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MOBILIZING FOR WAR:

**ST. LOUIS
AND THE MIDDLE MISSISSIPPI
DURING WORLD WAR II**



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**MOBILIZING
FOR
WAR:**

**ST. LOUIS
AND THE MIDDLE MISSISSIPPI
DURING WORLD WAR II**

by T. Michael Ruddy



**US Army Corps
of Engineers**

St. Louis District

**DP 870-1-1
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FOREWARD

Rivers have played an important role in America's development from its very beginning. They have been instrumental both in the country's economic expansion and as a component of national defense. This latter function, however, has often been overlooked or underestimated. By highlighting the significance of the river during World War II and specifically, examining the middle Mississippi River to include the port of St. Louis, will provide historical data which will perhaps remedy the oversight. The data herein is not intended as a comprehensive analysis, but rather an attempt to place the rivers and the barge industry which utilize them into historical perspective. Hopefully this will spur investigations by other interested parties not only into the part rivers played in the past, but into their essential needs to America's future defense plans.

INTRODUCTION

The inland river system has played a vital role in the development of the United States, from the post-revolutionary period when this country was an infant nation struggling for survival to its assumption of the role of world power in the twentieth century. Rivers not only contributed to America's economic life, but also to its national defense. Strategically located in the middle of the country, where the Illinois, Missouri, and Ohio Rivers meet the Mississippi, St. Louis and its surrounding region has figured prominently in the history of this river system.

This study is an effort to examine river transportation's contribution to the defense planning of the nation. Focusing particularly on the World War II era and its impact on the stretch of the Mississippi River under the auspices of the St. Louis District, Corps of Engineers, it reveals the value of the rivers and the barges which use them as an essential supplement to the railroads which emerged as the major transportation component of the nation's industrial mobilization effort.

BACKGROUND

The waterways were recognized as a major factor in America's defense as early as the first part of the nineteenth century, in the aftermath of the War of 1812. Following this conflict which saw American soil invaded and Washington, D.C., devastated by the British, a board composed of naval officers and officers from the Corps of Engineers was charged with examining the defense needs of the country. Their final report concluded that effective national defense had to rest on what they called "four pillars": a strong navy; adequate coastal fortifications; a regular army and organized militia; and improved interior transportation to aid the military in combating foreign threats.

This fourth pillar especially underlined the need for internal improvements at a time when the rivers outstripped the infant railroad industry as a potential means of transportation. Besides the economic advantages these rivers provided in a peacetime situation, the report noted that they allowed for the commercial and economic development which would improve the nation's ability to resist attack and to supply its armed forces in time of war. Furthermore, they were a means of transporting troops from one point of conflict to another.¹

¹ Leland Johnson, "The Fourth Pillar of Defense: Waterways," pp. 27-39.

The report's emphasis on the value of internal improvements proved true to one degree or another in every conflict the United States engaged in through the nineteenth century and into the twentieth. However, with the dawn of the new century, a new situation presented itself. Not only had modern warfare become the rule in the western world — a type of war which demanded a strong and viable industrial base to back up its fighting forces — but beginning with World War I, global war replaced the more limited conflicts of the past. Since the United States was slowly assuming its role as a major power at this time, this trend toward global war was particularly important.

The industrial revolution which enveloped the country during the latter third of the nineteenth century served as the context for America's development into a world power. The Civil War had in a sense been the turning point. Despite the contributions the rivers made to the war effort, the need for rapid transportation during this conflict had hastened the ascendancy of the railroad over the steamboat, then the primary vehicle of river transportation. In the postwar period, pressed by railroad expansion, river men responded by seeking increased governmental aid for improved river navigation and introduced the barge system as a means of greater efficiency and economy for river traffic.² However, their efforts failed. The railroads quickly came to dominate. Consequently government's interest in river improvements to facilitate the barge industry failed to keep pace with America's developing economic might.

But when the United States entered World War I, plans for mobilization were inadequate and the government had to rethink its policy toward river systems. The unprecedented demand for transportation and poor planning overburdened the railroads to such an extent that the country had to fall back on barge transportation to relieve the pressure. Faced with this calamity, various governmental agencies struggled to prepare the barge industry quickly and utilize the rivers to compensate for the added wartime requirements, stimulating a revival of the inland waterways and new-found awareness of their role in national defense.³

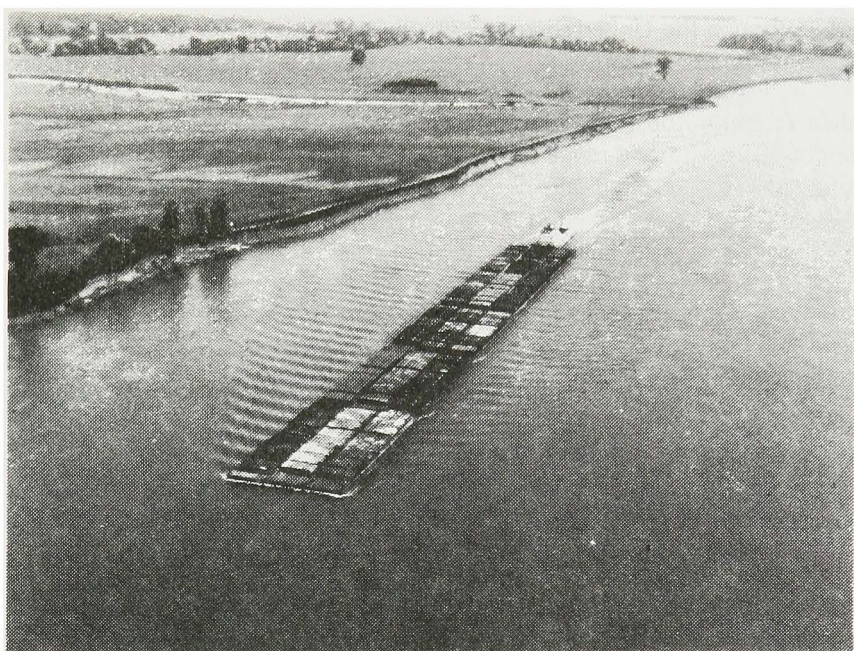
Following the war, Congress, cognizant of the demands of rapid mobilization and the difficulties it presented, moved to improve the inland waterways. The Transportation Act of 1920 tried to "promote, encourage, and develop water transportation." Furthermore, the government-owned barge line organized during the war was continued in the postwar period and in 1924

² Frederick J. Dobney, *River Engineers on the Middle Mississippi: A. History of the St. Louis District, U.S. Army Corps of Engineer*, pp. 39-40

³ U.S. Army Corps of Engineers, Institute for Water Resources, *National Waterways Study, Final Report: Review of National Defense, Emergency, and Safety Issues Affecting the Waterways*, pp. 20-31; Frederick J. Dobney, *River Engineers on the Middle Mississippi*, p. 73.

the Federal Barge Line was placed under the auspices of the Inland Waterways Corporation.⁴

This corporation was an interesting and unique effort to foster the development of the inland rivers. It was incorporated to accomplish two major objectives. First, as a business, it had to demonstrate the economic feasibility of inland waterways, most specifically by showing that such an operation could show a profit. But secondly, in some ways running counter to this goal was its other mandate to engage in pioneering developmental programs. These costly experiments included opening new routes, testing new equipment, and stimulating the establishment of terminal facilities in various river ports.⁵



FEDERAL BARGE LINES' TOWBOAT "UNITED STATES"
WITH 42 BARGES

⁴ "Wartime and the River," *Fortune* 26 (July, 1942), pp. 69-75 and 102-07.

⁵ For a discussion of the Inland Waterways Corporation, see Michael C. Robinson, "The Federal Barge Fleet: An Analysis of the Inland Waterways Corporation," pp. 10-25

In conjunction with the efforts of the Inland Waterways Corporation, the government moved to improve the rivers as channels for commerce. In the middle Mississippi region, government expanded its activities through the River and Harbor Acts of 1927 and 1930, among other pieces of legislation. These mandated a nine-foot channel for the Mississippi River from the Illinois River to the Ohio River, and the Corps of Engineers was charged with developing and maintaining this channel. As a result of these actions and other efforts, navigation conditions improved such that river commerce became significantly more dependable.⁶ By the outbreak of World War II, the Inland Waterways Corporation had succeeded in reviving river traffic. Private carriers were beginning to compete for business on the various routes.

WORLD WAR II

Even though the United States had learned a lesson from World War I, all did not proceed smoothly when it entered World War II. Mobilizing became a massive operation. James MacGregor Burns, a noted biographer of President Franklin Roosevelt, has remarked that there was an absence of strong, comprehensive, long-range planning instruments at the outset, so the war-time agencies were typically organized “to cope with the existing, dramatic crises rather than to head off a less visible, potentially bigger one.” Roosevelt’s mobilization machinery tended to be “more the prisoner of events than the master of them.”⁷ This characterization certainly fitted the agency which assumed authority over the inland waterways.

In December of 1941, the Office of Defense Transportation was created and charged with coordinating transportation policies and the activities of governmental and private transportation agencies in the zone of the interior. River transportation fell under the auspices of the Inland Waterways Division of the Waterways Transportation Department within this office. This was just one of three such divisions, the other two covering Great Lakes and coastal traffic.⁸

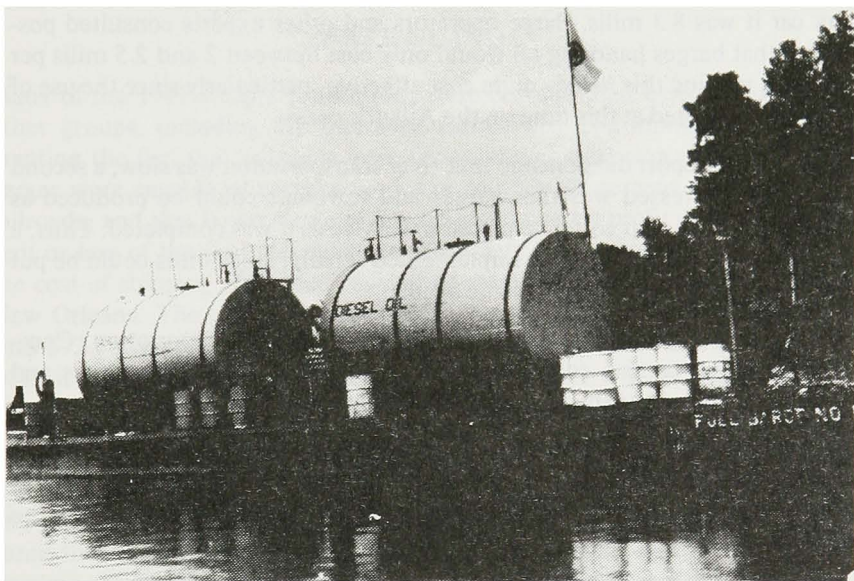
This agency’s experiences in preparing the river system for mobilization reveal much more than the facts of the barge industry’s contribution to the war effort; they go further in pointing out the potential value of the rivers, a potential which was often unrealized. While World War I had underlined the advantages of the river systems, and while a great deal of work had been done to bring them to a more acceptable level of efficiency in the interim between the wars, the barge transportation system was still ill-prepared. *Busi-*

⁶ Dobney, *River Engineers*, pp. 73-77.

⁷ James MacGregor Burns, *Roosevelt: The Soldier of Freedom*, p. 354.

⁸ Marvin Kreidberg and Merton Henry, *History of Military Mobilization in the United States Army, 1775-1945*, p. 689.

ness Week magazine in March, 1943, lamented how the expected expansion in the barge industry had not yet materialized. It attributed this, in general, to two conditions. The railroads had been able to handle the added traffic imposed by the emergency. Furthermore, as the article explained, the need for barge transportation was becoming evident in supplying oil to the Atlantic coast now that enemy activity was hampering coastal shipping and ocean-going tankers were pressed into service overseas. Yet a shortage of available barges, particularly tanker barges, delayed the river system's shouldering of this responsibility. Securing new equipment was a monumental task since barge manufacturers had to compete with other militarily essential industries for the steel and other materials required for constructing these units. This led government officials to consider other less satisfactory alternatives to steel barges, such as wooden and concrete ones.⁹



FUEL BARGE

Still, this East coast oil shortage exposed the potential role the river systems could play very early in the mobilization effort. In the spring of 1942, the government was wrestling with trying to compensate for the shortfall in oil to the Atlantic coast. The estimated minimum daily need of petroleum for that area was 1.3 million barrels. But as of the latter part of March, 1942, the East already faced a shortage of 175,000 barrels per day.

⁹ "Inland Freight Hit," *Business Week* (March 27, 1943), pp. 20-28.

A study done for the Chief of Engineers of the Army Corps of Engineers estimated that railroads and pipelines could only handle 700,000 barrels per day, necessitating tankers and barges to make up the other 600,000 barrels. With the decreased availability of tankers, a solution to the problem could be found only by relying more on the inland waterway system to take up the slack.

This particular report discussed three possible routes for supplying the East coast, each one utilizing a combination of different transportation means. Each proposed a prominent role for barges. While acknowledging some obvious shortcomings in barge utilization — such as their slowness and the fact that more equipment would have to be manufactured — the report also noted some advantages. The first was cost. The National Petroleum Association at that time estimated that the average unit cost of transporting oil by tanker was 1.25 mills per ton mile; by pipeline it was 3.2 mills; and by rail tank car it was 8.3 mills. Barge operators and other experts consulted postulated that barges handling oil would only cost between 2 and 2.5 mills per ton mile, making this means quite cost effective, particularly since the use of tankers was limited at this time on the Atlantic coast.

Although the report did concede that river transportation was slow, a second advantage it stressed was that barges and towboats could be produced as needed and each unit could be placed in service as it was completed. Thus, a plan to utilize barges could be implemented rapidly, since units could be put in service piecemeal as they became available.

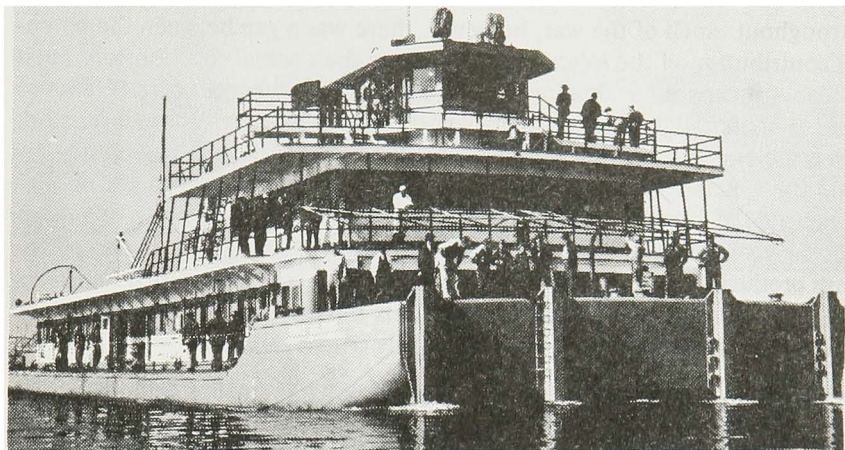
A third advantage noted was the flexibility of barge transportation. Commodities to be carried could be changed almost at will. Also routes and points of pick up along the river could be easily altered.

Finally, looking ahead, barges and towboats could be conveniently converted from wartime to peacetime use. Therefore, the investment in new equipment necessary to supply the East coast with oil would not be lost once the war was over.¹⁰

Responding to this and other reports, the Defense Plant Corporation in 1942 embarked upon a program to construct 100 tugboats, 21 large river towboats, 370 wooden petroleum barges, and 155 steel barges. (By the end of the war, a large quantity of equipment which had been constructed and which was owned by the government was taken out of service and sold to private interests.)¹¹

10 U.S. Congress, House, *Use of Barge Transportation for the Movement of Petroleum Products*, House Doc. 731, 77th Cong., 2d sess., 1942.

11 Johnson, "The Fourth Pillar," p. 35; James Swift, "The Waterways Are Vital Transportation Arteries in Time of War," *Waterways Journal* (September 29, 1979), p. 9.



WAKE ISLAND

Many of the 1942 study's contentions were corroborated by the findings of other groups, including the Interstate Commerce Commission. Although granting the fact that railroads were faster, the commission estimated that barges were capable of carrying goods at roughly 80 percent of the cost of railroads, and that larger barge operators could show a profit at even 50 percent or less of the cost. To illustrate this point, *Fortune* magazine examined the cost of shipping 5000 tons of finished steel products from Pittsburgh to New Orleans. The cost, they discovered, was \$32,550 by barge compared with \$72,000 by rail. However, the railroad could make the trip in four days while it took fifteen days by barge followed by a month trip back upstream.¹²

This same study also considered the problem of the shortage of steel barges. It discovered that investment in new barges might be potentially more cost effective than investment in rail equipment. Rail units to carry 60,000 barrels of oil would cost three times more than barges and towboats and would consume five times as much steel, a strategically valuable commodity during wartime. The largest barge at the time, furthermore, could carry as much as 3000 tons of freight, the equivalent of 75 box cars. A towboat could push 30 or more barges, 15,000 tons capacity, the equivalent of 375 freight cars or seven average train loads. The average tow was 5000 tons, or roughly 125 freight cars.¹³

12 "Wartime and the River," pp. 69-75 and 102-07. An economist at Miami University in Ohio reached similar conclusions when he studied the cost-effectiveness of barges versus railroads in 1941. In the Mississippi Valley region, he calculated that the ton-mile cost of using the waterways was \$0.0157 as opposed to \$0.0257 for the railroads. See Harold Kelso, "Waterways Versus Railways," *American Economic Review*, 31 (Sept., 1941): 41.

13 "Wartime and the River," pp. 69-75 and 102-07.

Throughout much of the war, however, there was a gap between the potential contribution of the inland waterways and their actual contribution. Most available means of evaluating their role reveal that barges carried a good deal of material, but only a small portion of what the railroads carried. Nevertheless, although the railroads were able to handle the emergency, by 1943 the waterways were providing an adequate and necessary back up. Petroleum did become the chief commodity the waterways carried. Through the war years, barges hauled 1,731,030,485 barrels of petroleum and petroleum products, equalling more than 7 million tank car loads, which translates into 72,732 trains of 100 cars each.¹⁴ This obviously eased the burden of what many considered the more strategically crucial railroads.

This same trend applied to the transport of military supplies shipped by the War Department internally. TABLE I shows the means of transportation utilized by the War Department during each year of the conflict. Railroads and motor transportation were the preferred modes. Aside from the factor of speed which has already been discussed, an added consideration affecting the War Department's decision to use waterways sparingly was that few military installations were served directly by water carriers, thus necessitating use of a supplementary means of transportation. Still approximately 82 percent of the products shipped under War Department bills of lading on the waterways were petroleum products, an essential commodity for the military.¹⁵

TABLE I

**Means of Transport Used for Freight Moved on War Department
Bills of Lading in the Zone of the Interior -
December, 1941 to December, 1945
(Thousands of Tons)**

Means of Transport	Total	1941 (Dec. only)	1942	1943	1944	1945
All Means	340,021	1,618	50,928	88,272	105,014	94,189
Rail	307,980	1,556	46,941	80,816	94,093	84,574
Motor	27,926	44	3,085	7,044	9,028	8,725
Water	4,110	18	901	411	1,892	889
Air	5	*73 tons	*1,392 tons	*1,103 tons	*1,409 tons	*1,170 tons

* Too small to list in thousands of tons.

Source: Wardlow, *The Transportation Corps*.

¹⁴ The American Waterways Operators, Inc., *Big Load Afloat*, pp. 59-62.

¹⁵ Chester Wardlow, *U.S. Army in World War II, the Technical Services: The Transportation Corps: Movements, Training, and Supplies*, pp. 248 and 252-53.



ST. LOUIS DURING WW II

ST. LOUIS AND THE MISSISSIPPI RIVER

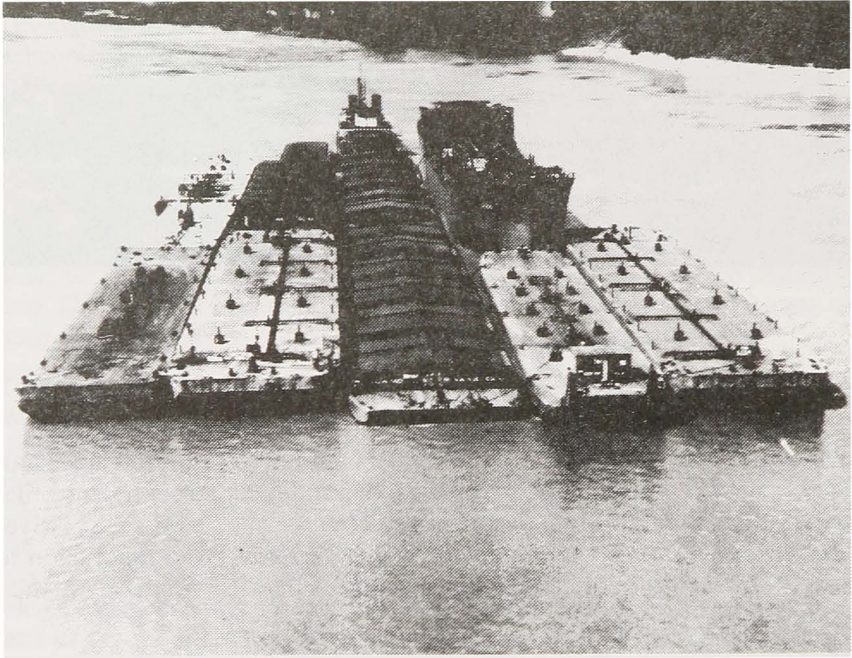
With its diverse industrial base and central location, the St. Louis area naturally figured prominently in wartime mobilization. As a consequence, not only did the economy of the region expand, but the middle Mississippi River and the port of St. Louis combined with other forms of transportation to supply the needs of the region and to ferry finished products to their destination.¹⁶

During the war, the Corps of Engineers in St. Louis contributed to many facets of the mobilization effort, including military construction projects, a responsibility taken over from the Quartermaster Corps in 1940 and 1941, and the procurement of military supplies in a ten-state area. To carry out these functions, the number of civilian personnel grew from 777 in April of 1941 to a peak of 3415 in August of 1942.

In conjunction with these added duties, the Corps' concern remained its pre-war civil function, controlling the Mississippi River and keeping it navigable. The Flood Control Acts of 1936 and 1938 had authorized a number of levee projects for the St. Louis District which, it was hoped, would guarantee adequate flood protection and navigability. The war curtailed these projects, although the Chief of Engineers warned in 1941 that all flood control projects affected more than the national economy, that they were also either directly or indirectly related to the national defense. As he predicted, this function did become important during the war when record floods inundated the Mississippi River Valley in 1943 and 1944, requiring the Corps to act not only to protect lives and property, but to maintain the flow of necessary war materials on the river.¹⁷

¹⁶ For a discussion of the growth of the St. Louis area during World War II, see U.S. Department of Labor, Bureau of Labor Statistics, *Impact of the War on the St. Louis Area*.

¹⁷ Robert J. Maxwell, "Mobilization of the Field (St. Louis District) Organization in World War II;" Dobney, *River Engineers on the Middle Mississippi*, pp. 106-09.



SHIP BUILT INLAND AND TRANSPORTED
DOWN MISSISSIPPI IN WW II

And this river was indeed proving a valuable transportation artery. A unique use made of the Mississippi was to facilitate the utilization of inland shipyards to relieve the burden of those on the coast, freeing them to concentrate on constructing the larger vessels. Approximately 2115 ships were built at inland shipyards during the war in such places as Ambright, Pennsylvania, Jeffersonville, Indiana, and Seneca, Illinois, just to mention a few. Ships built included submarines, which were floated down the Mississippi on floating drydocks, small cargo vessels, escort ships such as frigates, destroyer escorts, and mine sweepers. LCI's, LCM's, and LCT's comprised most of the construction. These ships saw extensive service both in the Pacific theater and in the D-Day invasion at Normandy. The Mississippi served as their highway to the Gulf of Mexico and on to the open sea.¹⁸

¹⁸ James Swift, "The Rivers Served the Nation in World War II," *Waterways Journal*, September 15, 1979, p. 9; "The Rivers Supplied Many Vital Landing Craft," *ibid.*, September 22, 1979, p. 9; "More on Inland Waterways World War II Activities," *ibid.*, November 17, 1979, pp. 10-11.

TABLE II

Total Tonnage of Traffic on Mississippi River, 1939-1950

1939	58,420,985
1940	88,980,317
1941	99,595,957
1942	100,351,044
1943	93,561,533
1944	101,340,788
1945	95,543,335
1946	95,648,203
1947	117,973,935
1948	125,437,742
1949	122,313,602
1950	138,144,871

Source: Office of Chief of Engineers, *Annual Reports*, Vol. 2, *Commercial Statistics*.

Although not so dramatic, the Mississippi River's main role continued to be supplying essential goods for the nation. Between the time Europe became embroiled in World War II and the time the United States entered in 1941, river activity had already begun to rebound from the depths of the depression. Total annual tonnage increased by 70 percent from 58,420,985 tons to 99,595,957 tons. Nevertheless, between 1941 and the end of the war, the Mississippi failed to be utilized to its fullest in transporting essential material. This was probably due to factors discussed earlier, including the shortage of necessary barge equipment in the beginning, the lack of coordination and adverse planning, and the ability of the railroads to handle the burden. Nevertheless, river traffic remained steady and obviously carried a percentage of tonnage which otherwise might possibly have strained the railroads (see TABLE II).

The Mississippi River falling under the auspices of the St. Louis District fared better. When preparing his annual report, the Chief of Engineers gathers data for river traffic on the Mississippi between the Missouri and Ohio Rivers. The figures compiled for this stretch of the river reflect some expansion in river traffic. Between 1941 and 1945, yearly total tonnage grew from 3,488,269 tons to 4,449,200 tons, an increase of 27.6 percent (see TABLE III). Undoubtedly, the importance and diversity of St. Louis as an industrial center accounted for much of this growth. Yet one must also realize that

TABLE III

**Comparison of Railroad Traffic in Southwest Region
with Barge Traffic on Mississippi River between
The Missouri and Ohio Rivers Total Tonnage,
1939-1946**

	Railroad	Barge	Percentage of Barge Tonnage in Comparison with Railroad (%)
1939	103,060,841	2,536,513	2.5
1940	109,290,629	3,094,612	2.8
1941	141,552,633	3,488,269	2.5
1942	214,645,592	3,147,476	1.5
1943	244,203,506	3,156,530	1.3
1944	236,317,336	4,775,489	2.0
1945	223,791,440	4,449,200	2.0
1946	198,719,480	4,190,570	2.1

Source: Interstate Commerce Commission, *Statistics of Railways in the United States*.
Office of Chief Engineers, *Annual Reports*, Vol. 2, *Commercial Statistics*.

river improvements had been implemented in the interwar period to make this increased traffic possible.

As was the case in the rest of the country, petroleum products comprised one of the major commodities carried. On the middle Mississippi, annual shipments of gasoline more than doubled between 1939 and 1941, from 473,525 tons to 954,599 tons. Throughout the war years, this volume of gasoline shipments continued and increased by 2.7 percent in 1945 over 1941, when gasoline shipments totalled 980,433 tons (see TABLE IV).

It is difficult to make concrete comparisons between the Mississippi River and the railroads because different government agencies divide their reporting regions differently, because the categories of commodities hauled differ from one reporting agency to another, and because the areas surveyed by the Interstate Commerce Commission, the body overseeing the railroads, for reporting purposes are much more extensive than the stretches of the river examined by the Chief of Engineers in his annual reports. However, some loose comparisons are possible in order at least to identify trends.

TABLE IV

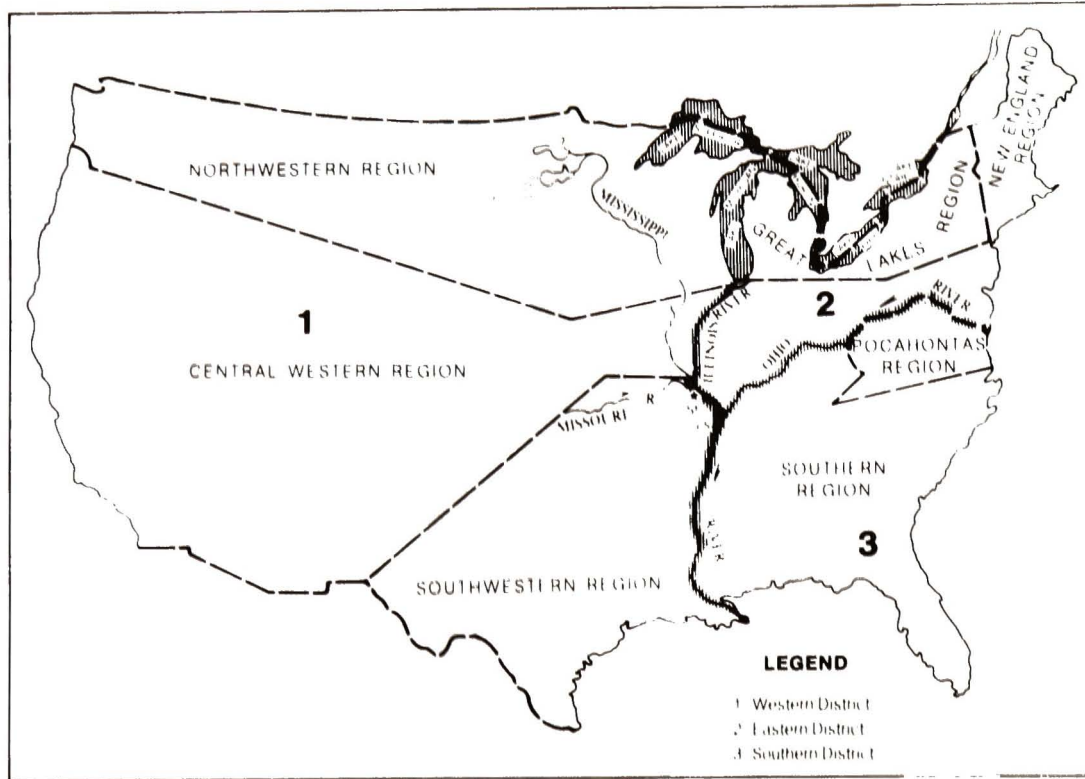
**Gasoline Tonnage - Mississippi River Between
the Missouri and Ohio Rivers
1939-1946**

1939	473,525
1940	825,954
1941	954,599
1942	776,994
1943	607,430
1944	945,868
1945	980,433
1946	1,782,755

Source: Office of Chief of Engineers, *Annual Report*, Vol. 2, *Commercial Statistics*.

When the Interstate Commerce Commission reports annually on railroad traffic, it divides the country into eight regions. One of these, which encompasses St. Louis at its uppermost limit, is the Southwest Region (see map, p. 14). Comparing this region with the stretch of the Mississippi between the Missouri and Ohio Rivers provides some insight into the relative importance of the two modes of transportation. In 1941, total tonnage carried on the middle Mississippi comprised only 2.5 percent of that hauled by the railroads in the Southwest Region. When the country entered the war, the demands for rapid movement resulted in a decline in the percentage of tonnage carried by the river relative to the railroads. In 1942 and 1943, river tonnage amounted to only 1.5 and 1.3 percent of the railroad tonnage respectively. But as the situation stabilized and speed was not so crucial in the delivery of certain commodities, river traffic began to return to its previous position relative to the railroads. By 1946, the rivers were carrying 2.1 percent of the total tonnage (see TABLE III). This upward trend continued into the post-war years.

The figures for the port of St. Louis reflect a similar trend. During the war, the tonnage handled remained essentially stable. In 1941, the total was 1,377,272 tons. 1945 brought only a 1.3 percent increase over 1941 to 1,395,769 tons. But it was clear that the war's impact was just beginning to touch this port. By 1950, when the Korean conflict broke out and people were contemplating the possibility of mobilization once again, the tonnage



Interstate Commerce Commission. *Statistics of Railways in the United States, 1940-1954*, Washington: GPO, 1940-1954.

TABLE V

**Port of St. Louis, Total Tonnage
1939-1950**

1939	1,167,787
1940	1,302,614
1941	1,377,272
1942	1,115,652
1943	980,544
1944	1,361,565
1945	1,395,769
1946	1,839,482
1947	2,259,894
1948	4,032,659
1949	4,364,981
1950	4,822,494

Source: Office of Chief of Engineers, *Annual Report*, Vol. 2, *Commercial Statistics*.

had increased by 245.5 percent from 1945. Now the port was handling 4,822,494 tons (see TABLE V).

World War II certainly provided a great stimulus for the rivers. But this stimulus did not become apparent until after the war. During the conflict, tonnage carried by barges remained relatively stable, even though certain bulk items could more easily be transported by river than rail.

CONCLUSIONS

One of the values of studying history lays in learning from the past, not only to avoid previous mistakes, but to make wiser policy decisions for the future. The experiences of the inland waterways during World War II certainly do hold some lessons for the present day. Quite often when interested individuals and groups, both private and governmental, examine the merits of inland waterways, they tend to stress their benefit to the industrial and economic development of the country, often ignoring or failing to give sufficient consideration to their value in times of national emergency. This has consequently led to a self-fulfilling prophecy. Consider if you will the experience of World War II. The lack of preparation and planning restricted the potential contribution the inland river system made.

Nevertheless, throughout history, the waterways have contributed to the successful defense of the country, America's "fourth pillar" of defense. Leland Johnson, in an article which placed the river's role in national defense into historical perspective, concluded that rivers served their greatest value during emergencies involving foreign blockade and invasion or civil war, were of secondary value during foreign wars requiring total mobilization, and were of only tertiary value in general support of American economic preparedness during limited foreign wars.¹⁹

In the case of World War II, submarine activity on the Atlantic coast presented vestiges of a blockade, hampering tanker traffic. But this war serves more as an example of Johnson's second category, a foreign war requiring total mobilization. When assessing the importance of the rivers in this situation, one has to avoid exaggeration. To place the barge industry at the same level of importance as the railroads distorts reality. Rather, the historical record shows that the waterways provided an essentially supplementary and backup role for the nation. This supplementary role allowed for a degree of flexibility important in conducting a modern war. It guaranteed an alternative means of transport should the primary mode, the railroads, become overburdened as was the case in World War I.

History also exposes some untapped advantage in the waterways which could prove useful in the event of a future conflict. Poor planning and haphazard organization plagued the Inland Waterways Division of the Waterways Transportation Department, just as it plagued other sectors of the mobilization program. A shortage of equipment impeded the barge industry's efficient functioning in the beginning, even though the interwar efforts at maintaining and improving the Mississippi River channel made conditions more conducive to navigation than they had been at the onset of World War I. The potential existed for the waterways to play a more significant role than they did.

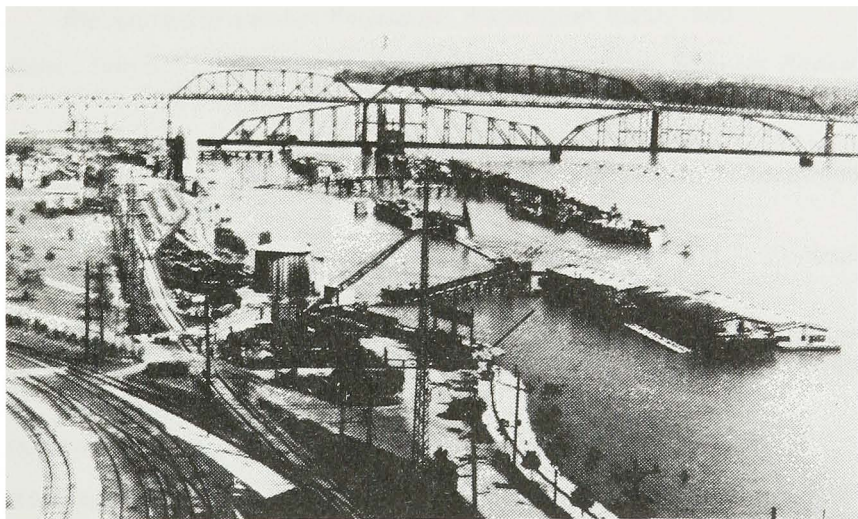
This assumes more importance when one examines the development of the waterways after the war. The barge industry failed to quickly respond to the war's stimulus. But the war created a momentum which was maintained into the postwar years. The cost-effectiveness of water transportation, the abundance of new equipment which had been constructed under government auspices and then sold to private companies, the continuing effort of the government to make the river systems more navigable, and other factors stimulated a steady growth. To return to the comparison drawn earlier between the amount of material carried by the railroads in the southwest region of the country versus barge traffic on the middle Mississippi, in the year 1950 barges were carrying 5.6 percent as much tonnage as the railroads, a significant increase from the 2 percent in 1945. Total tonnage carried by the rail-

¹⁹ Johnson, "The Fourth Pillar," p. 28.

roads had slipped by 8.1 percent. Total tonnage in 1945 had been 223,791,440 tons. In 1950, it was 205,605,264 tons. Barge traffic, in contrast, grew notably. The 4,449,200 tons carried in 1945 had increased by 160 percent to 11,577,850 tons in 1950.²⁰

The growth of the port of St. Louis was even more dramatic. In 1945, the port handled 1,395,769 tons. By 1950, tonnage had increased by 245.5 percent to 4,822,494 tons (see TABLE V, p. 15). This was not only indicative of the economic expansion of the region and the country, but it was also further evidence that the inland waterways needed to be considered more seriously as a component of national defense.

In addition to the expansion in river traffic, one can look at some of the considerations which impressed World War II planners with the value of the waterways and see how they stand in more recent times. These planners recognized the relative cost effectiveness of the barges. The industry still holds an advantage in this area. A 1970 study revealed that one could expect to get 33.5 annual ton-miles for every dollar invested in new railway cars, as opposed to 92 annual ton-miles for every dollar invested in barges. Comparing diesel locomotives with towboats produced similar results — 181.9 annual ton-miles for the former versus 201.2 annual ton-miles for the latter.²¹ Certainly the cost effectiveness of the barge industry remains as it had in World War II.



ALTON, IL JUST PRIOR TO WW II

²⁰ Interstate Commerce Commission, *Statistics of Railways in the United States, 1951*; U.S. Army Corps of Engineers, *Annual Report, 1951*, Vol. 2, *Commercial Statistics*.

²¹ *The American Waterways Operators, Inc., Big Load Afloat*, p. 90.

Railroads unquestionably provided an invaluable service to the country's mobilization after 1941. But a conscientious examination of the history of World War II's mobilization emphasizes both the role played by the inland waterway system and the potential usefulness of this alternative mode of transportation, especially when considering its growth after the war. Planners at the beginning of World War II were aware of the advantages and usefulness of the barge system. It may not have been as rapid as the railroads, and it may not have been capable of reaching certain regions of the country which the railroads could. But it was a relatively inexpensive means of transportation. It proved particularly beneficial for the transport of bulk commodities. And it presented them with a valuable flexibility in the event that railroads were unable to bear the burden imposed upon them or that once again shipments of oil along the coast was hampered. The problem which the country faced at the outset of the Second World War was that inadequate planning and coordination prevented the country from taking full advantage of this alternative means of transportation.

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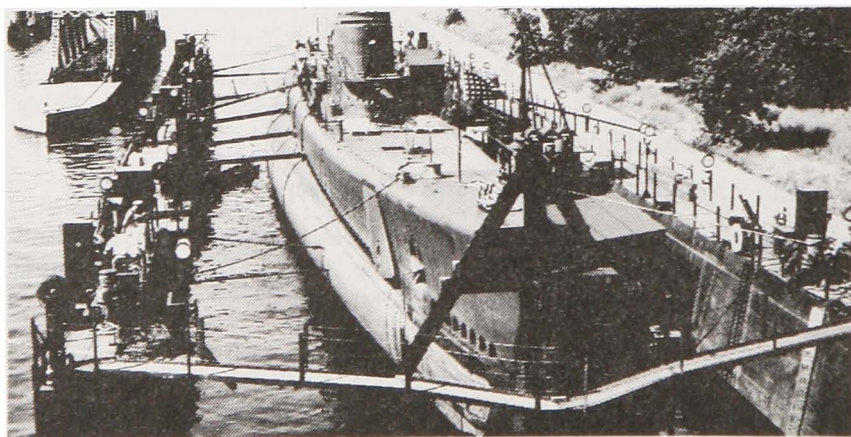
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SUBMARINE AT LOCKPORT, IL

