

## **Navigating the Osage River in Missouri: 1839-1926**

North St. Louis Island is situated about 40 miles upstream from the mouth of the Osage River in Miller County, Missouri. It was named for the first boat to ascend the Osage. The voyage of the North St. Louis began in St. Louis in July of 1837 but was interrupted when the steamer grounded on the gravel bar that bears its name. The water level dropped rapidly, and soon the boat was sitting high and dry, six feet above the water's edge, where it remained until spring rains brought enough water to float it once again. Thus began the century-long adventure of steamboating on the Osage River. Navigating the river's tight bends and numerous shoals remains a challenge to this day. Recreational boaters on the Osage can attest to the unpredictability of this stream whose water level can fluctuate as much as two feet up or down in the course of a single afternoon. Despite the obstacles, many Missourians find boating on the Osage irresistible. Forested bluffs line the winding stream, and gravel bars along the clear waters provide an ideal location for picnicking and swimming.

Today's river enthusiasts can scarcely imagine a 100-foot long sternwheeler laden with cargo and passengers plying from landing to landing a century ago. Nevertheless, all along the river one can see reminders of days gone by when the commercial steamboat industry was thriving. Rock wing dams, often lurking just below the water's surface, are reminiscent of attempts to channelize the river and back up the water's flow enough to keep steamboats afloat. The obsolete Osage River Lock and Dam No. 1 now serves only as testimony to man's determination to conquer the forces of nature at considerable cost and to succeed in navigating the unnavigable. The demand for goods and markets brought nineteenth century residents of the Osage valley together with the shared mission of opening the channel for navigation. Nearly a century of political debate and the investment of more than 1.5 million dollars eventually resulted in limited improvements to the Osage River between 1840 and 1926, making the lower reaches navigable for commerce for a period of six to nine months out of the year.

The Osage River, named for the Indian tribe inhabiting the region when white settlers arrived, is the largest tributary of the Missouri River in the state. It originates in eastern Kansas and empties into the Missouri 12 miles below Jefferson City. It flows easterly through the state for over 300 miles and borders or crosses through the counties of Bates, Vernon, St. Clair, Henry, Benton, Morgan, Camden, Miller, Cole, and Osage. The river's channel is crooked and its flow of water is extremely uneven, comprising a series of pools and shallow shoals, but mid-nineteenth century settlers

were determined to overcome these navigational obstacles and to develop its potential as an artery of transportation.

The steamboat *Adventure* had better luck than its forerunner, the *North St. Louis*. It ascended the Osage in the spring of 1838, ran a distance of 160 miles upstream, and returned to St. Louis with little difficulty. This venture offered hope for commercial navigation, but for the Osage River to provide a reliable transportation route, navigational improvements were essential. Business leaders in the river valley began pressing their representatives in the Missouri House and Senate to take up the issue.

In February 1839, the first attempt was made to secure state funding for improvements to the Osage River, but the proposed bill was rejected by the State legislature. During the same legislative session, however, the Board of Internal Improvements was established by an Act of the Missouri General Assembly on February 11, 1839. The Board was charged with the task of examining and surveying the state's waterways. Its mission was to identify needs for deepening the channel, clearing the bed and shores of obstructions, and erecting lock and dam systems for creating slack-water navigation. According to the only report of this board issued on December 20, 1840, 25 shoals and rapids were counted in the 58-mile stretch between Osceola and Warsaw, 30 in the 63-mile distance from Warsaw to the mouth of the Niangua, and 43 from there to the mouth of the Osage 108 miles downstream. These hazards were usually adjacent to islands where the channel narrowed and the water level dropped to less than one foot in dry seasons.

The most economical method of improvement, as described by a civil engineer familiar with the Osage, was the construction of wing dams and training walls. Wing dams of brush and rock projecting from the bank at an angle from the head of an island gave the river a gradual turn toward the opposite bank and thereby encouraged a deeper channel. Those rapids not divided by islands resulted from an extreme widening of the river with the usual quantity of water being distributed over a greater expanse of lesser depth. Training walls at those points, extending transversely from both shores, reduced the width of the water's flow and created greater depth in the center of the stream. Such structures, according to proposed specifications, needed to be large enough to ensure a minimum depth in the channel of four feet for seven months out of the year. The challenge of navigating during the dry summer months and icy winter months was considered insurmountable. William H. Morell, the Chief Engineer of the Board of Internal Improvements, estimated the cost of establishing and maintaining a four-foot channel for a distance of 220 miles at \$204,600.

Local political activity in the Osage valley reflected a strong emphasis on improving the river for navigation. Residents of Warsaw in Benton County held a meeting on August 22, 1840 for the purpose of selecting a Democratic candidate to fill a vacancy in the State Senate. They resolved that Thomas H. Harvey would be the choice from that district "provided he is in favor of an appropriation being made by the State for the improvement of the navigation of the Osage River." The resolution further stated that Harvey had, while a member of the Lower House, supported and "sustained with zeal" the bill for such appropriation. Throughout the Osage valley petition drives were underway, with several signed documents being presented to the legislature in November of 1840. At the urging of proponents in the House, these petitions were referred to a Select Committee rather than the Internal Improvement Committee, so that the members "might throw every possible light on the subject which thorough friendly examination might enable them to obtain." On December 17, 1840, a bill for the improvement of the Osage River was introduced and referred to the Committee on Internal Improvement.

The matter of improving the Osage River for navigation seemed to be gaining support, but optimism soon gave way to discouragement and frustration. The state had few resources to fund the recommended programs, and the General Assembly abolished the Board of Internal Improvements on February 15, 1841. Later that year, Congress granted 500,000 acres of land within the Missouri borders to the state with which to generate revenue for internal improvements. Meanwhile, agitation for improvements to the Osage continued. According to an 1843 report of the House Standing Committee on Internal Improvements, the Osage valley required improvements for navigation to develop a promising mining industry. The committee reported that "numerous deposits of mineral wealth and extensive veins of the richest coal fringe the margins of the Osage." The committee encouraged the legislature to use land sale proceeds to provide funding for navigational improvements and insisted that the resulting economic growth would soon repay any expense incurred by the state. Subsequent measures to fund the improvements, however, failed to pass during that legislative session.

Distraught citizens in the Osage River valley held a convention in Warsaw on September 9, 1843 in response to the failure of the House to pass the appropriation bill. Delegates from 13 counties attended the meeting. Even Springfield was represented since southwest Missouri markets could connect with shipping routes through Osceola and Roscoe. The intent was primarily to garner support for pressing the General Assembly to allocate funds from land sales. Additionally, organizers addressed various misconceptions people had regarding the proposed work on the

river. Thomas B. Hudson refuted the far-fetched claim that "if the bars should be removed from the river, the water would all run out and leave the farm stock to perish of thirst." A resolution was passed that called for a committee of five to prepare an address to the people of the State on the importance of the improvement of the Osage. They also decided that 5,000 copies of the address would be printed and distributed, and that each member of the Convention would contribute money to defray the expenses of printing. Citizens of the valley were called on to furnish to the Legislature and other interested parties "all the information in their power" to support an appropriation. A resolution to "support no man for Governor, Lt. Governor, member of Congress, or member of the General Assembly of the State of Missouri who will not pledge himself to do all in his power for the improvement of the Osage river" aroused strong opposition from three counties. Jefferson City delegates from Cole County insisted that this restrictive measure was undemocratic. The resolution passed, never the less, after spirited debate. Furthermore, the members of the convention pledged themselves to "use all honorable means in their power to advance and carry out the contemplated objective." The text of the address was soon printed in newspapers across the state.

Politicians generally agreed that the land sale funds should be used to improve waterways, but the manner in which this would be done was contested for four years. Despite strong initiatives to secure funding for specific improvement projects, the General Assembly opted for a compromise. An Act of the General Assembly on March 27, 1845 approved a provision that the revenue generated from the sale of the land be distributed equally among the counties of the state for use on internal improvements as each deemed appropriate.

Failing to specifically authorize funding for improvements to the Osage, the state legislature in 1847 authorized a bill, one first introduced in 1843 but "laid upon the table," to establish the Osage River Association. The bill gave its board of directors, representing the dominant interested parties, authority to raise funds from individual counties willing to invest in improvements. Their charge was "To make navigable and improve navigation of the Osage River from the mouth through Harmony Mission in the County of Bates." Stock was sold at \$100 per share, and \$60,000 was raised with only eight counties, including St. Louis but not Cole County, investing in the Osage River Association. Some counties apparently refrained from investing funds in a project that they thought could potentially benefit other counties more than their own. The river was divided into five districts from the mouth to Papinsville in Bates County with simultaneous improvements targeted for each. Work began on all five: dredging shoals, clearing snags, cutting overhanging limbs, and building wing dams and

training walls. Funds were inadequate and the overall benefits somewhat limited by not starting at the mouth and working upstream. By 1849, it was obvious these were only temporary measures and that a system of locks and dams was needed to maintain slack water over shoals.

Cole County was actively engaged in the struggle to establish a railroad hub in St. Louis amid competition from Chicago and Memphis. Though local newspapers encouraged investment in improvements to the Osage to increase trade through the county from the southwest, Jefferson City merchants and developers resisted. They were concerned that the Osage trade might divert local markets to St. Louis and that improved waterways could be perceived as competition to the development of railroads. St. Louisans, on the other hand, envisioned a complimentary railroad/waterway transportation system connecting them with markets served by eastern and western railroads as well as the Mississippi River. The prodigious Senator from Missouri, Thomas Hart Benton, was also skeptical about the coexistence of railroads and navigation. He eventually jumped on the bandwagon and supported efforts to bring the railroad through his home state, but for years he had opposed the idea, favoring instead his scheme to develop waterways to create a "North American Road to India." In a speech to the Senate in 1850, Benton insisted that the "labors of Lewis and Clark have demonstrated the existence of a water communication with a few portages, through the heart and center of the Republic, from the Atlantic to the Pacific. The rivers Columbia, Missouri, and Ohio form this line and open a channel to Asia, short, direct, safe, cheap, and exclusively American, which invites the enterprise of American citizens, and promises to them a splendid participation in the commerce of the East."

Those "few portages," amounting to hundreds of miles, were minor obstacles to commercial navigation, according to Benton, but waning popularity at home changed his mind about the railroad. On February 7, 1849, he made one of the long speeches for which he was well known supporting a bill to create the Pacific Railroad Company's charter in Missouri. The media quickly recognized his tactics and seized the opportunity to expose his suspected hypocrisy. A commentary in the *Western Journal* in September of 1849 reported: "The proposition for a railway from St. Louis to San Francisco was introduced into the Senate of the United States by Colonel Benton of Missouri. It was gratifying to all the friends of this great measure to find that Colonel Benton, who had so long cherished his original scheme of 1818 for navigation of the Missouri and Columbia rivers; and who had as late as the session of 1846 elaborately and ably defended that scheme in his place in the Senate; had at

last reconciled it to his feelings to unite with those friends of a Pacific railroad who had pressed the matter upon public consideration for the last fifteen years."

The Pacific Railroad terminus was eventually established at St. Louis, and crews began laying track eastward. It bridged the Osage River at its mouth and reached Jefferson City late in 1855. Fearing competition with steamboats, the railroad was located away from the Missouri River west of Jefferson City. However, the Pacific Railroad operated its own fleet of 12 steamboats connecting with the trains at Jefferson City to transport passengers and freight on up the Missouri River to Kansas City and beyond. Passengers could step from the train to a waiting steamboat, completing the journey from St. Louis to Kansas City in just 50 hours. Osage City, on the western bank where the bridge crossed, served as a transfer point for shipments of goods and passenger service. Steamboats linked both to railroads and Missouri River traffic from a single vantage point. Navigation was still unreliable, but communities along the Osage River intended to further capitalize on this profitable trade.

The development of railroads and navigation was interrelated in other ways, as well. Due in part to the state's financial assistance to the Pacific Railroad, promoters for improvements to the Osage River were successful in demanding fair treatment of their economic concerns. On February 14, 1855, the Missouri legislature passed the General Assistance Act, providing \$50,000 for improvements to the Osage, starting at the mouth and extending to Osceola. The counties forming the Osage River Association assigned their rights to the state. The legislature divided the river into three districts and appropriated the funds to each District Commissioner. With this funding and systematic approach, efforts were increased in dredging, snagging, and constructing rock wing dams and training walls to back water up over the shoals. As a result, Navigation increased substantially, and by 1856, twelve steamboats were operating exclusively on the Osage River between the mouth and Osceola 200 miles upstream.

Because of the shoals and tight bends in the river, Osage River steamboats were necessarily smaller and had shallower drafts than the steamboats operating on the Missouri River. Some plied all the way to St. Louis and back, and others transferred shipments to and from larger Missouri River boats at the mouth of the Osage. Among those operating on the Osage were the *Osage Packet*, *Alliance*, *Wave*, *Warsaw*, *Chippewa*, *Laclede*, *Leander*, *Mary C*, *Financier*, *Thomas E. Tutt*, *Flora Jones*, *T. L. Crawford*, *Maid of Osage*, and the *Mansfield*. Both the *Wave* and *Alliance* sank in the treacherous waters, and several other boats suffered severe damage. Cargo records

document the shipment of such commodities as venison hams, deerskins, otter furs, lumber products, hemp, pork, and produce mainly to markets in St. Louis. Upstream commodities included salt, groceries, nails, and iron.

Osage River navigation and improvement declined significantly during the Civil War. Commerce was disrupted nationwide, and guerilla terrorism on the Osage River interfered with local trade on the stream. During the early years of the Civil War, a southern sympathizer known as "General Crabtree" led a band of recruits in raids on towns and farmhouses in the Osage valley. Operating primarily in the Cole and Miller County areas, they moved their camps from place to place through the thickly forested areas along the river. In June of 1864, Crabtree and his men successfully infiltrated the town of Tuscumbia and held it hostage until the arrival of a 60 man militia sent them retreating. Crabtree's hit and run tactics proved successful until an irate landowner, whose wedding suit Crabtree had stolen, managed to locate the guerillas' camp and fire a lucky shot, dropping the notorious leader in his tracks. Further endangering navigation during the Civil War was the river's proximity to the railroad. On the morning of October 6, 1864, Confederate forces attacked the Missouri Pacific railroad bridge at Osage City. They had approached from the East early in the morning, forcing the Union Command on the Osage County side of the river to surrender. The Union Company on the western, Cole County side soon evacuated.

The end of the Civil War brought renewed interest in developing potential commerce in the Osage River valley. Between 1855 and 1871 a total of 33 shoals were improved by the State of Missouri between Rainy Creek 140 miles from the mouth and Tuscumbia at the 60-mile mark at a cost of approximately \$175,000. The emphasis next shifted to Washington and targeted federally funded programs. Congressman Barnett of Jefferson City was successful in his efforts to obtain an order for the examination of the Osage River. The U.S. Army Engineers initiated a survey of the river in 1870. Lt. Col. S. F. Reynolds, stationed in St. Louis, was the officer in charge of Western River Improvements. He dispatched Mr. D. Fitzgerald to study the stream, and the results of Fitzgerald's survey were published in the District's Annual Report of 1871, documenting 128 shoals and more than 100 wing dams. The engineer's conclusion was that "the navigation of this stream can be so improved as to afford priceless benefit upon the country through which it flows." He argued that the investment of \$200,000 in improvements would open a three foot channel between the mouth of the Osage and Roscoe, 238 miles upstream, and provide the means of shipping large amounts of produce that were presently unable to reach markets. Again, the argument for exploiting mineral deposits was used.

Reynolds reported that the principal minerals were lead and iron. "The lead deposits are very rich and, although mined in a crude way by the farmers, already form quite an item of freight. If there were any certain means of transporting the ore to market, there is little doubt that it would form a leading source of wealth to the valley and State."

Reynolds was persuasive, and fieldwork was ordered by an Act of Congress on March 3, 1871. Work began in September of 1871, and for the first time, the U. S. Army Corps of Engineers was responsible for snagging, dredging, and construction on the Osage River. The training walls and wing dams were constructed to confine the low water flow over each shoal to a width of 80 feet, but according to some reports, navigation was hindered rather than improved by these methods. Osage River pilots offered the most vocal complaints. They were of the opinion that the Osage River, at stages that partially or completely submerged the training walls and wing dams, was impossible to navigate with a fair degree of safety. Critics also argued that a wider though necessarily shallower channel would minimize hazardous water flow velocity. Where the channel was confined between training walls, materials in the bed of the river over the shoal were scoured out and then deposited at the lower end of the chute producing a bar or downstream extension of an old shoal in the navigation channel. The natural depth over those riffles was one foot, and the training walls increased this depth to just 2 feet, therefore, it was still necessary to maintain a dredge to acquire the wanted depth of 3 feet in the channel. Even if the methods were questionable, it was a never-ending struggle to keep up with the planned improvements and necessary maintenance. In addition to dredging crews, cranes were in operation at all times removing snags from fallen trees. Overhanging limbs also had to be cut to avoid hazards to smokestacks on the steamboats. Three successive \$25,000 appropriations in less than two years provided barely enough money to fund the project.

Local businessmen recognized that the improvements being made were only temporary and inadequate to sustain their growing commercial interests in the Osage valley. No attempts had been made by the Engineers to sustain a channel beyond Tuscumbia. On August 21, 1873, the people upstream in Benton County held a meeting in Warsaw at which they resolved to hold a convention at Jefferson City on October 7<sup>th</sup> and send delegates with the purpose of adopting a strategy to secure funding for permanent improvements. Their resolution reflected a belief that the time was favorable for a vigorous and persistent effort: "The widespread distresses and complaints of the great farming interest have secured the attention of the nation to the neglect which the West has suffered in the national legislation." They believed



that a disproportionate amount of money was spent on improvements in the East and that the successive small grants appropriated to the Osage River in previous years were evidence of slight attention to their significant need. The late Congressman Burnett had brought national attention to the issue, and the new Representative, Colonel Crittenden, pledged his hearty support. The Jefferson City *People's Tribune* applauded the results of the Warsaw meeting and encouraged the people of Cole, Osage, Miller, Camden, Benton, Henry, St. Clair, Vernon, and Bates Counties to send full delegations to the Jefferson City Convention.

On October 8, 1873, the Jefferson City *People's Tribune* reported the proceedings of the Osage River Convention. The editorial of the day condemned the State of Missouri for overindulging in the development of railroads at the expense of Osage River improvements that would have, the writer argued, "added more dollars to the treasury and more glory to the State than half the railroads within her borders." But, the editorial claimed, it was not too late to press Congress for recompense. Representatives from each of the Osage valley counties, as well as representatives from St. Louis, and the counties of Johnson, Maries, Phelps, Moniteau, Hickory, Cedar, and Laclede attended the convention in Jefferson City. They appointed Ex-Governor McClurg as head of the Memorial Committee whose task it would be to present a convincing appeal to Congress and to prepare a public address to assure the unified support of the people residing in the Osage valley. The delegates were determined to settle for nothing less than a system of locks and dams.

According to a letter sent to the convention by the Chief District Engineer, J. H. Simpson, the 1870 estimate for improvement was far too low for the amount of material that had to be removed and the time consumed in preserving the channel. He claimed that the only means of maintaining a depth greater than two feet was slack-water navigation and that the only means to determine the cost of such improvements would be an exhaustive survey at a cost of no less than \$20,000.

On February 24, 1874, the Memorial Committee met and approved the draft offered by Governor McClurg for presentation to Congress. It gave lengthy reports from each contiguous county of the agricultural products, mineral resources, and "inexhaustible coal fields" dependent on a lock and dam system to reach potential markets. Governor McClurg, who owned and operated a Linn Creek shipping business, agreed to present the memorial to Congress himself if his expenses could be paid. Committee members agreed to solicit donations for that purpose. A June 18 meeting of interested parties at Tuscumbia resulted in the appointment of delegates from various counties to raise the funds necessary to send J. W. McClurg to Washington.

The Osage River improvement initiative suffered a blow when Engineer Simpson's Annual Report was published in February of 1875. Simpson failed to see from the current or anticipated commerce the necessity of undertaking so costly an improvement as slack-water navigation. Citing the necessity of maintaining more than 125 shoals on less than 250 miles of river, Simpson suggested that the cost outweighed the benefit: "From present appearances I should say the cost of improving them will average not less than \$4,000 to each shoal, or not less than \$500,000 in all, and this, if done upon the present plan, will require frequent retouching. The cost of locking and damming would be enormous. The present commerce of the river amounts to almost nothing, although the people interested claim that it will increase if the Government opens the river."

The Engineer's ongoing project on the Osage must have been substantially underfunded because the State Legislature was called upon to pay for work on Bolton Shoals in March 1877. A sum of \$2,000 was needed to complete the dredging and training wall construction. No satisfactory results were gained from the citizen's initiative of 1874, but a new alliance was forged with interests in Kansas where high freight rates were exacted by the few railroads serving the population. Congressmen Plumb of Kansas and Crittenden of Missouri vowed to convince their colleagues that the Osage River was an interstate waterway of great importance and worthy of significant appropriations. Unfortunately, the Missouri contingency in Congress shared no such unifying mandate. In 1880, Judge H. Clay Ewing wrote in the Jefferson City *Daily Tribune* a challenge to Colonel Phillips, then Missouri's leading Congressman, to take up the cause and persuade members from the Sixth, Eighth, and Eleventh Districts to realize the magnitude and importance of slack-water navigation on the Osage River to their constituents.

Among the steamboats plying the Osage River after the Civil War were the *Alice Gray*, *Emma*, *Tom Stevens*, *Golden Gate*, *Evening Star*, *Far West*, *General Mead*, *Aggie*, *Dan B. Hurlburt*, *Plattsmouth*, *John R. Hugo*, *Frederick*, *Nadine*, *Sport*, *Helena*, *Thomas H. Benton*, *J. R. Wells*, *Tuscumbia*, *Dauntless*, *Floyd*, and the *Homer C. Wright*. Some of these river packets towed barges, and some were engaged to tow tie-rafts when backwater from a swollen Missouri River caused them to float upstream. Wheat, livestock, lumber, railroad ties, farm produce, merchandise, lead, and barytes, or "tiff," were the principal commodities of commerce, but the steamboats also carried mail. Freight rates varied and were determined by the length of the haul and the kind of goods carried. Grain and minerals, for example, were carried for a lower rate than merchandise. After the establishment of railroad service

through Missouri, navigation proponents euphemistically took to calling steamboats "the great regulators of the cost of transportation."

By 1884, a large-scale plan for the systematic improvement of the Missouri River was initiated with a Congressional appropriation of \$850,000. Osage River interests feared that no major appropriations would be gained for them until the main artery was cleared of all obstacles. They argued that production in the Osage valley was growing at such a rapid rate that a difference of fractions of a cent in the cost of transporting a bushel of grain must be a matter of great concern to farmers and manufacturers. Improvements to the Osage River, they insisted, must proceed without delay and simultaneously with the Missouri River project.

In January of 1887, a group of merchants, landowners, and politicians from Jefferson City drafted a resolution to impress upon Congress the necessity of improving the Osage, and they planned a convention to be held at a later date. The Osage River Improvement Convention of 1886 convened in Jefferson City on March 18 to plan an organized effort to justify and secure funding from Congress for a system of locks and dams. Judge Clay Ewing and C. G. Brooks, President of the Jefferson City Board of Trade, spearheaded the campaign. The Tuscumbia delegation, the largest in attendance, arrived on the steamboat *Frederick* and made the trip in eight hours, averaging ten miles an hour.

The strategic outcome of the 1886 Convention was an appeal to both Congress and the Corps of Engineers. In a letter dated October 29, 1889, the Citizen's Committee presented to Major A. M. Miller, U. S. Engineer in Charge of River Improvement, their justification for locks and dams on the Osage River. The letter claimed that at least one-third of the \$36,000,000 in agricultural products from the Osage valley could be transported on an improved waterway and the resulting development of mineral and timber resources would soon quadruple production. They argued that railways could never adequately serve the valley because of the river's bluffs and curves. Major Miller responded favorably and in January 1890 submitted a report asking Congress to appropriate \$220,000 for the construction of a lock and dam on the Osage River at Shipley Shoal 10 miles from the mouth. Miller's endorsement enabled Congressman R. P. Bland and Senators Cockrell and Vest to secure the long-awaited authorization of a lock and dam project.

Funding was delayed, but finally appropriated in 1893. Still, no work was begun until Congressman Bland appealed to the Secretary of War on September 29, 1894. His letter struggled through the usual red tape channels and was finally forwarded to Lieutenant Colonel Charles R. Suter of the United States Engineers and President of

the Missouri River Commission. He returned it to the Chief of Engineers with the following endorsement: "I am directed by the commission to state that work will be begun as soon as the plans and specifications can be prepared."

In addition to constructing locks and dams, the engineers were directed to open and maintain a three-foot channel for a distance of 238 miles to Roscoe, the head of navigation. This proved to be an impossible task, and the head was twice pushed back - first in 1902 to a point just above the Grand River 185 miles from the mouth, then again in 1904 to the 171-mile mark below Warsaw. The people of St. Clair and Benton Counties had given up hope of seeing improvements to the river and welcomed the passage of measures that established the head below their region. Their interest shifted to the economic benefit of building bridges, an endeavor precluded by navigation.

Operations at Shipley Shoal were underway by September of 1895. A towboat was stationed there and engaged in moving dredges, piledrivers and material up from Osage City. The lock measured 220 feet by 40 feet and the dam was nine feet high. Affixed to the dam were movable drums, or half-cylinders, that could be rotated and raised on steam-powered wickets during low-water stages. The lock was equipped with mitered gates at the upper and lower ends. These were first made of timber, and then replaced with steel gates. The dam stretched the full 850-foot width of the river, but it had a navigation pass 60 feet in width through which boats and rafts of ties and logs could pass during high-water stages.

Navigation was closed for six months during construction, creating a serious backlog of shipments and cutting off trade between Osage City and communities upstream. A Missouri Congressional contingency took up the concern with the War Department and "pressed the matter so vigorously as to obtain the necessary order for restoring the river to its natural uses." The Secretary of War consequently instructed Chief Engineer Chittenden to expedite operations at the lock and dam. The editors of the *Jefferson City Tribune* not only praised the efforts of Senator Stone and Congressman Shackelford, but said, "The people living in the valley of the Osage are fortunate in having representatives at Washington who are not only willing to look after their interests, but can accomplish something when they start out to do so."

The results of the Congressional pressure on the lock and dam project were quick and dramatic. Engineers hurried through the final phase of construction and just two weeks later, on February 15, 1906, the first test of the operation of the lock was conducted. When the gates on the lock closed, the pressure created by the backed up water was too great for the wall of the dam to withstand. About 30 feet of the

center section gave way carrying the third pier with it. Engineers attributed the failure to heavy rains and frequent flooding conditions during construction. Instead of waiting until the official March 1 opening date, boats and rafts began passing through the breach immediately and continued to do so until repairs were initiated during the dry summer months. The dam was not fully operational until 1914, but the lock was functional in the meantime.

Navigation on the Osage River was at its height during the last two decades of the nineteenth century and the first decade of the twentieth century, due largely to channel improvements, but there were still obstacles to face. The memoirs of Captains Robert M. Marshall, Henry Castrop, and C. B. Wright document the day-to-day difficulties faced by rivermen of the era. These pilots operated routes out of Osage City, Linn Creek, and Tuscumbia to as many as sixteen communities and fifty landings between the mouth and Roscoe, 238 miles upstream. They also hauled shipments to and from ports as far away as St. Louis. Weather was a constant concern, and it determined whether or not the boats could run. Wright once observed: "The river is so low a duck can ford it." He paid careful attention to the branches after a rainfall, and if they were running well, chances of the river rising were good, so he would once again be making pick-ups and deliveries aboard the Wells. Wind was another concern. If the boats were hit broadside by strong gusts, pilots could not keep them in the channel. When temperatures dropped suddenly, pilots risked navigating in freezing water if they tried to race home. They occasionally spent the winter months stranded on bars or in ports far from home. When the river began dropping, boats grounded periodically, and extreme exertion was required to re-float them. Osage packets ranged in length from 60 to 140 feet and carried up to 200 tons of freight. A towboat hauled one or two 60-foot barges. Often, the cargo had to be removed to accomplish the task of re-floating. Sometimes the effort was to no avail, and the voyage had to be halted until the water rose again. Captain Marshall had a bad experience one night at Osage City. It was customary for a steamboat to whistle so that a section of the railroad bridge could be raised to permit the boat's passage. The railroad men replied that the passage was open and clear, but as the night was dark, Captain Marshall had no way to be certain. He headed for what he believed was the open section and plowed directly into the bridge. The smokestacks of the *John R. Hugo* were torn off, and the pilothouse was set afire. A pilot was often at his watch for twenty-four hours straight. He might have crewmen splash him with water or speak at intervals to keep him awake. Captain Castrop and his crew occasionally went without sleep for two nights in a row, and once this depravation resulted in quite a scare. On the relatively straight homestretch, just above Osage

City, the Captain and crew succumbed to a brief nap, and the unguided *Frederick* plowed headlong into the riverbank.

After 75 years of persuasion, Lock and Dam No.1 had finally created a three-foot channel for a stretch of 20 miles above the structure, but the labor-intensive work of improvement exceeded estimated costs. In 1917, just three years after completion of the dam, the federal government decided to halt plans to further develop slack-water navigation on the Osage River. They reported spending \$1,050,000, including \$375,000 for the lock and dam, and the estimated cost of completing the work as far up as Lynn Creek was another \$85,000 with \$8,000 annually for maintenance, and an additional \$6,000 annually for the upkeep and operation of the lock and dam. They believed the benefit to navigation had not proved to be commensurate with the cost. The improvement project was modified to provide only for the operation of the lock and dam and for snagging.

In 1922, developers took initial steps for the construction of one of the largest hydroelectric plants in the state. The proposed site was on the Osage River at Devil's Elbow, ten miles upstream from Tuscumbia. The government had condemned the Osage River as a navigable stream above the site of the proposed power dam, but the lower reaches were still in need of maintenance. Congress granted \$12,000 in 1926 for dredging and snagging, and that appears to be the last such assistance to the Osage River besides operation of the lock and dam. Improved roads connecting markets to railroad service significantly decreased the need for river shipment of farm products, and the anticipated mineral wealth in the Osage valley never materialized.

Union Electric completed construction of Bagnell Dam in 1931, effectively ending steamboat navigation on the Osage River except for a small amount of trade from Tuscumbia to the mouth. The lock and dam ceased operating in September 1951, and the property, which included 12 residential, operational, and maintenance buildings, was sold to a private concern on April 1, 1960 for \$10,500.

Commerce on the Osage River is likely to remain confined to history books and local museums, but if economic conditions present a compelling need for a revival of commercial navigation, the Corps of Engineers and Union Electric would be required to provide the means for boats to pass over or around Bagnell Dam. Two methods suggested in a 1933 Congressional report were the installation of a rail transfer system and a traveling crane capable of lifting up to 100 tons. This report also presented the results of a study to determine the likelihood of such a development. The conclusions regarding future prospects of large-scale commercial navigation were as follows:

- a. There is at this time only a small amount of commercial navigation on the Osage River
- b. The lower section of the Osage Basin is in general unproductive and the agricultural products of this region are relatively unimportant.
- c. There are at this time no industrial developments of any consequence bordering on the Lake of the Ozarks, or at any point in that portion of the Osage valley which is served by the navigable reaches of the Osage River. There is no assurance that such developments will take place at any time in the near future.
- d. There is not at this time any interest in, or demand for, a general program of improvement on the Osage River.
- e. The Osage River in its present improved condition meets all of the requirements of existing navigation.
- f. A slack-water development is the only means of securing a dependable channel 6 feet in depth and 100 feet in width; but neither actual nor prospective commercial navigation justify any change in the existing project.

The most significant change in the Osage valley since the 1933 report was the addition of Truman Dam above Warsaw authorized by the Flood Control Act of 1954. The project was completed in 1979 and brought a thriving tourism industry to the Truman Lake area. Additionally, a rock quarry in Warsaw employs 100 people, and 151 people work in a uniform factory there. Only the usual commerce that supports rural communities is visible in Tuscumbia and Osceola. The Lake of the Ozarks formed by Bagnell Dam submerged the original town of Linn Creek. The relocated town is a half-mile west of Highway 54 and consists of several abandoned buildings now used by a model railroad scenery manufacturer. All that remains of Osage City are a few houses, a leaning, derelict grain elevator, and a marina offering gas to recreational boaters in the summer months. The trains no longer stop there.

A counterfactual study of economic development in the Osage River valley could possibly determine whether or not earlier and more substantial funding for improvements would have resulted in more significant growth. Perhaps, on the other hand, such an investigation would reveal that no more than a few bankers, merchants and freighters could have ever benefited from investments in navigation. Eighty years of political struggle and continuous labor along the waterway have left behind these questions as well as the crumbling concrete walls of Lock and Dam No. 1 and the rugged stones that form the wing dams and pique the curiosity of visitors to the Osage River.