A HISTORY OF THE MISSISSIPPI RIVER COMMISSION, 1879-1928:
FROM LEVEES-ONLY TO A COMPREHENSIVE PROGRAM OF FLOOD
CONTROL FOR THE LOWER MISSISSIPPI VALLEY

DISSERTATION

Presented to the Graduate Council of the
University of North Texas in Partial
Fulfillment of the Requirements

For the Degree of

DOCTOR OF PHILOSOPHY

BY

Matthew T. Pearcy, B.A., M.A.

Denton, Texas
August, 1996
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In 1879 Congress created the Mississippi River Commission (MRC) to develop and coordinate federal flood control policy for the Lower Mississippi River. Through 1927, that Commission clung stubbornly to a "levees-only" policy that was based on the mistaken belief that levees alone could be effective in controlling the flood waters of the Mississippi River. When the levees failed--and they occasionally did--the MRC responded by raising and strengthening the system but refused to adopt a more comprehensive program, one which would include outlets and reservoirs. Finally, a disastrous flood in 1927 forced the abandonment of levees-only and the adoption of a comprehensive plan for the Lower Mississippi River.

Predictably, the MRC faced heavy criticism following the failure of its highly-touted levee system in 1927. While certainly the Commission was culpable, there was plenty of fault to go around and a plethora of mitigating circumstances. Developing a plan for achieving adequate flood control along the lower Mississippi River constituted
what was probably the most difficult and complex engineering problem ever undertaken by the U. S. Government.
Additionally, there were innumerable political and financial constraints that worked to shape MRC policy. This study will endeavor to tell the story of the MRC from its earliest origins through the landmark 1928 Flood Control Act, and, in the process, give evidence to the reality that the Commission did not function independently. As an organization, it relied upon outside forces for its membership, for its jurisdiction, and for the appropriations necessary to carry out its policies. Significantly, these forces were politically driven and did not always, or even often, share the MRC's priorities for the Lower Mississippi River. Even so, the MRC accomplished a great deal in its efforts to protect the Valley from moderate floods, to improve the navigability of the Mississippi River, and to expand significantly the body of knowledge available on the "Father of Waters."
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CHAPTER I

INTRODUCTION

In 1879, Congress established the Mississippi River Commission (MRC). This seven-member advisory board consisted of three representatives from the U.S. Army Corps of Engineers, one representative from the Coast and Geodetic Survey, and three civilians, at least two of whom were required to be engineers. The President of the United States made all appointments, subject to confirmation by the Senate. According to the originating legislation, the MRC was tasked with developing and overseeing the implementation of plans to "improve and give safety and ease to navigation" and to "prevent destructive floods" on the Mississippi River.\(^1\) All work was done through the Army Corps of Engineers, which was also responsible for supplying necessary plant and equipment.

Today, the MRC has largely realized its ambitious assignment. The comprehensive river management program adopted after the great 1927 flood has brought an unprecedented degree of flood protection to the lower

\(^1\)U.S. Statutes at Large, 46th Cong., 1st sess., June 28, 1879, Ch. 43, 38.
Mississippi Valley. This program, known as the Mississippi River and Tributaries Project, employs a variety of flood control measures, including an extensive levee system for containing flood flows, floodways for removing excess flows away from the main channel to the Gulf of Mexico, and channel improvement and stabilization to facilitate navigation. Additionally, the Mississippi River is a major commercial artery, transporting a great variety of commodities to market, including grains, coal, petroleum, sand and gravel, salt, chemicals, and building materials. Due to the implementation of this comprehensive program, waterborne commerce increased from 30 million tons in 1940 to almost 400 million tons by 1984.²

It was, however, a long and tortuous road to success for the MRC. For its first forty-eight years, the MRC clung stubbornly to a "levees-only" policy for the lower Mississippi River. It based this policy on the mistaken belief that levees alone could be effective in controlling the flood waters of the greatest river in North America. Throughout this period, the MRC built constrictive levees along the length of the lower Mississippi River and with mixed results. While the levees helped protect the region

²This summary relies heavily on information contained in the following MRC publication: Mississippi River Commission, Mississippi River and Tributaries Project (Vicksburg, MS: U.S. Army Corps of Engineers, 1986), 2-10.
from most floods, they also brought about increased flood heights that put additional strain on the levee system. When the levees failed—and they occasionally did—the MRC typically recommended raising and strengthening the system but refused to adopt a more comprehensive program, one which would include outlets and reservoirs. Finally, a disastrous flood in 1927 forced the abandonment of levees-only and the adoption of a comprehensive flood control plan for the lower Mississippi River.

Predictably, the MRC faced heavy criticism following the failure of its highly-touted levee system in 1927. Gifford Pinchot, a leading conservationist of the period, characterized the Commission's failed levees-only policy as "the most colossal engineering blunder in human history" and placed responsibility for that failure squarely on the MRC.3 Even the Commission's superiors, most notably the chief of the Corps of Engineers, General Edgar Jadwin, criticized levees-only and publicly disparaged the Commission. While certainly the MRC was culpable, there was plenty of fault to go around and a plethora of mitigating circumstances.

First, developing a plan for achieving adequate flood control along the lower Mississippi River constituted what

was probably the most difficult and complex engineering problem ever undertaken by the U. S. Government.\textsuperscript{4} The Mississippi River has the world's third largest drainage basin, exceeded in size only by the Amazon and the Congo. It drains 41 percent of the continental United States, including all or parts of thirty-one states and two Canadian provinces, covering a total of 1,245,000 square miles. From its headwaters at Lake Itasca, Minnesota, to the Gulf of Mexico, it is roughly 2,340 miles long, making it the world's third longest river as well. The Mississippi's average daily flow of 300 billion gallons of water places it fifth in total volume. Yet, these numbers only begin to describe the enormity of the Mississippi River.

In addition to its impressive magnitude, the Mississippi River flows through one of the flattest regions of America, and, as a result, it meanders considerably along its route to the sea. The distance from Cairo, Illinois, at the base of the Alluvial Valley, to the Gulf coast is about 500 miles, but the length of the river between those points is more than two-and-a-half-times that distance. The Mississippi's many ox-bow bends create a number of problems.

\textsuperscript{4}Arthur E. Morgan, the vice-president of the American Society of Civil Engineers and one of the nation's leading authorities on flood control, concluded in 1928 that "no similar problem of similar size ever has been mastered by men." Arthur E. Morgan, "A Policy for the Mississippi," \textit{The Annals} 135 (January 1928), 56.
for hydraulic engineers. At flood, the river picks up velocity, and its force increases to about 60 million horsepower, a force that is directed against the river's banks, both natural and otherwise. The resulting erosion of earthen material disrupts efforts to maintain levees and to secure a permanent channel, and this is particularly true at points where the banks redirect the course of the river. Additionally, as the river eats away at its banks, it occasionally swallows trees and other large debris, which can become anchored to the bottom of the channel and obstruct navigation at low water.

The Mississippi River is also an alluvial, or sediment-carrying, river. As with the Yellow, the Tigris and Euphrates, the Missouri, the Ohio, and the Rio Grande, the Mississippi River carries huge quantities of silt and gravel in addition to great volumes of water. In fact, the Mississippi transports roughly 400 million tons of sedimentary matter downstream each year, with about 90 percent of it suspended in the water and the rest dragged or rolled along the bottom by the force of the river. To put this in perspective, it would require 500 trains of fifty cars each and hauling over fifty tons per car, working every

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day of the year, to transport that same volume of sediment. As the velocity of the river undergoes subtle changes, the Mississippi alternately deposits this sediment or picks up more at the expense of the banks. As a result, the river's channel is irregular and constantly in flux, greatly complicating both navigation and flood control efforts.

The Mississippi River is also unusual in a number of respects, meaning that lessons learned on other well-known rivers do not often apply to the "Father of Waters." Compared to the other great rivers, for example, the Mississippi's sediment load is relatively light, averaging only about 550 to 600 parts per million by weight in ratio to the weight of the water. In flood, the Mississippi's sediment load increases to 2,600 parts per million, whereas the concentration of the Missouri in flood may go as high as 20,000 parts per million and the Rio Grande 40,000 parts per million. The Yellow River in China carries vastly higher concentrations, with the weight of the suspended sediment often exceeding the weight of the water itself. Some of America's greatest hydraulic engineers garnered much of their knowledge about river control abroad and, upon

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6 Frank E. Williams, "The Geography of the Mississippi Valley," The Annals 135 (January 1928), 10.

returning to the United States, sought to apply their knowledge and experience to the Mississippi River, and often with poor results.

Additionally, the Mississippi River experiences enormous fluctuations in volume. Both the Delaware and the Hudson Rivers experience tides of between five to eight feet. In contrast, stages on the Mississippi vary as much as 54 feet between high and low water at Cairo, Illinois, and almost as much at other locations down the river.\(^8\) In terms of total discharge, the Delaware and the Hudson remain relatively constant, while the Mississippi varies from about 70,000 second-feet to over 2,300,000 second-feet in flood. These variations cause innumerable problems for hydraulic engineers who are charged with both maintaining a navigable channel during the low season and preventing overflows during high season.\(^9\)

The Mississippi is also unique in that it is one of the few major rivers of the world that creates natural levees along its banks. Unlike the Yellow River in China, which is flat and shallow and almost without banks, the Mississippi is a deep river with high banks.\(^10\) As such, the latter

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\(^8\)Williams, "The Geography of the Mississippi Valley," 11.

\(^9\)Ibid.

\(^10\)Frank, Development of the Federal Program, 129.
maintains its channel except in cases of substantial high-water. When the river does overflow its banks, it deposits the heaviest of its sediment immediately, as the velocity of the flow begins to decrease. As the overflow moves further away from the river, heavy vegetation removes additional sedimentary matter. The net effect is to create a ridge twelve to fifteen feet high along the river on each side. Because much of the heavy sedimentary matter is removed so close to the river, the Mississippi's valley lands have experienced no appreciable build-up for many thousands of years. This greatly complicates matters for hydraulic engineers in their efforts to control the river, because overflow waters are not always inclined to return to the main channel after the flood. Instead, the Mississippi River at high water conveys a relatively large percentage of its overall flow into adjoining outlets, never to return.\footnote{Matthes, "Paradoxes of the Mississippi," 5.}

The most notable of these outlets is the Achafalaya Basin, which serves as a shorter, more-efficient, route to the Gulf of Mexico for Mississippi flood waters.

As if the Mississippi's many natural complexities and paradoxes were not trouble enough, there were innumerable political and financial constraints that worked to shape MRC policy. This study will endeavor to tell the story of the

\footnote{Matthes, "Paradoxes of the Mississippi," 5.}
MRC from its origins through the landmark 1928 Flood Control Act, and, in the process, give evidence to the reality that the Commission did not function independently. As an organization, it relied upon outside forces for its membership, for its jurisdiction, and for the appropriations necessary to carry out its policies. Significantly, these forces were politically driven and did not always, or even often, share the MRC’s priorities for the Lower Mississippi River. While struggling to create a workable strategy for controlling the Mississippi, the MRC confronted not only the mighty river, but legislative apathy and fiscal and legal constraints. The resulting situation was not unlike a heavyweight challenger who steps into the ring, only to discover that his hands are to be tied behind his back. Yet, even under these conditions, the MRC remained on its feet, though, as an agency, it had been knocked to the mat on several occasions and was reeling against the ropes by 1927. Through that year, however, the MRC fought the good fight, and it accomplished a great deal in its efforts to protect the Valley from moderate floods, to promote confidence among the residents of the Lower Alluvial Valley, and to expand significantly the body of knowledge available on the “Father of Waters.”
CHAPTER II

AN EARLY HISTORY OF THE FLOOD PROBLEMS OF THE LOWER MISSISSIPPI RIVER AND THE MOVE TOWARD GREATER FEDERAL INTERVENTION

More than 160 years separate the establishment of the earliest European settlements in the Mississippi Valley and the creation of the Mississippi River Commission in 1879. Throughout that period, the population of the valley grew, with many of the new arrivals settling in close proximity to the Mississippi River where alluvial lands were extraordinarily fertile and the river provided inexpensive transportation. But these advantages came with considerable risk. For many thousands of years, frequent overflows of the Mississippi River deposited rich soil throughout the alluvial valley. The first Europeans soon learned that these overflows continued and that at intervals the floods could be highly destructive. Still, they showed no inclination to surrender these rich alluvial lands to the river. Beginning with the earliest settlements, pioneers struggled mightily to protect themselves from the flood waters of the Mississippi River, but their efforts were haphazard and inadequate and met with little success. As
such, the years preceding the creation of the Mississippi River Commission evidence very clearly the need for central planning and intervention.

The first reports of flooding in the lower Mississippi Valley date to the mid-sixteenth century. Hernando De Soto's men, after their failure to push westward, returned to the Mississippi River and witnessed a great flood. One of these men, Garcilaso de la Vega, recorded the event:

The flood was 40 days in reaching its crest, which came on the twentieth of April [1543]. And it was a most magnificent spectacle to behold. That which previously had been forests and fields was converted now into a sea, for from each bank the water extended across more than twenty leagues [sixty miles] of terrain. All of this distance was navigable in canoes and nothing was visible except the pine needles and branches of the highest trees.¹

The first permanent European settlements in the lower Mississippi valley were made at Natchez and New Orleans in the early eighteenth century. The French settlers at Natchez established their colony high on the bluffs overlooking the Mississippi and enjoyed topographical protection from the river's frequent overflows. The settlers at New Orleans, however, enjoyed no such protection and recognized from the onset the necessity of adopting flood control measures to protect their settlement. To hold back flood

waters, they constructed earthen embankments along the river front. These embankments were known as dikes or, more commonly, as levees.

Sieur Leblond de la Tour, the French engineer who designed New Orleans, constructed the first levee along the Mississippi River in 1717. Upon completion, the levee was three feet high, 5,400 feet long, and eighteen feet wide at the top. It doubled as a roadway. By 1727 levees had been built eighteen miles up-river from the city. As both population and demand for land grew, the levees were extended. Significantly, the riparian proprietors, those landowners occupying lands within seven miles of the river, were charged with building the line along their river front and with assuming all costs and burdens associated with maintaining those levees contiguous to their property.

By 1735, levees ran for thirty miles above and twelve miles below New Orleans. That year, the utter inadequacy of the system was demonstrated when the levees broke under

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3Mississippi River Commission, Flood Control in the Lower Mississippi River Valley (Vicksburg, MS: Corps of Engineers, 1958), 2.

4Humphreys and Abbot, Report, 150.

5Ibid.
the strain of high waters, flooding the city for the first time. Difficulties persisted, and in 1743 the French leadership in New Orleans passed an ordinance that directed the planters to have their levees completed by the 1st of January, 1744, under the penalty of forfeiting their lands to the crown. Partly as a result of this ordinance, the riparian landowners devoted their time increasingly to the cultivation and improvement of those districts already partially reclaimed. In fact, through 1770 construction of new levees north of the city ceased altogether as the great expense associated with levee construction and repair impeded further up-river settlement.

Political as well as fiscal considerations played a role in this cessation. The French and Indian War (1756-1763) eliminated France as a major power in the New World. As a consequence of its defeat, France ceded New Orleans, along with a vast uncharted empire west of the Mississippi known as Louisiana, to its Spanish ally. The new Spanish governor immediately restricted all legitimate trade to Spain alone, limiting Louisiana's participation in the

6Ibid., 169.


8Humphreys and Abbot, Report, 151.

9Ibid.
region's increasingly lucrative fur trade. The French colonists were slow to accept the new arrangement and many considered emigrating to the right bank of the Mississippi River to avoid falling under Spanish rule. By 1768 Creole and French aversion to foreign authority culminated in revolt. The subsequent crackdown resulted in the hanging of six French insurgents, further impairing the development of the colony during this early period of Spanish rule and ensuring that further settlement would receive little or no governmental impetus.

After 1770 the construction of levees north of New Orleans resumed as the population of the Mississippi Valley grew and as Spain moderated its trade policies. So, too, the rapid settlement and cultivation of the Great Lakes region ensured that the Mississippi River would play a vital role in both transportation and trade and that those lands in the immediate vicinity of the River would become increasingly settled. Situated at the mouth of this vital transportation link, New Orleans became the chief commercial center for all of those living west of the Alleghenies.

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10 Francois Barbe-Marbois, Histoire de la Louisiane (Philadelphia: Carey & Lea, 1830), 137.

11 Ibid., 137-39.

The growing population of the Lower Mississippi saw increased potential for loss of life and for destruction of property due to overflow. Under Spanish authority, as under French, individual landowners were entrusted with the construction of levees along their property and were required to bear all associated costs. By 1782, this piecemeal approach to flood control had proved wholly inadequate. That year a great flood inundated much of the lower valley. According to Francois Xavier Martin, "this year the Mississippi rose to a greater height than was remembered by the oldest inhabitants. . . . The few spots which the water did not reach were covered with deer." The famous back-country writer Hugh Henry Brackenridge wrote: "1782 was l'année des eaux." This flood convinced the early settlers of the necessity of constructing additional levees.

Over the next two decades, though, political factors continued to interfere with the region's development. In January of 1783, England and the American colonies ratified and signed the Treaty of Paris. In addition to ending the American Revolution and granting the colonists their

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13Humphreys and Abbot, Report, 169; Francois-Xavier Martin The History of Louisiana (New Orleans: James A Gresham, Publisher and Bookseller, 1882), 235.

14Humphreys and Abbot, Report, 169.
independence, the agreement designated for the United States all lands east of the Mississippi and north of the 31st parallel. Spain retained the Louisiana territory as well as Florida. Under the terms of the agreement, the United States and England shared with Spain the right to navigate the Mississippi. Soon, though, controversy arose over the "Yazoo Strip," a section of land which included much of the lower half of present day Mississippi and Alabama. According to the Anglo-American treaty of 1783, this land was granted to the United States; but Spain retained possession, arguing that the mouth of the Yazoo River—and not the thirty-first parallel—represented the northern border of West Florida. Tensions escalated, and on June 26, 1784, Spain closed the Mississippi River to American navigation, crippling the development of the lower Mississippi Valley by restricting trade and discouraging immigration. After five years, the Spanish king relaxed this policy and agreed to allow the Americans to ship their goods through New Orleans in exchange for a 15 percent duty, but even this lesser restriction failed to stimulate economic growth.  

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16 Ibid., 234.
Events in Europe soon brought about further Spanish concessions. The French Revolution of 1789 escalated into a European war as Spain joined England in a confederation intent on restoring the French monarch. The ensuing war proved costly for all involved, and by March 1795, Spain's chief of state, Manuel de Godoy, decided to withdraw his country from the conflict. This meant withdrawal from the alliance with England and almost certain retaliation from that nation. Seeking to avoid the possibility of joint Anglo-American action against Louisiana, Spain moved to satisfy U.S. demands. On October 27, 1795, representatives from the two countries signed the Treaty of San Lorenzo, more commonly known as Pinckney's Treaty. This treaty recognized U.S. border claims and, more importantly, granted the U.S. open access to the Mississippi River and to the port of New Orleans for a period of three years.¹⁷

But the Spanish-American treaty failed to end the troublesome conflicts and international rivalries that had kept the lower Mississippi Valley in turmoil for twelve years. In 1796, England and Spain went to war, and the latter felt obliged to refortify its frontiers along the Mississippi River, including the garrisons at Natchez and other locations. American and French settlers in the region

¹⁷Ibid., 242-43.
reacted with hostility to the additional news that Spain would delay executing the Pinckney Treaty until the situation in Europe improved. Mobs roamed the streets of Natchez and held the Spanish deputy governor prisoner until he resigned; and in the border towns of West Florida, conspirators hatched revolutionary plots to wrest that region from Spanish control. Together with the fear of English attack, these developments reinforced the growing belief in the minds of Spanish rulers that Louisiana was a luxury they could no longer afford. As the tides of war turned momentarily in Napoleon's favor and dreams of a vast new French empire were reborn, France negotiated with Spain for the purchase of Louisiana. With the signing of the Treaty of San Ildefonso on October 1, 1800, Louisiana became French once more.\(^{18}\)

Within three years, though, the failure of his best troops to subdue a slave insurrection in Santo Domingo substantially lessened Napoleon's enthusiasm for empire building. In a surprise move, he authorized the sale of the whole of Louisiana to the United States. American negotiators, James Monroe and Robert Livingston, seized the opportunity and quickly negotiated a treaty with France transferring Louisiana and the Isle of Orleans to the United

\(^{18}\)Ibid., 243-44.
States for $15 million. On December 20, 1803, French administrators delivered New Orleans to the Americans.\textsuperscript{19}

Aside from De Soto's discovery of the Mississippi River, the Louisiana Purchase was the most significant milestone in the early development of the Mississippi Valley. Throughout the later colonial period, Spanish leadership adopted policies that were restrictive, exploitative, and, in general, harmful to the development of the region. In contrast, the new American government sought to facilitate trade and to develop the region's rich economic potential. With the extension of American control, the floodgates were thrown open to frontiersmen eager to settle the fertile lands of the Mississippi Alluvial Valley, and the white population of that region grew. In 1800, the white population of the Valley was approximately 380,000; just ten years later, it surpassed one million.\textsuperscript{20}

The first half of the nineteenth century brought about other changes as well. To a greater degree than their French and Spanish predecessors, the American settlers of that period adopted aggressive flood control tactics. With the exception of the relatively extensive levee system north of New Orleans, the earliest levees along the Mississippi

\textsuperscript{19}Ibid., 245-46.

\textsuperscript{20}Saxon, \textit{Father Mississippi}, 135.
River were constructed to protect specific settlements from inundation. Increasingly after 1803, though, Mississippi River levees were constructed for the additional purposes of containment and reclamation. Levees were no longer being constructed for the sole purpose of protecting specific settlements when the river overflowed, but for the purpose of preventing overflows altogether.

With this ambition in mind, American pioneers adopted new habits. Instead of settling those lands less susceptible to overflow, the new frontiersmen reclaimed lands well within the flood plain and constructed levees to protect them. They discovered quickly the difficult nature of the job. The already exacting task of preparing the land for cultivation—including clearing, tilling, and planting—was augmented by the need to construct levees. In addition to being expensive, the levees were often unreliable, and required continual maintenance, repair, and improvement. As such, the riparian landowners of the lower Mississippi Valley committed ever increasing resources to the task of protecting their lands from overflow.

Even so, for much of the first half of the nineteenth century, the profitability of reclaiming these alluvial lands and protecting them from the overflows of the Mississippi River outweighed the great expense. By 1812, cleared fields extended along the Mississippi to the
northern boundary of Louisiana with the levees extending for 155 miles on east bank and 185 miles on the west bank. In that year, the population was sufficiently dense to warrant Louisiana's admission to the Federal Union. Eight years later, 153,000 people lived in the state.

The growth and development of the rest of the lower Mississippi Valley came about more slowly and was based overwhelmingly on black labor and white cotton. Eli Whitney's invention of the first workable cotton gin in 1793 produced a market for upland cotton, a variety of cotton that could be grown profitably throughout the South. Very quickly, upland cotton began to replace tobacco as the chief staple crop of the Southeast; and with it slave labor displaced free labor. As native-born South Carolinians, Georgians, and North Carolinians discovered, however, successive plantings of tobacco for more than a century—using primitive and harmful agricultural methods—left the soil depleted and unfruitful. Soon, planters throughout these areas began looking westward toward the Gulf states, including Mississippi, Alabama, and Georgia.

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In the years following the War of 1812, high cotton prices and a general return to prosperity were the impetus for a "Great Migration" of southeastern farmers to the Gulf region. By the end of 1819, when a serious panic slowed the westward movement, 200,000 people had removed to the Gulf Plains. Mississippi and Alabama were quickly organized into states in 1817 and 1819 respectively; and cotton became the staple crop of the region. By 1819 half of the nation's cotton was produced in the Gulf Plains. High European demand for cotton both ensured the short-term prosperity of the lower Mississippi and focused the region's attention on the shipping lanes of New Orleans.\textsuperscript{24}

Facilitated by the introduction of the steam ship in large numbers, traffic on the Mississippi entered a boom period. In 1816, a total of $8,052,540 of produce was shipped down the Mississippi with cotton constituting about 12 percent of that value.\textsuperscript{25} Over the next four years, commerce on the river doubled, and steamboats began to make larger shipments of cotton.

The construction of levees paralleled the growth of commerce. As the lower Mississippi Valley became more prosperous, the riparian owners grew increasingly anxious to

\textsuperscript{24}\textit{Ibid.}, 322.

\textsuperscript{25}\textit{Saxon, Father Mississippi}, 245.
protect their investments. Slave labor enabled these landowners to construct levees at a relatively low cost because much of the work could be done during the off-season. So, too, the various states of the lower Mississippi began enacting legislation regulating the construction of levees; and some counties and parishes began making appropriations for their construction. Typically, though, these appropriations were small, and the individual landowners continued to bear the largest part of the burden.\(^{26}\)

As the region developed, federal interest focused increasingly on the navigability of the river. The shallow keel boats and flatboats of the eighteenth century did not need an improved river; the steamboats of the nineteenth century did. As a result, local interests soon began clamoring for river improvements.\(^{27}\) Congress responded in 1820 with a $5,000 appropriation for a survey of the Ohio and Mississippi rivers. Two years later, Army engineers S. Bernard and Joseph G. Totten presented the first official U.S. survey of the Mississippi River. Concerned primarily with the improvement of navigation, the study stressed


\(^{27}\)Ibid., 17.
indirectly the importance of flood control works in promoting commerce. The report concluded that underwater snags, which represented the greatest threat to river boats, result largely from the effects of lateral currents. Bernard and Totten asserted that levees, in addition to serving as flood control works, would be useful in preventing these lateral currents. "When the whole river shall be dyked," they concluded, "then will these snags cease to accumulate."  

Eighteen twenty-eight was a high water year. By that time, the levees of the lower Mississippi River were continuous from New Orleans to the mouth of the Red River, except above Baton Rouge on the left bank, where bluffs rendered them unnecessary. Above the Red River they were disconnected and unfinished. Though generally believed to be the greatest flood of the nineteenth century, it resulted in only a moderate level of destruction below Natchez, as the various flood plains north of that point, particularly the St. Francis and Yazoo swamps, drew away much of the river's excess waters.

29 Humphreys and Abbot, Report, 152.
No great floods visited the lower Mississippi Valley over the next sixteen years. During that period of respite, the efforts of local and federal legislators focused on facilitating the development of river commerce. To this end, Congress authorized the Corps of Engineers to begin removing hazardous snags from the Mississippi River. From September 30, 1829, to March 1, 1830, the specially outfitted U.S. steamboat Heleopolis removed 1,307 dangerous snags or trees from the main channel.\textsuperscript{31} These efforts continued throughout the nineteenth century. In addition, the levee system was extended on both sides of the Mississippi River. By 1844 they were nearly continuous from New Orleans to Napoleon on the right bank, and many isolated levees existed along the lower part of the Yazoo front.\textsuperscript{32}

The 1844 flood was among the greatest ever, but, once again, severe damage was restricted to the regions north of the Red River. Water levels at St. Louis reached flood stages on several occasions in the spring of 1844. In June, flood levels at that city exceeded the previous high mark by more than four feet. As a result of the low level of the Red River, the Atchafalaya basin carried off much of the surplus discharge of the Mississippi, and below the mouth of

\textsuperscript{31}Senate Document \#72, 21st Cong., 2nd sess., 1831, 7.

\textsuperscript{32}Humphreys and Abbot, \textit{Report}, 152.
the Red River the country escaped "with but little
injury."[superscript 33]

The relative good fortune of the lower Mississippi
Valley came to an end in 1849. In that year, yet another
great flood occurred, and this time conditions were such
that regions below the mouth of the Red River were heavily
inundated. "The injury done was so immense that the flood
is justly classed among the most destructive ever known."[superscript 34]
This first severe test of the flood works of the lower
Mississippi found the levees wanting. A great crevasse
occurred in March, a few miles below the convergence of the
Red and Mississippi rivers, on the right bank. Below that
point, several more crevasses occurred, flooding much of the
Atchafalaya basin. This was in addition to the inundation
of the St. Francis and Yazoo bottom lands, which were as yet
unprotected by levees. On April 7, another major break in
the levees formed, this time only fifteen miles above New
Orleans. This flooded the country between the Mississippi
and Bayou La Fourche to an average depth of about four feet
"and thus submerged the rear of many rich sugar
plantations."[superscript 35]
Another major flood occurred in 1850. As in the previous year, "the damage occasioned by this flood was immense." The lowland regions were deeply flooded, including the Tensas, St. Francis, and Yazoo bottoms. At points along the Tensas lowlands, flood levels were "3.0 feet higher than in 1849." Those regions below the mouth of the Red River "fared but little better." The water pouring from the Red River exceeded the carrying capacity of the Atchafalaya basin, and the surplus found its way back to the Mississippi. The resulting overflow was sufficient "to keep the numerous crevasses below Red-river landing [located at the convergence of the Red and Mississippi Rivers] actively discharging for more than four months." Once again, farm lands throughout the valley were inundated for long periods.

The destructive floods of 1849 and 1850 created widespread distress and focused the nation's attention on the problem of flood control in the lower Mississippi Valley. For the first time, a majority in the U.S. Congress became convinced that the federal government should

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36 Ibid., 177.
37 Ibid.
38 Mississippi River Commission, Flood Control, 3.
provide some aid to the people of the Mississippi Valley. This aid came in the form of two federal land grants.

With the passage of the Swamp Acts of 1849 and 1850, the federal government stepped up efforts to reclaim the Mississippi Alluvial Region below the mouth of the Ohio. These acts granted the states in the Alluvial Valley all unsold swamp lands within their limits on the condition that funds from their sale be used for building levees and drains required for reclamation purposes. The states of Louisiana, Mississippi, Arkansas, and Missouri soon organized offices for the sale of swamp lands and appointed offices for the improvement of the levee system.

Also in 1850, the federal government authorized "a topographical and hydrographical survey of the delta of the Mississippi River, with such investigation as might lead to determine the most practical plan for securing it from inundation." The act authorized $100,000 for two surveys. The first of these was by Charles Ellet, a civil engineer working for the Corps of Engineers. Completed in 1852, Ellet's report concluded that the federal government should assume responsibility for controlling floods of the

39U.S. Statutes at Large, 31st Congress, 1st session, September 28, 1850, Ch. 84, 519.

40Humphreys and Abbot, Report, 152.

41House Committee on Flood Control Hearings, 1922, 180.
Mississippi River. In explanation, he argued that "the process by which the country above is relieved is that by which the country below is ruined." As such, flood control along the Mississippi River was a national issue. Ellet's report also recommended a comprehensive plan for controlling the flood waters of the Mississippi River, a plan which included, in addition to levees, the construction of reservoirs and diversion channels. Both in his recommendation for the federalization of flood control along the Mississippi and in his support for a comprehensive flood control plan, Ellet evidenced an advanced understanding of the Mississippi River flood problem.

The second--and far more influential--of the studies was undertaken by Captain Andrew A. Humphreys and Lieutenant Henry L. Abbot, both of the United States Army Corps of Topographical Engineers. Completed in 1861 after more than ten years of exhaustive research, the study represented the most thorough analyses of the Mississippi River ever completed. The 500-page report dismissed Ellet's contention that reservoirs and diversions were necessary to control flooding along the lower Mississippi, arguing instead that a properly constructed and maintained levee system would

42 Senate Executive Document #20, 32nd Cong., 1st sess., 1852, 2.

43 Ibid.
wholly suffice. Due to its unprecedented thoroughness, the report won the respect of engineers around the world and, both in terms of the data gathered and the conclusions rendered, influenced the development of flood control policy well into the twentieth century. Following the Civil War, Humphreys became Chief of the Corps of Engineers and, in defense of his pioneering study, one of the nation's leading proponents of a levees-only policy for the Mississippi River.

Between 1851 and 1858, the construction of levees along the Mississippi River advanced at an unprecedented rate. The 1850s were a relatively prosperous period for the Mississippi Valley, and, together with the governmental impetus of the 1849 and 1850 Swamp Acts, the planters of the lower Valley were better prepared than ever to fund levee construction. By the mid-1850s, most of the levees along the lower Mississippi were in place, averaging about four feet in height. But the progress made during this period was haphazard, uneven, and, according to Humphreys and Abbot, "quite inadequate." As late as 1857 and 1858,

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sizable gaps existed in the system, and the completed levees were mostly of inadequate size, gauge, and cross-section.\(^{46}\)

The severe floods of 1858 and 1859 exposed these inadequacies and destroyed much of the progress of the previous decade. In 1858, flood levels in the lower Mississippi Valley were, according to Humphreys and Abbot, "second to none of which we have records."\(^{47}\) High water inundated the city of Cairo, washed away miles of levees along the St. Francis front, and deeply flooded the Yazoo, Tensas, and Atchafalaya basins. Below Red-river landing, two major crevasses—at Bell and La Forche—left the fertile country between the Mississippi River and Bayou La Forche submerged for weeks. Few of the much needed levee repairs could be made before the spring of 1859, when a second flood came to the Valley. Though not as severe as the previous year, the flood of 1859 was of unprecedented duration, causing the river to remain within a foot of the high-water mark for eighty consecutive days at Memphis and placing great strain on the levee system.\(^{48}\) At least thirty-two


\(^{47}\)Ibid., 181.

\(^{48}\)Ibid., 183.
separate crevasses formed, leaving much of the lower Mississippi Valley inundated.49

Though repairs began almost immediately, the floods of 1858 and 1859 proved conclusively that the levees had to be built higher and stronger in order to provide adequate protection. The people of the lower Mississippi Valley had already expended $40 million for the construction of the failed levee line and had reached the end of their resources. Full of hope, they turned to the federal government with very strong appeals for aid.50 By 1861, both houses of Congress were considering the problem, but before a decision could be made the country found itself occupied with more pressing matters.

Another deluge arrived in April 1861, but this one did not subside with the passing of the spring rains. On the morning of April 12, 1861, Confederate forces under the command of General P. G. T. Beauregard fired upon Fort Sumter, and the nation plunged headlong into the Civil War. Due to the naturally corrosive effects of the flowing water, levees had to be constantly maintained and repaired.51

49Ibid., 185.

50Congressional Record, 43rd Congress, 1st sess., 1875, 4654.

51The levee system below and just above the water level is particularly vulnerable to decay during periods of high water and rapid current. If not properly constructed,
Necessarily preoccupied, the people of the lower Mississippi Valley abandoned their flood control efforts altogether, and, very quickly, the levees began to deteriorate. The general neglect of the levee system throughout the war years resulted in untold damage to the system, as whole sections fell into disrepair and were washed away by the river. A major flood in 1862 hurried this process of deterioration.

The levee system sustained further damage as a result of military operations in 1863 and 1864. As part of the effort to get at the Confederate fort at Vicksburg, Union soldiers under General Ulysses S. Grant's leadership blew up the great Yazoo and Huspuckena levees. Representing the finest in the delta, the embankments at Yazoo Pass were thirty-eight feet high and had been constructed at enormous cost to the region.\(^52\) Grant had hoped to float troopships and gunboats down rivers tributary to the Yazoo; but the Union flotilla met heavily concentrated Confederate artillery batteries located strategically along the Yazoo River near Greenwood and turned back.\(^53\) On finding that sections of the lower levee may fail, falling away into the river and leaving the remaining levee greatly weakened and vulnerable to collapse. Such a condition is referred to as "caving banks."

\(^52\)Frank, Federal Program of Flood Control, 30.

\(^53\)James M. McPherson, Ordeal By Fire: The Civil War and Reconstruction (New York: Alfred A. Knopf, 1982), 312. Also see John K. Bettersworth, Mississippi in the Confederacy: As
gunboats could not destroy the fort at Vicksburg. Union forces cut additional levees, hoping to flood Confederate supply routes. By the end of the war, the neglected levee system was in shambles. Before repairs could be made, the Delta suffered a major flood in April 1865.\(^{54}\)

With the destruction of the levee system nearly complete by the summer of 1865, the states of the lower Mississippi Valley began to evaluate their predicament. Four years of war had done much to destroy the prosperity of the region. In 1860 the state of Mississippi had been among the wealthiest in the U. S.; following the war it ranked among the poorest. Louisiana, Arkansas, Tennessee, and Missouri were similarly impoverished. Property values throughout the region tumbled in the years after the war, and, as a result, so did tax revenues. In 1860, farm property in Arkansas, Mississippi, and Louisiana was valued at $607,385,474; ten years later that value had fallen to $213,885,602, representing a loss in value of almost $400 million. Certainly, the task of repairing the dilapidated levee system represented a daunting task in the best of

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They Saw It (Jackson, Mississippi: The Mississippi Department of Archives and History, 1970), 99-100.

\(^{54}\) Robert W. Harrison, Levee Districts and Levee Building in Mississippi: A Study of State and Local Efforts to Control Mississippi River Floods (Stoneville, Mississippi: Delta Council, 1951), 26-27.
times. With conditions as they were, "the prospect of an enforced abandonment of the whole delta country grew... more certain."  

In the face of nearly insurmountable difficulties, local planters stepped up pressure for federal aid. But the South in 1865 "presented a bleak landscape of destruction and desolation. Burned-out plantations, fields growing up in weeds, and railroads without tracks, bridges or rolling stock marked the trail of the conquering Union armies." In the immediate aftermath of the Civil War, Congressional attention was necessarily diverted by the difficult and expensive task of rebuilding the southern infrastructure. As such, the riparian landowners turned increasingly to state-sponsored levee organizations for help. In the decade following the war, the various states of the lower Mississippi created levee boards which were authorized to levy assessments upon all of the property within the alluvial area. Based on these revenues, the levee boards issued bonds and began to repair and reconstruct the levee system of the lower valley. But costs were high, and

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56McPherson, Ordeal by Fire, 493.

57Congressional Record, 74th Congress, 2nd sess., May 21, 1936, 7732.
progress was slow. By the end of the first post-war decade, the war-weary states of the lower Mississippi Valley had proven unequal to the task of protecting the delta from inundation.

A great flood in 1874 exploited the still weakened levees system and wrecked havoc on the lower valley. The resulting suffering and devastation forced the federal government to redirect its attention to the flood problems of the delta. That year, the U.S. Congress approved an act creating a commission of engineers "to investigate and report a permanent plan for the reclamation of the alluvial basin of the Mississippi River subject to inundation." To that end, President Grant appointed General G. K. Warren as commission chairman and appropriated $25,000 for the study.

After considerable analysis of the flood problem in the delta, the Warren Commission criticized the efforts and methods of local flood control.

It is a common and apt figure of speech to personify the Mississippi; and to speak of the conflict waged to protect the country against the inroads of a terrible enemy, and yet the army of defense has always been content to remain a simple aggregation of independent companies, with here and there a battalion under the command of a board of officers. That victory has not more frequently perched upon their banners is surely not surprising.

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58 Ibid., 43rd Congress, 1st session, 1874, 3151.
59 B. G. Humphreys, Floods and Levees, 37.
In the face of inadequate local protection, the Warren report emphasized the need for greater federal commitment to the control of the Mississippi River.

The report's solid recommendation for greater federal commitment stimulated the growth of favorable public sentiment and encouraged flood control advocates in Congress. Led by Louisiana Congressmen Randall Lee Gibson, these advocates convinced House Speaker Michael C. Kerr of Indiana to authorize the creation of a House standing committee on Mississippi levees. Beginning with its inception on December 10, 1875, this committee became the battering-ram for flood control interests in Congress and remained so for more than thirty-five years. The creation of the Mississippi River Commission in 1879 was among the committee's most significant achievements.

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60 Frank, *Federal Program of Flood Control*, 40.


The establishment of the House Committee on Mississippi Levees did much to hasten the trend toward greater federal commitment to the control of the Mississippi River, but the concept of a federally-subsidized flood control program still provoked considerable opposition. This opposition was based mainly on legal grounds. According to contemporary interpretation, the "commerce clause" of the Constitution empowered Congress to spend money for navigational improvements that facilitated interstate commerce. That same authority did not, however, grant Congress the prerogative to spend money on flood control works constructed solely for the purpose of preventing overflows. As such, flood control advocates had long fought an up-hill battle in their attempts to secure appropriations for levee construction and repair along the lower Mississippi River.

Unable to overcome this legal quandary before 1878, flood control advocates sought to circumvent it thereafter. James Buchanan Eads was largely responsible for this new approach. A civilian engineer of international reputation,
Eads's greatest achievement had been the design and
construction of a steel-arched bridge across the Mississippi
River at St. Louis. Known as the "Eads Bridge," it was
completed in 1874 and long regarded as an engineering
wonder.¹ No sooner was that project completed when, in
February 1874, Eads made a formal proposition to Congress to
open one of the mouths of the Mississippi River to ocean
going ships. The Mississippi River carried great quantities
of silt and sand through four passes into the Gulf of
Mexico, and by 1874 these passes were so choked with sand
that larger vessels could not navigate up-river.

Eads received approval from Congress and began work at
the South Pass in June 1875.² There he constructed two long
levees, or jetties, which were partially submerged along the
waterline and designed to restrict the course of the river.
By confining the flow of water, the narrowed stream was made
to scour out its own channel and carry the sediment out to
sea. At the beginning of operations, the South Pass had a
depth of only seven and a half feet. When the work was
completed in July 1879, the pass had a minimum depth of 26

feet, a width of 200 feet, and a central depth of 30 feet.\textsuperscript{3}

The project was viewed by most as a remarkable success. According to Representative James A. Garfield, a leading Republican from Ohio, Eads’s jetty system was "a great and striking success in the management of the mouths of that river." But the project’s significance did not end there. As Garfield suggested,

\begin{quote}
all our calculations and indeed all our theories concerning the improvement and management of other portions of that river need to be reconsidered in view of the new light that the jetty system will throw upon the question.\textsuperscript{4}
\end{quote}

Indeed, the lessons learned at South Pass influenced a generation of hydraulic engineers, both civilian and military.

Significantly, Eads’s South Pass project also did much to convince skeptics that levees could play an important role in improving navigation along the lower Mississippi River. While studies by the Corps of Engineers had long concluded that levees prevented the accumulation of hazardous snags, Eads’s success had proven that—under the right circumstances—levees could also force the river to scour out and deepen its own channel, facilitating river

\begin{footnote}

\textsuperscript{4}Congressional Record, 46th Cong., 1st sess., June 21, 1879, 2283.
\end{footnote}
travel.\(^5\) In the eyes of most flood control advocates, the once tenuous link between levees and navigation had been strengthened considerably.

In addition, Congress appropriated $1 million in the 1878 rivers and harbors act for the purpose of improving navigation on the Mississippi River.\(^6\) This relatively large allocation indicated growing support in Congress for navigational improvements. Together with Eads's successful use of levees to improve the South Pass, it also convinced flood control advocates to ally themselves with navigational interests and to renew their efforts to secure appropriations for levee construction and repair along the lower Mississippi. In the years ahead, those who favored a federal flood control program for the lower Mississippi increasingly sought to justify levee appropriations based on their benefits to navigation, and not flood control.

The Committee on Levees was instrumental in fostering and promoting this new coalition. In a formal report to the House on May 3, 1878, that committee characterized "the questions of river improvement and the protection of the

\(^5\) *House Document #35*, 17th Cong., 2nd sess., 1823, 21-22.

\(^6\) *Congressional Record*, 45th Cong., 3rd sess, February 5, 1879, 1033.
alluvial lands as intimately and inseparably connected."
The report went on to say that

In the past these have been rival interests, not withstanding nature made them interdependent. At present however all parties in interest admit that levees are necessary aids to the improvement of navigation.'

This "fortunate adjustment of rival interests" generated the support necessary for facilitating the introduction and passage of Congressional legislation for the improvement of the lower Mississippi River.

The Congressional coalition between flood control and navigational interests grew stronger, and by 1879 there existed a general consensus for the creation of a commission with federal oversight authority for the lower Mississippi River. 8 But the coalition was one-sided. Flood control advocates had agreed to support navigational interests, but the reverse was not necessarily true. As such, there was little consensus in Congress over the nature of this proposed commission.

On January 16, 1879, U.S. Representative Edward W. Robertson of Louisiana, the Chair of the House Committee on Levees and Improvement of the Mississippi River, introduced

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7Ibid., 46th Cong., 2nd sess., January 21, 1880, 452.

8U.S. Representative Edward W. Robertson discusses this "fortunate adjustment of rival interests" in his presentation of H. R. 4318. Ibid., January 16, 1879, 499.
H.R. 4318. As referred by the committee, this bill provided for the organization of a "Mississippi River Improvement Commission." In addition to its responsibility to affect improvements for the promotion of navigation, the Commission was ordered to "take into consideration such plans and estimates... for the protection of the alluvial lands of the Mississippi Delta from overflow." 9 The debate that followed did much to define the parameters of this proposed commission.

Robertson's proposal met with considerable resistance from two groups in Congress—those who favored improvements for navigation but not flood control and those who opposed federal expenditures in both areas. The latter group was vocal but relatively few in number. Characteristically, they were Republicans from Northeastern states, which had little or nothing to gain from hefty expenditures for the improvement of the Mississippi River. 10 The former group

9Ibid., 496. The House Committee on Levees and Improvement of the Mississippi River will hereafter be referred to as the Committee on Levees.

10Of the seventy-four Congressmen who opposed the Robertson bill, twenty-five came from the following states: Pennsylvania (11), New York (5), New Jersey (3), Maine (2), Vermont (2), New Hampshire (1), and Connecticut (1). Twenty-two of these were Republicans. Ibid., February 5, 1879, 1033. On March 3, 1879, eighteen Senators supported a move to table the bill. Of these, seven were from the above states; and all seven were Republicans. Ibid., March 3, 1879, 2309.
was much more numerous and, as a result, represented a substantial threat to the passage of federal flood control legislation. Those who took this position were typically Republicans from Midwestern states who would benefit directly from navigational improvements to the Mississippi River but not necessarily from the construction of additional flood control works along the lower Valley. Representative William A. J. Sparks of Illinois articulated the views of this group:

We can and ought to draw upon the National Treasury to improve the navigation of the Mississippi River, for the work is national and is warranted by the Constitution, and ought to be done. We cannot and should not draw upon the Treasury to protect 'adjacent alluvial lands,' for such work would be local. The lands are the property of private citizens and within the sole control and under the jurisdiction of the States in which they are located, and there is no warrant of national authority for the expenditure of money for any such purpose.

Though proponents of the original bill included members from both parties and every section of the country, the

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11 In the House, half (37) of the seventy-four votes in opposition to the Robertson bill came from the following states: Illinois (9), Indiana (9), Michigan (6), Ohio (6), Wisconsin (3), Kentucky (2), Iowa (1), and Minnesota (1). Of these, twenty-nine were Republicans. Ibid., February 5, 1879, 1033. On March 3, 1879, eighteen Senators favored a move to lay the Robertson bill on the table with the intent of killing the bill. Of these, five were from the above states. All five were Republicans. Ibid., March 3, 1879, 2309.

12 Ibid., February 4, 1879, 979.
bill's most ardent supporters were Southern Democrats. In fact, not a single Representative from Louisiana, Mississippi, Arkansas, Missouri, or Tennessee—states with large Democratic majorities in the House—opposed the bill. Senators from those states supported the bill unanimously as well.\footnote{Ibid., 1033, 2309.}

The ensuing debate between the two opposition groups and proponents of the bill focused on Constitutional and sectional issues as well as issues of precedent. Section 4 of the bill, which authorized the Commission to erect flood control works, was a source of much of the initial opposition. Opponents quickly pointed out that the Constitution did not grant Congress the authority to construct flood control works. Proponents, on the other hand, went to great lengths to prove otherwise and to establish the bill's legality, particularly in regards to Section 4.

Representative James R. Chalmers of Vicksburg, Mississippi, took up this task with considerable zeal, indicating a number of legal justifications. Chalmers turned first to the "commerce clause" of the Constitution. The Congressional power to regulate interstate commerce was, he argued, wholly sufficient to justify the construction of
levee works that benefitted navigation, and there were numerous precedents to support this contention. Chalmers next cited the Congressional authority to establish post-offices and post roads. In the past, that authority had been extended to justify the construction of turnpikes, railroads, bridges, and telegraph lines. Certainly, the construction of levees along the Mississippi River—"the greatest natural post-route in the Union"—was no different, as they would enable the residents of the alluvial valley to receive their mail on dry land.¹⁴ Lastly, Chalmers found justification in Congress's authority to provide for the common defense and general welfare. The federal responsibility to protect its citizenry should, he argued, extend to those who are helpless against the great floods. In short, proponents held that any or all of these were sufficient to justify the legality of a federal flood control program for the lower Mississippi River.¹⁵

Sectional issues were raised with respect to Sections 10 and 11 of the bill. Those two sections authorized appropriations in the amount of $3,871,574 for the purpose of "closing such crevasses and raising and strengthening the

¹⁴Ibid., 503.

¹⁵Ibid.
levees along the Mississippi River."

Proponents here sought to associate the repair and improvement of Mississippi River levees with the general reconstruction of the post-Civil War South. Representative E. John Ellis of New Orleans directed his appeal to "those from the northern section of the Union." False Partisans have told them [the people of the South] you cared nothing for the South or her interests; that the two great political parties cared but for her political alliance and strength as an element of their own strength. Now you will show that these representations are false. Uniting upon this great measure, the two great parties will give earnest token that they eagerly long for the rehabilitation of the South and a restoration of her prosperity.

Similarly, Robertson of Louisiana argued that the Mississippi River, "a natural bond between the North and the South," should be improved in the interest of better relations between the two regions. Opponents here accused Southern flood control advocates of promoting sectional animosity. At least one northern newspaper found this

\[16\text{Ibid., } 497.\] Robertson of Louisiana, the sponsor of the bill and a staunch advocate of federal flood control, had received special permission from the Committee on Levees to include these appropriations with the bill as it was introduced to the House floor. They did not have the approval of the whole Committee, though, and were submitted as amendments only.

\[17\text{Ibid., } 507.\]

\[18\text{Ibid., } 511.\]

\[19\text{Ibid., } 501.\]
tactic objectionable as well and accused Robertson and his colleagues of arraigning anyone who opposed the bill as "a mean and malignant enemy of the South and its people."  

The last issue raised was one of precedent. Proponents argued that for many years Congress had been subsidizing internal improvements that were national in character, including railroads and turnpikes. Citing the construction of the Union Pacific Railroad, Ellis argued that "where a work of internal improvement is either national in its character, national in its extent, or national in its influence, Congress may with perfect propriety lend it aid." According to Ellis, the Mississippi River problem was no less national in scope than the transcontinental railroad or a national turnpike and, as such, no less deserving of federal subsidies.

Partisan wrangling also played a role in the debate. With the election of 1876, the Democratic Party had seized control of the House of Representatives, while Republicans retained control of the Senate and, narrowly, the presidency. Although the Robertson bill appealed primarily to regional rather than partisan interests, the two were closely related in the post-Reconstruction era. Throughout

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21 Congressional Record, 45th Cong., 3rd sess., vol 8, January 16, 1879, 507.
this period, the Republican and Democratic parties were evenly matched but not evenly dispersed. The upper and middle classes of the Northeast and Midwest were generally Republican, while the South was largely Democratic. Under those conditions, flood control proponents were unable to rely on the party apparatus to increase support for the bill outside of the South. As a result, support fell largely along party, as well as regional, lines. The Democrats enjoyed a comfortable majority in the House, and, on February 5, 1879, the Robertson bill was approved by a sizeable margin.22

The next day, the Robertson bill was referred to the Republican-dominated Senate. Deliberations did not begin in the Upper House until March 3rd, the final day of the last session of the Forty-fifth Congress. Judging from the apparent mood of the Senate, this was no accident. Senator Blanche K. Bruce, a Republican from Mississippi and a member of the Mississippi Levee Board, introduced the Robertson bill in the face of substantial opposition. After only a brief period of debate, Senator Zachariah Chandler, a Republican from Michigan, offered a motion to table the bill. While this motion was easily defeated, it did not

22Ibid., February 5, 1879, 1032.
bode well for the quick passage of the Robertson bill. Opponents came forward with a number of substantive amendments, and supporters were unable to bring the bill to a final vote before the end of the day. The session ended, and the bill met its inglorious end. But the plan for a federal Mississippi River commission did not die.

Fortunately for the lower Mississippi Valley, the Congressional elections of 1878 did much to further the interests of flood control advocates. That year, the Democratic party strengthened its majority in the House and, more importantly, seized control of the Senate. Proponents of flood control realized that prospects for the approval of a Mississippi River Improvement Commission, or a variation thereof, would improve substantially when the new Congress was seated in March 1879. With that in mind, several Congressmen produced replacement bills during the interim period, all of which were referred to the House Committee on Levees for consideration.

On May 10, 1879, Representative Randall L. Gibson, a Democrat from Louisiana, introduced a compromise bill (H.R. 1847) to provide for the appointment of a "Mississippi River Commission." The most obvious difference between this bill and its predecessor was the shortened title; the House

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23Ibid., March 3, 1879, 2311.
The committee dropped the word "improvement" from the title of the proposed Commission. The committee members may simply have been motivated by thrift, or perhaps the word "improvement" smacked of reclamation, a term that raised the ire of fiscal conservatives in both parties. Whatever the motive, the name of this proposed board was to be the "Mississippi River Commission" and not the "Mississippi River Improvement Commission."

More substantively, the new bill included a far less intrusive flood control statement. The Robertson bill had included three lengthy sections that dealt extensively with flood control issues, calling for the commission to take into consideration plans "for the protection of the alluvial lands of the Mississippi Delta from overflow." In the new bill, two of those three sections were stricken entirely. References to flood control in the one remaining section were reduced significantly, requiring only that the commission take into consideration such plans as to "prevent destructive floods." The new bill also dropped all appropriations for the closing of crevasses and the strengthening of levees along the Mississippi River and cut the Commission's proposed first-year budget by 30 percent. As a whole, these changes were designed to assuage opponents

24Ibid., January 16, 1879, 496.
of the original bill, particularly those in the Senate. The House, which had already passed a more extensive version of this bill in the previous Congress, approved H.R. 1847 without debate on June 2.\textsuperscript{25}

After reviewing the House bill, the Senate Select Committee on the Improvement of the Mississippi River and its Tributaries reported the bill along with a single amendment. This amendment increased the size of the Commission from five persons to seven. In the original proposal, the Commission consisted of three appointees from the Corps of Engineers and two from civil life. The amendment added an additional member from civil life and one from the Coast and Geodetic Survey. Senator Lucius Q. Lamar, a Democrat from Mississippi, introduced the bill along with the amendment to the whole Senate on June 14. This time opposition in that body was minimal. Not only was this bill less obtrusive than its predecessor, but the Democratic party was now the majority party in the Senate. On June 18th, the Senate approved the amended bill, and several days later the House concurred with the Senate version.\textsuperscript{26} Finally, on June 28, President Rutherford B.

\textsuperscript{25}Ibid., 46th Cong., 1st sess., June 2, 1879, 1730.

\textsuperscript{26}Ibid., June 18, 1879, 2099-2103; Ibid., June 21, 1879, 2284.
Hayes signed the bill creating the Mississippi River Commission.\(^{27}\)

The creation of the Mississippi River Commission in June 1879 represented a culmination of the efforts of both flood control and navigational interests, and the text of the act illustrated this dual-interest. As approved, it authorized the seven-person Mississippi River Commission to direct surveys and examinations of the Mississippi River from the Head of the Passes near its mouth to its headwaters. The purpose of these surveys was to ascertain "such plans and estimates as will correct, permanently locate, and deepen the channel and protect the banks of the Mississippi River; improve and give safety and ease to the navigation thereof; prevent destructive floods; [and] promote and facilitate commerce, trade and the postal service."\(^{28}\) The act also directed the Commission to submit reports of their proceedings and actions, along with cost estimates, to the Secretary of War.

Certainly, this wedding of flood control and navigational interests did not fail to provoke suspicion among those opposed to a federal flood control program for the lower Mississippi River. During the course of debate,

\(^{27}\)Ibid., June 28, 1879, 2423.

\(^{28}\)*Statutes at Large*, 46th Cong., 1st sess., June 28, 1879, Ch. 43, 37.
advocates had made numerous concessions to broaden support for the bill. While virtually all of these concessions were designed to weaken the flood control elements of the bill, it was clear to most that the intent of the bill's supporters never wavered. Representative Edward Robertson, the chair of House Committee on Levees, was a staunch advocate of federal flood control; all eleven members of the House Committee on Levees supported the bill in its original form; and Southern support for the original bill had been nearly unanimous.\textsuperscript{29} Their willingness to compromise, together with the steadfastness with which Southerners and most Democrats favored federal flood control legislation, led some to view the Mississippi River Commission as a Trojan Horse for flood control interests.

Accusations to this effect were made in Congress and in at least one prominent Northern newspaper. U.S. Representative John H. Baker, a Republican from Indiana,

\textsuperscript{29}The Robertson bill was introduced to the House with the unanimous support of the committee. The members of the House Committee on Levees for the 45th Congress were as follows: Edward Robertson (D, LA), Robert Hatcher (D, MO), Hernando Money (D, MS), Casey Young (D, TN), Robert Knapp (D, IL), George Landers (D, CT), Ben Martin (D, WV), Russell Errett (R, PA), Thadeus Pound (R, WI), George Robinson (R, MA), and Horatio Bisbee (R, FL). Nine of eleven voted in favor of the original bill on February 5, 1879; Knapp and Bisbee did not vote. \textit{Congressional Record}, 45th Cong., 3rd sess., February 5, 1879, 1033.
accused the bill's supporters of perpetrating a deception on the American people.

No, gentlemen, you do not want to pass this bill for the purpose of obtaining information so that you can improve the navigation of the Mississippi River. It is but the entering-wedge of a scheme to dike and dam that river so that, at the expense of Uncle Sam, the swamp lands may be made productive.  

A *New York Times* editorial argued that "promoters put forward the modest notion of a commission--a commission to inquire into and report upon methods for improving the navigation of the river . . . with the view of having the commission made up to suit their purposes." According to the editorial, these promoters favored an extensive federal flood control program for the lower Mississippi River and were only secondarily interested in navigational improvements. In the ensuing months, the appointment of the first seven commissioners and the evolution of commission policy would lend a good deal of credence to these accusations.

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30Ibid., June 21, 1879, 2283.

CHAPTER IV

THE MISSISSIPPI RIVER COMMISSION AND ITS ADOPTION
OF A LEVEES-ONLY POLICY, 1879-1880

The creation of the Mississippi River Commission (MRC) represented the first federal attempt to develop a coordinated flood control plan for the Mississippi River. Toward this end, the 1879 Act instructed the commission to investigate the feasibility of various plans, including the levee system and the outlet system, as well as "such others as they deem necessary." After only six months, the commission resolved to promote a comprehensive levee system at the exclusion of alternative methods of flood control. In a preliminary report to the secretary of war in the spring of 1880, the commissioners sought to justify their conclusions. Levees were essential, they argued, "to prevent destruction to life and property by overflow" and "give safety and ease to navigation and promote and facilitate commerce." But political considerations also

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1Statutes at Large, 46th Cong., 1st sess., June 28, 1879, Ch. 43, 38.

influenced the development of MRC policy, including that agency's adoption of a levees-only plan.

The Mississippi River Commission Act of 1879 authorized the president of the United States to appoint seven commissioners with the advice and consent of the Senate. Through this power of appointment, Hayes played a prominent role in shaping the character of the early MRC. Significantly, Hayes, unlike many of his Republican contemporaries, favored a system of internal improvements for the South and, particularly, a system of improvements for the lower Mississippi.

There are at least two explanations for this. Hayes came into office as a result of one of the most fiercely contested presidential elections ever. During Reconstruction, the Republican party depended upon African-American support for its majority position in the South. After 1868, though, President Andrew Johnson's liberal pardon policy for ex-Confederates and a successful terrorist campaign directed at Southern blacks did much to erode this majority position. By 1876 the Democratic party had regained control of most of the South, with the exception of Louisiana, South Carolina, and Florida. The Republican party maintained only tenuous control in those three states, and as the 1876 presidential election approached both parties struggled for advantage. The election ended in a
stalemate; two sets of returns arrived from each of the three Southern states still controlled by the Republicans. Both parties claimed victory, and Congress appointed a special commission to decide the issue. In the end, the commission awarded all of the contested electoral votes to Hayes, who, as a result, won the election. To assuage Southern resentment, the new Republican president entered into an agreement with the Democratic leadership. Known as the Compromise of 1877, this agreement pledged Hayes to support, among other things, internal improvements for the South.³

In addition, Hayes hoped to build a Republican party in the South that could command the respect and support of white Southern conservatives. To accomplish this goal, he made a number of friendly overtures to Southern interests in the hope of converting them to the Republican party. Hayes restored "home rule" to Southern whites; he appointed David M. Key, a Southern Democrat and ex-Confederate officer, to his cabinet; and, most important, he supported improvements along the Mississippi River as an appeal to ex-Whigs, whose party had earlier supported a similar scheme.⁴ In his third


⁴Vincent P. DeSantis, "President Hayes's Southern Policy," Journal of Southern History 21 (November 1955),
annual address of December 1, 1879, he stated that "a comprehensive improvement of the Mississippi and its tributaries is a matter of transcendent importance."  

While advocating Mississippi River improvements generally, Hayes soon became convinced of the many benefits associated with levee construction particularly. This occurred largely as a result of his association with one of the nation's most prominent levees-only advocates, James Buchanan Eads. An engineer of international reputation, Eads's success in opening the South Pass to ocean going ships had earned him the president's trust and admiration. During his third annual address, Hayes reported to the nation on the success of Eads's work, concluding that the project was a "permanent success" that provided for "an unobstructed channel safely to and from the sea." At first opportunity, Hayes appointed Eads to the MRC.

Significantly, Eads was among the first to consider the application of the jetty system to the length of the Mississippi River. As early as 1878, he became convinced that the Mississippi's own energies could be directed to the

477, 480.


6Ibid.
task of deepening that river's channel and improving navigation. In a speech made at New Orleans, Eads proposed to "set the river to work in the bottom of its bed, as we did at the jetties, and, while deepening it for the benefit of commerce lower its haughty crest forever." To accomplish this goal, he advocated straightening the river where it meandered needlessly; narrowing of the river at wide points; and closing off all outlets, natural or otherwise. Later, he also advocated the construction of a comprehensive levee system to prevent overflows. Eads's appointment to the MRC in 1879 put him in position to contribute directly to the creation of a federal policy for the management of the Mississippi River.

Hayes's subsequent appointments to the MRC provide further evidence of his preference for a comprehensive levee system for the lower Mississippi River. He appointed Henry Mitchell as the commission's representative from the Coast and Geodetic Survey. Mitchell had joined the U.S. Coast Survey in 1850 and served in that capacity until the Civil War, when he was reassigned to the Union Army's engineering

"Congressional Record, 45th Cong., 3rd sess., January 16, 1879, 505.

Ibid.

corps. Following the war, he published extensively, establishing himself as one of the nation's leading hydraulic engineers. Significantly, in 1874 Mitchell served on a seven-member advisory board that reported favorably on Eads's proposed jetty system and recommended its application for the purpose of improving the mouth of the Mississippi River. Mitchell's experience on this engineering board contributed to his appointment five years later to the Mississippi River Commission.

Hayes's appointees from the Corps of Engineers were Lieutenant Colonel Quincy A. Gillmore, Major Charles R. Suter, and Major Cyrus Ballou Comstock. As an organization, the Corps traditionally favored a levees-only program for the improvement of the lower Mississippi, and by and large these men were of that tradition. In fact, two of the three Corps appointees, Majors Suter and Comstock had, as recently as January 27, 1879, advocated the construction of a permanent levee system for the lower Mississippi River.

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12. The Bernard and Totten Report of 1823, the Abbot and Humphreys Report of 1861, and the Warren Commission Report of 1874 are among the most prominent Corps of Engineer studies that advocated the construction of a comprehensive levee system (see Chapter 2).
In a report on the potential benefits of such a levee system, both concluded that "levees have been an important aid to commerce" and "should be matured and developed in connection with the navigation improvements" of the River.\textsuperscript{13} The chief of the Corps of Engineers, Brigadier General A. A. Humphreys, concurred with the report's conclusions.

In addition to Eads, Hayes appointed two other civilians to the commission. Benjamin Morgan Harrod, an ex-Confederate and a civil engineer from New Orleans, had extensive experience in the area of levee construction. In 1877 Harrod became the chief of the state Board of Engineers of Louisiana, and his responsibilities included the construction of flood control levees for the protection of that state's alluvial lands. Harrod's work in that regard led to his appointment to the Mississippi River Commission two years later.\textsuperscript{14}

Hayes's final selection was politically driven. In a surprise move, he designated Benjamin Harrison as the last of the three civilian commissioners. Earlier in 1879, Harrison had been defeated in his bid for the U.S. Senate, and, as such, Hayes's action may be interpreted as a

\begin{itemize}
\item \textsuperscript{13}House Executive Document #37, 45th Cong., 3rd sess., 1879, 4-5.
\item \textsuperscript{14}Dictionary of American Biography, vol. 8, 353; The National Cyclopaedia, vol. 12, 328-29.
\end{itemize}
palliative to the popular Republican. Whatever the motive, Hayes's decision was a fateful one. A practicing defense lawyer, Harrison had little or no engineering experience but concerned himself increasingly with the legality of the commission's actions.

Each of these appointments, save one, evidence Hayes's support of a comprehensive levee system for the lower Mississippi. But the concept of a federal flood control program for the South remained distasteful to many, and his several appointments did not go uncriticized. On the day that Hayes signed the commissions of the seven new members of the MRC, a New York Times editorial lambasted the commission as a "gigantic scheme of jobbery" and accused Louisiana and Mississippi Democrats of attempting to perpetrate a scam on those "who deemed investigation a fair and friendly proceeding." These "innocent people" would soon learn the error of their ways, as the commission was so composed that the essential guarantee of thoroughness is absent. It is a commission, in short, apparently

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16Ibid.

predisposed to favor the levees and jetties which the South calls for."\(^8\)

The Congressional coalition of flood control and navigational interests responsible for the creation of the MRC also favored a levees-only policy. In fact, this coalition had been founded entirely on the commonality of levees. Flood control advocates understood that a properly constructed levee system would be useful in the prevention of overflows; and proponents of navigational improvements believed that a levee system would improve navigation by deepening the river's channel and preventing the accumulation of dangerous snags.

Significantly, the commonality of interests ended there, as alternative methods of controlling flood waters and improving navigation were not often mutually beneficial and, insofar as they were not, threatened the stability of the coalition. Many proponents of navigational improvements advocated, for example, straightening the Mississippi River and reducing its length. This could be accomplished by "cutting off" sections of the river that meandered needlessly. Those interested primarily in flood control, though, viewed these "cut-offs" with suspicion.

\(^8\)According to the *Times*, the appointment of Eads was the best evidence of that: "with Eads as a member of the commission . . . the costly jetties are assured of approval." Ibid.
Contemporary opinion held that cut-offs would only exacerbate the problem down river by piling up flood waters below.\textsuperscript{19}

Reservoirs were similarly problematic. While they could be useful for the control of floods or for the improvement of navigation, they were not typically useful for both purposes. Reservoirs constructed for the purpose of maintaining navigable water-levels during dry seasons had to remain full; whereas those constructed as potential repositories of flood waters had to remain empty.

The outlet system was the most controversial of the alternatives. Advocates of this system favored the creation or maintenance of properly located gaps in the levee system sufficient in size to relieve the river at high water. While such a system would be beneficial to the control of great floods, contemporary opinion held that outlets were detrimental to navigation and that "wherever an outlet occurs . . . the river [below] fills up and bars are formed."\textsuperscript{20} These deposits and sand-bars constituted obstacles to the free flow of traffic on the river. In addition, the real possibility existed that an outlet would

\textsuperscript{19}House Committee on Flood Control Document #17, 70th Cong., 1st sess., 1927, 55; also see Congressional Record, 45th Cong., 3rd sess., February 4, 1879, 981.

\textsuperscript{20}Ibid., January 16, 1879, 507; Ibid., February 4, 1879, 981.
prove so efficient that the main body of the river would be diverted entirely.\(^2\) For these reasons and others, the coalition of flood control and navigational interests committed itself exclusively to a levees-only policy for the Mississippi River. There were, quite simply, no alternatives that satisfied both interests.

As such, the coalition set out initially to effect the adoption of a levees-only policy by the MRC. Certainly, this is evidenced in the original House bill (H.R. 4318) calling for the creation of a "Mississippi River Improvement Commission." As introduced, that bill called for the closing of all outlets and included almost $4 million for the construction of levees—and all before the proposed commission could initiate a single study.\(^2\) While flood control advocates made numerous concessions to assure the creation of a Mississippi River Commission, the final bill retained a statement requiring the MRC to investigate various plans for *both* the improvement of navigation and the prevention of destructive floods. Upon completion of their

\(^{21}\)Ibid., 982.

\(^{22}\)See sections 6 and 10 of H.R. 4318, January 16, 1879, 496.
study, the commissioners were instructed to submit a
detailed report of their plans to the secretary of war. 23

The MRC presented its first report on February 17,
1880. As directed, the commissioners reported upon the
practicability of both the outlet system and the levee/jetty
system for improving the river. As to the former, the MRC
offered only condemnation. The commissioners explained that
the effect of an outlet on the river would be twofold.
First, it would lead to a reduction in the height of the
river's surface in the vicinity of the outlet and below it.
At high water, such a result would certainly be
advantageous. Second, a gap in the levees would lead
invariably to a reduction in the river's velocity. This
would be disadvantageous, particularly to navigation. The
Mississippi's waters were, the commission explained, highly
charged with sedentary matters that were held suspended in
the water by the current. To support this immense mass of
earth and sand in suspension, "the velocity of the current
must be sustained." Where it was not--either as a result of
an outlet or an obstruction--there quickly accumulated a
deposit of sediment. These deposits obstructed navigation

23Statutes at Large, 46th Cong., 1st sess., June 28,
1879, Ch. 43, 38.
and, under the most adverse of conditions, threatened the
stability of the river system.\textsuperscript{24}

As to a levee/jetty system, the Commission reported
favorably, and their conclusions reflect very evidently the
influence of Commissioner Eads. Based on the lessons
learned from Eads's successful jetty program at the Head of
Passes, the commissioners supported the adoption of "a plan
which will concentrate rather than disperse the waters of
the river, as the principal agent in securing the needed
improvement of its navigation."\textsuperscript{25} Such a plan would also,
they believed, improve the flooding problems of the lower
valley:

As the friction of the bed retards the flow of water,
any diminution of the friction will promote the
discharge of floods. The frictional surface is greater
in proportion to volume of discharge where the river is
wide and shoal than where it is narrow and deep. It
follows, therefore, that after the wide-shoal places
are suitably narrowed [by a levee/jetty system], and
the normal sectional area is restored by deepening the
channel, the friction will be less than it was before.
This will result in a more easy and rapid discharge of
the flowing water, and consequently in a lowering of
the flood surface.\textsuperscript{26}

Based on these premises, the commission concluded, "the plan
of improvement must comprise, as its essential features, the
contraction of the water-way of the river to a comparatively

\textsuperscript{24}\textit{Annual Report}, 1880, 7-8.

\textsuperscript{25}\textit{Ibid.}, 6.

\textsuperscript{26}\textit{Ibid.}, 14.
uniform width... and this is presumed to be the plan referred to in the act as the 'jetty system.' "27 With its first report, the MRC committed itself to a levees-only policy.

Following the release of the MRC's preliminary report, special interests in Congress continued their efforts to promote a levees-only policy. They did this partly through the dissemination of levees-only propaganda in the Congress. Here the House Committee on Levees and Improvement of the Mississippi River once again played a leading role. Following the first MRC report of February 1880, five members of that committee proceeded down the Mississippi River in the company of MRC commissioners for the purpose of "acquiring a knowledge of its peculiar conditions and wants and to gather information relative to the best methods for its improvement." 28 After spending the entire month of May investigating the Mississippi River from St. Louis to the Head of Passes, the subcommittee reported favorably on the MRC report, concluding that "the methods therein recommended for the treatment of the Mississippi River appear to be

27Ibid.

28This subcommittee was composed of Poindexter Dunn of Arkansas, who became chair of the subcommittee; William R. Myers of Indiana; Cyrus D. Prescott of New York; Herman Humphrey of Wisconsin; and Benjamin W. Harris, a Republican from Massachusetts. Congressional Record, 46th Cong., 3rd sess., February 15, 1881, 1653.
correct and should be tested." In addition to its affirmation of support for MRC policy, the subcommittee testified to the economic importance of those lands serviced by the Mississippi and its tributaries and stressed the need for increased federal expenditures for the improvement of the route.

The coalition did not hesitate to use legislative means to control or intimidate individual members of the MRC as well. One revealing example involved civilian Commissioner Benjamin Harrison. A jurist of considerable repute, Harrison held the opinion that the federal government lacked the Constitutional authority to appropriate funds for flood control. While he favored the construction of levees for improving the navigation of the river, "he felt that it was an unconstitutional use of public money, when and if levees were erected . . . for the express purpose of reclaiming land" or preventing injury to lands by overflow. In the MRC's preliminary report of March 1880, Harrison dissented from the commission's unqualified recommendation of the levee system.

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29 Ibid.
30 Ibid., 1654.
31 Sievers, Benjamin Harrison, 216.
32 C. B. Comstock also signed the minority report, though not because of Constitutional scruples. Comstock was
On April 5, 1880, flood control advocates in the Congress moved to silence Harrison. That day, Representative Randall L. Gibson of Louisiana introduced a bill (H.R. 5554) to reorganize the MRC by reducing its membership to six with only two civilian appointees, both of whom were required to be civil engineers. Harrison, one of the three civilian commissioners and the only member who was not an engineer, correctly interpreted this as an attempt to facilitate his removal from the MRC, and he enlisted the support of his friends in the House. Led by James Garfield of Ohio and Tom Brown of Indiana, his allies prevented the bill's passage. Even so, Harrison resigned from the commission less than a year later, ostensibly to make a run for the U.S. Senate. Following his resignation, Hayes appointed as a replacement Robert Stewart Taylor, who, like the other members of the MRC, would be more amenable to a levee program. While also a lawyer and not an engineer, Taylor was a close associate of James Eads simply not convinced that Eads's jetty system could improve low-water navigation on the length of the Mississippi River. Annual Report, 1880, Minority Report of the Mississippi River Commission, 21-23.

Congressional Record, 46th Cong., 2nd sess., April 5, 1880, 2331.

Sievers, Benjamin Harrison, 166.
and soon proved himself a champion of the MRC's levees-only policy.\textsuperscript{35}

The coalition also endeavored to increase its control over the spending apparatus in Congress. In particular, the Committee on Levees and Improvement of the Mississippi River sought to acquire the authority to introduce appropriation measures for the MRC and for improvements along the lower Mississippi River directly to the House. According to precedent, only two House committees enjoyed that privilege—the Committee on Appropriations and, with regard to the annual river and harbor bill only, the Committee on Commerce. As a result, those two committees exercised considerable authority in the House. Under contemporary rules, either committee could "strangle a bill, however important it may be, and prevent its consideration, although a majority of the House might be anxious to pass it."\textsuperscript{36}

In early January 1880, an opportunity for change presented itself. The Committee on Rules had been assigned the task of modernizing the tangled mass of House rules, and, after months of preparation, presented a revision of

\textsuperscript{35}The National Cyclopaedia, vol. 17, 415.

\textsuperscript{36}Congressional Record, 46th Cong., 2nd sess., January 21, 1880, 453.
the rules to the House. Included among these revisions were several changes of adverse significance for the Committee on Levees and, consequently, the MRC. As Speaker of the House and chair of the House Rules Committee, Samuel J. Randall, a Democrat from Pennsylvania, played a leading role in the formation of this resolution. Unfortunately for the friends of the lower Mississippi, Randall was not a strong partisan. In fact, he was "counted as a Republican by many of the Democrats." During the 44th Congress, Randall had served as chair of the Committee on Appropriations where he fostered a reputation as a guardian of the federal treasury and a fiscal conservative.

As such, the resolution reflected a greater fiscal conservatism than had the earlier House rules. Significantly, the resolution required that all appropriation bills be directed to the Committee on Appropriations for approval before they were presented to the whole House. This change was directed especially at the

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37Ibid., 726. One member of the House compared the "rude, unmethodized mass" of rules to a medieval castle in Europe, "to which addition after addition was made as the necessities or whims of its successive owners demanded, and in which none save those who had longest inhabited it could successfully thread the labyrinthine passages and stairways which led to its chambers and halls." Ibid.


39Ibid.
Committee on Commerce. In April 1816, the Committee on Commerce had won the right to present river and harbor bills directly to the House and had exercised that right intermittently thereafter. That right was firmly established by 1866, and between that year and 1879, the Committee on Commerce reported fourteen annual bills for the improvement of rivers and harbors.  

Over the same period, the Committee on Commerce had developed a certain notoriety for employing log-rolling tactics to facilitate the passage of these river and harbor bills. Typically, they were introduced under a suspension of the rules and without debate. Under this suspension, Congress would be required to vote without having the opportunity to amend or to make changes to the bill. Not surprisingly, charges of pork-barrel often accompanied these bills, and properly so. While the river and harbor bills included appropriations for improvements to the nation's major waterways--including the Mississippi River--they also included questionable allocations for improvements to minor

\[\text{Congressional Record, 46th Cong., 2nd sess., January 8, 1880, 247.}\]

\[\text{A suspension of the rules required two-thirds support from the House, but this was generally not a problem as the river and harbor bill included monies for hundreds of Congressional districts. Ibid., January 22, 1880, 478.}\]
creeks, streams, and "frog ponds." Speaker Randall was among those who believed that "the amounts appropriated heretofore have been in excess of the public requirements," and that the "Committee on Appropriations should say practically how much money should be appropriated in a given year for rivers and harbors." The proposed revisions to the House rules were designed such that that would be the requirement.

The revision of rules affected the Committee on Levees adversely as well. Rule 10 of the revised House rules, which set the number of Congressmen appointed to each committee, had been adjusted such that the thirteen members of the Committee on Levees would be cut to eleven, signifying a decline in the relative importance of the committee. Rule 11, which specified the jurisdiction of each committee, was left undefined for the Committee on Levees. The Committee on Rules had been unable to agree as to what should constitute the scope, power, and duties of

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42Ibid., 46th Cong., 3rd sess., February 26, 1881, 2148.
43Ibid., 46th Cong., 2nd sess., January 8, 1880, 254.
Committee on Levees and had left that decision to the
discretion of the whole House.\textsuperscript{46}

This provided flood control advocates with an
opportunity to expand the authority of the Committee on
Levees, and they endeavored to do so. During the ensuing
debate, the leading members of the Committee on Levees
offered three crucial amendments. The first would have
restored the number of Congressmen on the committee to
thirteen; the second would have extended the jurisdiction of
the Committee on Levees (and Improvement of the Mississippi
River) to include the tributaries of the Mississippi River;
the third, and most significant amendment, would have
granted the Committee on Levees the privilege of presenting
its appropriation measures directly to the House.\textsuperscript{47}
Unfortunately, though, all three of these amendments failed,
and the Committee on Levees was granted only a very narrow
jurisdiction over "the levees of the Mississippi River."\textsuperscript{48}

This defeat of the Committee on Levees and Improvement
of the Mississippi River was also a setback for the
Mississippi River Commission, as appropriations for that

\textsuperscript{46}\textit{Congressional Record}, 46th Cong., 2nd sess., February
5, 1880, 732-33.

\textsuperscript{47}\textit{Ibid.}, February 11, 1880, 882.

\textsuperscript{48}\textit{House Report #390}, 46th Cong., 2nd sess., February
27, 1880, 6.
organization would, in the future, be scrutinized by others than those most friendly to the needs of the lower Mississippi Valley. Just as importantly, it testified to the reality that the MRC could not, and did not, function independently. As an organization, it relied upon political forces for its funding and its jurisdiction, and, as long as that was the case, the MRC could never base its policies on science alone.
CHAPTER V

THE MRC AND THE POLITICAL AND FISCAL CONSTRAINTS
OF THE 1880s

Congressional flood control advocates enjoyed considerable success in the five years after the creation of House Committee on Mississippi Levees in 1875. Together with navigational interests, they secured the establishment of the Mississippi River Commission and oversaw that organization's adoption of a levees-only policy. They next sought to initiate a comprehensive, federally-subsidized levee program for the lower Mississippi River, but their hopes for the early inauguration of such a program were soon dashed. Shortly after the MRC's establishment in 1879, the Congressional coalition responsible for its creation began to weaken. From its inception, this alliance between flood control and navigational interests was tenuous and strained, and by the spring of 1880 the two interests were moving apart. As the coalition deteriorated, so did the broad-based support necessary for implementing an extensive federal program for the lower Mississippi River.

More than any other factor, the debate over House rules revisions in early 1880 drove a wedge between flood control
and navigational interests. Flood control advocates dominated the new Committee on Mississippi Levees and struggled to win control of Mississippi River appropriations from the House Commerce Committee, which sponsored annual rivers and harbors bills for the improvement of the nation's waterways. That latter committee also had to fend off an attack led by the Rules Committee, chaired by Speaker Samuel J. Randall, and the powerful Committee on Appropriations, both of which sought to limit the excesses associated with rivers and harbors bills. In the ensuing struggle, the Committee on Levees lost ground, while the Commerce Committee succeeded not only in securing control of appropriations for the Mississippi River but also in retaining the privilege of introducing rivers and harbors bills directly to the House. Under the revisions of 1880, the Commerce Committee would also control appropriations for the Mississippi River Commission, an arrangement which, for a number of reasons, represented a major setback for flood control interests.

According to its own bylaws, the MRC was responsible for developing plans both for improving navigation and for securing the river's banks from overflows. But, the Commerce Committee was concerned exclusively with

3Congressional Record, 46th Cong., 2nd sess., February 8, 1880, 254.
navigational issues and, as such, generally opposed appropriations for flood control works. Moreover, that committee had long evidenced an Eastern bias, to the neglect of the Mississippi Valley. Over the years, the Committee on Commerce had expended a total of more than $200 million in its various rivers and harbors bills, and only $7 million of that was allocated on the Mississippi River and its tributaries, the great inland sea that served as a drainage basin for more than 40 percent of the continental United States.2

During the same period, the Commerce Committee had failed to develop a systematic approach for dealing with problems of the Mississippi River, and its work was fragmentary and inadequate. Slow to accept innovation, the Commerce Committee had opposed James B. Eads's plan for improving the mouth of the Mississippi River, turning to him only after its own plan for the Fort Saint Philip Canal had failed to pass the Senate. Even at that point, the committee refused to throw the full weight of its support behind Eads's project. In fact, the Committee on Commerce was so incredulous and disbelieving that Eads had to proceed

2Ibid., January 21, 1880, 455; Ibid., January 22, 1880, 478.
with the work at his own cost until he had demonstrated the complete success of his plan.\footnote{Ibid., January 21, 1880, 456.}

Additionally, the powerful chairman of the House Commerce Committee, John H. Reagan of Texas, did not champion a levees-only policy for the lower Mississippi River. While not opposed to Mississippi River improvements, \textit{per se}, Reagan catered to broader interests and was unable to give adequate time and care to the consideration of the Mississippi River and its tributaries. The annual rivers and harbors bills were controversial and required considerable energy to maneuver through Congress. Chiefly, the members of that committee were motivated to spread the wealth as thinly as possible, in order both to maximize the number of Congressmen who would have an interest in the passage of the bill and to minimize the final appropriation. If the appropriation for the annual rivers and harbors bill was too large, it would provoke undue opposition; and if too few districts were represented, there would be insufficient support for passage. As such, large appropriations for the lower Mississippi River were anathema in that they would threaten the passage of the entire bill.

In part as a result of this situation, Reagan became a proponent of the less expensive outlet system for the lower
Mississippi River. Just as Robertson and Gibson of the House Committee on Levees turned to Eads's technical expertise for vindication of their views, Reagan looked to Captain John Cowden. The nation's leading advocate of the outlet system, Cowden insisted that diversions were far superior to the extensive levee system favored by most. In a report addressed to Reagan and printed by the House Commerce Committee, Cowden explained:

Levees, by all experience, raise the water and overflow the country, require fifty millions to start with, and no definite time for completion. Outlets, as demonstrated, do lower the water, and require $250,000 for a satisfactory practical test, and some ten millions to carry out the whole plan for river improvement and the reclamation of its now unproductive and comparatively worthless forty million acres of lowlands in about three years time. In short, the MRC found itself at odds with the chair of the Congressional committee responsible for its appropriations, and the chief contention between the two was among the most fundamental of policy issues. Together, these many factors handicapped the MRC's ability to secure the appropriations necessary to implement its new policies.

In its first year, the Commission completed surveys and studies that were authorized and paid for by the original act of 1879 and by a supplemental appropriation in 1880.

Having finished much of the survey work by 1881, the MRC prepared its first annual report. Preliminary in nature, this report adopted a policy of concentrating, rather than dispersing, the waters of the main channel. Such a policy necessitated contracting the river at wide places to achieve uniform width of roughly 3,000 feet and securing the banks from collapse. To accomplish this task, the Commission adopted an experimental policy based on the theory that the amount of sediment carried by a river decreases as the velocity of the river is decreased. To facilitate the creation of new banks where the river was too wide, the Commissioners planned to locate lightweight, flexible, and inexpensive constructions of poles, brush, and wire mesh along the new shoreline. According to theory, these contraction works, when properly placed and maintained, would sufficiently check the current to induce a deposit of silt, eventually burying the structure and creating the new river bank. In the early years, the MRC employed various types of contraction works for this purpose, including the hurdle, composed of a line of stakes with brush interlaced; the open dike, formed of stakes with waling strips on both sides filled loosely with brush; and curtains of wire or brush netting.  

The MRC adopted a revetment technique developed in Europe to protect the banks from the erosive effects of the river. Willow saplings were cut into uniform lengths, cross-stacked to a thickness of three to five feet, and then tied together with wire. These mattresses (or mats) were then secured to the river bank. Where the bank was exposed, these mats were constructed in place. To reinforce the subaqueous portions of the bank, the mats were completed on a mat launching barge. As sections were completed, the barge would pull out from under the mattress, and workers would then load the mat down with large stones (riprap) until it sank into place. If left undisturbed for several months, the saplings would send out roots and grow into the embankment, adding significantly to the stability of the mattress.

The Commission proposed to begin contraction and revetment work at six reaches of particularly difficult navigation along the lower Mississippi River. Each of these reaches, including New Madrid, Plum Point, Memphis, Helena, Choctaw Bend, and Lake Providence, suffered from excessive channel widths, shallow depths, and shifting bars and were considered excellent locations for testing the proposed

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6This description is based on Floyd M. Clay's account in History of Navigation on the Lower Mississippi (Navigation History, 1983), 18.
contraction works. The MRC also made plans to close all outlets and breaks in the existing system of levees between Cairo and New Orleans. Their report estimated the cost of such a program at $5,333,000 for the first year, including $1,010,00 for closing existing gaps in the levee system. While requesting that amount, the Committee on Mississippi Levees, the chief of engineers, and two leading members of the MRC intimated that the bare minimum necessary to begin work was $1.8 million. Following lengthy deliberations, the Commerce Committee presented its annual rivers and harbors bill to the House in February 1881. It included an appropriation of only $1 million for the MRC, or just more than 50 percent of the minimum appropriation requested.

Even this relatively small appropriation was placed in jeopardy, though, as negative attention quickly focused on the special appropriation for the MRC. Significantly, two of the original members of the Congressional coalition responsible for the creation of the MRC were among the most prominent of those who opposed the appropriation, providing further evidence of the growing schism between navigational and flood control interests. Massachusetts Republican

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7D. O. Elliott, Improvement of the Lower Mississippi River for Flood Control and Navigation, volume I (Vicksburg, MS: Mississippi River Commission, 1931), 16.

8Annual Report, 1880, 2733.
George D. Robinson, a member of the House Committee on Mississippi Levees in the 45th Congress, believed that a large appropriation for the MRC was premature. He reminded his colleagues that, while debating the bill to create that organization, "it was then said that Congress was not or would not be called upon to expend any money by that bill, nor would it be called upon for that purpose until the 'plan' proposed by that commission should be brought back for consideration by Congress and fully decided upon after debate." According to Robinson, these conditions had not been met. The "plan" proposed by the MRC was--by their own admission--preliminary only. Additionally, Congress typically passed rivers and harbors bills under a suspension of rules that limited debate. As a result, Robinson proposed that "this great question come in here by a separate bill and let the plan be considered in this House pro and con." Connecticut Republican Joseph R. Hawley had also advocated the creation of the MRC but expressed dismay with the "little, brief, imperfect, and practically useless report" offered by the MRC as justification of its new policy. Asserting that the commission had failed to distinguish properly between the two classes of

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9Congressional Record, 46th Cong., 3rd sess., February 10, 1881, 1437.

10Ibid., 1438.
improvements—those for navigational improvement and those for flood control—Hawley concluded that "I am not willing to vote even $100,000 with this meager scrap of information before me."\footnote{Ibid.}

Opponents also attacked the MRC's majority decision to adopt a levees-only policy, based mostly on concerns that such a policy was unlikely to succeed and that the costs of such a program would be excessive. Representative Benjamin Marsh, a Republican from Illinois, objected to the commitment of federal funds for the construction and repair of Mississippi levees. Citing the "coincidence between an appropriation of $1,000,000 in this bill and the $1,010,000 proposed in the plan . . . [for] filling up levee gaps," he sought assurances that monies appropriated to the MRC in the rivers and harbors bill would not be used for levee works constructed to protect private property from overflow.\footnote{Ibid., February 7, 1881, 1326.}

Likewise, George Robinson feared that Congress, by authorizing this initial appropriation, would be sanctioning a levees-only policy that might ultimately require "an appropriation of $50,000,000 or more."\footnote{Ibid.} Another opponent, Georgia Democrat James H. Blount, agreed that the cost of

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\footnote{Ibid.}
such a program would be excessive and related to the Congress a conversation that he had recently had with a member of the MRC. According to Blount, one of the commissioners had told him that their levees-only plan “in the course of ten years would cover at least an expenditure of one hundred millions of dollars.” That same unnamed commissioner added insult to injury by suggesting that the MRC “did not consider the matter [of MRC policy] was under the control of Congress at all.”\textsuperscript{14} Opponents also reminded their fellow Congressman that, at this preliminary stage, even the MRC was not unanimous in its support for such a program, as two members of that commission had filed a dissenting report.\textsuperscript{15}

In the face of growing opposition, the MRC’s supporters in Congress found themselves on the defensive. Confronted with the prospect of losing the entire MRC appropriation, Robertson and Gibson proposed a compromise. In exchange for passing the appropriation recommended by the Committee on Commerce, Robertson offered to restrict the MRC in its use of the allocation so that “not one dollar of it shall be applied to building a levee.”\textsuperscript{16} The opposition accepted

\textsuperscript{14}Ibid., February 10, 1881, 1438.

\textsuperscript{15}Ibid.

\textsuperscript{16}Ibid.
Robertson's concession and began drafting providers to achieve that propose. Several days later, the House adopted a version proposed by Robinson. It read, in part, "that no portion of the sum hereby appropriated shall be used in the repair or construction of levees for the purpose of preventing injury to lands by overflow or for any other purpose whatever, except as a means of deepening or improving the channel of said river." On February 17, the House passed the 1881 rivers and harbors bill by a comfortable margin.

Senate debate began the next day and continued for two weeks. Once again, the MRC appropriation attracted unwanted attention. Senator John A. Logan, a Republican from Illinois, opposed the appropriation, arguing that the provider adopted in the House fell short of its purpose. The final clause, "except as a means of deepening or improving the channel of said river," left the entire matter to the discretion of the commission, in that the MRC could construct levees as a means of deepening or improving the channel. With barely half of the senators in attendance, Logan's proposal to strike that clause from the provider failed. The bill was approved moments later with only

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17Ibid., February 15, 1881, 1657.

18Ibid., 1651.
thirty-two favorable votes.\textsuperscript{19} On March 3, the final day of his presidency, Hayes signed the 1881 rivers and harbors bill into law, and it included the $1 million appropriation for the MRC.

While that appropriation helped to validate the permanency of the MRC and to give evidence that, at some level at least, financial support would continue, few among the flood control advocates in Congress could consider it a success. First, the $1 million appropriation was too small, representing less than one-fifth the sum requested by the MRC and ensuring that financial constraints would play an important role in restricting MRC’s activities over the next year. More important, Congress had established a precedent of under-appropriating the MRC, a practice that would continue for the rest of the decade, plaguing the MRC’s efforts to regulate the lower Mississippi River. Second, by acquiescing to the provider, Congress placed additional restrictions on the development of MRC policy, and not just for the following year. That provider, in slightly modified form, appeared in every MRC appropriation up to 1890. Lastly, Congressional debate over the 1881 rivers and harbors bill evidenced the final collapse of the coalition of flood control and navigational interests in Congress.

\textsuperscript{19}Ibid., February 26, 1881, 2153.
The smaller than anticipated appropriation for 1881 also forced the MRC to scale back its plans for that year. Of the six trouble spots selected for improvement in the preliminary report, the MRC decided to limit its work to the two most treacherous reaches: Plum Point and Lake Providence. Preparatory work began in those two regions while the Commission continued its analysis of the lower valley. By the fall of 1881, the MRC completed its estimate for the projected cost of the recommended works along the length of the Mississippi River from Cairo to the Gulf. It approached the staggering figure of $33 million, dashing forever more conservative estimates. One of the commissioners, probably Major C. B. Comstock, favored an even more liberal estimate.

Also in the fall, the MRC completed a study of the Mississippi's river bed. Opponents of the jetty plan for the Mississippi River had long argued that the bed of the Mississippi River consisted of layers of tenacious blue clay. That being the case, these clay layers would resist almost indefinitely the corrosive actions of the current, confounding the general plan adopted by the MRC. After completing eighty-three borings, many of which exceeded two

20 Annual Report, 1881, 4, 9.
21 Ibid., 9.
hundred feet in depth, the engineers found no evidence of a clay bed at any point along the lower Mississippi River. The MRC Report of 1881 concluded that, from an engineering point of view, "this conclusion . . . is extremely important, and removes one of the greatest of the difficulties which it had been apprehended would interfere with the thorough and complete improvement of the river."22

The Commission requested $4,123,000 for the next fiscal year, a sum representing the original request of $5,123,000 minus the $1 million already appropriated in the 1881 rivers and harbors act.

In late November 1881, rising water interrupted the early progress at Plum Point and Lake Providence. By the spring of 1882, the entire alluvial area from Cape Girardeau to the Gulf of Mexico was inundated by what was perhaps the most destructive flood in the history of the Mississippi Valley.23 The levees protecting the valley failed at 284 different locations, and many were simply overtopped, reflecting the complete inadequacy of the levee system. Throughout the spring and into the summer, the MRC made little progress at either site, concentrating its limited resources in an effort "to avert undesirable changes in the

22Ibid., 15.

The great expense of this work quickly exhausted the MRC's limited financial resources, and all work was suspended until more money could be secured.

In the midst of the great flood of 1882, MRC President Q. A. Gillmore drafted a letter to Congress requesting a larger appropriation for the closing of gaps in the levee system of the lower Mississippi Valley. The extraordinary floods of the fall and spring had resulted in "numerous and extensive breaks," and earlier estimates would not cover the cost of these additional repairs. In its preliminary report of the previous year, the MRC had estimated the cost of closing all gaps at $2,020,000, to be distributed evenly over two years. As a result of the damage caused by the 1882 flood, Gillmore believed that those estimates would have to be doubled, resulting in a request for an additional $1,010,000 for 1882. Together with its earlier request for $4,123,000, the MRC sought a total of $5,233,000 for the fiscal year beginning in 1882, or more than five times its 1881 appropriation.

But there was reason to hope that Congress would meet this request. The widespread devastation of the 1882 flood had focused the nation's attention on the needs of the

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24 Annual Report, 1882, 2117.

25 Congressional Record, 47th Cong., 1st sess., April 17, 1882, 2946.
Mississippi Valley and had promoted a groundswell of support for federal aid. Additionally, the MRC enjoyed support from an unlikely source—President Chester Arthur, who proved himself to be a leading advocate for the Mississippi Valley. In a message to the Senate on April 18, Arthur expressed his support:

The immense losses and widespread suffering of the people dwelling near the river induce me to urge upon Congress the propriety of not only making an appropriation to close the gaps in the levees occasioned by the recent floods, as recommended by the commission, but that Congress should inaugurate measures for the permanent improvement of the navigation of the river and security of the valley. It may be that such a system of improvement would as it progressed require the appropriation of twenty or thirty millions of dollars. Even such an expenditure, extending as it must over several years, cannot be regarded as extravagant in view of the immense interest involved.  

Coincidentally, the Senate had begun debating a bill earlier that same day which would appropriate $5 million for the Mississippi River under the direction of the MRC.

Introduced by Senator William Pitt Kellogg, a Republican from Louisiana, this bill included the same provider that accompanied the MRC’s appropriation in the 1881 rivers and harbors bill. Benjamin Harrison, by that time a Senator from Indiana, spoke at considerable length in

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26 Senate Executive Document #152, 47th Cong., 1st sess., April 18, 1882. Arthur’s letter is also printed in its entirety in the Congressional Record, 47th Cong., 1st sess., April 18, 1882, 2975.
defense of this provider, drawing carefully the distinction among the three general systems of improvement—the levee system, the outlet system, and the jetty system. According to Harrison, only the "jetty system has for its prime object an increased low-water depth in the channel of the river."²⁷ As a one-time member of the MRC, Harrison’s words carried significant weight and helped defeat several Southern senators in their attempts to remove all restrictions for levee construction. The Senate approved the bill on April 25 and forwarded it to the House for immediate consideration.

But to the frustration of many, the Speaker, Ohio Republican J. Warren Keifer, chose not to act upon it in the House.²⁸ Keifer was a strong partisan and a Stalwart, a wing of the Republican party that traditionally frowned upon such legislation.²⁹ Nevertheless, the House Committee on Commerce circumvented the unpopular Speaker and incorporated the MRC’s emergency request for appropriation into the 1882 rivers and harbors bill. After more than four months of hearings during which members of the MRC spoke at great

²⁷Ibid., 2983.

²⁸Ibid., July 8, 1882, 5790.

length, the committee unanimously resolved “that liberal appropriations should be made this year to carry out . . . improvement[s]” along the lower Mississippi River.\textsuperscript{30} Yet, when introduced to the House in mid-June, the 1882 rivers and harbors bill included an appropriation of $4,123,000 for the MRC, approximately 20 percent smaller than the amount approved by the Senate two months earlier.

In addition to the smaller appropriation, the provider that accompanied earlier appropriations for the MRC had been modified. While the general restriction against constructing or repairing levees “for the sole and exclusive purpose of reclaiming lands or preventing injury to lands by overflows” remained, it had been altered slightly and amended. A second provider read “that the commission is authorized to repair and build levees if in their judgment it should be done as part of their plan to afford ease and safety to the navigation and commerce of the river.”\textsuperscript{31} These changes were clearly intended to give the MRC greater latitude to initiate the repair and construction of levees along the Mississippi River in the wake of the 1882 flood.

As in the previous year, the bill faced stiff opposition in the House, and the new chair of the House

\textsuperscript{30}\textit{Congressional Record}, 47th Cong., 1st sess., June 15, 1882, 4940.

\textsuperscript{31}\textit{Ibid.}, June 16, 1882, 5017.
Commerce Committee, California Republican Horace Page, was forced to defend the largest-ever rivers and harbors bill, totaling more than $17 million. More than half of that sum, or $8,705,000, went to the Mississippi River and its tributaries, and, not surprisingly, those portions of the bill provoked considerable opposition, much of which was directed at the MRC specifically. In the House, Indiana Republican Thomas Browne sought nothing less than the destruction of the MRC. Admitting that "mine is a radical amendment," Browne proposed to leave the whole MRC appropriation entirely to the discretion of the secretary of war, instead of requiring the adoption of the MRC program. The Indiana congressman opposed the levees-only plan favored by the MRC and hoped that, by destroying the influence of the MRC, logic would prevail, and the policy would be abandoned.\textsuperscript{32} Iowa Republican William P. Hepburn opposed the relaxation of restrictions on levee construction and offered an amendment to prevent the MRC from spending money on levee works.\textsuperscript{33} William S. Holman, an Indiana Democrat, proposed a lengthy amendment which would have authorized John Cowden to begin construction of an outlet below the city of New

\textsuperscript{32}Ibid., June 17, 1882, 5052.

\textsuperscript{33}Ibid., 5056.
Orleans. Each of these amendments failed, and the House passed the bill on June 17.

The Senate, which had already supported a larger appropriation for the MRC, added 150 amendments to the bill before approving it, swelling the appropriation to almost $20 million. This amended version passed the Senate on July 15, and the bill was sent to a conference committee. After a week of difficult negotiations, a final draft was approved. It included appropriations totaling $18,700,000, more than double the 1880 appropriation.

The unprecedented expenditure of the 1882 rivers and harbors bill drew sharp criticism. A New York Times editorial attacked the bill as "a monstrous offspring of Congressional recklessness and cowardice," a bill which is "full of jobs, small and great, which are calculated simply to squander the public money." That same paper called for President Arthur "to place himself on the side of economy and public decency by vetoing it." The New York Tribune, the New York World, the New York Sun and newspapers from all

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34Ibid., 5061.
35Ibid.
36Ibid., July 25, 1882, 6484.
over the country voiced similar sentiments. With an avalanche of public opinion behind him, Arthur vetoed the bill on August 1. In a letter to the Congress, he explained that the bill included appropriations which "greatly exceed in amount the needs of the country for the present fiscal year." He suggested that the Congress enact only half of the aggregate amount provided for in the bill. Despite the popularity of Arthur's action, Congress quickly overrode the veto.

Though unpopular, the large appropriation of 1882 invigorated the MRC and renewed hope that adequate funding would be forthcoming. To facilitate the expansion of its operations, the MRC divided the lower Mississippi River into four districts--the First District, 220 miles from Cairo to the foot of Island No. 40 (headquarters, Cairo); the Second District, 180 miles from Island No. 40 to the mouth of the White River (headquarters, Memphis); the Third District, 220 miles from the White River to Warrenton, Mississippi (headquarters, Vicksburg); and the Fourth District, 484 miles to the Head of Passes (headquarters, New Orleans).

In addition to continuing work at Plum Point and Lake

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38Reeves, Gentleman Boss, 280.

39Congressional Record, 47th Congress, 1st sess., August 1, 1882, 6759.

40Annual Report, 1882, 2118.
Providence, the Commission planned to begin work at Memphis and New Madrid and to initiate surveys at Helena and Choctaw. The MRC also allotted $1,300,000, fully one-quarter of its budget, to close existing breaks and gaps in the levee of the lower Mississippi River.\textsuperscript{41}

As in the previous year, though, the MRC faced numerous unforeseen difficulties, many of which increased the cost of the work. Extremely cold weather throughout December and January hampered progress, cutting off stone supplies from the Ohio and Upper Mississippi. At both Plum Point and Lake Providence, large amounts of mattress works, which were afloat in place, but unsunk for lack of stone, were lost. As the weather began to warm, the river began to rise rapidly and "finally culminated in a flood nearly as great as that of 1882."\textsuperscript{42} Under those conditions, the engineers suspended much of the work. Work on the levees did proceed, "though under very great disadvantages," and with mixed results. As a matter of consequence, emergency levee work involved continuous vigilance and frequent repairs, making it expensive but not of immense long-term value.

Other difficulties contributed to spiraling costs, as well. As the flood waters receded, low-lying areas remained

\textsuperscript{41}Ibid., 2149.

\textsuperscript{42}Ibid., 2410.
saturated. The spring season proved to be, as a result, "unusually sickly, and labor was scarce and inefficient." In addition to the scarcity of labor, the Commission had difficulty in securing an adequate and timely supply of the materials used for the construction of revetment works. As local supplies were exhausted, the Commission was forced to look elsewhere--often up to sixty or seventy miles from location--to secure materials, resulting in higher than anticipated transportation costs. Additionally, two years of high water had proven that the lightweight materials used originally in the construction of mats and screens were inadequate. The work required heavier materials, with a proportionate increase in cost. By late-1883, the MRC had nearly exhausted its resources and began to look to Congress for additional appropriations.

As the MRC would soon discover, however, Congress was no longer in the mood for large appropriations for the MRC or for rivers and harbors bills generally. In the November elections, House Republicans lost in droves, and the excesses associated with the 1882 rivers and harbors bill played no small part in this turnover. The new House had

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43 Ibid.

44 *Nation* magazine claimed that Republicans lost the House due in large part to the excessive 1882 river and harbor act (see editorial, vol. LIV, 347, May 12, 1892).
200 Democrats to 119 Republicans, and the majority Democrats initiated a period of reform. In the sixteen years from 1866 to 1882, the Congress passed fourteen rivers and harbors bills. During the next twenty-seven years, only twelve rivers and harbors bills would be enacted, and the tendency of these bills to increase in size would also be arrested.

With respect to the MRC, the remainder of the decade was painfully lean. Excluding several small appropriations for additional surveys and for office expenses and salaries, the MRC received only four additional appropriations through 1889, including $1 million in January 1884, $1,350,000 in July 1884, $2 million in August 1886 and $250,000 in August 1888. Throughout these years, the reports of the engineers were rife with requests for larger and more systematic appropriations. In the 1883 Annual Report, the MRC lamented that the emergency appropriation of $1 million "came too late" and that "much more satisfactory results might have been secured had the appropriation for these [revetment]..."

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46 Edward Lawrence Pross, "A History of Rivers and Harbors Appropriation Bills, 1866-1933" (Ph.D. diss., Ohio State University, 1938), 91.
works been more liberal.\" The 1887 Report disclosed that 
"in the absence of appropriations no work has been done in 
the districts below Cairo, beyond what was necessary for 
care and preservation of property." Even so, losses 
amounting to $200,000 represent "deterioration [of the 
plant] during a long period of disuse," and "a constant 
expenditure" was required "to secure the idle plant from 
decay and total loss." In 1889, the MRC protested that 
"the Commission are seriously embarrassed this season by the 
condition of the plant at their disposal. The long period 
of inactivity consequent on failures of appropriations . . . 
caused the plant to deteriorate very rapidly and extensive 
repairs are needed to place it again in proper condition for 
use.\" The failure of yet another appropriations bill in 
early 1889 prompted the following reaction from the new 
president of the MRC, Colonel C. B. Comstock:

The failure of this bill at the last session of 
Congress again leaves the Commission in a very 
embarrassing situation. Much of the work now projected 
must be left in an unfinished and, hence, dangerous 
condition, while much work of great importance and 
which could be done this season to great advantage, 
must necessarily be neglected for lack of funds to 
carry it on. . . . Congress at its last session also 
omitted to provide for the expenses of the Commission. 
. . . [which] is therefore again left without funds to

\textsuperscript{47}Annual Report, 1884, 3.

\textsuperscript{48}Annual Report, 1887, 2690.

\textsuperscript{49}Annual Report, 1889, 2595.
pay the salaries of its civilian members or even the necessary expenses of travel and inspection. As the responsibility for the proper application and disbursement of large sums of money and the carrying out of extensive and important plans of improvement rests upon them, the embarrassment entailed by the impossibility of inspecting the work or of meeting for consultation or action, seems sufficiently obvious, and it is hoped that Congress will give this matter early attention.\textsuperscript{50}

By the close of the decade, the irregular and inadequate Congressional appropriations had effectively paralyzed the MRC. Opportunities had been lost, expensive equipment had deteriorated, and the confidence, and perhaps arrogance, which characterized the early MRC had disappeared. In its place was a quiet resolve to work within the financial and legal restrictions placed upon it.

Despite these many setbacks, the 1880s were not entirely without success for the MRC. According to the original Mississippi River Commission Act, that body’s primary responsibility was the improvement of navigation along the lower Mississippi. Toward that end, the Commissioners adopted a policy of concentrating the waters of the main channel, and that policy, where implemented, was moderately successful. At both Plum Point and Lake Providence, the contraction works had improved low water navigation. In their 1883 report, the MRC noted that “these two long stretches of habitually difficult navigation showed

\textsuperscript{50}Ibid., 2597.
this year a depth twice as great as the bars above and below them, and this result can only be attributed to the works executed by the Commission.” The MRC also contributed to the general improvement of the levee system of the lower Mississippi River, particularly in those regions where local efforts had proven inadequate. While the vast majority of levee work along the lower Mississippi was accomplished through and paid for by local levee districts, some funds became available through the MRC after 1882. By 1890, the MRC had made approximately $3 million available for building, repairing and strengthening levees. The MRC also played an important role in coordinating the efforts of the various levee boards.

The MRC, however, also carried a number of misconceptions into the next decade and beyond. From its earliest origin, the MRC opposed cutoffs as a method of river improvement, stating in its first report that “the channel should be fixed and maintained in its present location, and that no attempt should be made to straighten the river or to shorten it by cutoffs.” The Mississippi River followed a winding route to the sea, meandering over a

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51 Annual Report, 1883, 2411.
52 Annual Report, 1882, 2150.
53 Annual Report, 1880, 2734.
broad alluvial region of its own creation. During flood
stages, the banks along the outside of the bends were
particularly vulnerable to collapse, as the river's momentum
ate away at the banks. A number of prominent engineers,
including Eads himself at one point, believed that the
benefits of cutoffs could be substantial. By cutting off
the bends, the river could be shortened and the velocity
increased, facilitating the discharge of flood waters to the
sea.\textsuperscript{54} But majority opinion still held that cutoffs
increased the destructive capacity of the river, and the MRC
agreed. Its refusal to consider cutoffs complicated their
efforts to secure a permanent channel for the Mississippi
River and increased significantly the cost of bank revetment
and levee construction. Additionally, these expensive
improvements, once completed, were exposed to undue strain,
particularly during periods of high water.

The MRC also favored contraction works as the most
effective method of deepening the channel. Initially, the
commissioners theorized that inexpensive, lightweight
materials would suffice in the construction of these works,
but they soon discovered otherwise. The lightweight
constructions were simply too weak to withstand the river's
powerful currents. By 1883 the Commission admitted that

\textsuperscript{54}\textit{Congressional Record}, 45th Cong., 3rd sess., January
16, 1879, 508.
these lightweight works “proved generally too weak for the work imposed upon them” and began to construct more substantial works at greater expense.\textsuperscript{55} After much experimentation, the MRC began driving columns of long wooden poles along the line of proposed banks, deep enough to ensure stability. These pilings were then lashed together for additional support, and willow mats were attached to the structure. Theoretically, these structures would trap sediment and create new banks. More often than not, though, these structures, like their lightweight predecessors, were undermined by the current and washed away. Throughout the 1880s and well into the next decade, the MRC continued its efforts to create more stable contraction works, but they met with little success.\textsuperscript{56}

Undoubtedly, the MRC’s levees-only policy was the most ruinous of those misconceptions carried into the next decade. The Commission as a whole held extraordinary confidence in the ability of levees to solve the many navigational and flood control problems of the lower Mississippi River. According to the jetty theory favored by the MRC, an adequate levee system would contribute to the river’s ability to deepen its own channel and clear

\textsuperscript{55}Annual Report, 1883, 2410-11.  
\textsuperscript{56}Clay, History of Navigation, 21.
obstructions, thereby improving low water navigation. This conviction served as the primary justification for all levee works accomplished under the MRC in the 1880s, since the providers attached to each of the MRC appropriations in that decade specifically forbade the construction of levees for the purpose of flood control. Even so, the MRC understood that the lower valley would benefit from the protection of these levees. Additionally, the Commissioners believed that a deepened channel would offer less resistance to the flow of water, further facilitating the rapid discharge of flood waters to the Gulf and lowering high water marks.57

For all of these reasons, the MRC adopted a policy designed to contract the waters of the Mississippi, a fateful decision that ran counter to the natural actions of the river. Nature preferred to disperse flood waters, and under extreme conditions the waters of the lower Mississippi River occupied a region more than fifty miles wide all the way to the Gulf. During high water, the lower Mississippi also employed several outlets to facilitate the discharge of flood waters. The Yazoo, Tensas, and the Achafalaya Basins were the most significant of these, and after 1882 the MRC committed itself to the closure of all three.58 Progress on

57Annual Report, 1880, 7-8.
58Civil Works: Flood Control on the Lower Mississippi River (Fort Belvoir, VA: The Engineer Center, 1949), 7.
the Achafalaya outlet was delayed for a variety of reasons, but work began on the Yazoo and Tensas Basins in the fall of 1882 in conjunction with state and local organizations. As these outlets were closed and contraction works proceeded, those areas closest to the river became more densely settled and the contest between man and river was underway. For engineers, the pressure to secure the levees that protected these growing settlements became ever more intense.

The river, on the other hand, refused to cooperate. To the MRC's considerable dismay, gauge readings from the floods of 1882, 1883, and 1884 seemed to indicate that flood heights on the river were rising, challenging the MRC's theory that levees would contribute to the deepening of the channel and, ultimately, a depression of the flood plain. But there was little consensus among the Commissioners over how best to interpret these readings. In a minority report of 1884, Comstock blamed levee construction for the rise in flood surface. Gillmore and the rest of the commission attributed the rise to the closing of outlets and discussed plans to delay work at the largest Mississippi River outlet.

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60 *Annual Report*, 1883, 2435.
the Achafalaya basin.\textsuperscript{61} Whatever the cause, these higher readings did not lead the Commissioners to reevaluate their overall strategy. Instead, they generally agreed that the problem would be ameliorated over time as the river gradually enlarged and deepened its bed. For the interim, the Commissioners recommended raising the levees along the lower portions of the river.\textsuperscript{62} Thereafter until 1927, the MRC would respond to rising flood levels by building higher and stronger levees.\textsuperscript{63}

Clearly, the 1880s represented a difficult period for the MRC. Throughout that decade, the MRC found itself severely handicapped in its struggle to overcome the navigational and flood control problems of the lower Mississippi River. The greatest of these handicaps was fiscal, as Congress refused to appropriate monies on a scale appropriate to the task. Based on little more than a rudimentary understanding of the Mississippi River, the Commission had adopted a levees-only policy that it could not implement, yet was continually forced to justify. After ten years of defending itself in its quest for adequate

\textsuperscript{61}\textit{Annual Report,} 1885, 2873.

\textsuperscript{62}\textit{Annual Report,} 1884, 20.

\textsuperscript{63}George D. Waddill, Memorandum titled "History of the Mississippi River Levees, 1717, 1944." Office of the President of the Mississippi River Commission, Vicksburg, Mississippi, 1944, 5.
funding, the MRC found itself increasingly committed to policy that had never been properly tested. Additionally, the collapse of the Congressional coalition of flood control and navigational interests had the effect of isolating the MRC while increasing that body’s reliance on a comparatively small group of flood control advocates in Congress. Almost without exception, those flood control advocates favored a levees-only policy for the lower Mississippi, and the MRC could ill afford to alienate that group. In short, the Commission’s policy was shaped not only by scientific principles, but by political and economic factors and the restrictions of legislative enactments.
CHAPTER VI

THE MRC AND THE REALIZATION OF ITS LEVEES-ONLY POLICY, 1890-1897

Throughout the 1880s, the Mississippi River Commission struggled under financial and legal restrictions imposed by Congress and, as a result, made only marginal progress toward the implementation of its grand scheme for the lower Mississippi River. Though contraction work began in 1880 and levee work soon followed, conditions along the lower river had not improved significantly by the end of the decade. In its Annual Report of 1888, the MRC admitted that levee heights were inadequate and that substantial resources would be necessary to bring the levees to standard. These resources were not immediately forthcoming, though, and little progress was made before the severe flood of 1890. In response to the widespread devastation, lawmakers finally increased appropriations for the MRC and removed some legal impediments to levee construction. With a freer hand and more adequate funding, the MRC began to pursue more vigorously its navigational and flood control policies for the lower Mississippi River after 1890.
Originating in the Ohio Basin, the flood of 1890 was augmented by heavy rainfall in the Central Valley and in the basin of the White River. By February, flood waters had reached dangerous levels throughout the lower Mississippi River, and the MRC began diverting its remaining resources, about $220,000, to hold the levees. Despite their best efforts, the levees failed at numerous locations. Out of an aggregate of 1,294 miles of levees, 6.5 miles of breaks were formed with most of these occurring below the Arkansas River.¹

Significantly, the maximum discharge of the 1890 flood was not as great as that of 1882, yet "the river was higher than ever before" below the Arkansas River all the way to New Orleans, with the sole exception of Vicksburg.² Clearly, the efforts of the MRC together with state and local levee organizations had contributed to higher flood readings. Yet, as in mid-1880s, these higher readings did not lead the Commissioners to reevaluate their overall strategy. Instead, as they explained in their 1890 Annual Report, "the lesson taught by the flood is the same as that of other great floods, namely, the necessity of raising and

¹Annual Report, 1890, 3083-84; Robert W. Harrison, Alluvial Empire (Little Rock, Arkansas: Pioneer Press, 1961), 109-10.

²Annual Report, 1890, 3083.
strengthening the levees." In early May, Congress passed a joint resolution appropriating $1 million in emergency money for the lower Mississippi River. The understanding at the time was that this sum would be taken out of the appropriation for the lower Mississippi in the rivers and harbors bill then under consideration in the Rivers and Harbors Committee, a standing committee established in 1883 for the specified purpose of handling those bills. This new committee proved to be no friendlier to the lower Mississippi than its predecessor, the House Commerce Committee, as evidenced by the 1890 rivers and harbors bill.

When introduced to the House, that bill appropriated only $2 million for the MRC and included the same restrictive provider that accompanied earlier legislation. To make matters worse, the members of the House quickly adopted an amendment changing the appropriation to $1 million in compensation for the emergency money appropriated in the spring. Flood control advocates, who had always

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3Ibid., 3084.

4Congressional Record, 51st Cong., 1st sess., May 24, 1890, 5256.

5Ibid.; Edward Lawrence Pross, "A History of Rivers and Harbors Bills, 1866-1933" (Ph.D. diss., Ohio State University, 1938), 100.

6Congressional Record, 51st Cong., 1st sess., May 24, 1890, 5256.
opposed restrictions of any sort on levee construction, proposed to strike the provider from the bill and, in the process, stirred up a hornets' nest of opposition.7 The motion failed, 25 to 66.8 After approving the bill largely as it was introduced, the House forwarded it to the Senate for consideration.

Uncharacteristically, Senate flood control advocates took a leading role in promoting the interests of the MRC in 1890. After sitting on the bill for more than two months, the Senate quickly adopted a substitute amendment for the MRC appropriation. Introduced by the long-time chair of the Senate Commerce Committee, Maine Republican William P. Frye, that amendment increased the appropriation from $1 million to $3.5 million.9 Additionally, the amendment did not include the standard provider, though it did require that monies be spent "in such a manner [as] . . . shall best promote the interests of commerce and navigation."10

Surprisingly, Frye's amendment survived the conference committee for the bill and was sent to the House for approval on September 6, 1890. Although the change in

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7Ibid., 5257.
8Ibid., 5262.
9Ibid., August 15, 1890, 8600.
10Ibid.
language was certainly open to interpretation, Indiana Democrat William S. Holman objected to the removal of the provider, claiming that “the language of the bill is revolutionized” to the effect that “the construction of levees, instead of being made subordinate, is now to be one of the primary objects of this legislation.”

Over his objections, the House adopted the compromise bill, and it became law two weeks later, on September 19, 1890. In its final form, the 1890 rivers and harbors bill was a landmark piece of legislation that contributed to the rapid expansion of levee construction under the MRC in the first half of the decade.

The $3.5 million appropriation for the MRC represented the second largest ever for that organization. Additionally, the Commissioners interpreted the change in the language of the bill in a favorable way. According to the 1891 Annual Report, “the language [of the bill] . . . makes several changes in the legislation under which the Commission has been acting, the most important of which is the removal of restrictions as to the building of levees.”

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11Ibid., September 6, 1890, 9818.

12Statutes at Large, 51st Cong., 2nd sess., 1890, Ch. 26, 426-65.

13Annual Report, 1891, 3397.
The MRC promptly allotted $1.45 million for the construction of levees along the lower Mississippi River.\textsuperscript{14}

In spite of the several benefits associated with the 1890 rivers and harbors bill, 1891 proved to be a difficult year for the MRC. In the spring, a serious flood visited the lower Mississippi Valley. Though not as great as the previous year's high water, this flood caused five large crevasses of an aggregate length of approximately one mile. By fall, the problem was of an opposite nature. Water levels dropped sharply along the lower Mississippi River, causing serious hardship to navigation. The MRC reported that large shipments of grain and other perishables that had already found markets in Europe were held up in the grain elevators in St. Louis and elsewhere, unable to proceed down the shallow river.

In view of the serious loss of trade that resulted from low water conditions, the MRC began to reconsider its singular policy for improving navigation along the lower river. For the first time, the MRC conceded that it "was willing to try the experiment of dredging."\textsuperscript{15} The high cost of fighting the river at both high and low stages exhausted the financial resources of the MRC, and by June of 1892, it

\textsuperscript{14}\textit{Ibid.}, 3398.

\textsuperscript{15}\textit{Annual Report}, 1892, 2902.
was reporting that "demand for funds . . . has become more or less pressing."\(^1\)

Relief would soon be forthcoming, as Congress had been working on a rivers and harbors bill since April. For several months, that body had been grappling with an issue of longstanding importance to the MRC. A severe lack of funding had plagued the MRC throughout its first decade, but the problem was not merely one of enough money. The MRC had also suffered from an inability to plan ahead, for it never knew how much money would be made available for the following year; nor could it make contracts for work beyond the next year. As a government agency, the MRC was forbidden by law from entering into a contractual obligation beyond the limit of its immediate resources. Additionally, since 1882 the Congress had taken to passing rivers and harbors bills on a bi-annual, rather than an annual, basis. As Mississippi Democrat Thomas C. Catchings explained to the House, "the result has been that at least for one half of the time there has been a total suspension or cessation of . . . works," during which the necessary labor was disbanded and the plant lay idle and unproductive.\(^2\) When contracts

\(^{1}\)Ibid., 2887.

\(^{2}\)Congressional Record, 52nd Cong., 1st sess., May 5, 1892, 3980. The MRC's annual reports are full of references to the damaging affects of Congressional policy on appropriations. See the annual reports for 1882 (p. 2117);
were entered into, they were made for one year only and at higher than average prices, as the contractors were unwilling to make contracts "except at prices sufficiently high to compensate for the labor and annoyance and risk involved."

For the first time, those drafting the rivers and harbors bill included a provision which allowed the secretary of war to make multi-year contracts for the completion of specific projects. To facilitate that, Congress appropriated $1,125,000 for the first year, while authorizing the secretary of war to make additional contracts "not exceeding in the aggregate one million six hundred and twenty-five thousand dollars per annum for three years." That appropriation, while not overly generous, did allow the MRC to proceed in its work with the relative assurance that adequate resources would be forthcoming. Also, as predicted, the MRC was able to secure better prices from local contractors, and the cost of levee work fell from twenty-one cents per cubic yard of earth to nine cents.

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1883 (p. 2410); 1885 (p. 2860); and 1889 (p. 2597).

19Ibid.

19Statutes at Large, 52nd Cong, 1st sess., 1892, Ch. 158, 106-7.

20Annual Report, 1895, 3644.
With this greater assurance, the Commission was also able to take a more systematic approach to levee construction along the lower Mississippi River. In its annual report of 1893, the MRC gave a detailed explanation of its strategy. Due to financial limitations, the Commission planned to adopt a conservative policy directed first at closing all breaks in the levees system with the goal of establishing a provisional grade only. Such a grade would be of sufficient strength "to resist high waters that recur with substantial regularity" but would be of insufficient height and strength to confine the entire discharge of the greatest possible flood. The MRC believed that this policy would "give the earliest and widest protection, even if this protection is not complete."\(^\text{21}\) As construction progressed, levee heights varied considerably from site to site depending on local contributions and conditions, but the MRC generally sought to attain "a grade of 3 feet above the highest [average] flood."\(^\text{22}\)

Together with local and state levee boards, the MRC made considerable progress throughout the mid-1890s. In its annual report of 1895, the Commission predicted that by the

\(^{21}\) *Annual Report*, 1893, 3559.

\(^{22}\) *Annual Report*, 1895, 3626. In this context, "highest flood" did not refer to the greatest flood on record, the 1882 flood, but rather the several moderate floods of the early 1890s.
summer of 1896 "all these [levee] lines will be continuous and very nearly if not absolutely of standard grade and dimension." As a testament to the MRC's contributions, the report included a chart that compared federal expenditures on levee construction in Missouri, Arkansas, Mississippi, and Louisiana with local and state contributions in those same states. This chart evidenced that, between July 1, 1892 and June 30, 1896, federal contributions outstripped state and local contributions. For the first time since its inception, the MRC was fulfilling the dreams of its creators and presiding over the construction of a federally subsidized levee system for the lower Mississippi River.

But all was not well with the MRC. By 1894 the Commissioners freely admitted that those levee works already completed had contributed to an increase in volume and that "accompanying this increase in volume is, of course, an increase in flood height." In the past, the MRC held firmly to its initial contention that the greater volume would increase the scouring power of the current and contribute to an enlargement of the river channel.

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23 Ibid., 3627.
24 Ibid.
25 Annual Report, 1893, 3560.
Nonetheless, by the mid-1890s, the Commissioners were more careful to qualify that assertion. In 1894, they conceded that "to what extent such lowering will take place and when, are questions not yet answered by experience, and upon which opinions differ." The next year, the Commissioners once again defended the levee system, but endeavored to do so based in part, at least, on its value as a flood control device. While admitting that the exact correlation between volume and the size of the channel was still unknown, the Commissioners held that "the results of levees in excluding overflow from the rich lands on either side of the river the conclusions are more definite, and sufficiently so to justify the claim of the success of the levee system."

Additionally, by the mid-1890s the MRC admitted that its attempts to improve the navigability of the river through bank revetment and contraction works had generally failed. In fact, the Commissioners announced their intention to abandon contraction work altogether in 1896. The moderate success of their endeavors in that area simply did not justify the high cost of the work. Also in 1896, the Commissioners acknowledged that "the problem of bank

26 Annual Report, 1894, 2714.

27 Annual Report, 1895, 3625.
protection has been found extremely difficult." The earliest mattresses made were too small and too light to withstand the heavy currents of the lower river. Subsequently, the MRC increased the width of the mattresses from 100 to 300 feet and the length from about 600 to 1,200 feet and more. By the mid-1890s, the Commission had also adopted changes in the structure and texture of the mattresses in order to achieve a greater degree of flexibility without a corresponding diminution of thickness and strength.  

While these improvements had generally proven successful, they were also very expensive. The MRC estimated that these new mattresses cost about $30 per running foot of bank protected or approximately two and a half times earlier estimates. At that price, the completion of such work along the 600-mile stretch of river from Cairo to Vicksburg could cost as much as $63 million. The MRC also had difficulty securing materials for these massive structures, which required five times as much material as the earliest mattresses. Under these conditions, the MRC estimated that it could reasonably

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28 Annual Report, 1896, 3419.
29 Ibid., 3421.
30 Ibid.
expect to acquire materials adequate only for about fifteen
miles of work per year.\textsuperscript{31}

These many difficulties forced the MRC to undertake a
very fundamental policy shift, which the Commissioner's
communicated in their annual report of 1896:

From all these facts together it became apparent
several years ago--not all at once, but gradually, as
facts accumulated and the deductions of experience were
unfolded--that it was not possible by any or all of the
methods which have been employed to accomplish such
permanent improvement of the river from Cairo down as
was necessary to meet the urgent demands of commerce
within any reasonable time to come.\textsuperscript{32}

Based on those realities, the MRC allotted no money for
either bank revetment or channel improvement for the fiscal
year ending June 30, 1897, except such funds as were
necessary to continue experimental work at Plum Point and
Lake Providence.\textsuperscript{33} To maintain and improve the river's
navigability, the MRC turned almost exclusively to dredging,
and by 1896 that work consumed fully 30 percent of the MRC's
annual budget.

By temporarily abandoning expensive river improvement
projects, the MRC was able to concentrate ever greater
percentages of its resources on the construction of levees,
and the process grew increasingly circular. As the levee

\textsuperscript{31}Ibid., 3423.
\textsuperscript{32}Ibid., 3421-22.
\textsuperscript{33}Ibid., 3421.
system was extended, flood levels rose, and the levees were raised. Due to the nature of levee construction, costs grew at an almost exponential rate. By 1896, those levees already constructed had so raised the flood line that levee-building, repair, and protection absorbed much of the MRC's resources.  

But the Commissioners did not seem to care. Throughout the decade, they had become increasingly convinced that a properly constructed and maintained levee system was absolutely necessary for the long-term improvement of the lower Mississippi River. A major flood in the spring of 1897 would shake--but not destroy--that confidence.

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34 Albert E. Cowdrey, This Land, This South (Lexington: University Press of Kentucky, 1983), 123-24.
CHAPTER VII

THE NELSON REPORT AND THE AFFIRMATION OF LEVEES-ONLY, 1897-1911

Through the early 1890s, the MRC made considerable progress in its scheme to levee the lower Mississippi River. It oversaw the extension and enlargement of the system below Cairo and directed the closing of most of the major outlets of the lower Mississippi, including the Yazoo, the Tensas, the White, and, most recently, the St. Francis river basins. By 1896, the members of the MRC generally believed that the levees "were just as good as the commission and the people could possibly make them."

That system was put to the test, however, and found lacking in the spring of 1897. The high water of that year produced some of the highest flood levels ever recorded below Cairo. While the volume of the flood probably did not approach that of 1882, the now substantial levee system constricted flood waters such that Helena, Arkansas, recorded flood levels at more than three

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and a half feet above the previous high mark. In testimony to Congress, Commissioner Robert Taylor concluded that the "flood was, in a general way, the greatest of record" and conceded to the inadequacy of the levees. "I think," he admitted, "they were not high enough, nor strong enough."

The destruction wrought by the 1897 flood created a crisis for the various levee districts of the lower Mississippi River, all of which had assumed enormous debt to pay for the extensive levee program and were not well positioned to finance expensive repairs.

More importantly, the 1897 flood convinced Congress to reassess the value and the direction of its flood control program for the lower Mississippi River. In the late spring of 1897, Congress authorized the Senate Commerce Committee to begin an investigation of various flood control methods and to draw conclusions as to the probable effectiveness of these methods in alleviating the flood problems of the lower Mississippi River. Among the methods to be considered were reforestation, reservoirs, the outlet system, and the levee system. The Commerce Committee was also authorized to

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\(^3\) On April 4, flood levels reached 51.8 feet at Helena, exceeding the previous record, 48.1 feet in 1886, by 3.7 feet. *Annual Report of the Mississippi River Commission, 1897* (Washington: Government Printing Office, 1898), 3523.

\(^3\) Ibid., 241.
evaluate the effectiveness of the MRC and to make conclusions as to its continued existence.\textsuperscript{4}

As was the common practice, the Commerce Committee delegated these responsibilities to a special Senate subcommittee, which was charged with holding hearings and initiating studies. This seven-member subcommittee included Republicans Knute Nelson of Minnesota, Stephen B. Elkins of West Virginia, George W. McBride of Oregon, Jacob H. Gallinger of New Hampshire and Democrats George V. Vest of Missouri, James H. Berry of Arkansas, and Donelson Caffery of Louisiana. Given the scientific and technical nature of the investigation, the committee relied very heavily on expert opinion. Of course, the MRC and the Army Corps of Engineers employed many of the nation’s top hydraulic engineers in one capacity or another, and the Senate panel relied overwhelmingly on these sources for information.

This heavy reliance on members of the MRC and other prominent Corps of Engineer officials undoubtedly biased the subcommittee’s findings in favor of the policy status quo. Of the seven members of the MRC, six--including G. L. Gillepsie, B. M. Harrod, Robert S. Taylor, Henry Flad, Amos Stickney, and Thomas H. Handbury--gave extensive depositions.

\textsuperscript{4}B. G. Humphries, \textit{Floods and Levees of the Mississippi River} (Memphis: Mississippi River Levee Association, 1914), 53.
Much of this testimony naturally reflected the views of the MRC, an organization wholly committed to a levees-only policy. The subcommittee also did much of its investigation aboard the MRC's flagship vessel, the Mississippi. Beginning in February 1898, the subcommittee took that vessel in the company of the MRC from Cairo, Illinois, down the Mississippi River all the way to the Gulf of Mexico. In its 1898 Annual Report, the MRC suggested that "the subcommittee was afforded every facility for observation and for taking such testimony at different points as they desired," but, under the circumstances, it is unlikely that the senators had ready access to dissenting opinions. Additionally, the Nelson Committee admitted in its final report that it had "derived much valuable information" from William Starling's pamphlet on "The Floods of the Mississippi River." Starling was the chief engineer of the Lower Yazoo Levee District and a leading advocate of the levees-only system. In his testimony before the subcommittee, Starling advocated enlarging the present levee system by a grade of six feet at least, as such improvements

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6 Ibid., II; Annual Report, 1898, 3137.
would, he believed, afford nearly complete protection for the lower Mississippi River."

On December 15, 1898, the Senate subcommittee submitted its lengthy report, which included hearings and maps as well as the committee's conclusions. As to the various methods of flood control, the report dismissed the utility of reservoirs, outlets, and reforestation. In reference to reforestation as a flood control measure, the report concluded that, "nothing in the evidence . . . discloses the fact that the destruction of timber at or near the headwaters of these river systems tends to cause or promote the floods referred to." Likewise, the report determined that the "cost of constructing and maintaining a system of reservoirs in this basin would be enormous" and could not be justified. "Neither," the report continued, "can your committee discover from the evidence, or through other sources, any material relief from the outlet system."  

After dismissing the alternatives, the Nelson Committee reported in favor of continuing the levees-only policy of the MRC. The report concluded:

From all the evidence taken and considered by your committee it is evident that the basins and bottoms

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7 Nelson Report, II.
8 Ibid., IV.
9 Ibid., V.
along the Mississippi River exposed to the floods of the river can only be protected and preserved from such floods by an ample and complete system of levees from Cairo to head of the Passes.¹⁰

The report also concluded that the burden of completing the levee system was too great for local and state authorities and recommended that the federal government "continue, as it has since 1882, to aid in the great task of controlling and repressing the floods in the river."¹¹ This latter statement also testified to the subcommittee's support for the MRC, the federal agency heretofore responsible for coordinating the nation's flood control policy for the lower Mississippi River.

Most importantly, the Nelson Report served as a ringing endorsement of the MRC's levees-only program and, in that sense, helped preserve and promote that policy. As historian Robert Harrison stated, "The time was ripe for stocktaking, for a serious appraisal of the levee program, but none was made."¹² In fact, in the thirty years after the Nelson Report, the MRC would commit ever greater resources to the strengthening and enlargement of the levees

¹⁰Ibid., IX.

¹¹Ibid.

of the lower Mississippi River, and, until 1912-13 the commission would face very little opposition.

Despite the failure of the levee system in 1897, the MRC estimated that $18,300,000 was all that was needed to complete the levee system from Cairo to the Gulf of Mexico. In fact, the Commissioners seemed more certain than ever that an adequate levee system would cure all that ailed the lower Mississippi. In their annual report for that year, they concluded:

The important fact that the flood waters of the Mississippi River may be permanently controlled by a system of levees that can be constructed within a limit of expense warranted by the advantages to be gained seems to have been fairly demonstrated by the flood of 1897.\textsuperscript{13}

Congress responded with unusual generosity. In addition to the $3 million already appropriated for 1897, Congress authorized an additional $2 million as an emergency fund. This gave the Commission $5 million for levee construction and repairs and for other channel work, and "the greatest activity ever witnessed on the levees followed."\textsuperscript{14}

Over the next year, the MRC oversaw extensive repairs to the levee system, and the whole line was strengthened with very favorable results. The spring rains of 1898 brought high water to the lower valley, but the flood

\textsuperscript{13}Annual Report, 1897, 3527.

\textsuperscript{14}Humphries, Floods and Levees, p. 55.
"caused no breaks in the levees."\textsuperscript{13} For the first time since the commencement of a continuous levee line along the lower Mississippi River, a flood reaching the height of fifty feet at Cairo was safely discharged to the Gulf without a single break in the levees. For five years, the improvements continued, and the levees held back the spring floods.

In 1903, however, another great flood breached the levees. As in 1897, though, the MRC concluded that "the past flood showed more clearly than has any previous one, both the importance and the practicability of a complete and efficient levee system."\textsuperscript{14} According to the Commission, all crevasses in the line resulted from the "unfinished nature of the levees as regards both grade and section." As such, the MRC began placing a heavier emphasis on the need for more money. In its report to Congress, the Commissioners explained that insufficient financing slowed progress and left the system in an incomplete and vulnerable state. "If the flood damages of 1903 may be approximated at $5,000,000, the previous expenditure of that sum in permanent work would

\textsuperscript{13}Annual Report, 1898, 3150.

\textsuperscript{14}Annual Report, 1903, 28.
have largely if not entirely prevented them. Every year's delay in completion incurs the risk of similar loss."  

The 1903 flood was significant for another reason as well. The high water of that year wrought considerable havoc throughout the lower valley, but the older levees proved particularly vulnerable to collapse, since many of them had been defectively and improperly constructed. As Starling had concluded as early as 1890, "The difficulty has not been to make the levees high enough to hold extreme flood heights, but strong enough to withstand a long-continued strain."  

After the 1903 flood, the MRC focused ever more energy on making the levees strong enough as well as high enough to withstand future floods. But in one sense at least, that task became more difficult with every passing year and with each subsequent enlargement of the levee system.

As the levees of the lower Mississippi River grew larger, the problem of "caving banks" rapidly replaced that of levee heights as the most serious problem facing the MRC. The levee system below, at, and just above the water level was particularly vulnerable during periods of high water and rapid current. Under these adverse conditions, improperly

17Ibid., 28.

18Reports of the Chief Engineer, Yazoo-Mississippi Delta Levee District, 1884-1890, 124.
constructed or poorly located sections of the levee sometimes failed, falling away into the river and leaving the remaining structure greatly weakened and vulnerable to collapse. Additionally, the material lost from the levee choked the river and contributed to the formation of bars, which interfered with navigation. As the size of the levees increased throughout the lower valley, the problem of maintaining their integrity grew more troublesome, and repairs became increasingly difficult and expensive.

Thomas G. Dabney, the chief engineer of the Yazoo-Mississippi Delta Levee District, was among the first to recognize the seriousness of the problem. He believed that, unless something was done to prevent caving banks, all efforts to secure a permanent channel for the Mississippi River would fail. "There will be a never-ending shifting of river banks and steamboat channels, a perpetual caving in . . . , and an endless expenditure of energy to remove obstacles to navigation at low water periods." As such, Dabney advocated liberal appropriations for the purpose of bank revetment, which would serve to reinforce and protect the levee both at and below the waterline.

19Annual Report, 1911, 3186.

20Harrison, Alluvial Empire, 119; Annual Report, 1906, 2484.

21Reports of the Chief Engineer, 347.
In addition to using levees to confine the discharge of flood waters, the MRC had, its early years, contemplated the permanent location and deepening of the lower Mississippi River by engineering works that included bank revetment as an integral part of the overall plan of river improvement. The Commission had also planned to use semi-permeable dikes to contract the low-water width where necessary. As early as 1880, the MRC initiated these works at two particularly troublesome sections of the river--Plum Point and Lake Providence--with a high degree of success. But the work done there, while generally testifying to the soundness of the theoretical approach, also demonstrated that the general improvement of the entire lower Mississippi River by contraction and revetment works would be prohibitively expensive and time consuming. As technology improved, the MRC turned increasingly to dredging machines to improve the navigability of the river and abandoned, for the most part, attempts to contract the river.22

Similarly, after fewer than ten years, the MRC suspended most of its revetment work. Initially, Congress played a central role in this decision. In the Rivers and Harbors Act of August 5, 1886, Congress required the MRC to suspend all revetment work until less expensive works proved

22 Annual Report, 1903, 5.
either impractical or ineffective. For the next decade, revetment was confined to specific work along threatened levees.\textsuperscript{23} By 1896, though, the MRC had decided on its own account that revetment work, though useful in securing a permanent channel and in protecting threatened levee works, was simply too expensive. Estimates for revetting the entire main channel south of Cairo fell between $63 million to $100 million, and the difficulty in securing the necessary quantity of supplies and materials further complicated the problem.\textsuperscript{24}

In spite of these difficulties, the extensive damage caused by caving banks required that some serious action be taken. During the eleven-year period after 1900, losses equaled almost 21 percent (27 million cubic yards) of the 125 million cubic yards of earth placed in the levees by the federal, state, and local interests over that same period.\textsuperscript{25} Dabney proposed that the Congress make available $10 million per year, which would allow for the completion of the entire project in one decade. He dismissed the great difficulty of

\textsuperscript{23}Statutes at Large, 49th Cong., 1st sess., August 5, 1886, Ch. 929, 329.

\textsuperscript{24}Annual Report, 1896, 3423; Reports of the Chief Engineer, 347.

\textsuperscript{25}D. O. Elliott, The Improvement of the Lower Mississippi River for Flood Control and Navigation (Vicksburg, Mississippi: Mississippi River Commission, 1931), 168.
securing sufficient quantities of materials, particularly the willow used in the mattresses. "It will not," he believed, "require a great strain upon the ingenuity of the Engineers in charge of the work to enable them to utilize the branches of the myriads of forest trees that grow on the ground adjacent to the river banks in many localities." 26

Still, the high cost associated with such work dissuaded the MRC from moving forward immediately with a plan for revetting the entire river south of Cairo. No great floods visited the lower valley between 1903 and 1912, and throughout that period the MRC placed ever greater emphasis on the need to secure threatened levees with revetment works. By 1906, the Commissioners were considering the possibility of diverting resources from levee construction to bank revetment. Such a diversion might be possible, the Commissioners surmised, once levee construction had advanced to the point that it insured a measure of protection from ordinary floods. 27 Through 1911, the MRC made repeated requests for more money and always justified these requests on "the urgent necessity for

26 Ibid.
27 Annual Report, 1906, 2484.
further revetments for the preservation of the levee system."\textsuperscript{28}

But before much progress could be made to secure these funds, two great and very destructive floods visited the lower Mississippi Valley. The successive, record-breaking floods of 1912 and 1913 diverted the focus away from the technical difficulties associated with the implementation of the levees-only plan and revived the "levees-only" debate on a nationwide scale.

\textsuperscript{28}\textit{Annual Report}, 1908, 2657.
CHAPTER VIII

THE FLOODS OF 1912 AND 1913 AND THE REVIVAL OF THE LEVEES-ONLY DEBATE, 1912-1926

Americans have notoriously short attention spans, and federal flood control policy for the lower Mississippi River has been shaped somewhat by that debility. Since the creation of the MRC in 1879, a half-dozen or so major floods had visited the lower valley, causing untold destruction and spurring Congress to action. Typically, though, the Congressional response included only a single large appropriation and a call for more study. Within a year or so, the public clamor for action waned, and so did Congressional attention. Left to its own devices, the MRC continued to insist that levees alone could solve the flood problems of the lower valley. When the levees failed, the MRC's response was always the same—raise and strengthen the levees. While a few prominent individuals continued to challenge the levees-only policy, their opposition was never sufficiently vigorous to threaten the authority of the MRC. That began to change after 1912 and 1913.

In those years, the valley experienced successive record-breaking floods. The first of these, beginning March
1912, developed into a protracted flood extending through May. Helena, Arkansas, for example, was at flood stage for sixty-two days in 1912. The high water caused a total of fifteen crevasses between Cairo and New Orleans and an estimated $41,000,000 in property damage.\textsuperscript{1} The second flood, in April 1913, occurred before repairs were completed and resulted in an additional forty-five crevasses of an aggregate length of more than five miles.\textsuperscript{2}

Significantly, these floods precipitated a crisis in the reclamation program of the Mississippi Valley. The great expense incurred as a result of the regular inundation of the Valley, combined with the cost of building and maintaining the levee system, was becoming prohibitive. Out of self-preservation, landowners in the lower Mississippi Valley launched a massive propaganda campaign directed at obtaining greater federal commitment.\textsuperscript{3}

After several years of debate in Congress and a third major flood in 1916, this campaign culminated in the passage

\textsuperscript{1}Annual report of the Mississippi River Commission, 1912 (Washington: Government Printing Office, 1898), 1902.

\textsuperscript{2}D. O. Elliott, The Improvement of the Lower Mississippi River for Flood Control and Navigation (Vicksburg, MS: Mississippi River Commission, 1931), 168.

\textsuperscript{3}Robert W. Harrison, Levee Districts and Levee Building in Mississippi: A Study of State and Local Efforts to Control Mississippi River Floods (Stoneville, MS: Delta Council, 1951), 212-215, 217.
of the First Federal Flood Control Act, also known as the Ransdell-Humphreys Act of 1917. This landmark act included five important provisions. First, it stated that the primary purpose of the authorized levee program was flood control. Heretofore, all federal funding for levee construction had been justified on the grounds that it aided navigation. Second, it provided that local interests pay one-third of the cost for levee construction. Previous to this, expenditures by local interests generally exceeded those of the federal government, so this act substantially eased the burden of land owners in the lower Mississippi Valley.\textsuperscript{4}

Third, the 1917 act authorized the largest-ever Congressional appropriation for levee construction on the Mississippi River. In 1916, the MRC had testified before the House Committee on Flood Control that the completion of the levee lines along the lower Mississippi would require 155,000,000 cubic yards of earthwork at a cost of approximately $45 million.\textsuperscript{5} Toward meeting that requirement, the 1917 act authorized a federal expenditure

\textsuperscript{4}U.S. Statutes at Large, 64th Cong., 2nd sess., March 1, 1917, Ch. 144, 948.

\textsuperscript{5}George D. Waddill, "A Memorandum for Mr. Senour on the History of the Mississippi River Levees, 1717 to 1944," (Vicksburg, MS: Mississippi River Commission, 1945), 7.
of $30 million over five years. Under the newly established guidelines for local contribution, local interests would pay $15 million. Fourth, this First Federal Flood Control act placed all responsibility for levee construction along the lower Mississippi River under the authority of the MRC and accorded that agency control over the expenditure of federal as well as contributed funds.\(^6\)

Finally, the act extended the MRC's jurisdiction. Under the original act of June 28, 1879, by which the commission was created, the MRC's jurisdiction was restricted to the Mississippi River from the Head of the Passes near the mouth of the Mississippi River north to Cairo, Illinois. Subsequent acts of Congress extended that jurisdiction further north, first to Cape Girardeau, Missouri, in 1906, and, later, to Rock Island, Illinois, in 1916. The 1917 act extended the MRC's authority into the tributaries of the Mississippi River "to such an extent as may be necessary to exclude the flood water from the upper limits of any delta basin."\(^7\) By expanding federal authority along the lower Mississippi River and increasing federal funding and federal control, the flood control act of 1917 did more to satisfy the demands of levees-only advocates

\(^6\)U.S. Statutes at Large, 64th Cong., 2nd sess., March 1, 1917, Ch. 144, 949.

\(^7\)Ibid.
than any previous Congressional action. As the MRC's authority and jurisdiction expanded, however, so did its culpability, at least in the eyes of those opposed to its levees-only policy. Following the great floods of 1912 and 1913, organized opposition to levees-only developed for the first time in Congress. 8

The most serious threat came from the Progressive faction in Congress. The Progressive movement of the early nineteenth century was accompanied by an increased awareness that the nation's natural resources were being depleted at an alarming rate. President Theodore Roosevelt led a burgeoning conservationist movement that set out to establish a barrier of federal regulation and protection for the nation's land and water resources. Under pressure from Roosevelt and fellow conservationists, Congress added fifty federal wildlife refuges, approved five new national parks, and initiated a system of designating national monuments like the Grand Canyon. 9

In 1907, Roosevelt turned his attention to the nation's water resources. That year, he created the Inland Waterways Commission (IWC) which was charged with developing a

8Walter Parker, "Curbing the Mississippi," Nation 124 (May 11, 1927), 521.

national policy for river regulation and with making recommendations for the improvement of the national system of waterways. Not surprisingly, Roosevelt appointed a number of prominent conservationists to the IWC. Gifford Pinchot and Nevada Senator Francis G. Newlands were the most notable of these appointments. One of the nation’s first scientific foresters, Pinchot served as chief of the Division of Forestry in the Department of Agriculture from 1898 to 1910. In that capacity, he struggled against Congressional apathy to develop programs and public interest in conservation.¹⁰ An advocate of a more comprehensive approach to river system management, Pinchot was outspoken in his criticism of federal flood control policy on the Mississippi River, which he characterized as “haphazard, uncoordinated, wasteful, political.”¹¹

Senator Newlands, as chair of the Committee on Interstate Commerce, struggled tirelessly to bring about the adoption of a more comprehensive national water policy. He had long dreamed of creating a great waterways commission that would be responsible for conserving the purity of the nation’s water resources, for regulating underwater ground


flow for irrigation purposes, for draining the nation's seventy-seven million acres of swamp land, and for controlling floods in every part of the nation, including the Mississippi River. To facilitate such a program, Newlands called for an appropriation of almost two-thirds of a billion dollars over ten years. While Newlands never opposed the construction of levees along the lower Mississippi River, he did express profound dissatisfaction with the MRC's levees-only policy, favoring, instead, a more varied approach that would include reservoirs and outlets.

The Inland Waterways Commission's recommendations of February 3, 1908, clearly evidenced the influence of these two men. The report called for the organization of a national waterways commission that would be tasked with coordinating the various federal agencies responsible for regulating the nation's water resources—including the Army Corps of Engineers, the Bureau of Soils, the Forest Service, the Bureau of Corporations, and the Reclamation Service. This coordinating board would consider "all matters of irrigation, swamp and overflow land reclamation.

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12Congressional Record, 65th Cong., 2nd sess., September 2, 1918, 9826.

13Ibid.

clarification and purification of streams, prevention of soil waste, utilization of water power, preservation and extension of forests, [and] regulation of flow and control of floods." The work of the IWC ended with that report, pending the creation of a permanent waterways commission. But there was little support in Congress for the creation of such a commission, and no action was taken on the IWC's recommendations for almost ten years.

The great floods of 1912 and 1913 did much to revive interest in alternative approaches to the flood control problems of the lower Mississippi River. With both the Army Corps of Engineers and the MRC, however, it remained business as usual. Following the 1913 flood, President Woodrow Wilson charged the Mississippi River Commission with submitting a report on flood control. The report, authored by the Commission's president, Colonel C. McD. Townsend, considered six methods of flood control—reforestation, reservoirs, cut-offs, outlets, floodways, and levees. As with all previous reports, the Commission condemned the various alternatives to the "levees only" approach and recommended the construction of an adequate levee system.  

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16 The Commission report was published as Senate Document #204, 63rd Congress, 1st session, May 16, 1913.
But Newlands was undaunted. He stepped up his lobbying after 1913, and, after four years, the political climate had warmed to his ideas. In 1917, levees-only advocates had mustered support for their landmark flood control act, and, in exchange for an endorsement of their measure, agreed to support a river-regulation amendment to the rivers and harbors bill. This amendment, which became Section 18 of the 1917 rivers and harbors bill, represented a partial realization of Newlands's grandiose dream.¹⁷

By design, Section 18 posed a threat to the authority of the MRC. It called for the creation of a seven-member "Waterways Commission," which would include only one Army engineer with the remaining commissioners coming from civil life. The fact that this commission was to be made up almost exclusively of civilian engineers illustrates the lawmaker's dissatisfaction with the Army engineers that dominated the MRC. Additionally, the new waterways commission would be staffed with conservationists who favored a comprehensive, system-wide approach to flood control. For more than thirty years, the MRC had advocated a singular, levees-only approach and had concentrated their

For a good summary of this report, see Benjamin G. Humphreys, Floods and Levees of the Mississippi River (Washington, D.C.: The Mississippi River Levee Association, 1914), 154-64.

¹⁷Parker, "Curbing the Mississippi," 521.
efforts on the main trunk of the Mississippi River to the near exclusion of the tributaries. Finally, as envisioned by its supporters, the new commission's responsibilities would overlap and, in some cases, potentially supersede those of the MRC. In addition to its responsibilities for developing plans for irrigation, drainage, reclamation and purification, the new Waterways Commission was charged with producing a comprehensive flood control plan and with making "recommendations for the modification or discontinuance of any project . . . heretofore adopted."\textsuperscript{18}

Yet, in spite of its potential, Section 18 suffered from a terminal case of poor timing. The passage of the 1917 rivers and harbors bill in August 1917 fell just four months after the U.S. entry into World War I. Perhaps even more significantly, Senator Newlands, the architect of Section 18, died on December 24, 1917.\textsuperscript{19} President Wilson was distracted by the war, and, with Newlands dead, the waterways commission lost its leading proponent in Congress. Weeks, months, and then years passed, and Wilson failed to make the necessary appointments.\textsuperscript{20}

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\begin{enumerate}
\item [\textsuperscript{18}] U.S. Statutes at Large. 65th Cong., 1st sess., August 8, 1917, Ch. 49, 269.
\item [\textsuperscript{19}] Malone, Dictionary of American Biography, 462-63.
\item [\textsuperscript{20}] Congressional Record, 66th Cong., 2nd sess., January 7, 1920, 1174.
\end{enumerate}
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After the war, Congressional levees-only advocates mounted a campaign to repeal Section 18. In place of the waterways commission, they proposed the creation of a less antagonistic Federal Power Commission (FPC). While there was a good deal of overlap between the responsibilities of the waterways commission and the proposed FPC, the latter commission lacked its predecessor's license to study flood control. After considerable wrangling, Congress passed the Federal Water Power bill, and President Warren G. Harding signed it into law on June 10, 1920. The act included in its title the repeal of Section 18 of the Rivers and Harbors act of 1917. With the liquidation of the Waterways Commission, Congressional levees-only advocates had defeated a potential threat to their plans for the lower Mississippi.

With its allies in Congress victorious, the MRC proceeded with its levees-only plan virtually unmolested, and significant progress was made in their attempt to protect the lower valley from Mississippi floods. The 1917 Flood Control Act had authorized unprecedented sums to finance the completion of the levee system, but with the U.S. entry into World War I progress was slow. Congress extended the period for spending the authorized sums from five to seven years, and, as a result of inflated wartime

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21 U.S. Statutes at Large, 66th Cong., 2nd sess., June 10, 1920, Ch. 285, 1063-77.
prices, the volume of work fell short of expectations. In 1923, Congress passed the Second Flood Control Act, and it provided $60 million for levee construction over a ten-year period.\textsuperscript{22} Technological improvements also facilitated levee construction. The earlier levees were built with wheelbarrows, but, by the 1920s, the MRC had developed high capacity levee machines that had an average capacity of 300 cubic yards per hour. By 1926, the MRC had a total of twenty-six government-owned levee machines in use.\textsuperscript{23}

The two flood control acts, together with technological advances, brought the MRC’s levee system to near completion. The levees of the Yazoo Basin, for example, had reached enormous proportions by 1926. In 1882, the levees along that front were about eight feet high and contained about 31,500 cubic yards per mile. Before the great flood of 1927, the Yazoo levees were twenty-two feet high and contained 421,000 cubic yards per mile.\textsuperscript{24} Public confidence in the levee system increased, and many began to believe that the MRC had achieved adequate flood protection for the lower Mississippi River. The MRC generally agreed, and, in

\textsuperscript{22}Robert W. Harrison, \textit{Alluvial Empire} (Little Rock, Arkansas: Pioneer Press, 1961), 133.

\textsuperscript{23}\textit{Annual Report}, 1926, 1818.

\textsuperscript{24}Ibid.
1926, they concluded as much in their annual report.\textsuperscript{25} The great flood of 1927 proved, however, that these conclusions were premature.

\textsuperscript{25}Ibid., 1793.
CHAPTER IX

THE GREAT FLOOD OF 1927 AND THE ABANDONMENT
OF LEVEES-ONLY, 1927-1928

Through the first quarter of the twentieth century, the MRC clung stubbornly to its levees-only policy for the lower Mississippi in the face of ever-growing opposition. To its credit, the MRC had presided over the development of a levee system which had significantly improved conditions in the lower Mississippi Valley. Behind these defensive levees, the population of the region grew; property values increased; and northern business interests began investing more heavily in the region. While the stakes had been raised, the citizens of the region were more confident than ever that the levees would protect them from destructive floods; and, apparently, the MRC agreed. In a fit of hubris, that agency concluded that the levee system "is now in condition to prevent the destructive effects of floods." 1

The year was 1926. One year later the Mississippi Valley experienced the most catastrophic flood the country has ever witnessed.

The "Great Mississippi Flood of 1927" so devastated the Valley that Herbert Hoover, then secretary of commerce, called it "the greatest peace-time calamity in the history of the country." The setting for this flood traced as far back as the second week of August 1926, when heavy rains fell over the plains states of Kansas and Oklahoma. This downpour continued through December 1926, saturating the soil in the middle drainage of the Mississippi and leaving the main river and its tributaries at relatively high stages in a season when levels were normally low. In addition, the Cumberland River, a major tributary of the lower Ohio, experienced a record-breaking flood from December 1926 through January 1927. This combination of factors, combined with heavy rains in the Ohio Valley and the Missouri Valley in March and April of 1927, produced unprecedented high water along the Mississippi River from Cairo, Illinois, to New Orleans.

The MRC’s prized levee system—the culmination of almost fifty years of work—proved unequal to the task. By the middle of May, the high water had caused seventeen

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2This famous quotation, by then Secretary of Commerce Herbert Hoover, was cited in William MacDonald, "Devastations of the Mississippi Flood," *Current History* 26 (July 2, 1927), 630.

breaks in the main levee line and 209 crevasses on the
tributaries of the Mississippi. The flood waters
overflowed an estimated 11,000,000 acres from Cairo to
Natchez, Mississippi, on the west bank and from the mouth of
the Arkansas River to Vicksburg on the east bank.

In terms of gauge readings, volume of discharge, and
destruction, the flood of 1927 was unprecedented. In 1914,
the MRC had established a provisional levee grade at three
feet above the confined height of the greatest flood prior
to 1927. This grade called for levee heights of 55.8 feet
at Greenville and 60.5 feet at Arkansas City. The estimated
confined height of the 1927 flood would have been 62.8 feet
at Greenville and 69 feet at Arkansas City. A grade based on
these gauge readings would require that levee heights be
increased by as much as nineteen feet in some places.

While the confinement of the levees certainly
contributed to increased flood heights, the volume of

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"For a detailed account of the breaks in the mainline
levee system, see Annual Report, 1927, 1840.

"MacDonald, "Devastations of the Mississippi Flood,"
630; Congressional Record, 70th Cong., 1st sess., April 17,
1928, 6651.

"The provisional levee grades adopted by the MRC in
1914 were based on the estimated stages for the 1912 flood

"Arthur DeWitt Frank, The Development of the Federal
Program of Flood Control on the Mississippi River (New York:
confined discharge in 1927 was higher than ever recorded. In 1858, Cairo recorded a record-high discharge of 1,420,000 cubic feet per second (hereafter abbreviated as "second feet"). That city recorded maximum discharges of almost 1,800,000 second feet in 1927. Similarly, Arkansas City recorded its maximum discharge of 1,742,000 second feet in 1892. In 1927, discharges at that location reached 2,472,000 second feet.⁸

Total flood losses were staggering. At final count, 246 people died as a result of the flood; 700,000 people were forced from their homes; 1,500,000 farm animals were destroyed; and the lower Mississippi Valley, including parts of seven states, was flooded from April to August. Total property lost and damaged was estimated at between $200,000,000 and $400,000,000, exceeding the aggregate losses of all previous Mississippi floods.⁹

Although the levee system was never designed to handle a flood of that magnitude, its collapse brought on a wave of criticism, most of which was directed at the MRC. Gifford Pinchot, a prominent forester, conservationist, and former governor of Pennsylvania, was among the most vocal and

⁸Ibid.

⁹Congressional Record, 70th Cong., 1st sess., April 17, 1928, 6641; Ibid., 74th Congress, 2nd session, May 21, 1936, 7752.
influential of these critics. Pinchot bluntly concluded that "the army engineers have been in control of the Mississippi for the past fifty years, and they don't know anything about it yet." He later characterized the MRC's levees-only policy as the "most colossal blunder in engineering history."

Editorials that were highly critical of the MRC's levees-only policy appeared in newspapers and magazines across the country. An editorial in the May 11, 1927 edition of The Nation was fairly typical. It concluded that the federal government's 'levees-only' or 'confinement-only' policy of flood control, developed and adhered to for forty-eight years by the Mississippi River Commission, has gone bankrupt. The levees are almost completed to the full size approved by the commission. Yet, were they all built to that size, the 1927 flood in the Mississippi River would go over the top of every one of them.

Another in Manufacturers Record criticized the MRC for its rigid defense of levees-only and for overstating the

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10 New York Times, December 9, 1927, 16.


strength of its levees, "which it insists always hold, with occasional exceptions."\(^{13}\)

U.S. congressmen also vented their frustration at the MRC's expense. Senator Lynn J. Frazier, a Republican from North Dakota, concluded that "the Army engineers have made a dismal failure of the flood control situation in the lower Mississippi River for the last 40 years," and questioned the rationale behind entrusting the problem to them in the future. Significantly, the Chair of the House Committee on Flood Control, Illinois Republican Frank R. Reid, was also highly critical of the MRC and its levees-only policy. He argued that the 1927 flood proved that "the flood control works heretofore constructed were neither adequate nor of the right kind." That they were not of the right kind, he suggested, "was the fault of the 'levees-only' policy of the Mississippi River Commission."\(^{14}\)

Certainly, no organization was more singularly responsible for the levees-only plan than the MRC, so the Commission had to accept a large degree of responsibility for the apparent failure of that plan. Even so, there was no more knowledgeable agency in the federal government on

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\(^{13}\) Thomas Ewing Dabney, "Levees Have Reached the Limit--Spillways Must Solve the Mississippi Problem," Manufacturers Record 91 (May 12, 1927), 62.

\(^{14}\) Congressional Record, 70th Cong., 1st sess., March 29, 1928, 5609.
issues relating to the flood problems of the lower Mississippi, and reason dictated that the MRC play a leading role in the development of flood control policy in the aftermath of the 1927 flood. That prominent outsiders in positions of authority were so willing to publicly chastise the MRC, however, hurt that agency's credibility at a time when important decisions were being made about the future of flood control policy for the lower Mississippi River, particularly in Congress. Worse still, the MRC's direct superiors within the executive branch, including the chief of the Corps of Engineers and the secretary of war, soon questioned the MRC's competency. Under these unfriendly conditions, the Commission struggled to retain an effective level of authority and to influence the development of flood control policy for the lower Mississippi. But, increasingly, the MRC found itself losing that struggle.

On a national scale, the most important legacy of the 1927 Flood was that it alerted the nation to the severity of the flood problem in the Lower Mississippi Alluvial Valley. Newspapers and magazines across the country carried news of the destructive flood. In September 1927, one of the country's most popular magazines, National Geographic, ran a fifty-page commentary, complete with maps and illustrations, documenting the widespread devastation. Other popular magazines, including The Saturday Evening Post, The Literary
Newspapers, such as the New York Times and the Washington Post, carried daily updates on the progress of flood waters and the accompanying relief efforts. In addition, editorials sympathetic to the plight of those in the afflicted region soon appeared in publications nationwide. Almost all of these voiced their support for a federally financed, national flood control policy. On April 16, 1928, the Washington Post published an editorial claiming that "public opinion has been clearly expressed . . ., the country asks that the Mississippi [River] be controlled by the Government, and that the work be paid for by the Government." The following statement appeared in a New York Times editorial dated July 7, 1927: "We are hopeful that Congress will take the view that the matter is a Federal one, as we believe it to be, inasmuch as the whole country is affected by such a flood as we have had this year." Clearly public opinion was in favor of immediate and decisive action.

See, for example, the following articles: "Floods of 1927 in the Mississippi Basin," Science 67 (January 6, 1928), 15; "First Effects of the Mississippi Flood," Literary Digest 93 (June 18, 1927), 8-10; and "After the Flood is Over," Saturday Evening Post 200 (July 2, 1927), 8-9.

Washington Post, April 16, 1928.

Congress was sensitive to the mood of the country. The following is an excerpt from an address by Will Whittington, a Democrat from Mississippi, to the House of Representatives:

The heart of the Nation was touched and the conscience of the Country was aroused... The statesmen and the press, the scholars and the businessmen, the public official and the private citizen are thoroughly agreed; American public opinion is unanimous. Harnessing and curbing the Mississippi is the responsibility of the Nation.\textsuperscript{18}

Senator Pat Harrison, also of Mississippi, was of like mind. He made the following statement in an address to the House Flood Control Committee in 1927:

There is no opposition to flood control throughout this country. The country has never been quite so aroused over any problem or any question as it has over this. The heart of America is in it. They see that it is a national question.\textsuperscript{19}

While it became increasingly evident that public opinion supported an expanded federal flood control program for the lower Mississippi River, the question remained, "What role would the MRC play in the development of this expanded federal program?"

Initially, there were indications that the Commission would play the leading role. Under pressure to act,

\textsuperscript{18}\textit{Congressional Record}, 70th Congress, 1st session, April 17, 1928, 6649-50.

\textsuperscript{19}\textit{U.S. Congress, House, Hearings Before the Committee on Flood Control}, 70th Congress, 1st session, 1927, part 1, 65.
President Calvin Coolidge directed the MRC to report a flood control plan that would provide for the maximum probable Mississippi flood, estimated by engineers to be one 25 percent greater than that experienced in 1927. Since its inception, the MRC had been preparing reports on various flood control methods, and these reports invariably recommended a continuation of levees-only. But conditions were much different following the 1927 flood, and, for the first time in its history, the MRC would call for the adoption of a more comprehensive flood control plan for the lower Mississippi River, signaling the end of the levees-only era.

For a variety of reasons, the transition away from levees-only was not a difficult one for the MRC. First, the MRC had been directed to develop a plan which would provide for the discharge of unprecedented flood volumes. In the past, the MRC always recommended raising the standard levee to account for higher discharge volumes, but the Commission had been building levees since 1882 and had come to realize that there were practical limits to the heights to which levees could be built. The alluvial soil served as a poor foundation for any structure of great weight, and, beyond a certain height, the levees began to sink or to break away.
into the river. By 1927, those heights had almost been reached, and so the prospect of providing for a flood substantially higher than the 1927 flood left the MRC with little option but to consider alternative methods.

Second, the extreme high water of late April 1927 had forced the MRC to approve the cutting of a levee below New Orleans to reduce flood heights and to avoid the loss of life and property incidental to an accidental break in the levee line. This action was unprecedented in the history of the MRC and constituted an emphatic denial to its own claim that levees alone were sufficient to prevent flooding. Following the incident, the president of the MRC, Charles L. Potter, conceded that "we now think that a new mouth for the river, through which surplus water could be more readily speeded to the Gulf, would possibly be the most feasible plan to follow." While not definitive, Potter's statements did constitute a recognition of the value of the outlet principle.

Other factors also affected the MRC's decision to abandon its almost fifty-year-old policy of levees-only in favor of a dual approach which would include the

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20 Frank, Development of the Federal Program, 127.

21 Dabney, "Levees Have Reached the Limit," 61; Dabney "Louisiana Sees It Through," Manufacturers Record 91 (May 19, 1927), 63.
construction of emergency outlets. Contemporary studies showed that an extensive reservoir system could reduce flood levels substantially, but the expense of a system sufficient in scope and scale to control the flood waters of the Mississippi River was simply too great. Moreover, cut-offs were still viewed with suspicion. Practically by default, the MRC turned to outlets, the only cost-effective method not yet employed in the struggle to control the Mississippi River. On November 28, 1927, the commission submitted its report, published as Flood Control Document No. 1, which relied primarily on a combination of levee improvements and outlets to provide for the maximum probable Mississippi flood.

While General Edgar Jadwin, the chief of the Corps of Engineers, had made an effort to defend the activities of the MRC throughout much of the early post-flood period, his tone changed considerably after the MRC submitted its plan. In fact, within weeks, Jadwin appeared before a Congressional hearing and openly repudiated both the MRC and its flood control plan. The following is an exchange between the Chair of the House Flood Control Committee,

22 A Corps of Engineer study completed in 1928 estimated the cost of such a system at about $1,300,000,000. House Document #90, 70th Congress, 1st session, December 8, 1927, 21 (cited hereafter as Jadwin Report).

23 Ibid., 17.
Frank Reid, and General Jadwin concerning the latter's initial decision to withhold the MRC's flood control plan from Congress:

Reid: Don't you think it is the duty of this committee to consider the report and recommendations and considerations of the Mississippi River Commission, a duly authorized agency of the United States for the flood control of the Mississippi River, in the matter of a plan for the future flood control of the Mississippi River?

Jadwin: I think you will have to decide that yourself. I do not think you are required to do it and it is not normal procedure, but if you want to do it and think you ought to do it, that is your duty.

Reid: You said this report came in by the back door.

Jadwin: Yes, sir.

Reid: What do you mean by that?

Jadwin: I meant I did not forward it up.

Reid: Why didn't you?

Jadwin: Because there were so many things about it that I did not think were sound, it was better, I thought, not to send it up.²⁴

In later testimony, Jadwin was even more direct in his disavowal of the MRC:

The present commission [MRC] organization showed its defects in the preparation of the flood-control plans just completed. The Chief of Engineers had to prod the Mississippi River Commission to get a definite and constructive recommendation from them. And when their plan came, it was full of holes. The Chief of Engineers had no authority to make the commission correct glaring defects. In their first report they made no recommendation at all, but were led into a recommendation finally after being reminded that they had had 48 years in which to meet the study and that a

²⁴Congressional Record, 70th Cong., 1st sess., March 29, 1928, 5646.
When the MRC report was finally transmitted to the Senate, the secretary of war, Dwight F. Davis, informed that body that "the report of the Mississippi River Commission as a whole has neither the approval of the chief of engineers, nor that of the President and himself." 

Since he held such little regard for the MRC plan, Jadwin submitted a report of his own. In addition to his own recommendations for a comprehensive flood control plan, the report included a call for the reorganization, and effectively the demotion, of the MRC. Jadwin recommended that the MRC be consolidated under his authority, since work can be done more efficiently with unit control than with divided control. At present the Chief of Engineers and Secretary of War have veto power over the Mississippi River Commission, but not initiative control. It is recommended that under the direction of the Secretary of War, the Chief of Engineers be given authority to plan and direct the work of the Mississippi River, with the president of the commission reporting direct to him. The commission as at present constituted can be continued as an advisory, but not as an executive, commission.

Together with this recommendation, Jadwin’s flood control plan was transmitted to Congress on December 1, 1927, and

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25 Ibid.
27 Jadwin Report, 33.
printed as *House Document #90*. Congress thus received the task of choosing between the two major plans.

For the most part, the Commission plan and the Jadwin plan, as the two came to be known, were similar. Both provided for enlarging and strengthening the levees from Cape Girardeau to the Gulf, with the objective of safely discharging up to 1,500,000 cubic feet/second of water within the main channel. In addition, the levee system was to be supplemented by several floodways. The first floodway was designed to protect the territory between the Arkansas and Red rivers. Referred to as the Boeuf Diversion, this floodway would channel up to 1,500,000 cubic feet/second of flood water away from the Mississippi River near Arkansas City into the Tensas River Basin. Under normal conditions, the waters from the Tensas River flow south into the Red River, less than twenty miles from the latter's junction with the Mississippi to the east. Under severe flood conditions, though, a second floodway located near Morganza would be used to carry up to 1,500,000 cubic feet/second of water from the Red and Mississippi rivers through the Atchafalaya Basin to the Gulf of Mexico. This diversion was referred to as either the Atchafalaya Floodway or, more commonly, the Morganza Floodway. Both plans also called for the construction of a spillway above New Orleans. This spillway, the Bonnet Carre, would empty up to 250,000 cubic
feet/second of flood water into Lake Pontchartrain to the north.\(^{28}\)

The two plans differed in their strategies to improve protection for the city of Cairo, Illinois. The commission plan was to strengthen and raise the levees around the city.\(^{29}\) The Jadwin plan called for the construction of the New Madrid Floodway. This floodway would divert excess waters from Cairo through a controlled channel into the Mississippi River near the city of New Madrid, Missouri.\(^{30}\)

The most significant difference between the two plans was economic. The Jadwin plan called for a local contribution of 20 percent and recommended that local interests furnish the rights of way and flowage rights.\(^{31}\)


\(^{29}\)Ibid., 46-47.

\(^{30}\)Jadwin Report, 23.

\(^{31}\)As used here, the term "flowage rights" refers only to lands within proposed floodways. These rights are, in effect, temporary leases. Rather than purchasing the land within the proposed floodways, the government, or whoever is purchasing the flowage rights, is paying for the right to use private lands for the intended diversion. Because the floodway is only put to use in times of extreme high water, maybe once every ten years or so, the cost of the flowage right is based upon a percentage of the total value of the land in question. The term "rights of way" refers only to lands necessary for the construction of levees or spillways. For obvious reasons, these rights must be purchased outright.
The estimated cost incurred by the federal government for this plan was $296,400,000.\textsuperscript{32} Under the terms of the commission report, local interests were only responsible for paying for repairs, not improvements, to local levees. In addition, the federal government would pay for all rights of way and flowage rights. Because the commission recommendation called for greater federal commitment, the projected cost of the plan was $407,500,000.\textsuperscript{33} Both plans were reported to Congress and sent to committee. Simultaneously, the members of both the Senate Commerce Committee and the House Flood Control Committee began work on separate flood control bills.

Within several months, the Senate committee adopted a plan devised by its chair, Wesley L. Jones of Washington. The Jones bill (S. 3740), as it became known, was based loosely upon the Jadwin plan. Considering the circumstances, the Senate committee's decision to adopt a policy based on the Jadwin, and not the MRC, report was hardly surprising. In addition to his chairmanship of the Senate Commerce Committee, Jones was the party's Republican Whip; and the Jadwin plan had been submitted to Congress with favorable recommendations from the Republican

\textsuperscript{32}For a summary of expenses, see page 32 of the Jadwin Report.

\textsuperscript{33}Commission Report, syllabus.
administration, including Secretary of War Davis and President Calvin Coolidge. Additionally, the Jadwin plan proposed to accomplish largely the same results at a savings of over $100 million in comparison to the MRC plan. Whether or not these savings could be realized was a point of contention, but, on paper at least, it appealed to the fiscally-conservative Republican leadership.

To their credit, the Senate committee recognized the limits of their engineering expertise and sought to overcome them, but their efforts to do so fell short. Though the committee "adopted" the Jadwin plan, the Jones bill called for the creation of a special board to work out the engineering differences between the two plans. This five-member board would be composed of the secretary of war, the chief of engineers, the president of the MRC, and two civilian engineers to be appointed by the President of the United States. Clearly, the secretary of war and the chief of engineers already favored the Jadwin plan. So did the Republican executive, making it likely that his appointees to the board would as well. In short, the board was

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34 Jadwin Report, 1-3.
35 Congressional Record, 70th Cong., 1st sess., March 28, 1928, 5485.
designed such that its ultimate position was practically a foregone conclusion.36

The Jones bill mirrored fairly closely the engineering recommendations made in the Jadwin report. The bill provided for construction of flood control works on the lower Mississippi Valley only; authorized an immediate survey of the tributaries of the Mississippi; and approved a study to analyze the effectiveness of reservoirs in controlling floods on the lower Mississippi River. Significantly, the Jones plan did not include provisions calling for local contributions as recommended in the Jadwin plan, but the Senate was not overly concerned about that.37 It passed the Jones bill after less than an hour of debate and without a single vote cast in opposition. On March 30, 1928, the bill was sent for consideration to the House Flood Control Committee, where the real struggle began.

36The nature of this board was altered somewhat before the final passage of the bill, though to little effect. The final bill called for the creation of a special board to consist of the chief of engineers, the president of the MRC, and one civil engineer to be chosen from civil life and appointed by the president. President Coolidge appointed Carleton W. Sturtevant of New York to the civilian position. In August 1928, the board reported in favor of the Jadwin plan. Annual Report of the Chief of Engineers, 1928, 4; Frank, The Development of the Federal Program, 247-48.

37Senate Report #619, 70th Congress, 1st session, March 24, 1928.
The House committee convened a month early, on November 7, 1927, at the request of its chair, Frank Reid.\footnote{U.S. Congress. House. \textit{Hearings Before the House Flood Control Committee}, 70th Congress, 1st session, November 7 to 22, 1927, 1.} Even so, the committee found itself unable to report a plan. After months of debate, the committee agreed to Reid's proposition calling for the creation of a seven-member commission which would be responsible for developing a cohesive flood control plan for the region. Before the Reid bill was reported to the House, however, six Republican members of the Flood Control Committee filed a minority report. These members included James A. Frear of Wisconsin; Gale H. Stalker of New York; Frederick M. Davenport of New York; C. G. Selvig of Minnesota; Thomas C. Cochran of Pennsylvania; and William F. Kopp of Iowa. The report criticized the bill for unnecessarily delaying the adoption of a definite flood control plan and for failing to include provisions requiring local contributions of any sort. Without even a moderate level of support from the Flood Control Committee, the Reid bill was doomed.\footnote{Concurrent Record. 70th Congress, 1st session, April 18, 1928, 6712. The Reid bill (H. R. 8219) was sent to the House in mid-February but never debated. It was finally "laid on the table" on May 16, 1928, the day after the Jones bill was signed into law. See Ibid., May 16, 1928, 8922.} Attention then turned to the flood control bill passed by the Senate.
For the most part, the Jones bill (S. 3740) was fairly well received by the members of the House committee, even among those responsible for the minority report on the Reid bill. Only one of the earlier dissenters, Representative Frear, refused to vote in favor of reporting the bill. On April 2, 1928, the House committee sent an amended version of the Jones bill, now referred to as the Jones-Reid bill, to the House for consideration.\footnote{The amended version of the Jones bill first reported to the whole House was referred to as \textit{House Report \#1100}, 70th Congress, 1st session, April 2, 1928.}

The whole House began debating the Jones-Reid bill on April 17. Unlike the Senate, which passed the bill quickly and with little difficulty, the House embarked on a lengthy and often heated debate. While virtually the entire Congress favored federal responsibility for the flood control problem in the lower Mississippi, several issues spurred debate and prevented early ratification of the bill.

The most important of these was the issue of local contribution. Since the passage of the Flood Control Act of 1917, the federal government assumed two-thirds and local interests one-third of the cost of levee construction in the Lower Mississippi.\footnote{U.S. \textit{Statutes at Large}, 64th Congress, 2nd session, March 1, 1917, Chapter 144, 948.} President Coolidge strongly advocated
the continuation of this principle. He made his position known in his annual address to Congress on December 6, 1927:

It is extremely important that it [local interests] should pay enough so that those requesting improvements will be charged with some responsibility for their cost, and the neighborhoods where works are constructed have a pecuniary interest in preventing waste and extravagance and securing a wise and economical expenditure of public funds.

Yet, despite a tradition of local contribution and significant pressure from the president, neither the Senate version of the Jones bill nor the amended version introduced to the House included provisions calling for local contributions of any sort.

Many members of the House found this omission objectionable. The first congressman to speak on the bill, New York Republican Bertrand H. Snell, made the following statement.

I am . . . very strongly in favor of the principle of local contribution. That principle has never yet been abandoned, and I am strongly opposed to doing it now. In my judgement the people who receive the major part

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42Donald R. McCoy, *Calvin Coolidge: The Quiet President* (Lawrence, Kansas: The University Press of Kansas, 1967), 330. McCoy argues that Coolidge was intent upon restricting appropriations for flood control because he did not want to "throw his budget out of line."

43*Congressional Record*, 70th Congress, 1st session, December 6, 1927, 106.

44See Section 2 of either bill.
of the benefits are entitled to pay a little more than the average citizen of the United States.\textsuperscript{45}

Frear of Wisconsin was among the most adamant of those favoring at least some degree of local contribution. In his opening address, he showed that nearly 15,000,000 acres would be protected by the flood control works proposed in the Jones bill. As a result of this protection, the value of this property would increase significantly. Without some degree of local contribution, the thousands of corporations and individual owners of this land would, he argued, reap enormous profits.\textsuperscript{46}

Davenport of New York felt that local contributions of some sort were essential because there were "special benefits" inherent in the Jones bill. Among those who would benefit inordinately were cotton farmers, who would enjoy a "surer and more continuous income" from their fields; property owners, who would receive protection for their land; railroad interests, who would be free of the flood menace; and lumber interests, whose "young and growing timber" would no longer be "subject to drowning in the overflow."\textsuperscript{47}

\textsuperscript{45}Congressional Record, 70th Congress, 1st session, April 17, 1928, 6641.

\textsuperscript{46}Ibid., April 17, 1928, 6655-66; Ibid., April 23, 1928, 7000.

\textsuperscript{47}Ibid., April 18, 1928, 6716.
Reid held the opposite view. In his opening address, he argued that the tradition of local contribution was the elemental weakness in all previous flood control efforts on the lower Mississippi, resulting "in a weak and unfinished system of levees." Local interests were simply unable to raise the money necessary for adequate flood control, even under the best of conditions. In the past, local communities divided themselves into levee districts for taxation purposes. After the latest in a series of severe floods, however, these districts were no longer able to raise money. The 1927 Flood left the inhabitants of the region in financial ruin and unable to pay. The levee districts could not even borrow money because so many of them had defaulted on bonds already issued. The only answer, argued Reid, was a federally financed flood control program for the lower Mississippi Valley.\(^{48}\)

Representative William J. Driver, a Democrat from Arkansas, presented financial statements from several levee districts within his state as proof of their inability to carry the burden of further taxation. One of these, the White River Levee District, included 60,000 acres of cultivated land at an assessed value of $2,500,000. By 1927, however, the district had accrued $1,300,000 in

\(^{48}\)Ibid., April 17, 1928, 6643.
outstanding bonds and $3,000,000 in land mortgages. These numbers did not include the 1927 Flood losses estimated at $2,130,535. Another, the Southeast Arkansas Levee District, contained 727,264 acres worth an estimated $12,500,000. Its accrued debt included $8,571,541 in outstanding bonds and $5,000,000 in real-estate mortgages. Flood losses for 1927 in the Southeast Arkansas District totaled $7,211,905.

These numbers, argued Driver, showed conclusively that "any plan based upon continued contributions is doomed to failure at its inception."49

Representative Riley J. Wilson, a Democrat from Louisiana, agreed wholeheartedly. He made the point that local interests had already spent $292,000,000 over a period of one hundred years in an effort "to protect themselves against the drainage of 42% of the Union," including thirty-one states and two Canadian Provinces. The people of the region, he argued, "are now unable to contribute in any way to make an effective flood-control program possible."50

Whittington argued that "special benefit" alone did not justify requiring local contribution. A project of this scale, he argued, would inevitably enhance local interests. Instead, he emphasized that Congress should be concerned

49 Ibid., 6649.
50 Ibid., 6646.
with the effect of the proposed works on the nation as a whole. The improvements in navigation, which would necessarily accompany any flood control project, would add significantly to the commercial value of the River. In 1926, the Mississippi River carried over 56,000,000 tons of commerce. The river improvements proposed in the Jones bill would, he argued, significantly increase that number, thereby adding to the national wealth.\footnote{Ibid., 6650.}

Another issue that roused significant debate concerned the issuance of flowage rights within the proposed floodways and of rights of way for the construction of levees. The Jadwin plan, upon which the Jones bill was based, called for local interests to furnish all flowage rights and rights of way. The Jones Bill did not, however, adopt this recommendation, but instead called for the federal government to purchase all necessary flowage rights and the rights of way for levees within the proposed floodways.

Once again, Frear led the opposition, calling this provision of the bill "an unprecedented paradox."\footnote{Ibid., 6657.} The federal government had, after all, relinquished much of the land in the proposed floodways to the states at no cost in the Swampland Acts of 1850. In turn, the land had been
parceled off by the states for as little as $1.25 an acre. This provision of the Jones Bill would require, argued Frear, that much of this land be sold back to the federal government at a cost approaching $75 an acre. At that price, the total cost of purchasing the 4,000,000 acres of land within the proposed floodways would surely exceed $300,000,000, possibly running as high as a billion dollars.

Reid disputed Frear's "exaggerated" estimates for the value of land within the proposed floodways. First, argued Reid, Congress had been assured by General Jadwin that the vast majority of these lands were "swamp land" and "of little value." Second, these assurances were reinforced by the statements of several large landowners. William Lorimer, a representative from the Tensas Land Company, which owned 226,000 acres within the proposed floodway, made the following statement to the House Flood Control Committee:

In so far as we are concerned, Mr. Chairman, if it would assure flood control, such land as we own in that neighborhood we would be very glad to contribute. It has a value of probably around $10 an acre. It can never be worth any more, because it is . . . in an area that is overflowed by the backwater from the Old River in Tensas Basin.\(^{53}\)

The vice-president of the Delta Hardwood Lumber Company, Wilmer J. Thomas, promised that his company, which owned

\(^{53}\)Ibid., 6672-73.
12,500 acres within the proposed floodway, would "be glad to accept $10 per acre for flowage rights." Similarly, in a written statement, J. F. McIntyre, the president of Willets Wood Products Company which owned 41,000 acres, assured the Flood Control Committee that "we will sell any part of our land that is required for spillways at $5 per acre all around, gas, oil, and timber reserved." Finally, Reid attacked Frear's general supposition that the great expense of the program mandated the need for local contribution. Assuming that Frear's exaggerated estimates were correct, questioned Reid, "how can any local levee district ever raise a billion dollars to match the government's $290,000,000 under conditions now existing?" Because the financial situation throughout the valley was so desperate, any provision requiring significant local contributions would, reiterated Reid, undermine the success of any flood control program.55

Congressmen from both sides debated the issue further over the next week. During this period, Reid and his supporters won significant support in Congress on the issue of local contribution, but still there lingered a fear among many congressmen that the complete abandonment of the long

54Ibid.
55Ibid.
held principle of local contribution would set a dangerous precedent. Many feared that such an abandonment would invite speculators and large landowners to push similar, federally financed, flood control projects "through Congress and the Treasury with greater speed and thoroughness than any pork barrel of old." The general feeling among these congressmen was that the principle of local contribution must be preserved. Yet, even the strongest advocates of local contribution were forced to admit the exceptional nature of this situation. The lower Mississippi River, from Cairo to the Gulf, carried the drainage from all or portions of thirty-one states of the Union and two Canadian provinces. Even if fairness had called for the states of the Alluvial Valley to carry a sizable portion of the financial burden for the proposed flood control program, it would not have been practical. Local interests had already contributed $167,000,000 to the construction of levees along the lower Mississippi River since 1882 and in many cases were no longer able to make any significant contribution. It was evident to most members of Congress that if the project was to be completed, it would have to be done almost entirely at federal expense. Certainly, the great expense

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56 Ibid., 6656.

57 Ibid., 6653.
involved in general construction and in the purchase of lands within the proposed floodways could not practically be shared by local or state interests. For this reason, those in Congress and elsewhere, who fervently believed that the principle of local contribution was one too important to cast aside, turned their attention, instead, to the purchase of rights of way.

On April 23, 1928, Representative Martin B. Madden, a Republican from Illinois and chair of the Committee on Appropriations, rose to express the will of the president. Coolidge had, explained Madden, already surrendered any demand for significant local contribution. In exchange, however, the president had insisted that the people along the Mississippi River and along the floodways supply at their expense all the rights of way for levees to be constructed under the terms of the program.\(^5^8\) While the Flood Control Committee was still in session, it had agreed, in principle, to require that all rights of way along the main Mississippi channel to be supplied by individual states. The committee had refused, however, to make the states responsible for supplying the rights of way for the construction of levees within the proposed floodways. The estimated value of these rights of way within the floodways

\(^5^8\)Ibid., April 23, 1928, 7003.
was only $1,000,000. Both Coolidge and Madden objected to this refusal. "Why do you want to take the chance of losing the whole thing by a veto," questioned Madden, "when by the expenditure of a million dollars you can furnish the foundation for the levees or the floodways" and meet the president's demands? 59

Regardless of the opposition, Reid felt that he had the necessary support for the bill. The next day, April 24, 1928, he called for a vote. The Jones-Reid bill, as it had come to be known, was passed by a margin of 254 yeas to 91 nays. 60

The Jones-Reid bill spent the next two weeks in conference while members of the originating committees, the Senate Commerce Committee and the House Flood Control Committee, debated the changes proposed by the House. 61 During this period, a new threat to the ultimate passage of the bill arose. It was already well known that Coolidge was unhappy with certain provisions of the bill. In particular, the president believed that state and local interests should

59 Ibid., 7024.
60 Ibid., April 24, 1928, 7125.
61 The conference committee members from the House included Frank Reid, C. F. Curry, Roy G. Fitzgerald, Riley J. Wilson, and W. J. Driver. Those from the Senate included W. L. Jones, Duncan U. Fletcher, Charles L. McNary, Joseph E. Ransdell, and Hiram W. Johnson.
contribute more and that the final figures for the cost of
the program were greatly underestimated. Up to this point,
proponents had ignored his veiled threats to veto the bill,
but 1928 was an election year, and those who supported the
bill felt confident that Coolidge would not oppose the bill,
if only because public opinion seemed strongly in favor of
it.62 By mid-April, however, exaggerated estimates of the
final cost of the program had reached newspapers and
magazines across the nation.62 Supporters of the bill
understood that suspicions of "pork-barrel" could undermine
public opinion on the bill and place Coolidge in a position
to prevent a veto-override.

Accordingly, Reid and Jones, the ranking members of
their respective conference committees, took steps to secure
the passage of the bill. They began by making several
concessions to the president. The most important of these
dealt with the purchase of the approximately 4,000,000 acres
of land within the proposed floodways. The bill recently

62 McCoy, *Calvin Coolidge*, 331-332.

63 "Suspicions of "Pork" in the Flood Control Bill," *The
Literary Digest* (April 14, 1928): 10-11. This article cites
numerous editorials from newspapers across the country, all
of which are highly critical of the Jones-Reid bill.
Newspapers cited include the St. Paul Dispatch, the Detroit
Free Press, the Cleveland Plain Dealer, the Baltimore Sun,
the New York Sun, the Philadelphia Inquirer, the New Haven
Register, the Boston Transcript, and the New York Evening
Post.
passed by the House called for the federal government to purchase flowage rights for all lands within the proposed floodways. The members of the conference agreed to alter the language of the bill slightly so that the federal government would be required to pay flowage rights only for lands that received "additional" damage due to the construction of the floodways. In other words, the government would not be required, in most instances, to pay flowage rights for lands already subject to overflow. The committee also agreed to include a provision that required local contributions of one-third on all subsequent flood control works.

In addition, Reid set out to clarify, once and for all, the projected cost of the program. He assigned a fellow member of the Flood Control Committee, Will Whittington, the difficult task of presenting the pertinent financial information to the whole House. Whittington addressed Congress on May 5, 1928. "There is," he argued, "no foundation for the extravagant report that the project will cost a billion or a billion and a half dollars. The real truth is that the project will cost a little more than one-third of a billion dollars." If the Jadwin plan had been adopted without modification, the cost of the program would

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*Congressional Record*, 70th Congress, 1st session, May 8, 1928, 8120-21.
have been $296,400,000. The Jadwin plan had called for state and local interests to furnish flowage rights and rights of way within the floodways, while the Jones-Reid bill charged this expense to the federal government. The cost of these flowage rights and rights of way was the difference between the two estimates. The Jones-Reid bill placed the value of these rights at approximately $59,000,000. Estimates by those opposing the bill, including Frear, went as high as $300,000,000. As a result, much of Whittington's speech was directed at clarifying the exact cost of the lands in question. First of all, explained Whittington, "there is no guesswork about the number of acres required." The only "unknown" was the value of the flowage rights and rights of way in question. Careful estimates by both the Mississippi River Commission and the chief of the Army Corps of Engineers, however, were available. Using these unbiased and reliable estimates the total expense of all lands necessary for the construction of floodways could not, Whittington assured, exceed $59,000,000. In his final statements on the bill, he gave the following assurances:

\[\text{\textsuperscript{55}Jadwin Report, 32.}\]

\[\text{\textsuperscript{56}Congressional Record, 70th Congress, 1st session, May 5, 1928, 7786-90. See itemization on 7889.}\]
The pending bill safeguards the Treasury. I have given the estimated costs, and I have relied on the record. The legislation is the most comprehensive flood control bill ever passed by a legislative body. Every word in the bill has been inserted carefully. Every section has been revised. All provisions that would have made unnecessary and unjustifiable demands on the Treasury have been eliminated. . . . The reliable, authentic estimated costs of flood control of the Mississippi River will not exceed $355,400,000.67

The concessions granted by the conference committee, combined with the reassurances by members of the Flood Control Committee as to the final expense of the program, persuaded Coolidge to sign the Jones-Reid bill. Its passage, on May 15, 1928, ushered in a new era of federal commitment to flood control in the Mississippi Valley and in the United States.

The 1928 Flood Control Act also marked the end of the first period of the MRC's history since it effected certain definite changes in the organization, duties, and jurisdiction of that body.68 The MRC ceased to be an executive body and became an advisory and consulting body charged with a number of responsibilities, including holding public hearings, making inspection trips, recommending policy, and preparing annually the program of work to be

67Ibid., 7889-90.

undertaken during the following fiscal year.\textsuperscript{69} Also, as part of a general reorganization of the Engineer Department, the legislation moved the MRC's headquarters from St. Louis, Missouri, to Vicksburg, Mississippi, where it currently resides. Most importantly, though, the law charged the MRC with the execution of the flood control project authorized by the 1928 act, and, as such, would continue to play a major role in protecting the lower Mississippi Valley from overflow.

\textsuperscript{69}See section 8 of the 1928 Flood Control Act, U.S. Statutes at Large, 70th Cong., 1st sess., May 15, 1928, Chapter 569.
CHAPTER X

CONCLUSIONS

As the 1927 flood clearly evidenced, the MRC’s levees-only policy failed to bring complete flood protection to the Lower Mississippi River, and, for many critics of the MRC, that failure overshadowed the Commission’s many accomplishments. In addition to being uncharitable, though, that evaluation is unfair. The MRC struggled throughout its first forty-eight years to create a workable strategy for regulating the Mississippi and, under adverse conditions, accomplished a great deal. From its inception, the Commission made steady progress in its efforts to protect the Lower Valley from inundation. In 1882, the levees of the main stem of the Mississippi River failed in 284 places for a combined length of fifty-six miles. By 1912 and 1913, the levees were greatly improved, and, while the floods of those years were among the highest-ever recorded, they caused just twelve and eight breaks respectively, for a total of only a few thousand feet. The 1916 flood caused only one break, and the 1922 flood set new records but
resulted in only one break above New Orleans and one below.\(^1\) Certainly, the 1927 flood wreaked havoc on the MRC’s levee system, but, in defense of the Commission, it had never made allowances for a flood of that magnitude. At Arkansas City, flood volumes exceeded previous highs by more than 40 percent, far higher than any margin of safety built into the levee system.\(^2\) Predicting maximum flood levels was a difficult endeavor at best, and the MRC’s failure to do so accurately was its greatest fault. When confronted with the new reality, though, the MRC responded intelligently, abandoning its levees-only policy and reevaluating its entire approach to flood control in the Lower Valley. As such, the MRC in 1928 had reason to be proud of its past, and hopeful for its future, as well as the future of the Mississippi Valley.

The 1928 act ushered in a new era for both the MRC and the Lower Mississippi Valley. As a result of that act, the levees of the Lower Valley were raised, and emergency


\(^2\)Arkansas City recorded its previous, maximum discharge of almost 1,800,000 second feet in 1892. In 1927, discharges at that city reached 2,472,00 second feet. See Arthur DeWitt Frank, *The Development of the Federal Program of Flood Control on the Mississippi River* (New York: AMS Press, 1930), 188.
outlets were constructed. In addition to the adoption of a comprehensive flood control system, the legislation authorized the creation of a hydraulic laboratory. This laboratory, known as the Waterways Experiment Station, was located at Vicksburg under the direct authority of the MRC. There the Commission’s engineers and scientists constructed large-scale models to find solutions to river problems.¹ But the 1928 Flood Control Act was not the panacea for which many had hoped. While that legislation represented an important step forward, it authorized only a portion of the works that were eventually brought to bear in the struggle against the “Father of Waters.” Future legislation would be necessary to bring the program nearer to completion, but the 1928 act was significant in that it opened the door to alternative flood control methods and, in doing so, helped initiate a period of progressive and scientific experimentation.

The Mississippi Valley reaped the benefits almost immediately. For almost two hundred years, hydraulic engineers had viewed cutoffs with a great deal of skepticism. By 1932, though, studies carried out at the Waterways Experiment Station convinced the MRC to initiate a

¹D.O. Elliott, The Improvement of the Lower Mississippi River for Flood Control and Navigation (Vicksburg, MS: Mississippi River Commission, 1931), 21.
series of cutoffs in the middle reaches of the Mississippi River. Within nine years, sixteen such cutoffs had reduced the river distance from Memphis to Vicksburg by 170 miles. By shortening the river, these cutoffs had the effect of speeding flood waters to the Gulf, which helped lower flood plains considerably. The cutoffs lowered stages at Arkansas City by over twelve feet and at Vicksburg by six feet. In fact, the results were such that, by 1941, the MRC abandoned its plans for one of the two major floodways authorized by the 1928 act. The successful development of these cutoffs “marked a new phase in the evolution of flood-control engineering.”

Additionally, by the late-1930s a campaign to construct flood control reservoirs in the headwaters of the major tributaries of the Mississippi began to bear fruit. The MRC had always conceded that reservoirs could lower flood levels on the Mississippi River by retaining flood waters in the basins of the various tributaries. In the past, though, the Commission had always concluded that the benefits did not justify the high cost of construction. Under the adverse

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1 Mississippi River Commission, *Flood Control in the Lower Mississippi River Valley* (Vicksburg, MS: Mississippi River Commission, 1958), 7; Harrison, *Alluvial Empire*, 137.

2 Congressional Record, 71st Cong., 1st sess., June 20, 1941, 5430.

3 Harrison, *Alluvial Empire*, 137.
economic conditions and high unemployment of the 1930s, reservoir advocates reasserted their demands for headwater projects; and lawmakers, looking for useful, large-scale work-relief programs, were increasingly amenable to the idea. By the spring of 1938, Congress had authorized forty-four reservoirs, but requirements for local contributions were such that few were actually under construction. The landmark Flood Control Act of 1938 reduced requirements for local contribution and facilitated the construction of headwater projects on many of the major tributaries of the Mississippi River, including the Ohio, the Tennessee, the Cumberland, the Missouri, the Upper Mississippi, the Arkansas, the White, the Red, the St. Francis, and the Yazoo rivers. These reservoir systems were instrumental in reducing flood levels on the main river, as well as the various tributaries.

Today, the MRC oversees a comprehensive federal program for flood control for the Mississippi Valley that employs levees, reservoirs, floodways, and cutoffs. This program has brought an unprecedented degree of security to the Mississippi Valley, and the MRC deserves much of the credit for that security. Even so, as the major flood of 1993

"Ibid., 169."
proved, the Commission's struggle to bring complete flood protection to the Mississippi Valley is ongoing.
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