Above: Construction photograph of Lock and Dam No. 1.

The *pièce de résistance* of the futile effort to render the Osage River navigable was Lock and Dam No. 1. In the twentieth century, Army Engineers became renowned for escalating the price of a dam after Congressional authorization and work had started. Underestimating construction costs has long been a skill of the Corps.

In 1891, Lock and Dam No. 1 was estimated to cost $187,244. By 1895, with the addition of Chanoine wickets to raise and lower water levels to keep from flooding farms upstream, a figure of $417,500 appeared in War Department documents. As the 1909 photograph shows, the project obviously took longer and cost more than had been stated in Corps of Engineers reports to Congress.

In an impassioned plea for improved transportation, the May 19, 1848, *Liberty Weekly Tribune* chided unprogressive Missourians. It cites the "almost incredible increase in population and wealth" of New York due to her "great canal, stretching like a silver link from the Hudson to the lakes . . . . If we cannot slack-water all our streams, requiring such improvement, let us commence with the most important one, the Osage."

A decade earlier, the Missouri Board of Internal Improvement suggested a lock-and-dam solution for the Osage to create slack-water navigation. This would be the ultimate solution to the ninety-eight shallow shoals the report identified between Osceola and the Missouri River. Locks and dams are costly and complex engineering solutions employed on projects like the Suez and Panama canals, but hardly justified to deliver salt and nails to Warsaw, Missouri, then return with raw lumber and barrels of pork.

In 1886, an Osage River Improvement Committee convened and, using Army Engineers plans, challenged Congress to make the river navigable clear to Kansas with a series of locks and dams. After delays, work on the first lock and dam began in September 1895 at Shipley Shoals then seven miles from the mouth of the Osage. The impressive hunk of concrete and iron, 850 feet wide with a 40 by 220 foot lock, proved to be a mixed blessing. Upon completion in 1906, a 30 foot section washed away. The structure blocked barges, which were the most cost-effective river transportation.

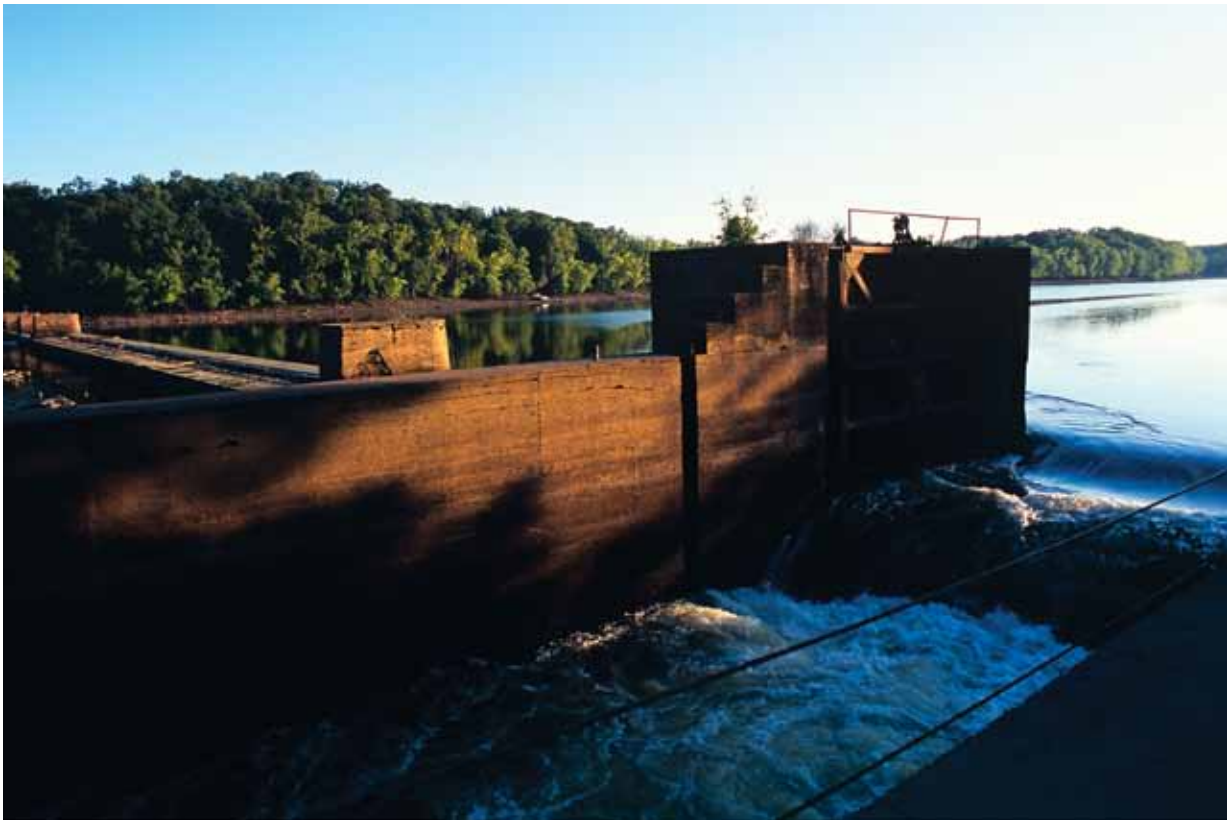
There were some realistic Corps officers, as well as politically motivated shills. Major A.M. Miller in the *1887 Annual Report of the Chief of Engineers to the Secretary of War* cited an 1884 document by Major O. H. Ernst stating that of $950,778 of commerce on the river,

Left: Circa-1910, hand-tinted postcard of Lock and Dam No. 1 built by the Army Corps of Engineers. Costing $375,000 in the early 1900s, it was auctioned off with a dozen houses and service buildings for $10,500, in 1951, after half a century of little utilization. In another fifty years, the Corps would begin projects in the Osage basin that would cost hundreds of millions of dollars.

$565,405 was floated timber, "which would rather be injured by slack-water improvement." Major Miller concluded, "Radical and expensive improvements will cost several millions of dollars. The Osage is not at this time worthy of improvement by moveable dams."

The fantasy quest to make the Osage navigable was rendered moot when plans for a high dam began to solidify in the 1920s. Relics of useless engineering projects are rarely nostalgically remembered.

Below: The lone lock and dam on the Osage operated until 1951. Today it functions as an impediment to fish migration, a subject for conservation agency memos concerning the endangered pallid sturgeon, and as a hazard to boating. On August 9, 2009, a Jefferson City man drowned attempting to drive his jet ski through the treacherous current of the degraded lock.



Above: *The Improvement of Rivers* (1913).

Above right: Sketch of Moveable Drum Wicket designed by Captain Hiram Martin Chittenden to regulate the depth of the Osage River at Lock and Dam No. 1.

This retractable 375 foot long iron mechanism was installed on top of a 9 foot concrete dam. It was prone to being jammed by mud and clogged by drift. Ultimately it was scrapped. The captain had not investigated the river bottom adequately and a 30 foot section of the dam collapsed as well. In spite of these failures, he went on to achieve fame as an engineer, was the architect of the roads in Yellowstone Park, and authored many volumes on Western American history. Upon his retirement from the Army Corps of Engineers, Chittenden was promoted from Colonel to General.

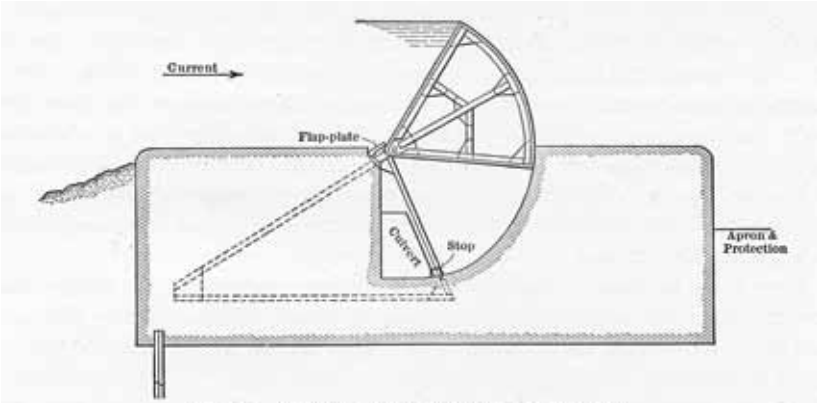


FIG. 232.—Typical Section of a Chittenden Drum Wicket.

It is conceivable that the commercial-minded citizens who futilely tried to make the Osage a steamboat thoroughfare were unaware of the observations of Indians, French fur traders, explorers, and territorial officials that the river's navigability was inherently unreliable.

Zebulon Pike dashed off a note on July 26, 1806, to General Wilkinson: "[T]he bearer had been sent by Mr. Sangonet to examine the Osage River, and reports that they could not get their canoes up the river more than sixty miles." Fortunately, by the time their keelboats had ascended the Missouri River to the Osage, there had been rains and the river was up. Two years later on July 1, 1808, Governor Meriwether Lewis wrote to the Secretary of War on the issue of where to locate the fort promised the Indians:

> The Osage River at present has not sufficient depth of water to admit a peroque or small boat to ascend ten miles, nor will it be in a navigable state until the fall rains commence, which usually happens in the later end of September or beginning of October—the fluctuating and uncertain navigation of that river during the winter and spring seasons also renders it, comparatively with the Missouri, ineligible for permanent trading establishments.

A November 28, 1813, letter from George Sibley to George Rogers Clark, governor of the Missouri Territory, discusses misgivings the Osages had about locating the new fort at Fire Prairie on the Missouri River. As much as the Indians preferred a trading facility near their old villages, they recognized the problems of the Osage River as a navigable stream. Even Thomas Jefferson, the Great White Father in Washington, could not transform or improve it they reluctantly concluded:

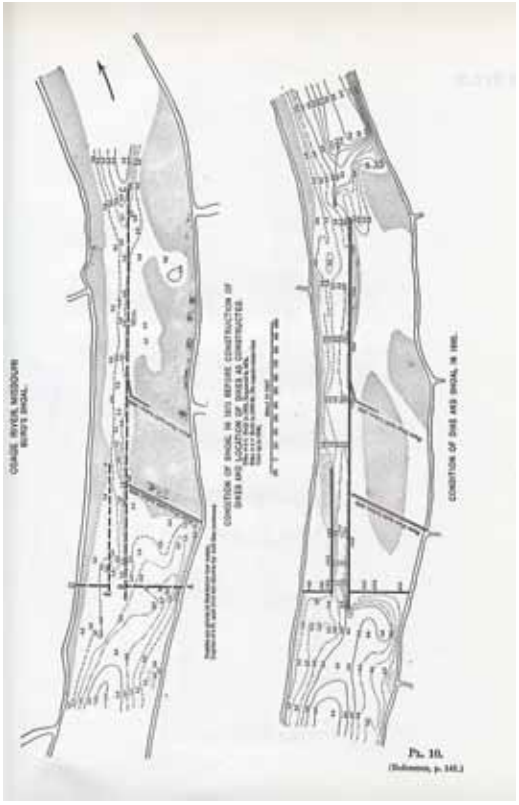
> Sans, Oreilly—head warrior Little Osages Said—"I know The Chief of the Big Osage asked the President to remove the Trading House to the Osage River, & I heard the President tell him he could not—the President

can do almost anything he pleases, but it would be out of his power to turn bad Rivers into good ones."

Many election cycles later there would be presidents who, with the encouragement of Congress, would use all their powers to turn bad rivers into good rivers. Even when incarcerated in reservoirs, bad rivers are still dangerous as the floods of 2011 demonstrated.

Had the improvers been familiar with earlier, realistic observations on the Osage, there is no guarantee this would have dimmed their zeal for development. Those driven by the promises of the Industrial Revolution were disinterested in nature as it was—they were consumed by a vision of a perfected future, a transformed world that would fulfill all human needs.

The holy trinity of industrialization was manufacturing, transportation, and finance. The Osage valley was not known for any of these components of modernity. Manufacturing requires a skilled labor force that would work for money and a ready access to population centers to sell finished goods. A large class of settlers here were contented with a subsistence lifestyle. They had learned to live with little money. The region had been for two hundred years essentially a colony producing raw materials under American as well as imperial European rule. The nature of this subordination to far-away central authority had not been fully appreciated by the once-powerful Osages until the United States claimed the region. Descendents of self-sufficient pioneers a century after the Indians had been evicted would be shocked to find themselves also controlled by distant political and economic powers.



Above: Before and after diagram of Burd's Shoal from the 1913 edition of *The Improvement of Rivers*.

Until the 1930s, the Army Corps of Engineers was not involved in flood control, at least not directly. Their mission, indeed their obsession, was the facilitation of commercial boat traffic. Barge traffic, they claimed, would compete with railroads and keep transportation costs down. Neat maps and engineering plans suggest rationality, functionality, and an outcome that may be overly optimistic or completely unjustified. Rivers are a more dynamic and complex phenomena than their improvers recognized.

Efforts to improve transportation were thwarted by geography and a lack of marketable commodities. The third component of industrialization was finance. In the two centuries of exposure to capitalist culture, the Osage valley had never been thought of as a moneyed place. There had never been large sums of outside investment.

In the 1920s, that was about to change. Two Kansas City promoters, Walter Cravens and Ralph Street, with the help of Union Electric, introduced big time corporate capitalism to the backwards northern Ozarks. Although the Osage River Project, as Union Electric originally called Bagnell Dam, did not live up to its promises of improving transportation or creating manufacturing jobs, it did alter the region dramatically. Not everyone welcomed this progress.