expect to gross $9,720 on freight for the 150 day season." Passengers would be "charged $1.00 one way, which would bring the yearly receipts including freight to $15,720." One-third of the total gross would go for overhead, thus leaving $10,000 as profit.

Grover stated that once the rail was in use, the amount of freight shipped would likely increase manyfold, especially if the road functioned on a good schedule. To insure that shipment of merchandise from boats to freight cars would be handled judiciously, he said he would encourage the road's promoters to run

"... the Rail Road track down to low water mark, or even below ... letting the cars along side of the boats. By use of a crane [the] goods [could] be handled from one to the other with but little more trouble than to land them on a wharf. 27

Those who were in favor of having the government renew its work at the rapids agitated for that proposal, feeling that with little work and expense the entire length of the rapids could be rendered safe for river traffic, especially since a considerable amount of stone had already been removed from the river. The man who became the chief spokesman for those supporting river improvements was Adolphus Allen, the same individual responsible for getting the government to perform the initial surveys at the rapids in the 1830's. In a letter to Tom Sharp, Allen said he felt compelled to answer the editorial of January 13, which asserted that the bed for the Des Moines Rapids Railroad had already been con-

27 Ibid.
siderably graded. "Cherishing the most friendly feeling towards, and rejoicing in the growth and prosperity of Warsaw," which the "editorial of January 13 was intended to patronize... I should have remained in silence," wrote Allen, "had it not aimed to defeat the improvements in the rapids..." Concerning Warsaw, "it needs no false praises," for

... the commanding position it occupies, in point of commercial importance will, without any adventitious aim, at no distant day, be one of the great ports of the far west. Then let it rest on its own intrinsic merit....

Allen added that neither does

... Nauvoo, where the road is to terminate require any intrinsic aid to ensure its growth, aside from its natural advantages, its surpassing beauty, and its picturesque scenery, which render it the most delightful locality to be found on the great shores of the great Father of waters.

However, in reference to the statement that "much grading for the rail had already been completed," Allen was in disagreement, and he professed that he was "with great deference" prompted to write a few remarks. "Warsaw, Carthage, and Nauvoo" form an "equilateral triangle, whose sides are eighteen miles respectively."

"Can you," he asked Sharp,

... follow the graded rail road twelve miles (which extends towards Carthage) and find yourself within seven miles of Nauvoo?—or even twelve?

It was Allen's contention that the partially graded road was in reality the unfinished rail bed lying between Warsaw and Carthage, which had been prepared as part of the Peoria and

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28 Ibid., February 24, 1841, p. 3.
29 Ibid.
30 Ibid.
Warsaw line, and no matter how much of it was completed, it would not push the railroad any closer to Nauvoo. He also questioned the feasibility of the route the rapids railroad would traverse, feeling that too many "creeks and deep ravines would have to be crossed," which would make it a very costly venture. Allen did say to Sharp that if the railroad could be constructed at private expense, he would not oppose it, but "to augment our taxes, which are already oppressive, by having the state engage in it, I would say--Hands off."

The rapids-improvement enthusiasts favored their program, not only because they felt it was a good solution to the problems confronting river traffic, but because the federal government would foot the bill, thus doing away with the taxes that might be levied by the state if it became the financier of the project. With respect to the government work at the rapids being at a stalemate, the anti-railroaders argued that it was only temporary.

That the government has abandoned . . . the rapids improvement, because for the last year or two, no appropriations . . . have been made, would be to suppose that it had abandoned all the great works of the nation, . . . the docks and harbors of the Seaboard and our inland seas, the Cumberland Road, and whatever would conduce to the well being and prosperity of our beloved country. The commerce of the Upper Mississippi is of too important a character to be long neglected by the General Government. Nor will the inhabitants of the wide-spread and fertile country to the north, long submit to a tribute by exorbitant freight, of several hundred thousand dollars annually, when it can be alleviated by so feasible an improvement.31

Allen's letter, as carried in the Western World, did not

31Ibid.
go unchallenged. An editorial penned by Sharp, appearing in the same issue, was written as a rebuttal of the river-improvements program. Sharp agreed that the newspaper had been caught in an error, but one into which, said the Warsaw editor, "we were led by false information." He, nonetheless, was quick to assert that the error was of little consequence since the railroad would not cross the prairie but, as Grover's report had indicated, "would be confined entirely to the bottom, a route along the river.” "Therefore," wrote Sharp, "we concede our error immaterial to the main point.”

What was significant, he suggested, was the "... apprehension of Allen" in regard to the taxes encountered if aided by the state. "We would remark," continued Sharp,

... that if it is the design of our legislators to prosecute any one work this should claim their first attraction, because it would require the least money and would be of the greatest proportional benefit. The inhabitants of that vast portion of the state located to the north of this point are now almost excluded from the market for the want of this improvement. To what object then, could the money of the state be better appropriated ...?32

The state is very capable, announced Sharp, even if it designs "... to make no further investments of money, ..." to make an "appropriation of railroad iron, of which a great quantity is on hand, and which could be given without at all increasing her taxation or crippling her resources."33 It is likely that Sharp was aware that the Illinois legislature was at that time discussing the possibility of aiding the Des Moines Rapids Railroad Company with a grant of iron. When, however, word

32Ibid. 33Ibid.
finally reached Warsaw relative to the state’s possible aid, it was not accompanied by the desired results. The state did agree to let the Rapids Railroad Company draw on its stockpile of rail, but only if the company would agree to pay to the state the original cost of the iron. That announcement came through a bill entitled "An Act Supplemental to 'An Act to Incorporate the Des Moines Rapids Railroad Company.'"34

Following a careful reading of the supplemental act (see Appendix VI, p. 174), it can be surmised that the Des Moines Rapids Railroad Company was, in the spring of 1841, desperately trying to stay alive, hoping that a way would be opened to permit construction of the rail. What Section I of the Act accomplished was to prolong the charter’s life for two more years, extending it until the first day of May, 1843. Two other sections of the Act were of little consequence, especially if money could not be raised sufficiently to promote the road. In actuality, the railroad was living on borrowed time and would succumb long before the new deadline was reached. After February 24, 1841, only two notices appeared in the Western World regarding the Des Moines Rapids Railroad Company—-one very insignificant and the other suggestive of growing discontentment then sprouting between the two Illinois cities at opposite ends of the rapids. On March 3 the Western World printed the following:

The Burlington Hawk-Eye states that the charter for the Des Moines Rapids Railroad . . . has been purchased by the Mormons, who design to complete the work. This is certainly a mistake—we are authorized to say that no such contract

has been made, or talked of, so far as the directors in this place are concerned.\textsuperscript{35}

Within a few months following the aforementioned notice, feelings between the communities of Warsaw and Nauvoo became quite unfriendly, and cooperative efforts between the two became totally impossible for the remainder of the Mormons' stay in Illinois.\textsuperscript{36}

Occasionally throughout the remaining years of the nineteenth century, talk arose indicating that interest was still alive for constructing a railroad from Nauvoo to Warsaw to bypass the rapids. In 1848 Henry Lewis, while on one of his notable sketching cruises down the Mississippi, mentioned while passing Warsaw that there

\ldots one could \ldots see the beginnings of a railroad running from that \ldots place down along the rocky shores, designed to connect Warsaw with Galena and thus to avoid the obstacle to navigation at low stages of water.\textsuperscript{37}

What Lewis saw, since the graded bed was running near the river, was likely some work done for the Des Moines Rapids Railroad back in the year 1840. Further evidence that what Lewis saw was graded bed for the rapids railroad appeared in the \textit{Nauvoo Independent} January 11, 1878. Joseph Smith III, eldest son of the Mormon prophet, spoke at a public gathering in Nauvoo near the date mentioned and stated that there was a need to have a railroad connecting Nauvoo with railroad centers. He

\ldots expressed his belief that it lay \ldots in the power of Nauvoo's citizens to finish grading the old bed

\textsuperscript{35}\textit{Western World}, March 3, 1841, p. 2.

\textsuperscript{36}\textit{Times and Seasons}, January 15, 1845, pp. 774-75.

between Nauvoo and Warsaw, and with but little cost—by the labor of its citizens and people along the route as in a common cause, this done, a good company could be found to tie and rail it, and put on the rolling stock.\textsuperscript{38}

However, the citizens of Nauvoo did not rise to the challenge, and a railroad was not completed between Warsaw and Nauvoo. The rapids continued to run their course on into the twentieth century, playing havoc with much of the watercraft that ventured over them.

\textsuperscript{38}Nauvoo Independent (Nauvoo, Illinois), January 11, 1878, p. 2.
CHAPTER VI

THE RAPIDS: A SOURCE OF WATER POWER

Non-Mormon Involvements

Despite the negative aspects of the Des Moines Rapids, many residents in its proximity considered that the stretch of water could be developed for useful purposes. From Nauvoo to Keokuk the river fell nearly twenty-four feet, and in some areas along its course the velocity was such that enough power could be generated by the stream's current to turn mill wheels. From the day that white men first planted permanent settlements in the locality, the idea that the rapids could be harnessed for water power was considered very probable.

The interest manifested in developing the rapids as a source of power was not limited alone to the residents who lived along its banks. As early as 1830 the state of Missouri had petitioned Congress for permission to annex the southern limits of Lee County, Iowa, which, if granted, would have given that state access to the rapids. Missouri's memorial to Congress stated that "that stretch of water in future times . . . would be of immense importance to the commerce of the whole western valley." It fur-

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1Congress, Report in Relation to the Rock River and Des Moines Rapids, p. 3.

2Western World, February 24, 1841, p. 2.
ther noted that the authors of the memorial

... anticipate[d] the day when the obstructions to
navigation ... would be overcome by a canal around the
rapids; when the inexhaustable power of that mighty stream
would be applied to almost every variety of manufacturing
machinery, and when a great commercial city ... would
spring up in that wilderness, to serve as the great entrepot
of the Upper and Lower Mississippi.3

Missouri did not acquire the rapids country, though, for it was
concluded by Congress that the area should remain part of Iowa.4

Adolphus Allen stated that in 1838 he had suggested to
the Army Corps of Engineers the feasibility of building a wing
dam in the area of the Lamelle Chain. This was done, he wrote,
in order to help control the flow of water at that particular
point. Allen reasoned that a wing dam at that location would
guarantee a suitable level of water in the channel on that chain
at all seasons of the year and supply "water sufficient for
hydraulic power ...," which power "would in all probability,
command a price sufficient to defray all expenses, and leave the
navigation free."5 He even offered to donate one mile of river
front to the government if it would accept his proposal. But the
offer was rejected as the government had no intention at that
time of getting involved in dam building at the rapids.6

Prior to 1841 no attempt had been made, either on a gov-
ernmental or private level, to construct a dam at the rapids.

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3 Jacob van der Zee, "The Half-Breed Tract," Iowa Journal
of History and Politics, XIII (April, 1915), 160-61.

4 Statutes at Large, IX, Part 1, 52-53.

5 Western World, February 24, 1841, p. 2.

6 Territorial Papers, XII, 1175-76.
That year, however, two energetic gentlemen living at Montebello, a settlement on the Illinois side of the Mississippi some five miles above the foot of the rapids, undertook the enormous task of building such a structure, the water of which was to propel a gristmill. From a contract dated September 1, 1841, Benjamin B. Gates and David Higby, on the one hand, and Edward Worth on the other, agreed that Worth, for a particular sum, would construct a dam of specified size for the two aforementioned parties. The contract called for the commencement of work on the "wing dam, wier, or dyke" on or before the twentieth day of September following and allowed twelve months' time for completion of the same. The dam was to begin at a point in the river as designated by Gates and Higby, extending for at least forty rods upstream so that the upper end of the dam would not be more than 300 feet out from the river's bank.

The structure was to be faced on both sides with large, flat stones lapped together to give them a firm fit. Its interior was to be a composite fill of stone and earth, safeguarded from the Mississippi's current by the large facing stones. For erecting this dam, Gates and Higby had agreed to pay

... Edward Worth, his heirs, or assigns, forty cents a perch for how many perch as there may be in said wall (it is understood sixteen and a half cubic feet is a perch) to be paid in manner following to wit: how much flour and meal at cash price as the said Worth may want for his families [sic] and for his work hands on said job, the balance to be paid in cash notes ... at the completion of said job. ... 7

7 A Contract between Benjamin B. Gates and David Higby on the one hand and Edward Worth on the other Relative to the Construction of a Wing Dam on the Mississippi, September 1, 1841. (In the files of Mrs. Ida Blum, Nauvoo, Illinois.)
A to B, a fourteen-foot span, represents the wing's base. The perpendicular C to D is seven feet and represents the extreme height of the structure. EEEEE are six large stones cut to form the flume side of the dam, while GGGG are four elongated overlapping stones laid to protect the wing from the river's current. The stones E and G cap the internal fill of the dam, a composition of earth and stone rubble.

Fig. 9. Diagram showing cross section of Wing Dam constructed by Edward Worth for Benjamin B. Gates and David Higby, 1841.
It was understood that Worth could demand 50 per cent of the value of his work each month, the other half to remain as security until the job was done. The 50 per cent would undoubtedly be needed, for within the contract it was written that Worth would have to pay the cost of building the dam. Most of the expense would be for wages paid his hired hands, for purchasing equipment, and for buying necessities for his family. Though the stone that would be needed for the dam was to come from a quarry contracted for by Gates and Higby from a gentleman named John Cochran, the contract stipulated that Edward Worth would have to extract the stone from the quarry and move it to the jobsite. He would not, however, be obliged to pay for the stone—that would be the responsibility of Higby and Gates.

Worth and his family were also to be given free lodging in a log cabin that stood on the river bank near where the dam was to be erected. Apparently that convenience, as well as the other items specified in the contract, was agreed to by the parties concerned, for when drawing up the contract, each agreed to bond himself to the sum of $500 to insure that he would carry out his part of the bargain.\(^8\)

By the summer of 1842 the dam was completed. Gates and Higby built a gristmill on the narrow neck of the dam's reservoir, from which point the water was released to give movement to the mill wheel. The mill, sadly enough, was operated for only a little over a year. Twice during the period of months it was in use high

\(^8\)Ibid.
water and ice critically impaired the dam and extensive rebuilding had to be done. In early 1843 spring freshets almost totally dismantled it, and Gates and Higby had to abandon it as a loss.  

Just how much this first ambitious effort to harness the rapids influenced other would-be dam builders is not totally determined. It is likely, though, that the citizens of Nauvoo, just a few miles up the rapids, watched with interest the Gates and Higby venture, for they were aware that if Nauvoo were ever to pick itself up economically, large-scale industrial programs, including water power projects, would have to be developed.

Mormon Interests

When the Mormons first began to arrive in Illinois, little consideration was given to establishing industry. Most were weary and destitute from hardships encountered in Missouri, and it likely took some time before their thoughts turned to promoting businesses.

The "Saints" did manage to get a monthly periodical, The Times and Seasons, into circulation before 1839 drew to a close, but its pages for the first few months primarily carried accounts of the depredations suffered in Missouri, and little was written relative to industry. In December a Mormon named Alanson Ripley published an article giving a brief description of the area around the Des Moines Rapids, inferring that the area was suited to agricultural and industrial pursuits. The newly-founded town of

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Nauvoo was described as occupying a beautiful location and "equal in privileges with other towns." Not until June of the following year (1840) did there appear an article publicizing Nauvoo as a town well-suited because of location for the development of water power. This notice declared that Nauvoo was

... situated on a beautiful point of land on the Mississippi River ... at the head of what is denominated the Demoin Rapids ... which affords good privileges for all kinds of machinery in consequence of the rapidity of the current.

Now that the Latter-day Saints were again getting settled into a routine free from serious disturbances, living conditions began to be more pleasant. The citizenry of Nauvoo, as well as the Mormon element then settling across the river in Iowa, began turning more confidently to the task of making a living. A letter addressed "To the Saints Abroad," written by John Smith, ecclesiastical leader of the Mormons in Iowa, was carried in the Nauvoo periodical in September. Members of the church who would soon arrive in the west were encouraged to settle in Iowa where good land, lots of water, and timber were available. The letter stated that Nashville, the most prominent Mormon community in Iowa was "... laid out on the rapids of the Mississippi River, 5 miles below Nauvoo," and stated that it had the

... only good steamboat landing on the Rapids ... where during a considerable part of the year boats on the upper trade receive[d] their freight and passagers [sic]

11 Ibid., June, 1840, pp. 122-23.
12 Ibid., September, 1840, pp. 173-74.
Fig. 10. The Des Moines Rapids and the Northwest Section of Hancock County, Illinois, from a map drawn by A. Ripley and R. Campbell, ca. 1841.
which were brought from the foot of the rapids in Lighters.\textsuperscript{13}

Nashville, with its excellent river landing, appeared to be in a good position to involve itself in the lightering industry, but there was a major disadvantage confronting it in that pursuit. The town's landing was four to five miles from the head of the rapids where most goods needing portage around or lightering over the rapids were reshuffled. That factor undoubtedly would have proven an unfavorable blow to Nashville's involvement in the river trade. Whatever its future may have been, there was no chance for a realization, for in a few months that community was all but abandoned by the Mormons, many of whom between the years 1842 and 1845 crossed the Mississippi to make residence in Nauvoo.\textsuperscript{14}

During the period it was occupied by the Mormons, Nashville was also considered as a location affording

\ldots facilities for hydraulic purposes to any extent necessary; besides having \ldots numerous creeks in the country on which machinery and manufactories could \ldots be supplied with a sufficient quantity of water at all seasons of the year. \ldots\textsuperscript{15}

The Mormons felt they could not allow themselves to scatter out in Iowa and all over Hancock County, Illinois, and attempt to build industry on an individual basis. Most attempts along that line were discouraged by church authorities in Nauvoo.\textsuperscript{16}

\textsuperscript{13}\textit{Ibid.}, p. 174.

\textsuperscript{14}\textit{Journal History of the Church of Jesus Christ of Latter-day Saints} (Church Historian's Office: Salt Lake City, Utah), April 6, 1843.

\textsuperscript{15}\textit{Times and Seasons}, September 1, 1840, p. 174.

\textsuperscript{16}\textit{Ibid.}, August 15, 1844, pp. 618-20.
That city must be built up, announced the church leaders, and industry established on a large scale if the church were to free itself from the shackles of debt and economic insecurity and prepare itself for an influx of new converts who were soon to arrive. This feeling was partially responsible for the disbanding of the "Stake of Zarahemla" in Iowa in 1842 and for encouraging a gathering to Nauvoo.\(^\text{17}\)

Even as early as 1841 the arrival of converts in Nauvoo, including new members from England, was large, and the city for the most part was unprepared to receive them. Many of those arriving were workers from the factories of England's industrial centers and were unacquainted with the rudiments of farming. Most were poor and did not have the means to care for themselves. To remedy the situation, Joseph Smith wrote the following instructions to church officials in England:

> There are great numbers of the Saints in England who are extremely poor and not accustomed to the farming business, who must have certain preparations made for them before they can support themselves in this country, therefore, to prevent confusion and disappointment when they arrive here, let those men who are accustomed to making machinery, and those who can command a capital, though it be small, come here as soon as convenient, and put up machinery and make other such preparations as may be necessary, so that when the poor come--they may have employment to come to. . . .\(^\text{18}\)

The "Prophet" expressed his confidence in Nauvoo's future and bolstered the feelings of his English brethren by adding that

Nauvoo [had] advantages for manufacturing and commercial purposes, which, but very few [could] boast of; and by establishing cotton factories, foundaries, potteries, &c.,

\(^{17}\)Journal History of the Church, April 6, 1843.

\(^{18}\)Times and Seasons, January 1, 1841, p. 259.
&c., would be the means of bringing in wealth and raising it to a very important elevation.\(^{19}\)

Some two weeks later Smith and his two counselors, Hyrum Smith and Sidney Rigdon, had occasion to address "A Proclamation to the Saints Scattered Abroad," which statement was probably directed more to the members of the church residing in the limits of North America than to those in England. The notice minimized reports that were then circulating, claiming that Nauvoo's location was an unhealthy one, while it also managed to assert some favorable tones by indicating that the "... waters of the Mississippi" could "be successfully used for manufacturing purposes, to an almost unlimited extent..." This announcement, it was presumably hoped, would induce those with capital and technological know-how to establish machinery at Nauvoo capable of being powered by the water of the Mississippi.\(^{20}\)

Even though the first official remarks suggesting that the "Saints" harness the Des Moines Rapids for water power purposes did not come until later, there is little doubt that the idea was for some time freely discussed. On the third day of February, 1841, John C. Bennett, first mayor-elect of the community, proposed in his inaugural address that a wing dam as well as a ship canal be constructed at Nauvoo. At the north end of the promontory occupied by the city was a ravine where a small inlet of the Mississippi formed. Bennett suggested that at that point the dam should be built, there projecting west into the river.

\(^{19}\)Ibid.

\(^{20}\)Journal History of the Church, January 14, 1841.
The ship canal, he suggested, should run from the inlet down the middle of Main Street, terminating in a grand reservoir on the south side of the promontory. The dam would insure that water would be made available to raise and lower boats that passed through the proposed locks of the canal while it would also allow for a good head of water capable of

... propelling any amount of machinery for mill and manufacturing purposes, so essentially necessary to the building up of a great commercial city in the heart of one of the most productive and delightful countries on earth.²¹

In regard to the finances necessary to support the venture, Bennett encouraged the promotion of outside help.

I would advise that an agent be immediately appointed on behalf of the city corporation to negotiate with eastern capitalists for the completion of this great work, on the most advantageous terms, even to the conveyance of the privilege for a term of years.²²

The new mayor considered that when the work was finished, the "future greatness of [Nauvoo] would be placed upon an imperishable basis," as it would not only promote industry but would "... afford the best harbor for steamboats, for winter quarters on the Mississippi. . . ."²³

It appears that the dam and canal program was quite well received by the city fathers, for within five days following the inauguration of Bennett, the newly-organized city council met in session and discussed the proposed project. Joseph Smith, one of the city's nine councilmen, "reported a bill," according to his history, "for the survey of a canal through the city" which was

²¹Times and Seasons, February 15, 1841, p. 318.
²²Ibid. ²³Ibid.
accepted and he "was appointed to contract for its survey."²⁴

Bennett's suggestion relative to raising money to support the project through eastern capitalists does not seem to have borne fruit, however. It is doubtful that an agent representing the city corporation was sent east for such a purpose. But if one were, we must conclude that it was in vain, for no money was forthcoming from that region.

That the leading men of Nauvoo were favorably inclined toward the dam project there is little doubt, though criticism concerning its projected route seems to have arisen quite early. The survey contracted for by Joseph Smith was presumably carried out by Alanson Ripley. It revealed that the north end of Main Street was undercropped for a considerable distance by a massive layer of limestone, and an extraction of thousands of tons of stone would have to have been made in order to reach the level necessary to allow water to enter and flow through the proposed canal. (See Appendix VII, p. 175.)

It is understandable that such information would cool even the most ardent canal enthusiasts. But there were also other problems to consider. If the project were undertaken, it would mean a rather large investment by the city to acquire the necessary stone-removing equipment. It was true that a newly-developed drill was in operation on the Illinois public works which was run by horsepower and had the capability of boring into solid rock to the depth of forty-nine feet in one day. But

²⁴Smith, History of the Church, p. 297.
even had such equipment been purchased, it is not likely that interest would have been aroused sufficiently to encourage the tackling of such a gigantic obstacle.25 Similarly, blasting powder was expensive, and it was not feasible to involve the city in an expenditure of such a large sum as would be needed to remove the required stone. As a result, the proposal to construct a canal through Main Street was dropped.

The survey revealing the large stratum of limestone lying beneath Main Street did not prove to be unprofitable, for in time that area became a bustling stone quarry.26 From it would be cut and tooled the structural and ornamental stones that would become a part of the rising temple on the bluffs.

The realization that Main Street was underlaid by limestone many feet thick did not discourage some of the enthusiasts of Bennett’s canal program, among whom was the editor of the Times and Seasons. On February 15 that periodical noted that it was

... thought by ... some that the agitation of that ... subject was ... premature, and that in the infant state of the ... city, it would be well to postpone the consideration of the ... subject for some time.27

Such a move would be a mistake, the editorial commented, for the "... most superficial observer must be led to the conclusion that Mayor Bennett’s suggestion is practicable. ..."28

25Western World, April 14, 1841, p. 3.
26Smith, History of the Church, p. 292.
27Times and Seasons, February 15, 1841, p. 319.
28Ibid.
Fortunately for the Mormon city, the supporters of Bennett's plan lacked the power to get the program augmented. Presumably the absence of money necessary to finance the project was the main deterrent, though apparently the prospect of chiseling through solid limestone was not inviting, either.

A lack of finances was to play a vital role in Nauvoo's inability to put in motion any sizable industrial programs. Those members of the Mormon church who had funds generally neglected to gather to Nauvoo, and the poor were left to build up the city. Such facts must have been disheartening to many, especially to Joseph Smith, though he seems to have usually carried an optimistic outlook relative to the future. Occasionally there was gathered into the fold a person of some affluence who was willing to move to the struggling community and there invest his capital. Such was the case in October, 1841, when the Mormon prophet received the following information from a letter written by Edward Hunter, a recent convert, then living in Pennsylvania:

Brother Henry Buckwalter wishes to take a steam engine to Nauvoo for a flour mill and I wish to erect a steam Saw Mill if I sell my farms.

Hunter's encouraging words led to a return letter from Joseph Smith, who wrote the new member in December. The Mormon leader stated that as

... respects steam engines and mills ... Nauvoo could not have too many. ... This place has suffered exceedingly

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29 Ibid., August 15, 1844, pp. 618-20.

30 Letter from Edward Hunter in Pennsylvania to Joseph Smith in Nauvoo, Illinois, October 27, 1841 (Edward Hunter MS file, Church Historian's Office).
from the want of such mills . . . and neither one or two can do the business of this place another season. We have no good grain or board mill . . . and most of our flour and lumber has to be brought twenty miles . . . There is scarcely any limits which can be imagined to the mills and machinery, and manufacturing of all kinds which might be put into profitable operation in this city . . . It will be difficult for the mills to keep pace with the growth of this place. 31

Others also saw the need and consulted with the young prophet regarding the building of steam mills in Nauvoo. Steam power, however, was not the only source of energy used by residents of the Mormon city to run their machinery. A more common means resorted to was to use the river's current as the source of power for turning the mill wheel. One gentleman who successfully used the stream's force to power a mill wheel was Newel Knight. Under the signature of Mayor John C. Bennett, April 9, 1842, the city council gave Knight and "another" the right to "run a wing into the river, for a dam." 32 The act appears to have been the first official endorsement of the council granting private citizens permission to build dams on the Mississippi. Knight followed through with the grant and established a gristmill that operated through the remainder of the Mormon's stay in Nauvoo. At least one citizen of the community found his mill a welcome establishment. In 1844 William Adams, a recent arrival in the "City of the Saints," who was having a difficult time making ends meet, wrote that by

... selling and trading some ... clothing and other things that ... could best be done without I was enabled

31 Smith, History of the Church, p. 482.

32 "A Charter Granted to Newel Knight to Erect a Wing Dam in the Mississippi, April 9, 1842" (Records of the City Council of the City of Nauvoo, Illinois, Commencing A.D. 1841, Church Historian's Office).
to buy some shorts from Bro. Newell Knight who owned a small grist mill on the bank of the Mississippi River, run by the power of the stream.\footnote{William Adams' Journal (Church Historian's Office, 1844), p. 10.}

Mill privileges similar to those offered Newell Knight were granted to other members of the community, though the actual number of mills subsequently erected is not known. Likewise, little is known regarding the degree of economic strength they brought to the city, although it can be assumed that the services they provided and the employment they created were welcomed by the Mormons.\footnote{Ordinances Granting "to William and Wilson Law the Privilege of erecting Butments and Piers in the Mississippi River, May 14, 1842." (Records of the City Council of the City of Nauvoo, Illinois.)}
To Build a Dam

Individual efforts to establish industry were approved but, as it was realized they could not adequately meet the needs of the people or insure prosperity for the city, a community-wide program was engendered. The town council announced the plan through the *Times and Seasons*, January 1, 1844. Coming as it did on the first day of the year, it was likely accepted as an omen of a more prosperous future. "A charter has been . . . granted by the city council for the erection of a dam upwards of a mile long," declared the article, that will "afford the best mill privileges in the western country." (See Appendix VIII, p. 176.)

The dam was proposed to "commence some distance below the Nauvoo House," move in a westerly direction across the river, "and intersect with an Island" opposite the little village of Montrose, thus leaving the channel of the river open to boat travel.\(^1\) Clearly mentioned in the city council minutes, though not specified in the *Times and Seasons*, a "dam, pier, or breakwater" was to project north for a short distance from the island where the main dam terminated. By that move a basin would be formed, making a sizable harbor for boats. At the same time, it was expected that

\(^1\)Times and Seasons, January 1, 1844, pp. 392-93.
the water level would rise adequately within the dam's reservoir to insure "accessibility" to Nauvoo's "shore at all times" to even the "largest class of boats." In conjunction with the proposal, the editor of the *Times and Seasons* reported that "vigorous efforts . . . were then being made to improve . . . the cities wharves to facilitate the landing of steamboats on Nauvoo's shores."^3

The charter for the dam specified that the Mormon prophet and "his successors" for the term of "perpetual succession" were "authorized and empowered to erect" the dam, which likely was stated as a safeguard to insure that greedy men did not get control and use it as a means to enhance their personal wealth at the expense of the people. Likewise, as a check and balance over any unforeseen conduct by the church president or his successors, the city council retained the right to regulate all tolls and rates regarding the use of the dam or the landings and wharves that would be constructed as part of the same.

The minutes of the city council inferred that the top of the dam would be wide enough to serve as a roadway for wagons or stock, and the tolls derived therefrom would serve to compensate the prophet and his successors for managing the same.^4

\(^2\) "An Ordinance to Erect a Dam in the Mississippi River, December 8, 1843" (Records of the City Council of the City of Nauvoo, Illinois).

\(^3\) *Times and Seasons*, January 1, 1844, p. 393.

\(^4\) "An Ordinance to Erect a Dam in the Mississippi River." Though the rates of toll for the proposed dam are unknown, it is probable that they were similar to those of the Nauvoo Ferry,
When one considers the magnitude of the proposed project, realizing that very little capital was available in Nauvoo, he is led to question how the desired program was to be financed. Some hint relative to this inquiry is found in Joseph Smith's history. Under date of November 23, 1843, the Mormon leader recorded that he met in council "in the old house..." near the river, and there "suggested the idea of petitioning Congress for a grant to make a canal over the falls or a dam to turn the water to the city so that we might erect mills and other machinery." The expense for the desired enterprise would be sizable, concluded Joseph Smith, but if assumed by the federal government, it would prove no burden to the Mormon community. However, nothing appeared thereafter in the city council minutes, in either of Nauvoo's newspapers, or in Joseph Smith's history to indicate that the federal government was still being considered as a source from which

which are hereafter inserted:

The following, as noted in "An Ordinance to Regulate the Rates of Toll at the ferry, in the City of Nauvoo, Illinois, June 10, 1843," shall be the rates of toll for crossing the Mississippi River at the City of Nauvoo:

One horse waggon, with contents & driver ... $ .75
Two horse waggon, with contents & driver ... 1.00
Four wheel carriage for two or four horses ... 1.50
Two wheel carriage for one horse ... .50
Cart ... .50
Horse, Ass, Mule, or Jenny ... .25
Foot Passenger ... .12 1/2
Horse or other Animal with rider ... .37 1/2
Oxen per yoke ... .25
Every head of stock per year old ... .18 3/4
Every head of stock under one year old and sheep, hogs &c ... .6 1/4

Whatever is not herein specified shall be calculated by agreement.

Records of the City Council of the City of Nauvoo, Illinois, as cited in the Nauvoo Neighbor, June 14, 1843, p. 3.

5Smith, History of the Church, p. 178.
revenue would be acquired to fund the desired project. In fact, a number of months passed before another statement appeared relative to the dam itself.

Winter had come to the Upper Mississippi country and with it a temporary cooling of enthusiasm for out-of-door work projects. Through the cold months there was usually little activity on the river, and it was not likely that interest in the project would again mount until warmer weather prevailed.

Another factor contributing to the lack of involvement in the waterworks program during the next few months was the renewal of anti-Mormon sentiment such as the Latter-day Saints had encountered in Missouri. Oddly enough, inasmuch as the Mormons, for the most part, had left the state, the resentment arose in Missouri, spreading from there to Illinois. Joseph Smith was forced into a period of seclusion as a result of attempts made by Missouri officials to have him extradited to answer charges of which he was accused while a resident of that state. To add to his difficulties, a few dissatisfied citizens of Nauvoo combined efforts with anti-Mormons in Hancock County in an attempt to arouse the general public to a further dislike of him and his people. Animosities aroused by misunderstandings similar to those which occurred in Missouri led the Mormons and their neighbors into physical contention which eventually culminated in the death of Joseph Smith and his brother Hyrum at Carthage, Illinois, on June 27, 1844.

Though the six months prior to the Smiths’ deaths were clouded with uncertainties for Nauvoo’s inhabitants, their plans
for industrializing the community managed to stay alive. In May, 1844, some six weeks before the Carthage tragedy, a letter was written from Nauvoo to the "Saints" in England, directed to Ruben Hedlock, then presiding over the British flock. The letter, bearing the signatures of Brigham Young and Willard Richards, reiterated the information about the Mormon prophet having received a charter for a dam. "Could five, six, or seven thousand dollars be raised to commence the dam at its lower extremity," wrote Young and Richards, a large amount of "machinery might be propelled by water." The letter implied that the project was very feasible and that for the "value of a steam engine" could one be taken under title and sold and the money forwarded to Nauvoo, the lower extremity of the dam, and a building with equipment sufficient for producing cotton could be established--"which Nauvoo much needs." To Hedlock was also directed the invitation to "start some capitalists" to help raise money for the venture. The water power program was considered the "greatest speculation in the world" for the city, noted Young and Richards, especially since "a world of cotton and wollen [sic] goods were wanted in Nauvoo."6

There the matter was to rest for a while, and not until the excitement and fear caused by the death of the Smiths subsided and a degree of calm reestablished in Hancock County, was confidence aroused sufficient to encourage further consideration of dam building.

6Journal History of the Church, May 3, 1844.
It was felt by some that Joseph Smith's death would spell an end to Mormonism, which would result in a rapid deterioration of Nauvoo, especially since it was rumored that the state legislature was going to repeal the city charter at its next session. Notwithstanding the fear that such action would materialize, the Quorum of the Twelve, which had assumed leadership of both the church and Nauvoo after Joseph Smith's demise, agreed that the development of the city must continue. "Nauvoo must be built up," they stated through the Times and Seasons of August 15, and furthermore, it must "... be supported by the gathering of those who have capital, [who] are willing to lay it out for the erection of every branch of industry and manufacture."\(^7\)

The "Trades Meeting Association"

Apparently the admonition of the "Twelve" aroused some interest, for some time during the next few weeks the craftsmen of the city organized into what was called the Trades Meeting Association, the purpose of which was to promote industry in Nauvoo. Throughout the winter of 1844-45 they met frequently to discuss programs that would get Nauvoo on a sound economic footing.

On the evening of December 2, 1844, the Trades Meeting Association assembled at the Masonic Hall on Main Street. In the absence of President John Taylor, D. M. Repsher was appointed to the chair. It was the intent of those assembled to discuss ways that would successfully set in motion the various trades of the

\(^7\)Times and Seasons, August 15, 1844, p. 619.
Alanson Ripley, who had worked closely with Joseph Smith relative to the deceased's plan for building a dam, must have felt that the time was right to reopen discussion of that proposal. After gaining the floor, he "begged leave" to discuss the project "got up by the late General Joseph Smith," the discussion of which topic was approved by those present. The "dam could be erected at but little expense," Ripley said, and it would "give water power for a quarter of a mile, the entire area of which could be filled up with machinery." Ripley added that he had confidence in the plan, for he and a Mr. Hewitt had already surveyed the contemplated site and agreed that the project was feasible. Repsher was of a similar opinion and added "that he had also had some conversation with the late Gen. Smith relative to the building of the dam," and after due consideration felt the raising of the sum necessary to float the project could "be accomplished by the citizens in a short space of time." He said that he and Smith agreed that it would take near "250,000 dollars" to complete the structure, but "much of the outlay was already in possession of the Saints" in the form of property. "Both the rock and the timber we have above," he asserted. Particularly is "sucamore [sic] in abundance in the area--it being the kind of wood that "would stand against ... flood."

Hewitt also took occasion to speak in favor of the dam program. He informed the gathering that he had "made an estimate

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Ibid.
of the expense that it would take to erect one pier." He had first felt it "too great a project to undertake," but realizing that at least "ten mills" could be run from such a development, he conceded it prudent to promote the program. He concluded that the first requirement for launching the project would be to "appoint a committee to make an estimate of the probable cost of erecting a dam." His enthusiasm, joined with that of Repsher and Ripley, aroused interest in the group assembled within the Masonic Hall and the suggested committee was appointed. Along with John Taylor, who was not present during the evening, and a fellow named Jabez Durphy, Ripley and Hewitt were appointed to the committee which was asked to report at the next meeting concerning their study.

Also a matter of concern during the evening was a discussion regarding the building of a factory that would produce cotton goods from machines run by the power of the Mississippi's current, some looms for which, if the records are correct, were already in Nauvoo awaiting the time when they would be assembled and put in operation. Edward Hunter, who it appears headed the committee sponsoring the factory, called upon a Mr. Graham "to give an estimate of the cost of erecting such a building." Graham responded, stating that a "building 3 stories high, 80 feet long, 60 feet wide, with a plain finish," but of "good strong material," could be put up for "2500 to 3000 dollars." Graham further informed those gathered that once the building was ready for use the "five or six looms" already in Nauvoo would be put in operation, though the program would "extend to many hundred as soon as
possible."

"No doubt," said Edward Hunter, "Nauvoo shall yet make some use of the rapids for manufacturing."  

Two days thereafter an article appeared in the Nauvoo Neighbor informing the public of the Trades Meeting organization. Apparently the first two gatherings of that group had been attended by only a smattering of those who it was felt should have been present, for the article was chiefly a plea to those interested in the trades to feel welcome to attend subsequent meetings. It is the intention of the Trades Association, announced the Neighbor, to "promote the community's [sic] welfare by bringing into successful operation all the combined forces of our numerous and useful machines." It was known that a program calculated to reach such proportions should have the support of the majority of the citizens, especially the mechanics who, if included in the planning, would likely enhance the success of the project.

The city council also used its influence to aid the Trades Meeting in promoting industry. At a gathering of that council on December 4, 1844, the charter granting Joseph Smith and his successors the right to build a dam into the Mississippi was

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9Nauvoo Neighbor, January 8, 1845, p. 3. It was noted in this newspaper on February 26, 1845, that ". . . one bale of cotton and several bales of leather" had "arrived from Mississippi, for the benefit of Nauvoo Manufactory," and ". . . the spinning jennies, or some of them, and the looms being ready, business . . . " was expected "to go ahead."

10Ibid.
amended, which action became necessary due to certain lands in
the community, rightfully owned by the church, being claimed by
individuals not in harmony with the Quorum of the Twelve.

The council even went so far as to lay private interests
on the table in order to promote the Trades Meeting program,
agreeing that such a move would be beneficial to the whole com-
community. Newel Knight, who had received a charter in 1842, per-
mitting him to run a dam into the river, had petitioned for a
second privilege, which request, as were others, was declined by
the council in mid-December, 1844.  

Prompted by this support, the Trades Meeting met shortly
thereafter for further deliberation at the store of Samuel Gulley.
Again discussion centered in problems relative to financing the
dam. The committee which had been appointed on December 2 to
determine the cost of constructing the desired dam was reshuffled,
and D. M. Repsher was asked to fill the position then occupied by
John Taylor. Others added to the committee were Alpheus Cutler,
Orson Pratt, and Henry G. Sherwood. Each of these appointees had
had experience in either surveying or stone work and would likely
be able to help the committee arrive at a closer approximation of
what it would cost to construct a dam.  

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11 "An Ordinance to Amend 'An Ordinance to Erect a Dam in
the Mississippi,' December 4, 1844" (Records of the City Council
of the City of Nauvoo, Illinois, as cited in the Nauvoo Neighbor,
December 14, 1844), p. 2.

12 "Petition of Newel Knight to Make a Wing Dam in the
Mississippi" (Records of the City Council of the City of Nauvoo,

13 Nauvoo Neighbor, January 1, 1845, p. 3.
When the Trades Meeting assembled on January 7, 1845, the dam committee, as scheduled, made a report, even though the survey they had been asked to make had not been completed. As a result, their report was not only brief but lacked detail. The Nauvoo Neighbor of January 8, reviewing the happenings of the meeting, noted that the committee's report "so far as made was highly satisfactory" though it acknowledged that the committee would need more time in study and deliberation before a complete report could be given. In order to facilitate the committee toward that end, it was "deemed advisable to add Newel Knight to its number," apparently with the hope that his experience in operating a mill by means of water power would aid that group in its further study. Before the meeting adjourned for the evening, it was suggested that the committee, with its new member, be invited to "confer with the Trustees in Trust"\(^\text{14}\) regarding their study and then make report "at the next meeting."\(^\text{15}\)

Accordingly, the dam committee met with the "Twelve, Trustees, the Temple committee, Ripley and Sherwood surveyors, and the Nauvoo Agricultural and Manufacturing Association." The journal of Willard Richards, a member of the Quorum of the Twelve, furnishes some details of the aforesaid meeting. It indicates that Newel K. Whitney, trustee-in-trust of the church, was "coun-selled" by the members of the Twelve "to urge the Manufacturing

\(^{14}\) The Trustee in Trust was considered by the Latter-day Saints to be the agent or "steward" through whom the church financial operations were to be directed.

\(^{15}\) Nauvoo Neighbor, January 8, 1845, p. 2.
Association to build the proposed dam." The Twelve did suggest, however, that the Manufacturing Association, before assuming control of the venture, should agree to "provide the Trustee every tenth share . . . of stock [which would be used by the church leaders to] promote the dam and indemnify Newel Knight for any injury that may occur to his mill then operating in the vicinity of the contemplated dam." The proposal was apparently accepted, for on the following Tuesday when the Trades Meeting met, it was noted that the Twelve, Trustee, and surveyors had agreed to let the Manufacturing Association spearhead the building of the dam. Action was also taken to appoint a committee to "confer with the owners of the land" where the contemplated dam was to be constructed, who would make arrangements respecting the purchase of property where "buildings could be [raised], machinery assembled, and stone for the dam acquired." Enthusiasm continued to mount and before the meeting of January 14 adjourned, "one thousand one-hundred and fifty dollars" was subscribed "for a commencement of the dam." John Taylor, speaking for the Trades Association, asserted that "all things being ready, it was deemed advisable that work [begin] soon," particularly "if the weather" continued "as favorable as it" then was.

Just at the moment when it appeared that work was about to begin, a problem arose which would delay that activity for another

16Willard Richards' Journal (Church Historian's Office), January 10, 1845.

17Nauvoo Neighbor, January 15, 1845, p. 3. The "... temperature [that winter] had rarely [been] more than 3-4 below zero." Being so, the season was considered "... mild and pleasant." Nauvoo Neighbor, January 29, 1845, p. 3.
six weeks. The postponement resulted when word was received by the Mormons in mid-January that their city charter had been repealed by the state legislature. That action caused the Mormons to reconsider a number of projects, among which was the proposed waterworks program. When the Trades Meeting gathered on January 28, the discussion of the evening centered on the propriety of continuing with the Manufacturing Association's charter as the legal basis for erecting the dam. In order to determine whether or not a benefit could be obtained by adhering to the charter, it was requested that the document be closely examined by those in attendance and a judgment made as to its values and liabilities.

John Taylor suggested that "perhaps it might be best to act upon its provisions in building the dam in order to secure some technical advantages." Several persons, however, expressed doubt that the Manufacturing Association's charter could afford "any advantages and doubted the propriety of acting under its provisions at all." Some also felt strongly that an "extra session of the legislature would be called and the charter repealed," which would likely be the case "after . . . two or three of the piers" for the dam had been built. Taylor recanted, adding that he had had little confidence in the stability of the Manufacturing Association's charter and would, without any dissatisfaction, acquiesce to the feelings expressed relative to the charter. He affirmed that it was well known that the state legislature could not take away the charter legally--"this they cannot do," but to "place any confidence upon their actions would be folly," for "they" grant charters "and then cry for them again, as little boys
cry for marbles when they have given them away." The Manufacturing charter, commented Taylor, stood less chance of surviving than did the city charter which had been granted on terms of "perpetual succession" but had already been repealed. "Therefore," he suggested, "we had better have nothing to do with it, for it would be a curse rather than a blessing to us." Taylor stated that if "he had his way, he would go in for repealing it," for he felt that only they could do that legally, and the legislature could not." Within moments a motion to repeal the charter was carried unanimously, bringing to an end, so declared the Trades Meeting, the dependence of the Nauvoo Agricultural and Manufacturing Association upon the state.18

Taylor then presented a "plan of organization" for the "Trades Union" which he said was ". . . something like the Priesthood." Let there be a "living constitution" appointed, composed of "twelve men," with a "President, Secretary, &c., to take the lead in the concern." The plan was accepted and a committee was chosen to select and submit the desired number of names at the next meeting for "adoption or rejection."19

Before adjourning for the evening, those assembled had the opportunity to view "a plan of the dam" which had been prepared by Jabez Durphy. In explaining the exhibit to the group Durphy asserted that it was the desire of his committee that the initial construction of the dam be composed of "three piers, each 40 feet

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18 Nauvoo Neighbor, February 5, 1845, p. 2.
19 Ibid.
long, ten feet wide and fifteen feet apart, and averaging twelve feet in depth." It is also recommended, noted Durphy, that "planks be put down between the piers, and the spaces [resulting be] covered with plank." By doing this, the "whole would form a permanent dam," which would make available a "bridge 40 feet wide and 80 rods long." The proposal was thought practical enough, and Alanson Ripley, city engineer, was "appointed to make a drawing of the structure" and to "write an account of ... its advantages &c." 20

Anti-Mormon Sentiment

While preparations were being made in Nauvoo to start work on the dam, opposition toward it began to mount elsewhere. In a periodical entitled The Latter Day Saints' Messenger and Advocate, published and edited in Pittsburgh, Pennsylvania, by Sidney Rigdon, a former resident of Nauvoo, was carried some unfavorable comments regarding the desired waterworks. Rigdon announced through his publication that it was the intent of Nauvoo's newspapers to mislead the public into thinking that the "... condition of the city was prosperous, and future anticipations ... desirable." The truth of the matter, affirmed Rigdon, is "that within that devoted community there is everything but prosperity," for the "capital in the city has long since been swallowed up, and there is none left." Also as regarding the building of manufacturies, it is doubtful "their situation ever admitted to establishing factories of any kind." The propriety of constructing a dam as a

20 Ibid.
means of promoting industry in Nauvoo was considered with even less favor by the article. "The idea that there can be water power obtained by a use of the rapids is a mistake," wrote Rigdon, and a great one too. The idea of propelling machinery by the current is as idle as it is ignorant. The freezing of the river would prevent its going several months in the year, if there were no other difficulties. The idea of building a dam across any portion of the river, so as to raise the water; either from thence to dig a canal or race or so as to erect machinery at the breast of the dam is still worse; nor do we believe that any person or persons ever seriously contemplated doing any such thing; and if they did, it would only prove that the authorities ought to take their case under consideration for they are fit subjects for a mad house.21

The editorial noted that such an undertaking as that of building a dam capable of "doing any good" would cost "millions of dollars" and would not make a water power half so good as could be obtained in other places, in the western country." Further, it would be "subject to overflow at the time of the annual freshets, for a length of time at once."

Rigdon likewise was not slow to use as a source for discouraging interest in Nauvoo's manufacturing proposals an idea that had long been considered by some to be a decided advantage to the Mormon city--its position at the head of the rapids. He asserted that the communities of Pontoosuc to the north of Nauvoo, and Warsaw on the south had the most likely prospects of developing in the areas of manufacturing and trade. "Warsaw lies below the rapids, and boats can reach it when they cannot Nauvoo." The consequence is, reasoned Rigdon, that "all the agricultural productions of the country reach one or other of the above places, and

21Latter Day Saints' Messenger and Advocate (Pittsburgh, Pennsylvania), February 1, 1845, p. 101.
nine-tenths of it go to Warsaw; . . . the reason being the difficulty in getting over the rapids.\textsuperscript{22} So difficult are the rapids to pass "that at certain seasons of the year" even the merchants of Nauvoo have their goods landed at Warsaw, and "... get them wagoned to their city, a distance of eighteen miles."

Rigdon furthermore derided the Mormons' recently organized "Trades Meetings" as a "miserable subterfuge" and inquired,

\ldots who is the better [for] all these meetings, how much business do they create, why just-none. The people go and return, and the papers inform the world that they have met and adjourned. When will such folly cease in that city \ldots?\textsuperscript{23}

Up to the last dates these great meetings had resulted in bringing forth a willow basket and a web ofworsted girting, and what advantage is that, if they could find somebody in Nauvoo that could make fifteen of these baskets in a day, he could not realize enough from them to feed a cage of woodpeckers. \ldots

Rigdon's evaluation of Nauvoo's industrial potential, whether correct or incorrect, did not deter the Mormons' promotion of the dam. When residing in Nauvoo, he had served as a counselor to Joseph Smith and it was generally known that he had supported efforts to strengthen the city materially. As a result, his editorial, being written after he had estranged himself from his former associates, was considered to be but the remarks of an apostate. It is likely his article would have been even more flamboyant had he been aware at the time of its writing what steps the Mormons were then taking to get their waterworks program in operation.

\textsuperscript{22}Ibid., pp. 101-2. \textsuperscript{23}Ibid.
Petition to Congress

On February 12, 1845, a reference to the dam was carried in the Nauvoo Neighbor, though only those directly involved in the dam's planning were probably aware of its meaning. The notice was brief and stated simply that W. W. Phelps, Secretary of the Trades Association, expressed "thanks to our Representative in Congress, Mr. Hoge, for favors from Washington."24

What Phelps had knowledge of was that Hoge was at that time presenting to the House of Representatives a petition, signed by some sixteen citizens of Nauvoo, requesting the "privilege of erecting a dam on the Mississippi River at the head of the Des Moines Rapids."25 The petition was not a request for a government subsidy, as Joseph Smith in 1843 had indicated the "Saints were desirous of receiving," but was merely a request for permission to build the dam. Since the petition asked for the privilege of receiving tolls from those who would use the improvements, it was considered wise to probe the federal government regarding the liberties they hoped to assume, particularly since it was known that the Ordinance of July 13, 1787, for the government of the Northwest Territory, stipulated

... that the navigable waters leading into the Mississippi and St. Lawrence, and the carrying places between the same [were to] be common highways and forever free.26

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24Nauvoo Neighbor, February 12, 1845, p. 1.

25Petition of the Citizens of the City of Nauvoo, Illinois, Praying Congress to Grant Them the Privilege of Erecting a Dam in the Mississippi, February 19, 1845. (Photocopy of Petition in files of writer.) (See Appendix IX, p. 178.)

26Century's Edition of the American Digest: A Complete
A decision by the Supreme Court in 1838, Spooner v. McConnell, had made it lawful for a "state" to exact a toll after it had improved the navigation of such rivers as were covered under the Ordinance, July 13, 1787, but as to the right of private corporations or individuals to do so, there as yet had been no decision. Either the Mormons felt Congress would agree to their proposal, or they did not care one way or another, for they did not wait to hear what verdict that body chose before beginning construction of their dam. What did happen to their memorial, however, was similar to the fate of many other petitions requesting rights of a like nature during a period in U.S. history when the federal government was attempting to stay aloof from internal improvement issues. On February 19, after having been read before Congress, the petition found its way into the hands of the "Committee on Roads and Canals." It is not known from that point what became of the proposal, but it is likely that the petition was tabled and with the adjournment of Congress, was forgotten. At least nothing was forthcoming from Washington to indicate that the petition had been accepted with any favorable discussion.

Even before W. W. Phelps' notice appeared in the Neighbor thanking Representative Hoge for his services, the Trades Commit-

Digest of All Reported American Cases from the Earliest Times to 1896, XXXVII (St. Paul: West Publishing Co., 1902), 17.


tee and the Quorum of the Twelve, headed by Brigham Young, met in session and devised a plan for acquiring the working force necessary to construct the dam. What the plan proved to be was a public works program, a tool used frequently by the Mormons. It was suggested "that the citizens be invited to subscribe twelve thousand days work," which it was estimated would put a "sufficient dam in the Mississippi River to propel machinery." Not only would work subscriptions by the public facilitate the progress of the dam, but it would likewise give "employment to the poor," wrote Hosea Stout, Nauvoo's chief of police.

**The "Living Constitution"**

Some time during the latter part of February, twelve men were selected, as had been suggested by John Taylor, to direct the affairs of the Trades Meeting and were officially designated the "Living Constitution." This rather unique group seems to have been but a part of a larger organization dubbed the "Council of Fifty," which had had its inception under the direction of Joseph Smith.

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29 *Journal History of the Church*, February 11, 1845.


31 Daniel Spencer's *Journal*, Church Historian's Office, February 18, 1845. According to Hosea Stout, "John Taylor" had "met with the 12 Trustees of the Nauvoo Merc. and Mfg Assoc" on February 18, 1845" and requested that "Bro. Bent, Rich, and Hunter" be released from their Board positions with the "Nauvoo Merc. and Mfg Assoc" as they had been "appointed in the Board of 12 who are called the Living Constitution." "Hosea Stout Papers," Utah State Historical Society MSS, Vol. I, 24a.

For a few days in February, the "Living Constitution" carried on the promotion of the water power program, making its chief contribution by completing arrangements for the land adjacent to the contemplated dam. A committee of four, including John Taylor, began negotiating for the land with the owner, Davidson Hibbard. "According to appointment," Taylor and his three associates, Jabez Durphey, Edward Hunter, and Daniel Spencer, met "Mr. Hubbard" and after "much consideration," agreed to terms. Though the amount of ground bargained for by the committee is not known, the agreement must have been for a fairly extensive site. Spencer informs us that in addition to a previous desired amount, "40 rods were obtained as the "right of a cite [sic] for a store House ... 40 or 50 ft" in distance along the river and "sufficiently deepe [sic] for a building...".

The Nauvoo Water Power Company

Four days following "title to the land" was acquired and a "contract for the dam site" was agreed to. Those arrangements having been satisfactorily completed, the "Living Constitution" and interested shareholders in the planned project met. The day was February 26, and the spot selected for the gathering was the recently acquired parcel of land where the dam would be commenced. At that time an organization was effected which was thereafter called the "Nauvoo Water Power Company," and "directors" for the

33Spencer's Journal, February 22, 1845. The dam committee was composed of four men: John Taylor, Jabez Durphey, Edward Hunter, and Daniel Spencer.

34Ibid. 35Ibid., February 26, 1845.
same were appointed—John E. Page, a member of the Quorum of the Twelve Apostles being selected to head the concern as president. The day following was set aside for commencing the long-hoped-for project. "Many of the principal men proceeded to the contemplated location," and about nine in the morning,

... according to the custom of the saints, in all ages of the world, dedicated the land, water, men, and means, to Almighty God, with a firm reliance that he would order all things in wisdom for the good of such as act according to his will.

Page, in the presence of nearly one hundred people, was called upon to dedicate the land and the project by prayer. He was followed by Brigham Young who offered a few remarks regarding the benefits the dam would bring the community when in operation, after which ceremony construction of the dam began.

The editor of the *Nauvoo Neighbor* asserted that "should the work proceed according to the ordinary speed of Mormonism, a season [will] ... not pass until mills, factories, and machinery of all kinds, [will] ... open a market in Nauvoo."

In that same issue there appeared over the signature of the new company's president an appeal to the citizens of Nauvoo encouraging the purchase of stock in the said company. It was noted that "all kinds of provisions and merchandise" would be received as payment for stock, and even "cash" would not be "refused." A request urging an immediate contribution of "five

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36 *Nauvoo Neighbor*, March 5, 1845, p. 3.


38 *Nauvoo Neighbor*, March 5, 1845, p. 3.
hundred pounds of good wrought bar iron" was made, as was a plea for "ten hundred pounds of good hemp for ropes." Nauvoo had a rope factory from which the supply could likely come, but the wrought bar iron would probably have to be purchased from as far south as St. Louis. "Five kegs of blasting powder" were also urgently desired and, without question, would have to come from an outside source, which would probably require weeks. Page also realized the need for other items, those that could be used as payment for the work done by the construction crew. He therefore requested "twenty barrels of good pork," and "fifty barrels of flour." Apparently the water power president needed a means of conveyance, as "a good horse, harness, and buggy" were also asked for. 39

Page used a little psychology in attempting to acquire the items advertised for in the Neighbor. He wrote that

... all persons desiring the good prosperity of their fellow men, especially of this unequaled thriving city and country, will do well to put in for a share, while it can be had, least they should be one hour late. 40

And he, suggesting a belief that had already become deeply rooted in Mormonism— the concept that they were a chosen people—concluded his article by calling on the "saints," the "gentlemen of enterprise and friends to mankind" to let the business classes of the eastern world know that we have the means, and the men, and the hearts too, to do all, and more than others can do for the converting of the western wilds to become a fruitful field." 41

39 Ibid. 40 Ibid.

41 Nauvoo Neighbor, March 5, 1845, p. 3.
A week later Page appealed through the Nauvoo news sheet for more assistance. The content of the article was about the same as its predecessor, though a little more detailed. Regarding the work force involved in the construction of the dam, it was noted that "a company" had gone north to the pine "forests for timber for the piers" and that a "large company was at work in the stone quarry." It was also mentioned that there was a need for a crew of laborers to remove earth who could furnish themselves with the "necessary tools" such as "wheelbarrows, picks, and shovels," and all who could "bring crowbars with them" were advised that they could "find employ." For milling the timbers that would be used extensively in the project, two "pit sawyers" were requested "without fail immediately." They were informed, however, that they would have to "furnish themselves with a pit saw." Blasting powder and drilling tools were again requested, and the food and dry-good items listed the week before had lengthened to include "good milch cows, wheat, flour, corn, pork, butter, lard," and all available provisions as "cotton, wool and &c." Also re-emphasized as a definite "must" was the need for "CASH."\(^{42}\)

There is "no argument" needed to "prove to the common mind" the propriety of promoting the dam, declared the Neighbor, which all of the sought-for items, if acquired, would facilitate toward completion. All other necessary advantages, including

\(^{42}\)Ibid., March 12, 1845, p. 2.
"natural resources" were considered available to Nauvoo—requisite to making it and the surrounding country "the head, and not the tail, of all other cities and counties of the same latitude in the world."

Page affirmed that the Des Moines Rapids country had an abundance of the "best kind of limestone and free stone" as well as the "soil, climate, and timber" needed to develop large-scale industry. Also, "stone, coal, copper, and iron ores of the richest quality" were within easy reach, he attested, though concluding that "without machinery to improve" the available resources, the "country might as well be left in the hands and possessions of its former aborigines."

The particular location of the Mormon city on the Mississippi River was considered by Page to be one of excellence, and in regard to it he wrote:

... Here is the proud and Gallant Mississippi, with her rapid current, rumbling to the broad Atlantic, seeming to say (as she quickens her pace over the rugged rocks of the lower rapids, just opposite our beautiful Nauvoo), only improve my shores and banks, ye saints, as ye improve my neighboring soil; and I will propel your Mills, Cotton and Woolen Manufactories, by which your laborers can find employ, and your poor can be adorned after the similitude of a palace.\(^4^3\)

Aside from the real or imagined available resources, there were still a few items that could not be dispensed with which Page had not considered. Equipment capable of working in the water, which could drive pilings into the river bottom for piers and butt­ments, was greatly needed, as were boats which could transport timber and stone to be used as the walls of the dam. When one

\(^4^3\)Ibid., March 12, 1845, p. 2.
considers that many large timbers and numerous tons of earth and stone would be required to build the structure, which was scheduled to be a mile long, forty feet wide, and twelve feet high, he is led to question the practicability of the undertaking. Even should the dam be completed, the problems of maintenance which would surely result from ice flows and high water would be almost more than could be coped with. At any rate, after only two weeks' work, the much-desired project was brought to an end.  

It was a period in the short-lived history of Mormon Nauvoo when every project of any consequence was taking second place to the building of the sacred edifice on the bluff—the temple. It was thought, however, according to Willard Richards, that work on the dam would only be suspended "till next winter." Even in mid-April, the dam committee was still involved in planning sessions and making payments on their "obligation" to Davidson Hibbard.  

Enthusiasm for continuing the dam was even forthcoming from a source as far away as the British Isles. In a letter written April 24, 1845, to Edward Hunter, then a "bishop" in Nauvoo, E. H. Davis of Birmingham penned the following:

We have established a joint Stock Company in England, called the Mutual Benefit Association for the purpose of erecting manufactories in Nauvoo, the capital to be 30,000 pounds sterling and each share ten English shillings or about $244,000, each share $2.50 so you can see that the

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44 Samuel W. Richards Journal, Church Historian's Office (March 17, 1845).
45 Willard Richards' Journal, Church Historian's Office (March 15, 1845).
46 Orson Spencer MSS file, April 7, 1845.
English Saints are determined to do something towards building up Zion. . . . 47

But as the weeks passed, it was realized that financial aid, from whatever area of Mormonism it came, was to be directed to the building of the temple. Also, before the year drew to a close, the citizens of Nauvoo would be informed by their leaders that the city would be abandoned the next spring and all further endeavor toward industrializing it would be of no avail.

By the third week in July the dam committee was convinced that further efforts toward putting a dam in the Mississippi were futile, and therefore decided to rid itself of its recently acquired property near where the structure had been commenced. The following notice under the title City Lots for Sale, appeared in the Neighbor of July 16 and continued for a number of weeks thereafter:

Lots belonging to the Nauvoo Water Power Co.- The cheapest and best in the city, are offered for sale on as moderate terms as a purchaser can reasonably ask. The lots are beautifully situated on the bank of the river, where the most business part of the city will eventually be. . . . 48

It was evident to most that the program to build a dam on the Mississippi was abandoned, and further attempts to harness the Des Moines Rapids for water power purposes would have to wait until someone else undertook the challenge.

The citizens of Nauvoo, in spite of all their efforts to establish industry on a large scale at the rapids, had been unable to do so. They likewise bore the brunt of the dissatis-

47Letter, E. H. Davis to Edward Hunter, April 24, 1845, Edward Hunter MS Collection, Church Historian’s Office.

48Nauvoo Neighbor, July 16, 1845, p. 2.
faction of outsiders who claimed that they, by living in the area, discouraged the development of manufacturing along the Des Moines Rapids. An example of such "gentile" feeling was printed in the Warsaw Signal of May 20, 1846, after the main body of the Mormons had begun their move toward the Great Basin. The article stated rather coolly that

... much has been said recently in relation to the subject of turning the water power of the Des Moines Rapids to productive account. Some of the New Citizens of Nauvoo contend that sufficient water power can be obtained at that city, without going further down the river, for all practicable purposes. We are no judges of this matter. We believe that capital could be profitably invested in turning the water power of the rapids to manufacturing purposes and, now that there is a prospect of getting rid of the Saints, we hope that monied men will turn their attention to the subject.\(^9\)

\(^9\)Warsaw Signal, May 20, 1846, p. 3. A Mr. Hunt, visiting the Mormons in 1845, considered the area at the head of the Des Moines Rapids suitable for the development of water power. Concerning it he said: "There is about six feet fall in the river, in a distance of three miles, beginning at the lower part of the city, and with a liberal expenditure, might make as great a water power as there is in the West, and would afford facilities for manufacturing that would soon bring prosperity to the inhabitants." (Information obtained through an interview with James L. Kimball, Jr., faculty member, History Department, Weber State College, Ogden, Utah, June 21, 1968).
CHAPTER VIII

THE RAPIDS: FURTHER EFFORTS TOWARD IMPROVEMENT

Costly Obstructions

During the short period of years the Mormons were in Illinois, they not only manifested considerable interest in developing the rapids as a source of water power, but like their non-Mormon neighbors, they agreed that the rapids should be made safe for river traffic. The yearly increase of trade on the Mississippi called for improvements at that barrier, and the sooner the better.

In the Nauvoo newspapers, articles were published periodically informing their readers of moves to acquire assistance for doing away with the rapids' obstructions, the bulk of which aid was sought from the federal government. An editorial in the Neighbor of January 17, 1844, pointed out that

... the Hon. H. Douglan and other of our Western Representatives, have been contending strenuously for appropriations to improve the Rapids; two millions have been talked of, we hope they will succeed. ...¹

Making a safe passage through the rapids would be costly, but the inhabitants of the Upper Mississippi Country considered such an expenditure necessary to their welfare. Even the once

¹Nauvoo Neighbor, January 17, 1844, p. 1.
enthusiastic railroad promoters at Warsaw were appealing strenuously for such action. "If there is one improvement more than another called for by the people living on the Upper Mississippi and its tributary streams," cited the Warsaw Signal,

... it is the improvement of the Rapids. The whole west, in fact, is interested in this matter, and the attention of Congress should be called to it. They are a source of great loss and annoyance to all interested in the trade of the Upper River.²

The destruction of watercraft and merchandise, and the loss of life suffered due to difficulties encountered at the rapids were considerable, and newspapers throughout the Upper Mississippi area carried frequent notice of the accidents incurred. One mishap involved the steamboat "Illinois," which sank at the head of the rapids near Nauvoo in 1842. The article bearing the tale of misfortune informed the public that the "... Steam Boat ... on a trip up the Mississippi, struck ... a rock on April 27 and sunk immediately in 8 feet water..." On board were 250 to 300 soldiers, with supplies, bound for one of the Western Forts. It was considered that the boat would prove a "total loss," as would most of the merchandise, though fortunately the crew and passengers escaped without injury.³

Another steamer, the "St. Louis Oak," while descending the rapids, lost a barge in tow near the same area where the "Illinois" went down. On board were 2,000 bushels of wheat. Similar misfortunes occurred to other watercraft, among which were several large

²Warsaw Signal (Warsaw, Illinois), September 1, 1841.
³Nauvoo Wasp (Nauvoo, Illinois), April 30, 1842, pp. 2-3.
flatboats attempting to descend the rapids in December, 1841. The Signal mentioned that the large craft "filled with stock and produce" from the nearby territory, "sunk on . . . the Lower Rapids" and the "valuable cargoes were a total loss. "We fear," announced the Signal, "the losses will fall heavily on some of our most enterprising farmers" and will "nearly impoverish them," some of whom have "nearly embarked their all on these boats."^ Another loss involved the "Gipsy," a steamcraft prominent in the lead trade. The boat struck rock April 20, 1841, above Warsaw, and lost a large and valuable cargo of "Galena Cotton."^ Inconveniences of less notoriety than sinking or loss of life were very frequent, occurring so often that they seldom reached the newspapers. Wilford Woodruff, a resident of Nauvoo, had an experience that was likely similar to many a businessman who had cargo transported over the rapids. Woodruff was managing editor of the Times and Seasons and on an occasion when his stock of paper had almost disappeared, he ventured to St. Louis to order the needed supply. In his journal he wrote:

On the 23 of July [1842] I went up to the steam boat landing to watch for a boat and tarried near by for four days at brother Lyman Wights, when myself . . . and Messrs. Ashton and Bulton took passage aboard the "Galena." We found the boat heavily loaded with lead, and the water being low, we soon saw that we should have a slow journey. The boat crossed to Montrose and unloaded into lighters and the hands

^Warsaw Signal, December 8, 1841, p. 3.

^Western World, April 21, 1841, p. 2. Lead throughout the 1830's and 1840's was the Upper Mississippi's chief export and from the wharves of Galena, Illinois, the major portion of the ore was shipped. Being considered a Northern staple, it was likened in importance to the South's cotton crop, and thereby derived the name "Galena Cotton."
had a tremendous fight while doing so. Next day we sailed to Nashville, and over the Rapids to Keokuk and ran upon the rock many times.\(^6\)

Woodruff eventually arrived at St. Louis, made the purchase of needed materials and began the return trip to Nauvoo by steamer. At Keokuk he left the boat and bypassed the rapids by taking a "stage" to Montrose, there crossing the river to Nauvoo. We are informed that the boat carrying the supplies from Keokuk "was five days getting over the rapids." During that delay the Times and Seasons grew desperately short of printing paper and Woodruff had to take a "skiff" and return down the rapids six miles to meet the tardy boat. There he "got from the steamboat what paper was needed for present use." He was "until midnight rowing up the rapids" and when landing, having sent the paper to the Times and Seasons office, awaited the steamer's docking, which was approximately four hours later. "As soon as the boat had landed our freight at Nauvoo," said Woodruff, "and I had seen to its several departments, I went home to bed."\(^7\)

A gentleman named James Palmer viewed the rapids with a similar resentment. His journal notes that he arrived in the "City of the Saints" in May, 1842, about which time he had his "first" contact with the unruly segment of water. On the last leg of the journey from England to Nauvoo, Palmer's party

\[\ldots\] reached the foot of the rapids at Keokuk where lighters were needed and nearly all the able bodied men were set ashore to walk the 12 miles while the \ldots\ Indian

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\(^6\)Wilford Woodruff's Journal (July 27, 1842), Church Historian's Office.

\(^7\)Ibid.
Queen made the ascent of those ugly water falls.\textsuperscript{8}
Palm\-\-er, who remained on the steamboat, says the craft

\ldots had made but a short distance when she struck \ldots fast upon the rocks, and where she remained for nearly a week and much in danger of other boats as they were plying up and down that river.\textsuperscript{9}

Help came to meet the new immigrants, though, and "at length the brethren succeeded in obtaining a team of horses" and effectively brought them up to the "landing at Nauvoo. \ldots."	extsuperscript{10}

It was general knowledge that the lightering industry benefited greatly when the water was too low to permit steamers to cross the rapids with their cargo, and thus, when expense was incurred by one, profit came into the hands of another. A fellow named Burrows, active in the upper river trade, made an attempt to get a large shipment of goods to market in the fall of 1843. He stated that "\ldots the low prices and the high freight, caused by low water, almost put a stop to navigation." Burrows, like many others, would have suffered a serious financial loss had he not been of a venturesome nature. Resorting to an "experiment" in an attempt to offset his near-do losses, he

\ldots procured a first-class, a no. 1 keelboat with a large cargo-box upon it. [He] \ldots never saw a better or a safer one. It was as good as a steamboat. [He] \ldots put in a heavy load, as much as the state of the river would permit, and hired a steamboat to tow her to St. Louis. Assuming all expenses of lightering at the Lower Rapids \ldots [he] made the trip to St. Louis and sold his goods, stocked up on winter supplies and started back up the river.\textsuperscript{11}

\textsuperscript{8}James Palmer's Journal (May, 1842), Church Historian's Office.

\textsuperscript{9}Ibid.

\textsuperscript{10}Ibid.

\textsuperscript{11}J. M. D. Burrows, Fifty Years in Iowa: 1839-1888 (Davenport: James C. Hawes, 1888), pp. 52-4.
The season was pretty well advanced before Burrows could find a boat to tow his keel on a return trip up river, and before he reached Keokuk "the weather turned cold, and ice began to form." His vessel had a large cargo aboard, and it took nearly two days to get it lightered over the rapids. After reaching the head of the rapids, Burrows' keel was reloaded but to his chagrin, there was no boat at hand to tow him to his destination at Davenport. Likewise, the steamer which had taken him in line to Keokuk could not get over the rapids and therefore could not be hired. While still at Montrose, Burrows contacted a friend, Mr. Prettyman, and told him of his predicament. Prettyman

... crossed over to Nauvoo and asked the Mormon Prophet Joe Smith, what he would charge to tow the barge up with his steamboat, the "Nauvoo." Smith said that as his boat was frozen up in a slough, it would be expensive getting her out, but finally agreed to tow the barge up for "five hundred dollars."12

According to Burrows, the offer was accepted and on Christmas Day the barge in tow behind the "Nauvoo," reached the wharf at Davenport. He afterwards grimly recalled that "the great expense he had to pay did not leave very much profit."13

As commerce on the river increased yearly, so also did the losses at the Des Moines Rapids. Businessmen throughout the nation interested in expanding their markets into the northern Mississippi River country, were often hesitant to send merchandise over the rapids, knowing that at any time unforeseen conditions might cause the loss or long delay of a shipment of goods. One cautious resident of Massachusetts, Charles Lowell, Esq.,

12Ibid., pp. 54-6. 13Ibid.
interested in the business possibilities of the Upper Mississippi area, mailed circulars to postmasters within the aforesaid country requesting information of various sorts. To the postmaster at Warsaw, among other things, he asked:

What has been done to remove the obstructions to navigation at the ... rapids on the Mississippi ... [and] do the steamboats ply regularly, or occasionally, upon the latter; and if so ... to what point do they usually ascend. ...?

Lowell's interrogatory was answered, though likely not agreeable to his desires. The Warsaw mail official is credited as saying: "I will state that all that has been done to remove the obstructions in the Mississippi River, is that a great deal of money has been spent by the United States to the great profit of the contractors. ..."\(^\text{15}\)

At various seasons of the year, fortunately for those living above the obstruction, the rapids proved no barrier to rivercraft, and such circumstances undoubtedly kept business alive when it otherwise may have floundered. At periods when the water was high, the rapids proved no difficulty, even to the heaviest laden boats, and could be crossed with the slightest effort. There was printed one week in the *Nauvoo Neighbor* a humorous, yet appreciative statement relative to the good condition of navigation of the Mississippi. It was noted thusly:

... [With] solemn deference to the great Ruler of the Universe ..., for the past five months, he has improved the navigation of the Rapids, beyond the power and capacity of Congress, by a supply of water sufficient for every emergency. ...\(^\text{16}\)

\(^{14}\) *Warsaw Signal*, March 9, 1842, p. 3. \(^{15}\) *Ibid.*

\(^{16}\) *Nauvoo Neighbor*, July 31, 1844, pp. 1-2.
The continuance of a favorable water level was at best only temporary and as a result, the plan to push for improvements at the rapids continued. It was considered that "... with a comparatively small expense to the Government" the rapids "might be made perfectly safe and convenient," and since "Illinois and Iowa pay [paid] heavy sums yearly into the National Treasury," it was considered only fair that a "small portion of the money thus paid" should be "directed to an improvement which both State and Territory ... were so largely interested."  

The communities surrounding the rapids were not the only ones calling loudly for improvements. Others of significant size and importance, and from long distances such as St. Louis and Cincinnati, were making similar appeals. In a memorial written to the Congress of the United States by citizens of Cincinnati was carried a request imploring the federal government to subsidize a program to clear the rapids of its bothersome reefs. It verified that "... the Lower Rapids of the Upper Mississippi present[ed] a formidable obstruction," and impeded the "access to one of the most productive and beautiful regions of the habitable globe," causing the "expense of freight to increase by double and three-fold" when cargo had to be lightered over them.

Appeals of this nature would bear fruit a few years in the

17Warsaw Signal, September 1, 1841, p. 3.
18Nauvoo Wasp, January 7, 1843, p. 2.
future, but for the time being any improvement of the rapids would have to come as a private endeavor.

Private Involvements

Early in 1849 the Navigation and Hydraulic Company of the Mississippi River was formed. It intended, as its name indicated, to improve the rapids for navigation and develop industry by means of the rapid's current.

In December of that year "Engineers' Report No. 1" was forwarded to the company's six directors, informing them of the results of a recent study made at the rapids. In part, it confirmed that when ascending the Mississippi from the Gulf of Mexico, navigation was free most all seasons of the year until reaching the Des Moines Rapids where, during the months of July, August, and September, the waters were most often "very shallow." The directors were also advised that at Keokuk,

... steamboats at low stages of water [have] to stop and transfer all their freight onto large Flat Boats, "lighters," which [are] ... towed to the head of the rapids ... by hitching to each boat from 4 to 6 horses.²⁰

Upon reaching the head of the falls, the cargo again has to be reshuffled to the steamers, noted the report, but not until "after considerable inconvenience and expense." Samuel R. Curtis, Chief Engineer for the Navigation and Hydraulic Company, affirmed within the report that

... the delay, the cost of unloading and reloading, the cost of keeping and hiring "lighters," the cost of

transportation for 11 miles, with horse power; the damage to freight at all times, and especially damage to produce in bad weather. . . .

was a "great drawback on the commerce," and he attested that it "must be remedied by some improvement adequate to the wants of the great and growing trade of the Mississippi River." Curtis acknowledged that he had had made available to him the survey made by Robert E. Lee, and was quite familiar with his format for carrying on the work at the rapids. "The plan suggested by Lieutenant Lee" in 1837 was to increase the width and depth of the "channel generally pursued by Steam Boats," wrote Curtis, which proposal "he thought presented some major difficulties." It was no "discredit to the young Lieutenant that he recommended that general plan of improvement," noted Curtis, for the plan of excavating the channel was proposed at a time when "improvements of that character were generally adopted by this country." Some of the drawbacks accompanying a program calling for the clearing of the river's natural channel were defined by Curtis as follows:

1st. The excavation of rock would be below water and in a rapid current.

2nd. You are generally some distance from shore, where you must rely on Boats on which to keep your force; and your intercourse with the shore is also more difficult, because of the rapid current.

3rd. You are frequently interrupted by freshets, and must suspend work entirely.

4th. You are generally annoyed by high winds during that period of the year best adapted to the work.

5th. The ice and cold weather must suspend all work during the winter season.

\[\text{Ibid.}\]
Fig. 12
MAP OF THE
PROPOSED CANAL & WING DAMS
of the
NAVIGATION & HYDRAULIC COMPANY OF THE MISSISSIPPI RIVER.
6th. The cutting is shallow, extending over eleven miles in length, and say 200 feet in width.

7th. Boats will be obstructed when the work is going on, or the work must delay to let Boats pass.\textsuperscript{22}

Pursuing a program where so many prospects of failure seemed likely, continued the engineer, it "... would be necessary to organize a very expensive outfit of boats and material for workmen," so as to "apply a large force during the short period of the year that such a work can progress." Curtis further considered that in following Lee's program not more than "70 days in a year" could be devoted to the work and a force of at least "500 men" would be needed.

When we consider the difficulty of accumulating and applying this force ... at the precise period of low water, and the expense of keeping boats and boatmen on the ground from month to month, and year to year, until such a work can be accomplished; we must admit that the execution of the plan would be attended with casualties which would ... very likely require many years of labor; and involve very doubtful estimates of final cost.\textsuperscript{23}

When the work is completed will it "be adequate?" questioned Curtis. The channel proposed would cross and "recross the river and meander in various parts throughout the entire distance of eleven miles." It would therefore be exposed to "cross currents," that would tend to "drive boats against the rough sides of the channel" which, being under water, would be "hid from the eye."

Even if the river's natural channel were cleared, Curtis doubted that rafts would be able to pass over the rapids in safety, and flatboats he ruled would be almost totally excluded

\textsuperscript{22}Ibid., p. 5. \textsuperscript{23}Ibid.
from the river trade. That being the case, he surmised, "coal, lumber, provisions, and many heavy articles of commerce, . . . the most important to the Upper Mississippi, would find very little benefit from such a work," having likely to await the period of high water, or remain as " . . . they now do, unknown to the commerce of this great river."

What Curtis was getting at was that he was opposed to Lee’s program and favored one similar to that entertained by Captain Shreve, one which called for the construction of a canal the entire eleven miles of the obstructed areas along the western bank of the river, "the minimum width being projected at 80 feet."

Since a considerable part of that distance was skirted by flat bottomland, it was thought that excavation could be carried on with little difficulty, and where the bluffs arose abruptly near the water’s edge, wing dams could be built parallel to the Iowa shore. Curtis maintained that wing dams were " . . . easily made and entirely safe and permanent; growing stronger as shrubbery grows up on the riprap wall, forming a new and natural shore to the river." Such a canal would " . . . secure continual navigation for Steam Boats, Flat Boats, and . . . small Rafts," and would not "interfere with the old channel, but leave it to be used in high water, or to be excavated and improved, if the friends of that peculiar plan persist in pursuing it."

Curtis also recommended that as the foot of the rapids was approached, the canal should be "backed down by either one or two

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24Ibid. 25Ibid., p. 10. 26Ibid., p. 11.
locks into four feet of water," the chambers of each lock being "275 feet long, and 60 feet wide."

When the canal opens to river traffic, "by tolling wheat 2 cents a bushel, flour ... 5 cents a barrel, and Merchandise ... 2 cents a hundred," suggested Curtis, "a company would be, in my opinion, well paid on their investment." Also to encourage the mounting traffic on the river to use the improvement, "rates could be decreased" and thus with "more boats using the canal, the dividends of the Company would ... increase." This work, conjectured Curtis,

... situated as it would be ... near the middle point of the largest River in the world, could not fail to become one of the most useful, as well as the most profitable improvements ... erected within this Republic.27

There were at the time of the organization of the Navigation and Hydraulic Company some 20 steamboats active in the carrying trade between St. Louis and points above the rapids. It was estimated by Curtis that those craft carried each season from "50,000 to 81,000 tons of freight each way," depending on the "water level at the rapids." Add to that "rafts, Flatboats, and other craft" and the tolls for using the canal would be considerable, and of course would bring a high return for any company's investment in such a program.

It is "... not merely for the accommodation of the commerce of the river ..." that this proposal is presented, stated Curtis, but equally so for the "Water Power" which would be produced at the lower end of the improvements by the "... accumu-

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27 Ibid., p. 11.
lated 18 feet fall." He continued that "without any apparent
drain on the channel of that mighty river," there could be applied
"power enough to propel a thousand French Burrs . . .," and the
power resulting from the flow of water through the canal could be
"regarded as sufficient for all the machinery that human invention
could locate within its influence."\(^{28}\) Possibly feeling a little
more salesmanship was needed to convince the company's directorate, Curtis concluded his report by stating that

... such a water power, situated in the center of the
Union . . . must attract the attention and the enterprise of
our most eminent manufacturers, and establish this place [as]
the greatest combination of manufacturing skill and energy.\(^{29}\)

Particularly so, he wrote, since the improvement could be com-
pleted in only "two years" and would be constructed

... on the greatest water highway . . . where the
largest boats can communicate with the ocean and where the
cotton of the South, the wheat of the North, and the wool
of the Centre, can be accumulated at the least possible
expense.\(^{30}\)

What the chief engineer of the Navigation and Hydraulic
Company of the Mississippi Rapids did not know in 1849 was that
his proposal would be accepted, though only in part, and not by
the organization that had employed him to compile the report.
That company would do little more than keep interest alive toward
freeing the rapids of its barrier, and would, like most of its
predecessor programs, remain only in the talking stage. During
the nineteenth century, apparently the only organization capable
of financing large waterworks projects was the federal government
which, as a result of the continued clamor made by interested par-

\(^{28}\)Ibid., p. 12.  \(^{29}\)Ibid., p. 13.  \(^{30}\)Ibid.
ties, made arrangements in 1852 to return its work forces to the rapids.

The Government's Return

Among the items of business transacted by the 31st Congress was the appropriating of funds for improving the western rivers. With the arrival of spring, 1853, Lieutenant G. K. Warren of the Topographical Engineers was sent to the Des Moines Rapids with men and equipment to make a study of the improvements desired and by April the following year, the survey was completed and forwarded to Lieutenant Colonel J. E. Johnston, Superintendent of Western River Improvements. The report was then sent to the House of Representatives for its perusal. Lieutenant Warren, according to the report submitted, when arriving at the rapids, found it necessary to complete an "entirely new survey" from that compiled by Robert E. Lee; this was necessary, he stated, for

... the maps made in 1837 by Lieut. (now Brevet Colonel) Lee, of the engineers corps, [were of] too small a scale to exhibit the character and extent of the channels and their obstructions.\(^\text{31}\)

Having resurveyed the rapids, Warren made a turnabout from the proposals of Shreve and Curtis, concluding as had Lee that the main river channel was the "most practicable one for improvement."

The rock composition forming the rapids was described by him as being "compact and stratified," having a mixture of "flint and geodes." Further investigation revealed that the layers of limestone were nearly "horizontal," being "interstratified with a

blue clay" and varying in thickness from "a few inches to three and four feet."

"Any estimate" of the amount of rock that "would require moving," however, must at "best be a very rough one,"\(^{32}\) conjectured Warren, and even more "unreliable must be the cost for removing a given amount." He referred to Lee's two-year expense of $47,953.20 ($18.42 per cubic yard) as considerably higher than what he would estimate, though Lee's figures were determined when the "condition of the country" was more "unsettled." For the "facilities" this area now "affords, together with the advantage of former experience," suggested Warren, "we might now expect to remove rock at $10 per cubic yard."

As to the practicability of improving the channel by removing the rock in the bed of the river it has, Warren concluded, been "proved beyond question by the result of former operations." If that were not evidence enough, he asserted, "a careful examination of the obstructions themselves" will be sufficient "to convince anyone without further demonstration."\(^{33}\)

The only noticeable difference in the surveys of Lee and Warren was the cost each estimated for completing the work. As a result, the additional time and expense incurred by the government in making Warren's survey was viewed rather critically by some. E. H. Beebee, of the Army Corps of Engineers, summed it up thusly:

... the surveys made this year are generally looked upon as being as useless as a re-survey of the capital would

\(^{32}\)Ibid.  \(^{33}\)Ibid., pp. 65-71.
be, in order that members might ascertain its location. Time and money both wasted: 

Beebee, in a letter to The Honorable E. H. Washburne of Iowa, confided that five years constant employment at all stages of water in the area of the Des Moines Rapids, had confirmed within him the opinion that the "only mode by which efficient and permanent improvements could be made" was by adhering to the "plans submitted by Major Lee," for the channel requires the "same work now as it did then." Beebee was in agreement with Warren, Lee, and numerous others when he added that whatever the cost or method, the "project must be pursued." He estimated that no less than 

When I assure you," added Beebee,

that thirty dollars per ton has been paid on merchandise from St. Louis to Galena this fall, which, had the rapids been improved, would have been transported from eight to ten dollars, you can readily understand that it is a matter of some importance to the whole country above the rapids to 

Warren's survey having been accepted, a contractor and work crew under the direction of John J. Floyd were sent to the rapids in the early autumn of 1854 to commence operations. What little work was accomplished that year was carried out on the two lower chains, the same location where the bulk of Lee's activities were concentrated. In writing the Bureau of Topographical Engi-

34 Rapids of the Mississippi, 12.

neers in November, Floyd made recommendations for subsequent activity. "I propose, for the next year's work to commence ... at the first low water of spring," for in doing so, "two months could be had before the rise. ..." Floyd figured that it would be best to "divide the twenty-four-hour-day into three shifts of eight hours each," and to work the crews "night and day." He intended to operate "at least two parties at each chain," which would be "thoroughly organized, with boats and tools of every description complete." Working as suggested, Floyd supposed he could "double the ordinary season in length ... and could expend advantageously $200,000. . . ."

The work would be aided by a "newly developed drill," powered by steam, unlike the outmoded "hand-drill" which was the "only one theretofore used upon the work." Floyd assured the Topographical Bureau that this new equipment had a "great capacity for work, boring into stone three or four feet per hour, and sinking a hole to any depth required, and of six inches in diameter." The charge of powder thus capable of being used, affirmed the engineer, would result in a blast ten times the effect of the old method. Floyd had enough faith in the program to state that he was

... willing to believe that the ... contractor would increase his preparations, both in extent and in improved machinery, adequate to meet any amount of appropriation that might be made, and to execute the work to the best advantage and with the greatest possible rapidity.38

One thing was certain, wrote Floyd, "... that exigencies of

37 Ibid., 14-15. 38 Ibid.
commerce require these obstructions to be speedily removed," which demand "necessitates that Congress make the adequate appro­priations."39

Rapids Continue Obstructed

In spite of the enthusiasm engendered toward improving the rapids, Congress could not make up its mind which was the best mode of clearing that stretch of water. For the moment, withholding the money that would finance the project, that body probed other personnel of the Topographical Bureau as to the most preferable method of doing away with the rapids obstructions. Of those officers questioned, most were of the same opinion as Floyd, Warren, Beebee, and Lee. One who replied answered as follows:

I would beg leave to say, that my opinion is now, and always has been for the past twenty years, that the fastest, easiest, and cheapest, and by far the most successful method is blasting and excavating the rocks on the high chains of the river's channel.40

Even after the reaffirmation that the program being fol­lowed by Floyd was considered superior to others, Congress did not again give it the go-ahead until mid-1855. As a consequence, the second season of renewed work was favored with little success. Congress, however, was not alone responsible for the delay. From a letter written to Colonel J. J. Abert, Bureau of Topographical Engineers by Lieutenant James Kearney, President of the Board of Western Rivers Improvements, we are informed that one of the major drawbacks hindering the clearing of the rapids was the irresolute nature of the contractor. In agreeing to clear the

39Ibid. 40Ibid., 12.
Des Moines Rapids of its reefs, the contractor had likewise to accept the responsibility of freeing the Upper Rapids at Rock Island. In attempting to do that, he found the undertaking too expensive, almost to the point of costing more than what the government appropriation would cover.\textsuperscript{41}

The distance from the Des Moines Rapids to Rock Island was nearly 140 miles which, Kearney knew, would necessitate a contractor to furnish "two distinct sets of apparatus," including all "varieties of water craft, machinery, tools, \&c.," in order to "prosecute the improvement of both rapids at the same time." Owing to the circumstances Kearney sympathized with the contractor and in writing to his superior, noted that

\ldots in view of the limited means now applicable to these branches of the service, compared with the amount of estimated cost of improving both the Des Moines and Upper Rapids, it would seem onerous, if not ruinous, to compel the contractor to carry on both improvements simultaneously.\textsuperscript{42}

According to Kearney, of the $100,000 granted by Congress in 1852, as the sum to clear obstructions at both the Upper and Lower Rapids, more than $90,000 remained unexpended. He stated that it was the "opinion" of the "board that the expenditure of the balance" should be confined to the improvement of the Des Moines Rapids, and particularly the "Lower . . . and English chains." Thus, contractors would likely feel more inclined to pursue the work, he noted, especially since it was estimated that the cost for removing the remaining obstruction would be only $54,336. That would leave a balance of about $35,000, which

\textsuperscript{41}\textit{Ibid.} \textsuperscript{42}\textit{Ibid.}
Table 2

TABULAR STATEMENT SHOWING THE DIFFERENCE IN THE QUANTITY OF EXCAVATION THAT WOULD BE REQUIRED TO MAKE A CHANNEL 100 FEET WIDE AND FOUR FEET DEEP OR 200 FEET WIDE AND FOUR FEET DEEP THROUGH THE RAPIDS OF THE MISSISSIPPI RIVER, DESIGNATING THE STONE TO BE REMOVED FROM EACH CHAIN, AND THE PROBABLE COST OF THE SAME

<table>
<thead>
<tr>
<th>Locality</th>
<th>Present width of 4-foot channel</th>
<th>Amount to be removed to make 100 feet wide</th>
<th>Amount to be removed to make 200 feet wide</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Upper Chain</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cut A, (800 feet long,) only 2½ feet water</td>
<td>30</td>
<td>2,970</td>
<td>8,900</td>
</tr>
<tr>
<td>Point B</td>
<td>200</td>
<td>730</td>
<td>4,040</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>3,710</td>
<td>14,070</td>
</tr>
<tr>
<td>Nashville crossing, (only 3 feet water)</td>
<td></td>
<td>1,288</td>
<td>2,777</td>
</tr>
<tr>
<td><strong>Lamellid's Chain</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reef G, &quot;Spanish chute&quot;</td>
<td>25</td>
<td>2,666</td>
<td>2,666</td>
</tr>
<tr>
<td>Reef F, &quot;Lime-kiln patch&quot;</td>
<td>25</td>
<td>4,000</td>
<td></td>
</tr>
<tr>
<td>Point H</td>
<td>140</td>
<td></td>
<td>830</td>
</tr>
<tr>
<td>Reef I, (a single rock)</td>
<td>50</td>
<td>1,360</td>
<td>2,250</td>
</tr>
<tr>
<td>Reef J</td>
<td>50</td>
<td>600</td>
<td>600</td>
</tr>
<tr>
<td>Point K</td>
<td>100</td>
<td></td>
<td>700</td>
</tr>
<tr>
<td>Point L</td>
<td>100</td>
<td></td>
<td>500</td>
</tr>
<tr>
<td>Point M</td>
<td>90</td>
<td></td>
<td>680</td>
</tr>
<tr>
<td>Point N</td>
<td>90</td>
<td></td>
<td>218</td>
</tr>
<tr>
<td>Rock O, P, Q, R.</td>
<td>50</td>
<td></td>
<td>500</td>
</tr>
<tr>
<td>Reef R, &quot;Hole in Wall.&quot;</td>
<td>70</td>
<td></td>
<td>333</td>
</tr>
<tr>
<td>Reef S</td>
<td>35</td>
<td></td>
<td>2,222</td>
</tr>
<tr>
<td>Reef T</td>
<td>65</td>
<td></td>
<td>2,256</td>
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<tr>
<td>Reefs U, V, W</td>
<td>65</td>
<td></td>
<td>9,425</td>
</tr>
<tr>
<td>Reef X</td>
<td>100</td>
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<td>370</td>
</tr>
<tr>
<td>Reef Y</td>
<td>40</td>
<td></td>
<td>222</td>
</tr>
<tr>
<td>Reef Z</td>
<td>100</td>
<td></td>
<td>50</td>
</tr>
<tr>
<td>Reef A*</td>
<td>100</td>
<td></td>
<td>45</td>
</tr>
<tr>
<td>Point P</td>
<td>100</td>
<td></td>
<td>1,666</td>
</tr>
<tr>
<td>Point D*</td>
<td>60</td>
<td></td>
<td>666</td>
</tr>
<tr>
<td>Reef E, &quot;Send-horse chute&quot;</td>
<td>60</td>
<td></td>
<td>1,928</td>
</tr>
<tr>
<td>Point F*</td>
<td>69</td>
<td></td>
<td>760</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>7,927</td>
<td>32,897</td>
</tr>
<tr>
<td><strong>English Chain</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Point G*</td>
<td>100</td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>Point H* (a single rock)</td>
<td>120</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Reef A*</td>
<td>80</td>
<td></td>
<td>666</td>
</tr>
<tr>
<td>Reefs B* and C*, (Centre patch)</td>
<td>30</td>
<td>888</td>
<td>888</td>
</tr>
<tr>
<td>Reef D* (partly removed by Lee)</td>
<td>50</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td>Reef E* (Brown's patch)</td>
<td>25</td>
<td></td>
<td>2,666</td>
</tr>
<tr>
<td>Reef F*</td>
<td>200</td>
<td></td>
<td>132</td>
</tr>
<tr>
<td>Reefs F*, G*, H*, and I*</td>
<td>80</td>
<td></td>
<td>17,770</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>4,343</td>
<td>21,165</td>
</tr>
<tr>
<td><strong>Lower Chain</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Point K*</td>
<td>150</td>
<td></td>
<td>40</td>
</tr>
<tr>
<td>Cut N*</td>
<td>668</td>
<td></td>
<td>1,736</td>
</tr>
<tr>
<td>Rock O*</td>
<td>200</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Reef P*</td>
<td>75</td>
<td></td>
<td>5,370</td>
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Table 2—Continued

<table>
<thead>
<tr>
<th>Locality.</th>
<th>Present width of 4-foot channel.</th>
<th>Amount to be removed to make it 100 feet wide.</th>
<th>Amount to be removed to make it 200 feet wide.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lower Chain—Continued.</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cut Q&quot;, (partly removed by Lee)</td>
<td>25</td>
<td>1,333</td>
<td>2,666</td>
</tr>
<tr>
<td>Beef B&quot;, (Omega patch)</td>
<td>25</td>
<td>1,000</td>
<td>2,000</td>
</tr>
<tr>
<td>Point K&quot;</td>
<td>25</td>
<td>814</td>
<td>814</td>
</tr>
<tr>
<td>Point T&quot;</td>
<td>30</td>
<td>814</td>
<td>814</td>
</tr>
<tr>
<td>Point U&quot;</td>
<td>30</td>
<td>814</td>
<td>814</td>
</tr>
<tr>
<td>Patches W&quot;</td>
<td>150</td>
<td>800</td>
<td>800</td>
</tr>
<tr>
<td>Point Y&quot;</td>
<td>65</td>
<td>660</td>
<td>660</td>
</tr>
<tr>
<td>Beef Y&quot;</td>
<td>15</td>
<td>1,300</td>
<td>1,300</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>4,813</td>
<td>18,444</td>
</tr>
</tbody>
</table>

From the foregoing we obtain the following as the cost of improving the natural channel at the lower rapids:

1. **For channel 100 feet wide and 4 feet deep.**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Chain</td>
<td>3,710</td>
<td>37,100</td>
</tr>
<tr>
<td>Nashville Crossing</td>
<td>1,288</td>
<td>12,880</td>
</tr>
<tr>
<td>Lamallee’s Chain</td>
<td>7,927</td>
<td>79,270</td>
</tr>
<tr>
<td>English Chain</td>
<td>4,243</td>
<td>42,430</td>
</tr>
<tr>
<td>Lower Chain</td>
<td>4,813</td>
<td>48,130</td>
</tr>
<tr>
<td>Total</td>
<td>21,981</td>
<td>219,810</td>
</tr>
</tbody>
</table>

2. **For channel 200 feet wide.**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Chain</td>
<td>14,070</td>
<td>140,700</td>
</tr>
<tr>
<td>Nashville Crossing</td>
<td>2,777</td>
<td>27,770</td>
</tr>
<tr>
<td>Lamallee’s Chain</td>
<td>32,897</td>
<td>328,970</td>
</tr>
<tr>
<td>English Chain</td>
<td>21,165</td>
<td>211,650</td>
</tr>
<tr>
<td>Lower Chain</td>
<td>18,444</td>
<td>184,440</td>
</tr>
<tr>
<td>Total</td>
<td>89,353</td>
<td>893,530</td>
</tr>
</tbody>
</table>

To make the shore channel four feet deep, we must excavate for a width of 100 feet:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>From foot of rapids to the Nashville landing</td>
<td>225,300</td>
<td>2,027,700</td>
</tr>
<tr>
<td>Upper Chain</td>
<td>3,710</td>
<td>37,100</td>
</tr>
<tr>
<td>Total</td>
<td>229,010</td>
<td>2,064,800</td>
</tr>
</tbody>
</table>

For a width of 200 feet:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>From foot of rapids to the Nashville landing</td>
<td>460,600</td>
<td>4,055,400</td>
</tr>
<tr>
<td>Upper Chain</td>
<td>16,070</td>
<td>140,070</td>
</tr>
<tr>
<td>Total</td>
<td>464,670</td>
<td>4,195,470</td>
</tr>
</tbody>
</table>
agreeable to the board may be expended with convenience and advantage in the partial improvement of Lamalee's chain, which is next above the English chain."^43

When the weather became such that work could continue another season, Major Floyd returned to the Rapids. The preceding year's contractor had declined to accompany him, however, and that meant before operations could begin, another would have to be chosen (see Appendix X, p. 180). In order to facilitate that action, Congress increased appropriations for the project and decreed that work at the Des Moines and Rock River Rapids could progress separately. It also agreed that a lengthy period of time could be used for the selection of a contractor who would be chosen by means of "sealed proposals."^44

Whatever degree of hope may have been entertained for continuing the work by friends of the long proposed improvements, bids by contractors were too excessive to interest the government. As the deadline neared when proposals were to have been submitted, Major Floyd, with no little feeling of apprehension, was led to conclude that he had ". . . received no encouragement to expect satisfactory bids for the work."^45

Floyd's fear was justified--not a single bid acceptable to the federal government was forthcoming. The day after bids

^43Ibid.

^44Missouri Republican (St. Louis, Missouri), November 5, 1856, p. 2.

Fig. 13. Photograph of the Head of the Des Moines Rapids, showing Kimball and Dundee Islands and north entrance to government canal, with Nauvoo, Illinois, in background.
closed, Floyd locked the door to his office in Keokuk and left for Louisville. The work of improvement at the Des Moines Rapids had come to another halt.

Another decade would pass before the federal government would return to the rapids to continue improvement work. At that time it would decide to carry out the program that had long before been recommended by Captain Henry M. Shreve. By 1876 the government would complete a lateral canal along the Iowa bank the entire distance of the rapids, allowing boats to bypass that unruly stretch of water. Then, for the first time, river boats could expect to traverse the Mississippi from the Gulf of Mexico to Rock Island with little fear of damage or detainment. Even with the opening of the government canal, the Des Moines Rapids would continue to run its meandering course, and not until 1913 would it be tamed. That year the rapids and its counterpart canal disappeared beneath the reservoir of the newly completed Keokuk hydroelectric power dam.
CONCLUSION

The completion of the Keokuk Dam in 1913 settled once and for all two questions that had long confronted people living along the Upper Mississippi River: could the Des Moines Rapids be made safe for river traffic and was it possible to develop that stretch of water as a source of power? The dam's reservoir, which completely covered the once troublesome shoals, allowed boats a safe passage over its course, and also directed the force of the river to propelling the dam's turbines, thereby producing an amount of energy previously unattainable.

It would have been impossible to erect a structure of that size based on the economic and technological status of pre-Civil War America. Following the war, however, as the nation became more industrialized, such projects became more feasible.

Though the work conducted at the rapids by the Army Corps of Engineers was not on the scale required to build the Keokuk dam, it was considerably larger than any project they had previously tackled and therefore necessitated considerably more in the way of preparations and money. The problem of most concern was finances, and it was principally because that need was not satisfied that the project failed.

Though Congress did appropriate a considerable sum to improve the western rivers between the years 1837 and 1860, it did not support the Des Moines Rapids project to the extent that
the Army Corps of Engineers could carry the work to completion. There are two reasons for this failure: first, shortly after the work was commenced by Lee, the Panic of 1837 developed and caused the federal government to abandon the improvement program. Secondly, during the twenty-five years between Lee’s initial work at the rapids and the beginning of the Civil War, Congress was considerably divided on issues of internal improvements, and it became more difficult, as the nation drew near to war, for any of the sections to obtain financial aid through Congress.

The difficulty of acquiring funds was even more of a problem for promoters of private programs. Though some of the larger cities along the western rivers, such as St. Louis and Cincinnati, had the capability of financing projects of the size desired by residents living along the Des Moines Rapids, the communities near that impediment were not so fortunate. Warsaw and Keokuk, villages of 500-600 people, were composed chiefly of farmers and owners of small businesses and were in no position, without outside help, to finance any sizable industrial or commercial enterprise.

The one community near the rapids which had the potential of doing so was Nauvoo. During their short stay in Illinois, the Mormons had set in motion some fairly large-scale projects, the largest being the building of their Temple, which structure, when completed, was said to have cost three-quarters to a million dollars. Their system of public works, coupled with their religious fervor, was the means by which they were able to construct that religious edifice and set in motion other notable projects,
among which was the waterworks program. Had the Mormons remained in Nauvoo, it is very probable that the industrialization of the city would have assumed priority status, and it is likely that a concerted effort would have been extended toward building the dam.

The programs promoted by each of the communities along the rapids were engendered directly or indirectly as a result of their close proximity to that barrier, and were motivated by a desire to establish their city as a leading commercial and industrial center on the Upper Mississippi. That desire was not unlike those entertained by nearly all frontier settlements, which were founded at locations where it was anticipated an economic advantage was afforded. Such desires were symptomatic of the time and permeated nearly every geographical section and social class in America. What did make Nauvoo's economic pursuits different from its neighbors was the religious motivation which prompted them. The Mormons' desire to have their community assume the position of the leading city on the northern Mississippi was rooted in their belief that they were to establish the Kingdom of God on earth and that Nauvoo was to be built up as a religious, cultural, and economic emporium of that kingdom. Tragically, the death of Joseph Smith and the continued antagonism of neighboring communities made it impossible for the Mormons to develop the rapids as a means to industrialize their city. It was unfortunate for all concerned that inadequate capital delayed the improvement and development of the rapids till well after the turn of the century.
APPENDICES
APPENDIX I

AN ACT ESTABLISHING A FERRY ACROSS THE MISSISSIPPI RIVER, NEAR THE HEAD OF THE DES MOINES RAPIDS, IN FORCE MAY 1, 1833.

Sec. 1. Be it enacted by the People of the State of Illinois represented in the General Assembly, that James White, of Hancock County, is hereby authorized to keep a ferry across the Mississippi River, at or near the head of the Des Moines Rapids.

Sec. 2. Said White shall receive such rates of ferriage for crossing at said ferry, as shall from time to time be allowed him by the county commissioner's court of Hancock County, and he shall in all respects be governed by law, as though the said ferry had been established by the order and permission of said court.

Approved March 1, 1833.
APPENDIX II

MEMORIAL TO CONGRESS BY INHABITANTS OF
DES MOINES COUNTY, MICHIGAN TERRITORY

Referred April 1, 1836

To the Honorable Senate and House of Representatives of the United States in Congress Assembled.

The memorial of the Citizens of The New Purchase respectfully represents the Upper Mississippi country north of the Des Moines Rapids (embracing as it does a tract of country for fertility of soil, salubrity of climate, abundance & richness of mineral unequalled) which lies above the rapids at a point where the navigation of the river is obstructed by rocks. Above this point lie Forts Armstrong, St. Peters, Fraire Duchien & Des Moines Garrison, between them & the Capitol of the National Government the channel is obstructed, & at times impassable. The importance of this trade is such that it is carried on at Great hazard and the Sacrifice of human lives. Humanity and Christian philanthropy pray for legislative relief. A few thousand Dollars would open a Safe & free navigation, which in a national point of view would be of Great importance. And the benefits to community will be immense and incalculable. We therefore pray your honors to Grant a Sum of money to be applied in removing the obstructions in the steamboat Channel at the Des Moines Rapids, And your memorialists as in duty bound will ever pray--

Enoch Gilbert
N. Knapp
John Cutler
John Judy
Henry Judy
W. G. Tirrell
Wm. G. Haywood
Jesse Kime
Geo Judy
Zadok C. Inghram
Sam Gooch
A. H. Sumner
Arthur F. Aldrich
Thomas Small
Daniel Thompson
Esra Aldrich
Wm. Wilson

Jonathan C. Cashman
Thomas McPherson
Jesse Griffith
George Herring
W. B. Crawford
B. Wheelock
Sam Ross
Augustin Hortin
Micheal Weyant
Hiram C. Smith
Lewis A. Garrison
William Boon
David Parker
Elsbury Small
Abram Foster
Bradford G. Chase
Stephen Perkins
John H. Knapp
William Anderson
James Caudill
George Whelock
William C. Reed

Louis Pitman
Alvah White
James A. Box
Wm. Brown
Evan T. Lamb

APPENDIX III

LETTER TO ROBERT E. LEE FROM HIS COMMANDING OFFICER ASSIGNING HIM TO DUTY AT THE MISSISSIPPI RIVER

Engineer Department
Washington, April 6, 1837.

Sir: You will be relieved from duty in this office so soon as your services can be dispensed with, which will be on my return to this city from a Western tour. You will then repair to the scene of your contemplated operations, and make the necessary arrangements for pushing them with vigor upon the plan that may be determined on. It is desirable that your work should be carried on at three different points simultaneously, viz: in the harbor of St. Louis, at the Des Moines Rapids, and at the Rock River rapids, which you will endeavor to accomplish. You will locate yourself at St. Louis, or other such point as may be advantageous to your operations, and be allowed in commutation of fuel and quarters one dollar per diem. To meet the expenses incident to your extended command, you will also be allowed the equivalent for fuel and quarters granted by the Secretary of War on the 16th July last, viz: $1.50 per day—both allowances to be paid out of the appropriations for the service on which you are placed. You will make a requisition for such instruments as you require at once, in order that no time may be lost in procuring them.

I have the honor to be, very respectfully, your most obedient,

C. Gratiot

Lieutenant R. E. Lee
Corps of Engineers, Washington, D.C.

Rapids of the Mississippi (Washington: Blair & Ives, 1856), pp. 3-4.
APPENDIX IV

LETTER TO ROBERT E. LEE, FROM HIS COMMANDING OFFICER, INSTRUCTING HIM TO REPORT TO DUTY AT THE MISSISSIPPI RIVER

Engineer Department
Washington, July 1, 1837.

Sir: You are relieved from duty in this department, and will now proceed to execute the orders with which you were furnished on the 6th of April last.

You will first repair to Brownsville, and if you find it necessary will proceed to Pittsburg, to examine the boats and machinery there constructing; you will descend the Ohio to Louisville, and examine what preparations have been made by Captain Shreve for the objects with which you are charged, and what further may be necessary. After this, you will take the first boat to St. Louis.

I am, very respectfully, sir, your most obedient,

C. Gratiot

Lieutenant R. E. Lee
Corps of Engineers, Washington, D.C.

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APPENDIX V

AN ACT TO INCORPORATE THE DES MOINES RAPIDS RAILROAD COMPANY
To incorporate the Desmoine Rapid Rail Road Company
Sec. 1. Be it enacted by the People of the
State of Illinois, represented in the General
Assembly, That Daniel J. Titus, Horace M.
Moore, John Macaque, William J.
Abraham, Joel Pratt, Calvin A. Warren
Isaac N. Morris, Isaac Callander, Mark
Illitch, Joseph Duncan, and Michael
T. Barrett their associates, successors, and
assigns, are hereby created a body Corporate
and politic under the name and style of the
Desmoine Rapid Rail Road Company and
by that name may be and hereby are made
capable in law and equity, to sue and be
sued to final judgment and execution, plead
and be repugnant, defend and be defended
in any Court or record, or in any other place
whatever, to make and use a Common
Seal, and the same to break, renew, and
alter at pleasure, and shall be and are
hereby vested with all the powers, privileges
and immunities, which are or may be
necessary to carry into effect the purposes and
object of this act as hereinafter set forth. And the
said Company are hereby authorized and
equipped to locate, construct and finally
complete a Rail Road Commencing at the
Mississippi River at the head of the Des-
moine Rapids as at near the Town of Com-
merce in Scotts Ferry, and from thence
in the direction to Pansky, to intersect the
Proviso and Mantle Rail Roads at such point
as shall be determined upon after a survey
shall have been made of the route by and
among the boards of Commissioners of the
tracks and the said Company and for the
The said Company are authorized to lay out and build said rail-track as may be necessary for the purpose of carrying on the business of said Company.

The said Company shall have the right to procure all necessary land and easements for the purpose of said railroad, and shall be entitled to the use of said railroad. Provided, that all damages that may be occasioned by the taking of such land on the premises for the purposes aforesaid shall be paid for by said Company to the owner thereof, and the same shall be paid to the owner thereof as aforesaid.

The capital stock of said Company shall be one hundred thousand dollars, with the company to create the same by new subscription and in such manner and form as they shall think proper, if such increase shall be found necessary to fulfill the purpose of the act, which shall be divided into shares of one hundred dollars each, and the immediate government and direction of the affairs of said Company shall be vested in five directors, who shall be chosen by the members of the Company in the manner hereinafter provided, who shall hold their offices for one year, and until other shall be duly elected and qualified to take their places as directors, and the said directors, a majority of whose votes shall form a quorum for the transaction of business, shall elect one of their number president of the board, who shall also be president of the Company, and shall have authority to choose a clerk, who shall be known to the public as the charge of his duty, and a treasurer who shall...
gave power to the Company, with authority to the
direction of the Directors.
Sec. 3. The President and directors for the time
being are hereby authorized and empowered
directly thereto as agent, to receive all the powers
and authority hereby granted for the purpose
of constructing, completing and operating said
Rail Road, and all such other powers and
authority for the management of the affairs of
said Company, not hereinbefore granted as
may be necessary to carry into effect the
object of this grant, to purchase and hold land
materials and other necessary things in the
name of the Company for the use of the road,
and to make such usual agreements thereunder
to hire all the lands of said Company as
they may deem expedient and necessary
in the prosecution and execution of the work
and direct the same to be paid to the Treasurer
of the Company and the Treasurer shall
give notice of all such assessments. The board
of directors shall have power to adopt rules
and by-laws regulating the manner and
mode of payment of all assessments they may
order. No one shall pay penalties as they may deem proper.

Sec. 4. Said Company shall be held to pay
all damages that may arise to any person or
party Corporation as Corporation by taking their
lands, gravels or stone for the use of said Rail
Road when the same cannot be obtained by
voluntary agreement which damages shall be
assessed in the same manner that damages
are now assessed in case of public roads
running through the lands of individuals.
Some one of the Directors acting in the name of the Trustees in the general House laws.

Sec. 5. When the lands or other property of estate of any married woman, infant or person not capable of management, shall be necessany for the eastern or western parts of said state, the husband of such married woman, and the guardians of such infant or person not capable of management may release all damages in relation to the land, and estate to be taken care of as aforesaid, as they might do if the same were held in their joint respectively.

Sec. 6. If any person or persons shall wilfully obstruct or delay the payment of any case or suit, suit, cause or cause, or any part thereof, or any thing belonging thereto, he the or they, as any person acting as father or superior to said Company, for every such offense shall be required of such damages as shall be proved before any Court of Common Pleas to try the same to be done for in the name and in behalf of said Company and such offense as offense shall be deemed guilty of a misdemeanor and liable to indictment in the same manner as other indictors are found in any County or Counties where such offense shall have been committed and upon Conviction, such offender as offender as offender shall be liable to a fine not exceeding five thousand dollars for the use of the County where the indictment may be made or may be in prison not exceeding one year at the discretion of the Court before to have the Conviction may be had.

Sec. 7. The time of holding the annual meeting.
Said Company for the election of Directors shall be fixed and determined by the by-laws. Said Company are at all meetings. Each Stock Holder shall be entitled to vote in person or by lawful proxy, and votes cast shall be the same as they may hold in said stock and a plurality of votes shall determine the choice.

Sec. 8. That Joseph Dunnoe, Thomas F. Barrett, Daniel D. Miller, John McCracken, James Holland and Gabriel A. Mann are hereby appointed Commissioners to open the subscription books for the stock of said Company. Said Commissioners on a majority of them are hereby authorized to open subscription books for said stock at such places as they may deem proper, and shall give at least thirty days notice of the time and place where such books will be opened and shall keep the same open for five days and collect the whole amount of Capital Stock of said Company. Said stock holders are to own stockholders and they shall require each subscriber to pay five dollars on each share subscribed at the time of debenture and at the termination of said term of five days, or sooner if the whole amount of said stock shall be taken. Said Commissioners shall call a meeting of the stock holders by giving ten days notice in some public newspaper printed in the State of the time and place of such meeting. At such meeting it shall be lawful to elect the Directors of said Company and when the Directors of said Company shall have been chosen, the said Commissioners shall deliver said directors the books, they now hold together with all sums of money, securities by them to said directors, provided that each director shall at the time of his
The law of 1842, or the real estate law, provides for the right of way by lease. A lease is a mutual agreement between the lessee and the owner, or owner of the real estate, on which the lessee has the right to use the property by paying a specified amount of rent. If the lease is terminate, the duties and powers of the lessee become the duty and power of the owner.

Section 9. That the right of way and the real estate law provide for the right of way by lease. A lease is a mutual agreement between the lessee and the owner, or owner of the real estate, on which the lessee has the right to use the property by paying a specified amount of rent. If the lease is terminate, the duties and powers of the lessee become the duty and power of the owner.

Section 10. That the Legislature reserves to itself the right to purchase the land of said Corporation at any time after the expiration of twenty years from the passage of this act. The right of entry, deposit, fixtures, easements, and the other appurtenances necessary for carrying on the business of said Corporation by paying to the owner the value of said land, real estate, deposit, fixtures, or easements, or the purpose of adventuring the value thereof. The Legislature may appoint two or more commissioners who shall proceed to ascertain the value of the premises and the oath of one of the commissioners.
actual value of the said Rail Road, bridge, 

cars and fixtures as aforesaid. The said Cor-

poration may take and transport upon the said 

Rail Road any freight or passengers or other property by the forces and power of the

same as actually or by combination of three

and therefrom. And every mountain, hilly

toll gates and other buildings for the accommoda-

tion and encouragement of the said Rail

Road, and in such way, establish the same to

such rate of toll for all passengers and prop-

erty transported upon the same as the said 

Corporation shall from time to time establish and

the directors may hereby authorize and in-

stall that to make all necessary rules and bylaws,

regulations and ordinances, that they may deem

necessary and expedient to accomplish the

object and purposes, and to carry into effect

the provisions of this act, and for the transfer and

assignment of its stock which is hereby declared

transferable and assignable in such

manner as shall be provided by the bylaws and

ordinances of said Corporation.

Sec. 11. If the said Corporation shall not commence

the work within two years from the passage of this

act and complete the same within five years

then this act shall thereby be repealed.

Sec. 12. The Company shall be permitted to

Connect the said Rail Road with the Picnic

and Transcontinental Rail Roads at such convenient

points only as the Board of Commissioners of Public

Works shall deem expedient to protect the interests of the State and prevent the same companies

from coming into direct competition
with the trustee, works, and upon the said trustees and under the direction of the said trustees, or of the trustee so selected, shall be entitled to establish and maintain a railroad System of INTERNAL improvement.

Sec. 13. The payment of the first installment of the Capital stock required to be paid at the time of subscribing shall not be waivered by the giving of promissory notes, or for another sum, and to such as five thousand shares of the said Capital stock shall have been subscribed since the first installment paid, therein as aforesaid the Company may be conveyed by the election of Directors herein before provided for.

John Brown
Speaker of the House of Representatives

Mr. St. John
Speaker of the Senate

April 19th 1839

Resolved by the House of Representatives, the Senate Concurring, herein, that the Secretary of State is hereby authorized to strike out the words "fifty-fifths," and insert the words "forty-fifths," in the 12th section of the act to incorporate the Piedmont Rapids Railroad Company, approved 19th July 1839, the word, "fifty-fifths," being a clerical mistake.

Adopted by the House, July 5th, 1839.
APPENDIX VI

AN ACT SUPPLEMENTAL TO "AN ACT TO INCORPORATE
THE DES MOINES RAPIDS RAILROAD COMPANY,"
IN FORCE FEB. 27, 1841

Sec. 1. Be it enacted by the People of the State of Illinois, represented in the General Assembly, that the time specified in the act to which this is supplemental, for commencing the construction of the Des Moines rapids railroad, is hereby extended until the first day of May, one thousand eight hundred and forty-six.

Sec. 2. The Des Moines rapids railroad company may connect the Des Moines rapids railroad with the Peoria and Warsaw railroad, at such points as they may deem expedient, and are authorized to complete so much of the said Peoria and Warsaw railroad as lies between the point of intersection, and the town of Warsaw, and use the same until it may be needed by the State: Provided, That the State may resume the use and control thereof at any time on paying to the company the amount of money expended in its completion, with interest at the rate of six per centum per annum.

Sec. 3. The company shall be entitled to receive from the State a sufficiency of railroad iron, plates and spikes to complete the superstructure of the said Des Moines rapids railroad at the original cost thereof: Provided, They make application for the same to the Governor, on or before the first day of May, one thousand eight hundred and forty-three; and on their entering into bond to be approved by him, to pay to the State within three years from the time of application, the value of said iron, together with six per cent per annum interest from the time the said company may receive the same: Provided, That nothing in this section shall be construed so as to require the state to furnish such iron, unless it may be on hand and not otherwise disposed of, or appropriated.

Sec. 4. The time allowed to the Warsaw marine and fire insurance company for procuring subscriptions of stock and commencing operations, is hereby extended three years from the passage of this act.

Approved February 27, 1841.


176
APPENDIX VII

SUGGESTED REASONS SUPPORTING THE CITY COUNCIL'S REJECTION OF MAYOR JOHN C. BENNETT'S MAIN STREET CANAL PROPOSAL

From September 20 to December 23, 1970, the writer of the foregoing thesis was employed by Nauvoo Restoration Inc. to help lay a sewer down Main Street of the old Mormon city of Nauvoo. Even with the use of explosives and heavy equipment (clam-scoop crane, caterpillar, and back-hoes), the work almost proved abortive. The removal of earth and stone from the trench in which the sewer pipe was laid was slow and dangerous, and cave-ins along its walls were frequent, often spilling thousands of pounds of earth into the ditch.

The excavation necessitated the digging of a trench an average of ten feet deep and sixteen feet wide, and was often forced to dimensions of over fifteen feet in depth and twenty feet in width. The large-scale earth extraction became necessary due to the wet sand, locally called "soupy soil," that was extensively deposited some two or more feet below the present ground level. Numerous underground springs arising from the Limestone bluffs on the eastern fringe of the promontory occupied by Nauvoo had caused a widespread saturation of the soil as they filtered west toward the Mississippi, resulting in the extensive deposit of wet sand.

When the sewer project was completed, an estimated 97,000 cubic yards of earth and stone had been removed. Regarding the 1970 sewer program, considering the difficulties encountered, the expense incurred, and the type of equipment needed, one must agree that the Mormons in 1841 had chosen the right course when shelving Mayor John C. Bennett's proposal, which called for the construction of a ship canal down the middle of Main Street. His program, had it been initiated and carried to completion, would have demanded the extraction of nearly 532,000 cubic yards of earth and stone. Credit is due the opportunist Bennett for his canal enthusiasm, but more so it is due those city fathers who put thumbs down on his proposal.
APPENDIX VIII

AN ORDINANCE TO ERECT A DAM IN THE
MISSISSIPPI RIVER, December 8, 1843

An Ordinance to erect a Dam in the Mississippi River and for
other purposes

Section 1. Be it ordained by the City Council of the City of
Nauvoo, that Joseph Smith and his successors for the term of
perpetual succession, are hereby authorized and empowered to
erect a dam, of suitable height to propel mills and machinery,
from any point within the limits of said city and below the
Nauvoo House, and in a proper direction to reach the Island
this side of Montrose, but not to interfere with the Main
Channel of the Mississippi River.

Section 2. And be it further ordained that the said Joseph
Smith and his successors are further authorized to erect north
of the aforesaid Island, a Dam, Pier, or Breakwater to intersect
the Sand Bar above.

Section 3. Be it further ordained that said Joseph Smith and
his successors are also authorized and have full liberty to use
the said Dam and Water for the purpose of propelling Mills and
Machinery, and shall be governed in their rates of toll, and
rules of manufactory by Ordinance of said City.

Section 4. And be it further ordained that the said Joseph
Smith and his successors, are further authorized and empowered
to use the space within the limits of the said Dam as a Harbor
or Basin for Steam Boats and other Water Craft and for which
purpose they may construct docks, wharves and landings and
receive such fees for wharfage as may be regulated by Ordinance
of said City.

Section 5. And be it further ordained that said Joseph Smith
and his successors, are further authorized to build an embank-
ment on the East side of the aforesaid Island, to connect the
said dam with the Pier on the North, and to use the top of said
Dam for a public Road or Highway, receiving for compensation
from those who cross upon it, such rates as may be allowed by
Ordinance of said City.

Passed December 8th, 1843.

Joseph Smith
Mayor

Willard Richards, Recorder

"An Ordinance to Erect a Dam in the Mississippi River, December 8, 1843," Records of the City Council of the City of Nauvoo, Illinois, commencing A.D. 1841, Church Historian's Office.
APPENDIX IX

PETITION OF THE CITIZENS OF THE CITY OF NAUVOO, ILLINOIS, PRAYING CONGRESS TO GRANT THEM THE PRIVILEGE OF ERECTING A DAM IN THE MISSISSIPPI RIVER OPPOSITE THE CITY OF NAUVOO FOR THE IMPROVEMENT OF THE NAVIGATION OF SAID RIVER, FEBRUARY 19, 1845

To the Honorable Body, Senate and House of Representatives of the United States of America in general Congress Assembled,

Mr. Young petitioning would most respectfully solicit your honorable body to pass a bill granting to the Trustees in Trust of the Church of Jesus Christ of Latter Day Saints the privilege of erecting a Dam on the Mississippi River at the head of the Des Moines Rapids in said River and opposite the City of Nauvoo. Your petitions would respectfully represent to your honorable body that such Dam would raise the water over the upper chain of said rapids at least one foot and thereby materially benefit the navigation of said River, that it would extend an extensive mill privilege which would be of great advantage to the inhabitants of the surrounding country; and that it would also afford a safe and convenient harbor for steamboats. The following is a form of the Act which is desired to be granted by your honorable body; and if you in your wisdom shall deem it worthy of your sanction, you will oblige your petitions and confer a lasting benefit on the inhabitants of the surrounding country and the public in general. We would, therefore humbly petition your honorable body to take it into consideration and we as in duty bound will ever pray &c.

"An Act Entitled An Act for the erection of a Dam in the Mississippi River"

Section 1. Be it enacted by the Senate and House of Representatives in Congress Assembled, that, Newel K. Whitney and George Miller, Trustees in Trust for the Church of Jesus Christ of Latter Day Saints and their regularly appointed successors in office are hereby authorized to erect a Dam in the Mississippi River opposite Nauvoo, beginning between the south line of said city (where it strikes the river) and the Nauvoo House (at High Water Mark) and extending into the River to the steamboat channel and then up said River to the island opposite
Montrose; also to build an embankment on the east side of said island, its whole length and also to build an abutment or breakwater above the said island of sufficient size and strength to protect the Dam from ice and drift-wood.

Section 2. Be it also enacted, that said Co. shall be authorized to use said dam for the purpose of propelling mills and machinery of all kinds, with the power of renting or leasing privileges for such mills etc. and also to make a road on said dam and charge such rates of toll as they may deem sufficient.

Section 3. Be it further enacted, that the said Co. be authorized to use the back-water caused by such Dam for the purpose of a harbor for Steamboats, rafts and all other water-craft, and be entitled to such wharfage as they may deem reasonable therefor, and that they shall enjoy the rights of said Dam for a term of perpetual succession.

Section 4. Be it further enacted, that, if any individual shall obstruct such company in the constructing of their Dam, they shall be subject to a fine not exceeding $10,000 at the discretion of the nearest District Court of the United States and imprisonment not exceeding two years, or both as the case may require, and likewise be subject to a civil suit for damages, provided nothing in the Act be so construed as to obstruct the navigation of said River.

Brigham Young
W. W. Phelps
James Newberry
James Couby
M. Phelps
George A. Smith
Nathaniel Fairbanks
Joseph Cain
John E. McEwan
Harrison Sagers
Joseph Young
William Taylor
James M. Monsoy
John Smith
John S. Smith
Stephan Markham
Mathias Cowley

APPENDIX X

NEWS ARTICLE REQUESTING CONTRACTORS TO SUBMIT BIDS RELATIVE TO MAKING IMPROVEMENTS AT THE DES MOINES RAPIDS

To Make a Channel in the River

Notice to Contractors.--Improvement of the Des Moines Rapids of the Mississippi River--Sealed proposals will be received by the undersigned at his office, in Keokuk, Iowa, until the 15th day of November next, for removing the obstructions to the navigation of the Mississippi river at the Des Moines Rapids.

The obstructions consist of reefs of rocks under the surface, which must be removed by blasting, or otherwise, and be deposited at such points, out of the way of the improved channel, as may be directed by the Agent.

The channel, when complete, to be four feet deep, at the lowest water mark, and two hundred feet wide. Contractors will be required to prosecute the work at all times, when not prevented by ice or by floods giving more than five feet water on the rapids. They will be required to commence the work at the earliest practical moment. Bidders for the work will be required to state the price per cubic yard, at which they will remove the stone, and give good references of character, capacity, and ability to execute the work.

Maps and soundings can be examined, and all necessary information can be obtained at the office of the agent in Keokuk. Contracts will be made to the amount of the late appropriation by Congress of the 16th of August, 1856, less the necessary contingencies on the part of the United States. Payments will be made monthly, deducting 20 per cent of the work actually done; as a guarantee for the faithful execution of the contract.

John G. Floyd, U.S. Agent
Keokuk, Oct. 1st, 1856.

Missouri Republican (St. Louis), November 5, 1856.
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BIBLIOGRAPHY

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THE DES MOINES RAPIDS: A HISTORY OF ITS
ADVERSE EFFECTS ON MISSISSIPPI RIVER
TRAFFIC AND ITS USE AS A SOURCE OF
WATER POWER TO 1860

Donald L. Enders
History Department
M.A. Degree, April 1973

ABSTRACT

During the 19th Century, the Mississippi River was the
chief commercial highway in the United States. But for two
impediments, the Upper and Lower (Des Moines) Rapids, its entire
course of 2400 miles would have offered an untroubled thorough­
fare to watercraft.

The federal government, as well as private concerns,
attempted throughout the better part of that century to alleviate
the river of its barriers and to develop its rapids as a source
of power. Those attempts were disappointingly unsuccessful,
however, and not until the advent of the 20th Century, when the
nation had matured both economically and technologically, was
the Mississippi freed of its obstacles and developed on a large
scale as a source of energy.

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