THE PORT OF MILWAUKEE

"Historical"
"Descriptive"
"Prospective"
THE PORT
OF
MILWAUKEE

Historical -- Descriptive -- Prospective

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It is safe to say that, while the country's inland oceans, known as the Great Lakes, constitute, with their connecting waters, one of the most marvelous highways on earth, they have only reached the dawn of their potential service. Nor has there been anything like a general awakening on the part of the port cities bordering on these waters as to the possible future of this service.

The Federal government has constantly improved the physical conditions, shipbuilders have placed ponderous craft upon the waters, and the shipmaster has picked up trade wherever it was offered. Only the obvious economies of the situation, rather than concerted or comprehensive effort, has made a substantial commerce. Individual enterprise, unaided by anything like municipal or collective support on the part of the port cities has wrought the success that has thus far been achieved.

The port cities, in their municipal capacity, have done but little in providing better facilities. Nor have the commercial interests in those cities concerned themselves in any organized degree with the progress of the Great Lakes commerce. The harbor cities, as such, have scarcely familiarized themselves with the accepted fundamentals in port development.

True, the lake cities have in most instances kept their inner channels at a reasonable depth, and private enterprise has provided docking and transit sheds. True, the Federal government has provided breakwater protection and lighthouse service, and has kept the harbor mouths dredged to a navigable depth. True, the waterborne commerce from port to port has been heavy and is constantly growing. True, lake transportation is making an annual saving over land transportation of over one-half billion dollars.

But, in the light of modern conceptions and ideas on harbor development, as exemplified by the great ocean and river ports of the world, the lake cities have not appreciated the part they must play in realizing the potential service of the world's greatest inland waterway. Modern port development means more than an accessible harbor entrance, river docking and warehousing, and the protection afforded to navigation by the Federal government.

**Public Control of Terminals**

Granted that all the physical essentials above enumerated are provided, it may still be found that the fundamentals dealing with the control of waterfronts and the administration of the harbor traffic, so vital to sound port development, are wholly lacking. In other words, terminals, their ownership, control and efficiency, constitute an essential factor in port development.

Whatever belief one may entertain on the subject of public ownership of certain utilities, the experience of the world has taught that the most accessible waterfronts, suited for terminal purposes, must be publicly owned and controlled if waterborne commerce is to render a maximum service.

This policy has in recent years been earnestly espoused by the United States government. Petitions asking for deeper harbor entrances, or better outer breakwater protection, have not only been denied because perchance the traffic, present and prospective, did not warrant these improvements, but also because the government did not believe in expending money to protect privately owned waterfronts not employed in waterborne commerce.

It has also been recognized that the harbor traffic must be under some form of centralized control if the rights and equities of those immediately concerned are to be conserved, and if the public interest, rather than private advantage is to be promoted. The ports of Europe have amply demonstrated this fact, and the ocean ports of the United States are emulating the example set. Just as every railroad train must have its terminal for the discharge and acceptance of passengers and freight, so every ship must have a berth for the discharge and receipt of its cargoes.

But, while railroad trains and railroad terminals are under definite ownership and centralized control, many ships and docks and warehouses usually are under diverse ownership and decentralized direction. Just as every single passenger train cannot have a depot of its own, so every ship cannot have its own dock and terminal facilities. There must be some terminals that can afford berths for many ships just as there are depots and freight houses that accommodate many trains.
These terminals must not only be conveniently accessible to the ships that carry cargoes but also to persons that receive them. Ships represent an investment, and their fixed overhead is usually heavy. Consequently the time, labor and effort expended is reaching the actual terminal, after entering a harbor, become important economic considerations to be dealt with. The shipmaster aims to discharge his cargo, receive a fresh cargo, and make sea again as expeditiously and economically as conditions will permit.

**Status of Lake Port Terminals**

The leading lake cities, in the matter of terminals, present a peculiar situation. The most desirable waterfronts available for terminal purposes are usually privately owned and devoted to commercial or industrial pursuits which are not concerned in water transportation, or else occupied by railroads that may as a general policy be opposed to waterborne commerce.

Thus, it is not uncommon to find the waterfronts of large lake cities occupied by manufacturing plants that do not employ water transportation, and by railroads that own the riparian rights to the waterfront and maintain a competitive attitude towards lake commerce.

In nearly all instances where the railroads have monopolized the waterfronts, all attempts on the part of municipalities to secure a surrender of the riparian rights held by them have failed. The railroads have at no time been friendly to water transportation except where the latter has served as a feeder to the former.

But, the need of new policies and practices in securing and controlling lake port terminals upon some basis that will promote rather than retard waterborne commerce, is accentuated by other difficulties.

The old time small wooden schooner could readily navigate, with the aid of a tug, to any part of the inner harbor of any lake city. The modern vessel, with its ponderous size and large cargo, is not so mobile. Its course through the crooked rivers and narrow bridge openings of commercial centers like Chicago, Buffalo, Cleveland, or Milwaukee, is laborious, slow and expensive. Tug hire adds a heavy item to the cargo charges.

Besides, there are dangers which are multiplied with the increasing length of the vessels and the growing commerce and street traffic of the lake cities. It is not uncommon to learn that a vessel has damaged a bridge or business building that edged on the dock line, endangering both property and lives.

**Land Commerce Crowding Water Commerce**

Another fact must here be noted. The streets paralleling these large city rivers have become commercially so important that they have driven water terminals from their immediate proximity. In other words the street traffic has made the adjacent river lands too valuable to be used for water terminal purposes.

This has brought about two alternatives. Either the terminals must be located at more remote inner river points, or the water commerce must be centralized at the most accessible point near the harbor entrance, or must be confined to the outer harbor area. The plan first suggested is uneconomical because it involves laborious and dangerous river travel, and therefore it cannot be recommended.

Milwaukee's harbor plans are the outcome of a comprehensive study, not only of the natural situation of the water and land areas, but also of past commerce and the trend of future commerce, it having become evident that with the growth of the central business section of the city, waterborne commerce will gradually be crowded out and must seek other centers. The feeling is growing that the day will come when the Milwaukee River will become obsolete as a navigable stream and that the city's lake commerce will have to be transacted near the mouth of the harbor, where the economies involved in convenience of access may be realized.

While the city council has been lenient and the public has been patient in the matter of bridge regulation, the hindrance in the city traffic caused by bridge openings is bound in time to bring about more stringent restrictions. Such regulations are necessarily discouraging to vessel movement, and have the tendency, as has been proven in Chicago, to reduce river commerce. The decision then reasonably hinges on the relative importance of street traffic as compared to the river traffic. Both deserve consideration, but the time will come as the city grows in commercial importance, when the one must yield to the other.

Cleveland has made a partial beginning towards a solution. It has provided a passenger boat terminal on the lake front. Chicago, too, has made a beginning, but with somewhat disastrous results. It constructed a wonderful pier on the lake front, costing something like five million dollars, but it is without ships and cargoes. The pier serves as a pavilion during the summer months for pleasure seekers. The lack of rail connections is the real drawback to the use of this magnificent terminal originally constructed for water transportation purposes.

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The Port of Milwaukee

The PORT of Milwaukee is situated on the west shore of Lake Michigan, about 260 miles south from the Straits of Mackinac or entrance to the lake, 85 miles northerly from the City of Chicago at the southerly end of the lake, and 83 miles from Grand Haven, Michigan, directly across the lake.

The harbor embraces three great rivers, which unite at one common outlet. The Milwaukee River, flowing from the north, is joined about five-eighths of a mile from the harbor entrance by the Menomonee River coming from the west, and about 3,000 feet south of the piers by the Kinnickinnic River, which empties its waters into the basin of the same name behind Jones Island, the combined waters merging with those of the Milwaukee River. These streams and the Kinnickinnic Basin constitute the commercial harbor of Milwaukee.

Milwaukee River is navigable for about 2½ miles, with an average width of 225 feet, and the Menomonee River for about 2 miles with an average width of 140 feet. Two artificial channels, the South Menomonee and Burnham Canals, connect with the Menomonee River and afford jointly about the same amount of frontage suitable for shipping as the Menomonee River. Several slips add to the efficiency of the South Menomonee Canal.

What is known as the outer harbor is a basin protected by a concrete sea-wall extending partially across the bay from the north. The inclosure affords good anchorage. The outer harbor was originally intended as a harbor of refuge, but with the disappearance of sailing vessels its purpose in this respect was rendered unnecessary. It is now frequently used by steamers which are unable to reach certain docks because they are occupied, and which remain at anchor behind the breakwater until a dock is ready for them.

Milwaukee’s excellent harbor has been the leading factor in promoting the commercial and industrial growth of the city. Coal represents the greater portion of the receipts of the port, and grain and miscellaneous freight preponderate in the shipments. In normal times the total inbound and outbound tonnage aggregates between 8,000,000 and 9,000,000 tons, having a valuation combined estimated at over $250,000,000. Government statistics rank Milwaukee as the second largest coal receiving port on the Great Lakes. Approximately 5,000,000 tons of coal are received at the port during the course of a year for local consumption and for shipment to points in the interior.

The port holds first place in point of number of arrivals and departures, about 5,000 being the average yearly record, third place as to valuation of freight tonnage, and third place in the matter of shipments of flour and grain products. Grain shipments are increasing annually. During the year 1921, 34,827,188 bushels of all kinds of grain went out of the harbor, bound for the seaboard. Sugar, salt and cement also figure largely in the receipts of the port.

In addition to the coal and grain trades, a large volume of general merchandise is handled by steamers which run to Georgian Bay ports, and to ports on Lake Erie. Two carferry lines maintain service throughout the entire year, summer and winter, to and from ports.
on the east shore of Lake Michigan, where direct connection is made with railways to the east, thus affording prompt dispatch and avoiding the delays incident to the congestion of rail traffic by way of Chicago. Two steamboat companies operate passenger and freight steamers to across-the-lake ports practically the year round. Passenger and freight steamers also ply daily between Milwaukee and Chicago and make intermittent trips to points north, including Green Bay ports.

The record of freight tonnage received and shipped from Milwaukee during the past ten years follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Inbound Tons</th>
<th>Outbound Tons</th>
<th>Total Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>1921</td>
<td>4,770,584</td>
<td>1,667,802</td>
<td>6,438,386</td>
</tr>
<tr>
<td>1920</td>
<td>4,792,868</td>
<td>1,068,638</td>
<td>5,861,506</td>
</tr>
<tr>
<td>1919</td>
<td>5,591,494</td>
<td>1,411,557</td>
<td>7,002,991</td>
</tr>
<tr>
<td>1918</td>
<td>5,475,340</td>
<td>1,611,210</td>
<td>7,086,550</td>
</tr>
<tr>
<td>1917</td>
<td>5,744,662</td>
<td>1,075,239</td>
<td>6,819,892</td>
</tr>
<tr>
<td>1916</td>
<td>6,616,116</td>
<td>1,308,783</td>
<td>7,924,899</td>
</tr>
<tr>
<td>1915</td>
<td>.............</td>
<td>1,659,024</td>
<td>8,127,698</td>
</tr>
<tr>
<td>1914</td>
<td>.............</td>
<td>1,942,487</td>
<td>8,488,965</td>
</tr>
<tr>
<td>1913</td>
<td>.............</td>
<td>1,649,344</td>
<td>8,875,231</td>
</tr>
<tr>
<td>1912</td>
<td>.............</td>
<td>1,319,355</td>
<td>7,772,965</td>
</tr>
</tbody>
</table>

Following is the custom house record of arrivals and departures at Milwaukee for the past ten years:

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of Register</th>
<th>Vessels</th>
<th>Tonnage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1921</td>
<td>3,564</td>
<td>5,722,289</td>
<td></td>
</tr>
<tr>
<td>1920</td>
<td>3,593</td>
<td>5,405,900</td>
<td></td>
</tr>
<tr>
<td>1919</td>
<td>3,830</td>
<td>6,719,421</td>
<td></td>
</tr>
<tr>
<td>1918</td>
<td>3,680</td>
<td>6,203,672</td>
<td></td>
</tr>
<tr>
<td>1917</td>
<td>4,371</td>
<td>6,283,636</td>
<td></td>
</tr>
<tr>
<td>1916</td>
<td>5,195</td>
<td>6,283,636</td>
<td></td>
</tr>
<tr>
<td>1915</td>
<td>5,417</td>
<td>6,597,693</td>
<td></td>
</tr>
<tr>
<td>1914</td>
<td>5,977</td>
<td>6,597,693</td>
<td></td>
</tr>
<tr>
<td>1913</td>
<td>5,864</td>
<td>9,013,650</td>
<td></td>
</tr>
<tr>
<td>1912</td>
<td>5,301</td>
<td>8,093,991</td>
<td></td>
</tr>
</tbody>
</table>

How The Dredge Cut Its Way Through Jones Island

In straightening the river frontage of Jones Island, a projection of land several acres in extent had to be removed. The area was occupied by dwellings and river sheds belonging to fishermen, who were forced to move to locations elsewhere in the harbor.
Progress of Harbor Work

Acquisition of shore lands and putting the same in condition to admit of terminal construction in the shape of piers, wharves, railway tracks, etc., received the first attention of those interested in the work of developing Milwaukee’s greater harbor. With the condemnation of four lots abutting the lake just north of the harbor entrance, the city became the possessor of the entire riparian rights along the lake front, from Wisconsin Street to the mouth of the harbor. A rubble breakwater was then constructed along this frontage at a distance of about 600 feet from the shore line, inclosing an area of nearly 85 acres. This area is now being filled in by the city.

Meanwhile, the north half of Jones Island was condemned, and a bulkhead consisting of piling and stone constructed along the lake front of the island about 700 feet from the shore, connecting with the shore at right angles at the southerly end of the harbor tract. This formed an inclosure embracing a little over 20 acres. At the same time the inner side of the island was provided with a pile and timber dock for a distance of about 1,500 feet.

The work of clearing off the island was started early in the spring of 1921. One hundred or more buildings of various character,—dwellings, warehouses, fishing sheds, etc.,—had to be torn down and removed. This work devolved upon the owners of the structures, who were reluctant in many instances to proceed with the work as rapidly as was necessary; in fact, proceedings in ejectment had to be resorted to in several cases.

The contract for dredging the Kinnickinnie basin, thus straightening the inner side of Jones Island, and for the removal of all wrecks and other obstructions, which might be found during the progress of the work, was awarded to the Cleveland Engineering Con-
struction Company, on Friday, July 15, 1921. The contract called for the depositing of the dredged material along the inner and outer bulkheads of the island to a level of 5 feet above datum. The contract price was 24-2/3 cents per cu. yd., measured in the fill. A lump sum of $10,000 was paid for the removal of the wrecks. The electrically-driven dredge “Keystone” was employed in the work.

While the dredging was in progress, it became evident that the land would have to be cut away to a point some distance beyond the north line of the inner revetment in order to furnish material enough to meet the requirements of the contract. Accordingly, a wing wall of piles and sheet piling was constructed, extending into the land 56 feet, almost at right angles with the revetment in order to prevent the northerly end of the newly filled area from caving into the river. It was also decided to drive mooring piles along the revetment. The mooring piles are placed 50 feet apart, and are located at a distance of 60 feet back of the face of the revetment. The wing wall will remain until it has been definitely decided whether or not to create a carferry slip at that point, as was originally planned. The present mooring piles will ultimately be cut off and become a part of a second line of anchor piles with which the revetment will be equipped.

The work of dredging proceeded without interruption until December 17, 1921, when cold and stormy weather forced an abandonment of the work until spring. Work was resumed April 25, 1922, and continued until September 5. The total amount of material pumped up to that time was 689,892 cubic yards. About 20,000 cubic yards consisted of silt, which was dredged up to deepen a shoal spot in the basin which was causing vessels considerable trouble. This silt was pumped on the beach south of the harbor tract.

Long before the dredging season closed, the remnants of 19 old hulls of schooners, tug, seows, bottoms of floating dry docks, etc., had been removed from the area in which they were abandoned 40 or 50 years ago. The wrecks had to be broken up with dynamite.

The city originally condemned 36.10 acres of Jones Island land, but the tract included 13.15 acres of land more or less submerged, on the lake and inner sides of the island. In the process of developing and straightening the frontages of the island on both sides, the greater part of this submerged land was filled in and raised to the proper grade. On the other hand, several acres of dry land were dredged away. There still remains a little over 3 acres of land, lying out-

side of the established dock line along the Sewerage Commission’s property, which will eventually be removed in the process of widening the river channel at that point. The present area of Jones Island harbor tract is 41.4 acres. Counting the cost of bulkheading the lake side of the island, and allowing one half the cost of the dredging as a proper charge against deepening the Kinnickinnic basin on the inside, the total cost per acre of 20.2 acres of water area filled on the lake side was $12,900 per acre.

The extension of the inner revetment to the north rests with the Sewerage Commission. When proper revetment is provided on the inner side of the sewerage tract the Harbor Board will consider the matter of the removal of the land outside of the same.

The land formerly occupied by the original garbage crematory, and also by the old life saving station, lying just beyond the limits of the sewerage tract, both on the north and west, will be dredged away by the United States government when it completes the channel improvement in line with the present south pier at the harbor entrance. This land has been allowed to remain up to the present time to serve as a buffer for the seas which sweep into the mouth of the harbor during the prevalence of casterly and northeasterly gales.

The proceedings in condemnation of the lands south of the city’s present holdings on Jones Island as far as Wilcox Street have reached the final stage. After the city has obtained possession of these lands, the Board of Harbor Commissioners will proceed to extend the present lake bulkhead southward about 3,800 feet, and connect the same with the shore. Kinnickinnic bay will then be dredged out and the material thus obtained deposited in the area of the lake inclosed by the extension of the bulkhead.

The next work to be undertaken by the Harbor Board will be the grading of the tract north of the harbor entrance, which is in bad shape because of indiscriminate dumping for many years past. The tract will be leveled to 5 feet above datum. It is estimated that 122,000 cubic yards will have to be handled to accomplish the desired result.

The following expenditures have thus far been made in connection with the development of the outer harbor:

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jones Island lands condemned</td>
<td>$402,195.40</td>
</tr>
<tr>
<td>Third Ward lands condemned</td>
<td>17,650.00</td>
</tr>
<tr>
<td>Rubble mound breakwater to Wisconsin Street</td>
<td>306,306.60</td>
</tr>
<tr>
<td>Jones Island inner revetment</td>
<td>101,649.70</td>
</tr>
<tr>
<td>Outer bulkhead, Jones Island</td>
<td>212,823.25</td>
</tr>
<tr>
<td>Dredging and filling along Jones Island</td>
<td>180,503.14</td>
</tr>
</tbody>
</table>
**The Port of Milwaukee**

**Jones Island Looking North From Wilcox Street**

Narrow strip of land between Lake Michigan and Kinnickinnic Bay, soon to be acquired for harbor purposes.

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wing wall and mooring piles, Jones Island</td>
<td>5,826.00</td>
</tr>
<tr>
<td>Harbor plans</td>
<td>4,513.30</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$1,231,467.29</strong></td>
</tr>
</tbody>
</table>

Improvements in other parts of the harbor, promoted by the old Harbor Commission and the present Board, cost as follows:

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete dock, South Menomonee Canal</td>
<td>30,813.58</td>
</tr>
<tr>
<td>Corner condemned on South Menomonee Canal</td>
<td>10,775.00</td>
</tr>
<tr>
<td>Muskgo Avenue retaining wall</td>
<td>4,500.00</td>
</tr>
<tr>
<td>Garbage incinerator dock</td>
<td>6,600.00</td>
</tr>
<tr>
<td>Dock foot of Milwaukee St. and S. Water St. (S. Menomonee Canal)</td>
<td>18,500.00</td>
</tr>
<tr>
<td>Dock foot of East Street and at Milwaukee River dam</td>
<td>9,544.00</td>
</tr>
<tr>
<td>Dock foot of Fowler Street</td>
<td>7,841.54</td>
</tr>
<tr>
<td>Railing on dock in alley between Cedar and State Streets</td>
<td>400.00</td>
</tr>
<tr>
<td>Dock foot of Johnson and foot of Clinton Streets</td>
<td>14,384.00</td>
</tr>
<tr>
<td>Dock foot of National Ave. &amp; alley bet. Clybourn and Fowler Sts.</td>
<td>2,002.00</td>
</tr>
<tr>
<td>Dock at alley bet. Grand Ave. &amp; Wells St. &amp; ft. of Cedar &amp; Biddle Sts.</td>
<td>6,434.17</td>
</tr>
<tr>
<td>Dock foot of Chicago Street</td>
<td>7,798.00</td>
</tr>
<tr>
<td>Dock foot of Prairie Street</td>
<td>9,895.00</td>
</tr>
<tr>
<td>Dock foot of Unnamed Street near Broadway bridge</td>
<td>5,130.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$134,617.20</strong></td>
</tr>
</tbody>
</table>

**Milwaukee's Greater Harbor Plan**

The plan which is furnishing the basis of harbor improvement at Milwaukee, was executed by Mr. H. McL. Harding of New York City, a recognized authority on all matters pertaining to port development. The plan is broad in scope and intensive in terminal arrangement, and is designed to meet the requirements of the vastly increased business of the port during the coming forty or fifty years, long before which time it is expected many of the present inner river terminals.
especially in the Milwaukee River, will have been abandoned.

While the Harding plan will undoubtedly be followed to a very great extent, it is more than probable that there will be many departures therefrom, because of everchanging conditions affecting not only navigation interests, but business in general. It is always necessary, however, in the case of large projects, to have a comprehensive plan so that work may proceed intelligently along basic lines, leaving problems which may involve deviations from the plan to be settled when such necessity presents itself. It is because of this uncertainty and also of the belief that construction costs will undoubtedly be much less at some future time that the Board of Harbor Commissioners has never attempted to work out an estimate of the cost of the harbor project in its entirety.

The Harding plan comprehends the development of an outer or lake front terminal harbor reaching from Wisconsin Street on the north to Wilcox Street on the south, a distance of about two miles. This outer harbor is divided into two distinct sections, one north of the harbor entrance and the other section south of the same. The north section, although slightly less than one mile in length, has a water frontage measured around the piers of 2.1 miles and a land and pier area of 115 acres. The section south has a water frontage around the piers just twice that of the north section, making the total for the outer harbor 6.3 miles, (exclusive of the harbor entrance frontage.) The north section is designed for the handling of package freight for wholesale and retail merchants, and products of the farm and factory, while the section south will handle the coarser freight, such as coal, grain, iron ore, salt and building material. The south section is designed to be the great transshipment location.

Seven piers and seven slips including one car-ferry slip, are shown in the north section. Six of these piers are for commercial use, and the other is a recreation pier, which is located at the foot of Wisconsin Street. The piers are 700 feet long and all except two are 300 feet wide. Five of the slips are 700 feet long by 250 feet wide. These piers are designed to be provided with sheds and railroad tracks arranged for the handling of miscellaneous cargoes. Standard mechanical appliances will promote the greatest speed in discharging and loading. To the rear of the piers, warehouses are provided in which cargoes can be held either for or from merchants in the adjoining district. The plan shows an area extending 1200 feet north of the north harbor entrance pier, reserved for the Federal Government.

The south section provides three large coal piers, 800 feet wide by 1,000 feet long, for the handling and storage of coal, each pier having a holding capacity of over 400,000 tons. At the extreme south end of the outer harbor is a grain elevator pier, with provision made for two grain elevators of 1,500,000 bushels capacity each. Elevated conveyor galleries extend along the sides of the piers for discharging into the ships. The sewerage disposal plant occupies the north 1,000 feet of the south section. Just south of the sewerage disposal plant two piers intended for miscellaneous cargoes are disposed. In the rear of one of these piers are oil tanks for supplying fuel oil to ships burning oil instead of coal. Along the westerly or river side of the south section there is three fourths of a mile of water frontage. A two-car ferry slip is adjacent to the sewerage tract. The balance of this frontage is designed for coal storage and miscellaneous cargoes.

By this plan the Kinnikinnic basin will have an area of 110 acres which will furnish adequate room for mooring vessels during the winter months. It is estimated that 40 to 50 vessels could find winter berths in this basin.

The Federal government will assist in promoting the Milwaukee project by constructing a breakwater extending from a point on the south shore of the bay to a point opposite the harbor entrance, a distance of 9,650 feet. The present north breakwater will be extended about 1,760 feet. The entrance or opening between the two breakwater arms will be about 500 feet. The inclosed basin will have an area of 1,300 acres. The estimated cost of the improvement, which was authorized by Congress at its last session, is $4,000,000, as follows:

1,760 linear feet north breakwater extension, at $250 $492,800
6,900 linear feet south breakwater main arm, at $320 2,208,000
2,750 linear feet south breakwater shore connection at $260 715,000
275,000 cubic yards dredging, at 25 cents 68,750
Removing 250 linear feet old pier, at $50 12,500
Contingencies, superintendence, etc. 502,950

Total $4,000,000

The Board is now conducting a commercial survey of the territory tributary to the port in order to determine the scope and source of present-day commerce, the trend of its growth and its probable character and volume twenty-five years or more hence. A survey of this nature is necessary in order that the Board may know just what kind of terminals it will have to provide to take care of the future commerce of the port.
Lake Michigan Frontage Being Developed For Harbor Purposes

Development of Milwaukee's Present Harbor

Milwaukee harbor has been the pride of the community from its very infancy. The aboriginal red men who located their wigwams on what is now the site of a thriving metropolis, undoubtedly had little in mind except the food value of the game and fish which abounded in the immediate surroundings; but the settlers and traders who subsequently followed these forest nomads and who built permanent habitations on the favored spot, must be credited with a wider vision. To these sturdy pioneers the three confluent rivers entering a sheltered indentation of Lake Michigan, evidently meant more than mere food and drink. They must have sensed to a greater or less degree something of the potentiality for trade and commerce of this wonderful combination of natural advantages. That they built far beyond the dreams of their time history has proven.

Chronicles of early days reveal the fact that as the community grew in numbers, serious differences developed between the residents of the east and west sides of Milwaukee River concerning the location of bridges and that as a result a state bordering on civil war resulted on a number of occasions. However, it is also a matter of history, that notwithstanding these differences the people were a unit when it came to matters appertaining to the harbor.

Government engineers located the first harbor entrance at a point nearly opposite what is now known as Greenfield Avenue, or about 3,000 feet south of the present entrance. The site selected was not popular with the people, as it was so far from the business heart of the settlement. As the government had been to considerable expense in completing the project, it was not an easy matter to get the Federal engineers to consider the abandonment of it, but the agitation in favor of a change was so earnest and persistent that they finally yielded in favor of the present harbor entrance, which was for a long time called the "straight cut," because a channel was cut straight through a narrow neck of land at a point where the Milwaukee River made almost a right angle turn to the south in the direction of the original outlet.

City Constructed the "Straight Cut."

The first harbor project cost the Federal Government $54,500. Three appropriations for the work were made, one of $400 in 1836, another of $30,000 in 1843 and a third for $20,000 in 1844. Congress in 1852 set aside $15,000 for the improvement known as the
"straight cut." The amount was deemed entirely insufficient for the purpose, so the city assumed the task of making the much desired improvement. The government's combined appropriation toward Milwaukee harbor at the time of the completion of the "straight cut" amounted to only $83,973, while the city spent $445,971 including the cost of litigation with contractors.

Since that period, however, the government put a concrete superstructure on the north pier, and built an entirely new south pier, also with concrete superstructure. The former was completed in 1906, and the latter in 1910, the combined cost being approximately $257,724. The present north pier is 1650 feet long, and extends about 1300 feet beyond the shore line. The south pier is about 1610 feet long and extends about 1590 feet beyond the original shore line. The width between the piers is 360 feet at the outer end, and 550 feet at the shore line. The shore end of the new south pier is 270 feet south of the location of the shore end of the original old pier. The Sewerage Commission, in constructing the new sewage reduction plant, has extended the shore line south of the south pier about 700 feet.

Development of the Menomonee Valley.

Milwaukee's lake commerce steadily increased in volume following the creation of a more accessible harbor entrance. The port soon became conspicuous as a wheat shipping center, and lumber, bark and other forest products found their way to this market in greater quantities every year. Additional water frontage along the upper rivers was constantly being developed, and the maintenance of channel depth to these new shipping points imposed an additional burden upon the city in the cost of dredging. Docks had also to be built at the ends of streets at points where there were no bridges. As vessels increased in size, the outlay for dredging and docking kept mounting and soon called for an annual appropriation of from $15,000 to $25,000. Of late years dredging and docking has required from $30,000 to $40,000.

Commerce continuing to demand more room, in 1868, a number of leading citizens began to cast about to see what could be done to relieve the situation. The Menomonee Valley at that time was a vast morass through which the river cut a tortuous course. It was finally decided to reclaim this waste land by constructing a system of water channels in the interest of navigation. A number of influential business men got behind the project and through their efforts the state legislature in 1869 passed an act empowering the city of Milwaukee to create a Canal Commission. These same citizens, with wise forethought, obtained the necessary area required for the proposed waterways by purchase or gift, and the Canal Commission was thus enabled to accomplish its purpose without unnecessary delay. The Commission consisted of Gen. F. C. Winkler, Messrs. F. S. Blodgett and Don J. Whittemore.

Eventually two canals paralleling the Menomonee River were created and the latter channel was straightened and dredged to a width of 140 feet. The Holton Canal connects the Menomonee River with the South Menomonee Canal just west of First Avenue. The latter channel was made 140 feet wide also. The Burnham Canal parallels the South Menomonee Canal on the south. The Burnham Canal has an established width of 135 feet. Just north of the Menomonee River, beginning at about the foot of Eighth Street, James Kneeland built a slip extending westward, which was thereafter known as the Kneeland Slip. Private parties also cut slips into their property connecting with the South Menomonee Canal, and thus, through the combined efforts of the city and the property-owners several miles of water frontage was added to Milwaukee's harbor facilities at a nominal cost. The Menomonee Valley section of the harbor ultimately became the center of the immense coal business of the port.

Creation of a Harbor of Refuge.

Congress, in 1881, because of numerous disasters to shipping on Lake Michigan, made provision for the creation of a harbor of refuge in Milwaukee Bay by the extension of a breakwater or sea-wall across the bay from the north in a southeasterly direction, for a distance of 8,610 feet. The last unit of the structure was completed in 1909, the approximate cost of the entire structure being $1,416,417. Except the southernly 1,000 feet, the entire breakwater has a concrete superstructure. The protected area created by the project is about 275 acres, over 16 feet deep, with a maximum depth of 32 feet. A lighthouse, displaying an intermittent red light is located at the extreme southerly end of the breakwater.

An Outer Harbor Suggested.

Conditions were considered so satisfactory at this time that harbor agitation subsided for a number of years. However, in the spring of 1900 Mayor David S. Rose in his message to the Common Council recommended the construction of a system of docks and terminals in deep water outside of Jones Island, south of the harbor, because, as he stated, the rivers were growing inadequate to meet the demands of a growing commerce. Col. Warren, who was then United States Engineer, invited an expression in regard to the matter from the Chamber of Commerce, and a
Menomonee Valley Coal District

This view was taken during the prevalence of the coal miners' strike, which accounts for the absence of marine life, and the emptiness of the docks.

committee from that body reported adversely on the proposition. Col. Warren submitted this report to the department at Washington, and in his own report declared against an outer harbor. Col. Warren’s report was promptly approved by Secretary of War Root.

Mayor Rose persisted in the matter, however, and in the spring of 1901, he invited representatives of the various commercial organizations to meet in City Hall to consider harbor matters. At that meeting a committee of ten citizens was appointed to be known as the Permanent Harbor Improvement Committee. After several months of investigation this committee reported to the Mayor and Common Council recommending that the channels be deepened, but it made no recommendations as to Jones Island and the outer harbor. The Committee then requested the Federal government to make a permanent survey of Milwaukee harbor, and that permanent harbor lines be established throughout its confines.

Col. Warren, submitted a report to the Chief of Engineers in August, 1903, outlining a number of improvements in the inner harbor, including the enlarging of Kinnickinnic River to a width of 200 feet, and the construction thereon of two turning basins of sufficient size to accommodate 600-foot vessels. Also the widening of the Menomonee River by the removal of a corner at the entrance to the South Menomonee Canal, and the removal of another corner on the latter channel just opposite “Elevator ‘A.’” The city was required to acquire the lands necessary for widening the channels and creating turning basins, after which the government was to do the necessary dredging. Col. Warren estimated the cost of the project at $318,581, and the project was adopted by Congress March 3, 1905.

Work of the Harbor Commission.

Aside from securing several pieces of land necessary to the widening of the Kinnickinnic River and the creation of a turning basin, nothing was done towards the realization of this project. However, in May, 1908, the Common Council authorized the appointment of a special committee of five members to ascertain the cost of acquiring Jones Island and advise the Common Council as to the feasibility of establishing harbor terminals thereon. The committee was made up of Almermen Frederick C. Bogk, P. H. Connell, Oscar Altpeter, S. H. Tarrant and Max Grass. At the same meeting a resolution was introduced declaring in favor of an outer harbor and directing that the United States Government be requested to make the necessary preliminary survey looking to that end. Accordingly, Congress, in March,

*This elevator was destroyed by fire in 1921.
1909, ordered another survey of Milwaukee harbor with a view to the creation of outer terminals and also with a view to modification of the Warren plan.

In response to this authorization Major C. S. Bromwell, submitted a report on the preliminary survey. He recommended that a plan and estimate of an outer harbor be prepared, inasmuch as, in his judgment, it was probable that such a harbor might be needed in the not far distant future, should the commerce of Milwaukee continue to increase at the same rate as it had done in the past.

In June, 1909, the Common Council special committee of five reported in favor of the acquisition of Jones Island for the establishment of municipal terminals thereon, and the Committee was promptly authorized to engage Mr. Isham Randolph, C. E., of Chicago, to make a full detailed engineering report on the proposition and to submit a plan of development. The report and plan of Mr. Isham Randolph was submitted in the spring of 1910, but the Common Council indefinitely postponed the resolution declaring in favor of an outer harbor and rejected the Randolph plan.

The Mayor was then authorized to appoint a Harbor Commission of nine citizens of Milwaukee conversant with harbor and shipping matters to study the needs of Milwaukee in regard to harbor facilities and to act in an advisory capacity to the Common Council in regard thereto. Mayor Emil Seidel made the appointments to the Commission on Monday, October 23, 1911, but the body did not formally organize until Tuesday, February 13, 1912, the Common Council having meanwhile made financial provision for the prosecution of its work.

The Commission rendered a report in May, 1912, in which it recommended the early acquisition of Jones Island. The Commission stated that the time had not arrived when the utilization of Jones Island for outer harbor purposes was necessary, but it favored development on the inner side, together with the deepening and docking of Kinnickinnic Bay. The Commission also advised that immediate steps be taken to remedy disadvantages in the Menomonee and Kinnickinnic Rivers.

With the making of this report the first Harbor Commission ceased its activities, it having been declared an illegal body by the Common Council because the appointments to its membership were not confirmed by that body. However, on August 19, 1912, the Common Council authorized the appointment of a new Commission, and Mayor G. A. Bading made such appointments on October 12, 1912.

The reorganized Commission urged the early acquisition of Jones Island by the city on the ground that it afforded the only remaining opportunity for the municipality to acquire water frontage capable of comprehensive terminal development. Acting on this suggestion, the Common Council provided the necessary funds and ordered the condemnation of Jones Island as far south as the old harbor entrance. Before the proceedings started the Sewerage Commission was given authority to acquire the north 1,000 feet of the island for a municipal sewage disposal plant.

**Outer and Inner Harbor Planned.**

In June, 1919, the Common Council authorized the Commission to engage competent engineering services to draft necessary plans for inner and outer harbor improvement. Acting on this authority the Commission engaged Mr. H. MeL. Harding of New York City to study and prepare an engineering report and plans pertaining to the Milwaukee Harbor project.

An engineering report and plans of the proposed harbor improvement were duly received from Mr. Harding, and after having been carefully reviewed by the Commission were submitted to the Common Council, which approved the same on Tuesday, June 28, 1920.

The submission of the plans was the last official act of the Harbor Commission. The retiring Commission promoted the following units of harbor improvement during the time it was in existence:

The condemnation of the north half of Jones Island and the inauguration of proceedings in condemnation of the lower half of the same as far south as Wileox Street.

- Removal of obstructing corners on the Menomonee River and South Menomonee Canal.
- Survey to establish a uniform system of harbor lines.
- Construction of a rubble mound breakwater along the shore of Lake Michigan from Mason Street to the harbor entrance.
- Revetment of the inner side of Jones Island.
- Bulkheading in the lake to protect the fill on the outside of Jones Island.
- Survey by the Federal government to determine the need of additional breakwater protection at Milwaukee.
- Securing the Harding plans and engineering report.


*Deceased.*
THE PORT OF MILWAUKEE

Coal Yards On The Upper Milwaukee River

Steamers pass through the business center of the city to reach these docks.

Development of the Coal Trade

Milwaukee is the second coal receiving port on the Great Lakes, being outranked only by the dual port of Duluth-Superior. Adverse conditions, such as strikes, etc., affect receipts detrimentally at times, but normally about 5,000,000 tons of coal are received at the port annually. About half of this amount is consumed in the city and suburbs, and the remainder is shipped to various points in the west and southwest.

Obviously, coal did not figure to any extent in the early days of the port, as wood was easily obtainable and was correspondingly cheap. However, as the city grew in population and industries began to multiply, the need of more lasting fuel forced the import of soft coal from Eastern mines by lake.

An old settler is authority for the statement that there were three coal yards doing business at Milwaukee during the early '50s. They were operated respectively by Anthony Green, R. P. Elmore & Co., and a man named Tompkins. Anthracite was hardly known in the West at that time. Hard coal was brought to Milwaukee about 1856 by Anthony Green, a former Philadelphian, and one of the pioneer coal men just enumerated. The first cargo consisted of 300 tons of Lehigh lump. The coal was not screened, but came in chunks of all sizes, some of which were rather formidable in proportions. These lumps had to be broken up by hand into sizes suitable for use in the ordinary stoves of those days. Mr. Green found it difficult to convince the people of the value of the new fuel, but he finally succeeded, and as a result “Green’s Family Coal Yard” is said to have become a popular fuel mart.

A cargo of 500 tons was looked upon with amazement in those days, and dealers found it difficult to unload vessels expeditiously. Tubs and wheelbarrows
were the appliances employed. A line was run through a pulley fastened to the dock, and then through another pulley swung between the masts of the vessel. By means of this rig a tub which held about 250 pounds was lowered into and raised out of the hold of the vessel. Men then conveyed the coal to the yard bins in wheelbarrows over elevated plank roadways built to a height of from 15 to 20 feet on top of empty sugar hogsheads or wooden "horses". By working two hatchways a boat was generally unloaded in two days time. In the '70s, when vessels carrying from 1,200 to 1,300 tons of coal became numerous, the same method of unloading was pursued, and it required from three to four days to unload a vessel of that size. With present-day machinery, the same amount of coal can be handled in the course of three or four hours.

The first official record of coal receipts at the port shows that 11,763 tons were received in 1858. In 1862 the receipts had increased to 21,860 tons. Ten years later, 210,194 tons were received, and a decade later, in 1882, the receipts aggregated 593,842 tons. At this time Milwaukee began to attract attention as a coal distributing point, and a number of the principal coal companies of the East purchased dock property and established yards for the distribution of coal locally and by rail. From that time on the business gradually became centralized, and most of the smaller coal yards were abandoned.

The receipts turned the million ton mark once during the '80s—in 1888. Beginning with 1891 the receipts never again fell below a million tons, but advanced almost steadily. In 1903 the receipts of coal jumped to 3,021,643 tons, and ten years later reached the record figure of 5,860,203. Milwaukee was then regarded as the largest coal distributing point on the Great Lakes.

The handling of several millions of tons of coal over docks during the few months of navigation naturally called for the latest and best appliances for unloading vessels and transferring the coal to the storage yards. In this respect Milwaukee is well provided for.

There are 26 coal receiving docks in Milwaukee harbor at present, including two docks connected with industrial plants. No port on the Great Lakes has so many individual coal receiving yards as has Milwaukee. The yards combined have a storage capacity of over 3,000,000 tons, and the machinery connected with

**Familiar River Scene At Milwaukee**

Passenger steamer passing up Milwaukee River through the heart of the city.
Milwaukee's Coal Piles Keep The Northwest Warm

Immense storage yard of the Milwaukee-Western Fuel Company at Greenfield Avenue.

docks in Milwaukee harbor are equipped to handle cargoes of 5,000 tons or over in a period of 10 hours.

The Menomonee Valley is the center of the coal trade at present, but the lower Kinnickinnic Valley and basin adjacent to the harbor is fast assuming prominence in this respect, and when the Jones Island improvement has been completed this zone of the harbor is bound to attract the major part of the coal business of the port.

Receipts of coal by lake and rail at Milwaukee for the past ten years were as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>By lake Tons</th>
<th>By rail Tons</th>
<th>Total Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>1921</td>
<td>3,903,333</td>
<td>798,178</td>
<td>4,791,711</td>
</tr>
<tr>
<td>1920</td>
<td>3,654,788</td>
<td>1,054,964</td>
<td>4,709,752</td>
</tr>
<tr>
<td>1919</td>
<td>4,469,120</td>
<td>532,936</td>
<td>5,002,056</td>
</tr>
<tr>
<td>1918</td>
<td>4,459,316</td>
<td>728,851</td>
<td>5,188,167</td>
</tr>
<tr>
<td>1917</td>
<td>4,186,287</td>
<td>987,513</td>
<td>5,173,800</td>
</tr>
<tr>
<td>1916</td>
<td>4,950,208</td>
<td>246,174</td>
<td>5,196,382</td>
</tr>
<tr>
<td>1915</td>
<td>5,007,388</td>
<td>193,157</td>
<td>5,200,545</td>
</tr>
<tr>
<td>1914</td>
<td>5,109,242</td>
<td>250,852</td>
<td>5,360,094</td>
</tr>
<tr>
<td>1913</td>
<td>5,551,478</td>
<td>308,785</td>
<td>5,860,263</td>
</tr>
<tr>
<td>1912</td>
<td>4,906,393</td>
<td>265,864</td>
<td>5,172,257</td>
</tr>
</tbody>
</table>
The Essentials of Port Development

Continued from Page 4

On the Canadian side Toronto is manifesting a most progressive spirit in port development. The entire waterfronts of that city have been brought under public ownership and control and millions of dollars have been spent in providing the most modern harbor facilities. All this has been done in spite of the fact that its harbor tonnage is as yet small. Toronto is building for the future and invites waterborne commerce through superior port facilities just as a merchant invites trade through an attractive store and a complete assortment of goods.

The solution must eventually be found in the utilization of the outer waterfronts, holding at a consistent minimum the area over which the harbor activities are to be extended, and by intensifying here the efficiency of the general port facilities.

The Port of Milwaukee

When at a recent hearing of the Rivers and Harbors Committee at Washington it developed that the port of Milwaukee had gone far in advance of other lake cities in the development of a comprehensive harbor scheme, and Congress readily approved a project which calls for an expenditure of four million dollars to protect the same, there was inquiry as to just what this meant.

It meant that Milwaukee realized ten years ago that, with the growing changes in the character of the lake commerce, the crowding of water terminals from the river banks of large commercial centers, and the increasing cost of handling large craft through tortuous inner harbors, some study of future port development would prove timely.

The local harbor improvements, which had hitherto been in the hands of an aldermanic committee, were entrusted in a commission made up of citizens familiar with lake commerce and with the physical conditions of the local harbor. It was realized that an aldermanic committee, at best, is transient in character, and that a body of men in sympathetic touch with local port affairs, enjoying a long tenure of office, was best suited to provide a comprehensive plan involving years of study and a continuous policy of development.

The harbor commission proceeded to gather the best port experience of the world. It soon recognized that the municipal ownership of waterfronts, best suited for terminal purposes, was desirable, and that the policy of public control of harbor operations was highly essential.

The riparian rights of that part of the lake front best suited for commercial harbor purposes were transferred from the railroad that owned them to the municipality. The city then proceeded to acquire a peninsula known as Jones Island, adjoining the mouth of the harbor and lying between the lake and an inner river, adjacent to the industrial section of the city. This peninsula, a mile in length, which was in part occupied by hundreds of fishermen's huts and in part by an iron industry, will ultimately be utilized for harbor purposes.

Those in charge of the development have planned facilities which will enable ships to discharge their cargoes with a minimum of expenditures in time, money and effort, with the purpose of making the port of Milwaukee attractive, along lines of economy and efficiency, and thus invite an increased commerce for the future.

With the introduction of adequate docks and wharves, the establishment of transit sheds and warehousing, adequate rail connections and unloading devices, shipping operations may be conducted upon a basis that will attract commerce which is now diverted to other parts.

The very fact that the harbor operations are concentrated at a point where ships have free and unobstructed access in close proximity to the open sea is an advantage which is readily recognized. When ships can reach their docks without bridge delays and the expense of tug hauling, discharge and receive cargoes expeditiously and at a minimum of cost, the first essential in port efficiency is met.

In the development of Jones Island and the Kinnickinnic Basin as the center of future port operations, the assurance is given that Milwaukee is proceeding along proper lines in bringing natural environment and physical situation to the highest stage of utility and service.

Liberal in Support of Harbor

In the improvement made along the new harbor developments the municipality has spent something like two million dollars. It expects to spend several millions more before the entire plan has been realized. The money has been raised by bond issues voted at popular elections which have always received a heavy vote. The city council, as well as the general citizenship has loyally supported the harbor commission in all its policies and departures.
THE PORT OF MILWAUKEE

A Typical Coal Unloading Bridge

Steamer Powell Stackhouse under the hoist at the plant of the Milwaukee Coke and Gas Company.

Until 1850, all communications between Milwaukee and the East were via the Great Lakes. To-day one-third of the combined rail and water tonnage still comes and goes via the water routes. The traditional feeling that the harbor must be kept upon a basis of efficiency is as strong to-day as it was in the fifties of the last century. This may be noted from the fact that while the tonnage of the port of Chicago proper has declined to less than 2,000,000 tons, the tonnage of the port of Milwaukee has exceeded the 9,000,000 ton mark.

At two elections the harbor bonds received a higher vote than was accorded to the school bonds which usually receive the highest vote.

In developing a comprehensive harbor scheme, and one which aims to utilize to the fullest the natural situation that is offered the commission has brought to its service the best harbor experts in the United States. Besides, it has availed itself of the helpful cooperation of the harbor engineers of the War Department.

The citizens of Milwaukee are firmly imbued with the thought that the commerce of the Great Lakes is still in its infancy, and that with the ultimate coordination in this country of the rail and water routes there will be a great demand for the service of the latter. Its people also believe that Milwaukee, by virtue of its advantageous location and through the creation of a modern harbor, will command a larger share of the future Great Lakes commerce.

And it is with this thought in mind that the Harbor Commission has planned a comprehensive harbor and port development scheme which shall serve a constantly growing waterborne commerce and meet to the fullest the future needs of the city in this direction for years to come.

WHY UNCLE SAM RULES THE WATERS

What was known as Northwest Territory passed into the hands of Great Britain by the Treaty of Paris in 1763, and was by her ceded to the United States in 1783.

The part of the ordinance of 1787 dedicating the navigable waters of the Territory to navigation reads as follows:

"The navigable waters leading into the Mississippi and St. Lawrence, and the carrying places between the same, shall be common highways and forever free as well to the inhabitants of the said Territory as to the citizens of the United States and those of any other states that may be admitted into the Confederacy, without any tax, impost or duty therefor."
Milwaukee’s Grain Trade - Past and Present

Milwaukee’s early-day commerce was naturally of a trading nature. Three small Chicago vessels, the Chicago Packet, Virginia and Aurora are credited with having arrived at the settlement in 1823, but there is no record of what they brought or took away. It was not until 1835 and 1836, however, that navigation became fully established on Lake Michigan. Milwaukee had 314 vessel arrivals during 1836, and the first load of wheat was marketed at the port the same year. The first steamer, the James Madison, stopped at Milwaukee May 28, 1837. Sailing vessels were the principal carriers in those days, lumber, wood, railway ties, tan bark and other forest products being the chief articles of traffic. Flour and provisions of all kinds came from Chicago, while small schooners brought occasional loads of grain from ports to the north.

Up to 1850 there was not a mile of railway leading into Milwaukee. In 1851, however, a line was constructed as far as Waukesha, a distance of 20 miles. This was the beginning of the Milwaukee & Mississippi Road. The year following, additional railway enterprises were launched, and in the course of a few years Milwaukee was receiving grain and other products over five different railway lines, viz: The Milwaukee & Mississippi; Milwaukee, Watertown & Baraboo Valley; Milwaukee & Horicon, LaCrosse & Milwaukee, and the Milwaukee & Chicago Line. The latter became part of the present Chicago & Northwestern system, and the other lines ultimately became units of the present Chicago, Milwaukee & St. Paul Railway.

Growth of the Grain Trade

As the country tributary to Lake Michigan increased in productiveness, grain, more especially wheat, began to figure extensively in Milwaukee’s commerce. The first grain shipment from the port was made in 1841, when the schooner Illinois took a cargo of 4,000 bushels of wheat to a Canadian destination. Four years later, in 1845, the records show that the shipments of wheat for the year aggregated 95,510

Norwegian Tramp Steamer Visits Milwaukee

The Modern of Christiania, Norway, loading grain for Montreal at the Kinnickinnic elevator.
bushels. In 1849 other grains than wheat began to be represented in the shipments out of Milwaukee, which in that year exceeded the million bushel mark by over 157,000 bushels.

**Elevator and Storage Capacity**

Up to 1857 all grain arriving at Milwaukee was handled in bags and stored in warehouses. During this year L. J. Highy built the first elevator. It had a capacity of about 50,000 bushels of wheat. The same year Angus Smith & Co., erected an elevator with a capacity of about 450,000 bushels of wheat. The latter company built an additional elevator in 1861 with a capacity of 700,000 bushels, and later on, in 1864, the Chicago, Milwaukee & St. Paul Railway Co., built an elevator with a capacity of 1,500,000 bushels, which was declared at that time to be the largest elevator in the world.

**Direct Trade to Europe.**

Milwaukee was put on the map as a grain shipping port in 1856, when the schooner Dean Richmond took a cargo of 14,320 bushels of wheat to Liverpool. Three years later the bark T. F. Park took 16,643 bushels of wheat to Cork, Ireland, and the schooner M. S. Scott carried a load of wheat and walnut lumber to a German port. While there is no record of the previous departure of the schooner George D. Dousman, she evidently took a cargo of wheat to Liverpool about this time. Early-day historians credit the vessel with having returned to Milwaukee in 1859 with a cargo of salt for Layton and Plankinton, pork packers. Milwaukee’s ambition to establish direct trade with Europe was then thoroughly aroused.

In 1861 the bark Ravenna, brig J. G. Deshler and schooners Col. Cook and Gold Hunter sailed for Liverpool with cargoes of wheat. During that season forty vessels left the Great Lakes for European ports with grain, lumber, staves, etc. In 1863 the brig Hanover cleared from Milwaukee for Hanover with a cargo of grain, provisions and hardwood lumber, and in 1865 a cargo of beef, tallow and hides was shipped direct to Liverpool on the bark E. C. Rosenberg by Edw. Roddis. About the same time Mr. Roddis forwarded 3,600 tierces of India mesh beef direct to Liverpool, the shipment going by rail to Portland, Me., and thence by steamer to its destination.

**Greatest Primary Wheat Market in the World.**

During the period of the Civil War, when the southern markets were eliminated and trade was diverted from the Mississippi River to the Great Lakes, Milwaukee’s grain traffic mounted rapidly, what was
then known as "Milwaukee Club" wheat having become a great favorite in the European markets. In 1862, when the total receipts of wheat aggregated 15,613,995 bushels, and exceeded the receipts at Chicago, Milwaukee gained the distinction of being the greatest primary wheat market in the world.

Milwaukee's wheat trade reached its peak in 1873, when the receipts of this grain aggregated 32,567,565 bushels, and the shipments by lake 24,925,032 bushels. The year 1873 witnessed the advent of a great many vessels of much larger size than had theretofore been employed on the Great Lakes. The largest single cargo of wheat for that year was 59,300 bushels. There was also a moderate spurt of grain and lumber shipments direct to Europe during the '70s.

From that time on, however, wheat began to be marketed to a greater extent at Lake Superior points, and an increased amount of grain was converted into flour at St. Paul and Minneapolis. This naturally reduced to some extent the flow of wheat to Milwaukee. However, closely following the decline in wheat receipts, more of other grains found their way to Milwaukee elevators from year to year, until in 1916 the receipts of all grains combined reached the enormous aggregate of 86,522,686 bushels. These figures have not been exceeded since.

The proportion of the various grains entering into the annual receipts of all grains at Milwaukee in 1873 and in 1921 was as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Wheat</th>
<th>Corn</th>
<th>Oats</th>
<th>Barley</th>
<th>Rye</th>
</tr>
</thead>
<tbody>
<tr>
<td>1873</td>
<td>87.38</td>
<td>2.83</td>
<td>4.92</td>
<td>3.71</td>
<td>1.16</td>
</tr>
<tr>
<td>1921</td>
<td>13.76</td>
<td>41.92</td>
<td>27.12</td>
<td>13.61</td>
<td>3.59</td>
</tr>
</tbody>
</table>

The volume of corn received now exceeds the wheat receipts of 1873 and the receipts of all grains during the year 1921 were 119 per cent larger than the record of 1873, being 71,336,597 bushels against 32,567,565 bushels in 1873.

The year 1921 holds the record of grain shipments, the total exports of all grains during that year amounting to 51,611,606 bushels, of which 34,827,188 bushels went out by lake.

Following is the record of grain receipts at the port for the past ten years and of the amount of grain shipped by lake:

<table>
<thead>
<tr>
<th>Year</th>
<th>Receipts</th>
<th>Shipped by Lake</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bushels</td>
<td>Bushels</td>
</tr>
<tr>
<td>1919</td>
<td>69,084,766</td>
<td>19,667,047</td>
</tr>
<tr>
<td>1918</td>
<td>76,905,019</td>
<td>26,242,932</td>
</tr>
<tr>
<td>1917</td>
<td>67,366,642</td>
<td>8,847,817</td>
</tr>
<tr>
<td>1916</td>
<td>86,522,686</td>
<td>16,450,489</td>
</tr>
<tr>
<td>1915</td>
<td>70,148,510</td>
<td>20,330,844</td>
</tr>
<tr>
<td>1914</td>
<td>76,654,300</td>
<td>24,619,749</td>
</tr>
<tr>
<td>1913</td>
<td>59,464,630</td>
<td>12,520,749</td>
</tr>
<tr>
<td>1912</td>
<td>50,939,720</td>
<td>11,294,939</td>
</tr>
</tbody>
</table>

**The Flour Movement**

When the wheat trade was at high-tide, Milwaukee was one of the leading flour milling cities of the country, and the product of Milwaukee mills found its way to every part of the world. For a number of years the city ranked as the second milling center in the United States, Minneapolis being the first. In 1882 the total product of flour in Milwaukee aggregated over 2,000,000 barrels, this being the largest amount ever milled in Milwaukee in any one year. Of late years the output of flour has averaged a little over half a million barrels annually. Most of the flour shipments by lake from Milwaukee at present represent the product of mills in Minneapolis and other points in the Northwest. In 1921 the total shipments by lake out of Milwaukee aggregated upwards of 1,200,000 barrels. Of this amount fully 90% went across the lake on earferry line steamers.

The following figures show the receipts of flour at Milwaukee for the past ten years and also the amount shipped annually by lake:

<table>
<thead>
<tr>
<th>Year</th>
<th>Receipts</th>
<th>Shipped by Lake</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Barrels</td>
<td>Barrels</td>
</tr>
<tr>
<td>1921</td>
<td>1,693,930</td>
<td>1,229,025</td>
</tr>
<tr>
<td>1920</td>
<td>1,144,106</td>
<td>669,060</td>
</tr>
<tr>
<td>1919</td>
<td>2,757,544</td>
<td>2,178,968</td>
</tr>
<tr>
<td>1918</td>
<td>3,163,899</td>
<td>2,318,594</td>
</tr>
<tr>
<td>1917</td>
<td>1,454,953</td>
<td>1,092,103</td>
</tr>
<tr>
<td>1916</td>
<td>2,458,253</td>
<td>2,131,605</td>
</tr>
<tr>
<td>1915</td>
<td>3,501,837</td>
<td>3,427,587</td>
</tr>
<tr>
<td>1914</td>
<td>3,743,708</td>
<td>2,650,204</td>
</tr>
<tr>
<td>1913</td>
<td>3,161,287</td>
<td>3,141,547</td>
</tr>
<tr>
<td>1912</td>
<td>2,870,469</td>
<td>2,935,070</td>
</tr>
</tbody>
</table>
With a budding lake commerce and a scarcity of vessels with which to conduct the same, shipbuilding claimed the early attention of Milwaukee's business interests. The first vessel produced at the port was built in 1836 for Solomon Juneau, the founder of the city. It was a schooner of only 90 tons burden, but nevertheless a pretentious craft for those days. From that time on the business of shipbuilding was pursued with such vigor, that by the end of the year 1859, 68 vessels, including one steamer and several lighters, had been constructed at the port, the total tonnage of the same aggregating 12,491 tons. Milwaukee held her place as a shipbuilding port for many years, and a good-sized fleet of the finest sailing vessels and steamers of their time owed their origin to Milwaukee builders.

The industry began to languish, however, with the advent of steam barges on the Great Lakes. However, a number of fine specimens of this class of vessels were constructed here up to the time steel supplanted wood in the construction of lake craft. The shipbuilding industry was then abandoned entirely. The last wooden schooners, the Resumption and Ford River, were turned out in 1879 and the last wooden steamer, the Ferdinand Schlesinger, in 1891. The Schlesinger, while she was in existence, bore the distinction of being the largest wooden vessel on the Great Lakes. She measured 2,087 tons.

With the exception of a dredge and several lighters and the mine layers which were fabricated or assembled here during the world war, no shipbuilding has been done at Milwaukee for a number of years past. Milwaukee's shipyard facilities at the present time consist only of a dry dock and a steel repairing plant, capable of making repairs to steel craft.
Steamboat Service To and From Milwaukee

Milwaukee always has had good steamboat service, both passenger and freight, and the facilities afforded by the various along-shore and across-the-lake lines in times past have contributed materially to the commercial welfare of the city. There is room for improvement in the package freight service to and from the lower lake ports, which was almost wiped out by conditions created by the world war. Nine different lines of steamers now operate in and out of the port, as follows:

Goodrich Transit Co.—Daily service to and from Milwaukee, Chicago, and intermediate ports, and weekly service to and from ports to the north as far as Sturgeon Bay and Green Bay.

Crosby Transportation Co.—Daily service to and from Milwaukee and Muskegon, Mich.

Pere Marquette Line Steamers.—Daily service to and from Milwaukee and Ludington, Mich.

Milwaukee Steamship Co.—Daily service to and from Milwaukee and Chicago.

Chicago Steamship Lines.—Daily freight service to and from Milwaukee, Chicago, and Buffalo.

Great Lakes Transit Co.—Service two or three times weekly to and from Milwaukee, Chicago, and Lake Erie ports.

Canada-Atlantic Transit Co.—Freight service two or three times weekly to and from Georgian Bay ports.

Pere Marquette Carferry Line.—Daily service to and from Ludington, Mich.

Grand Trunk Carferry Line.—Daily service to and from Grand Haven, Mich.

Passenger and freight service by line steamers was more general in character on the great lakes in early times than it is to-day. In the '60s, eight different lines operated steamers to and from Milwaukee. One line gave service weekly direct to Montreal, Canada. Two lines gave daily service to and from Buffalo, N. Y., and one line ran steamers tri-weekly over the same route. Two lines gave daily service to and from Sarnia, Canada, and a line of steamers ran tri-weekly to and from Oswego and Ogdensburg, N. Y. In addition, the Grand Trunk Railway, then known as the Detroit and Milwaukee Line, operated steamers between Milwaukee and Grand Haven, Mich., and regular daily steamboat service was maintained between Milwaukee and all ports on the west shore of Lake Michigan to the north and south.

Steamers of the screw wheel type were at that period called “propellers”, in contradistinction to the side wheel steamers which were the popular type.

Pere Marquette Carferry Reaching Port

One rarely misses the sight of a carferry in viewing Milwaukee bay and Harbor.
of steam craft in early days for shore line and across the lake service. The Goodrich liners were all side wheelers in those days. The steamers Milwaukee and Detroit which were placed on the run between Milwaukee and Grand Haven in 1859, were always designated steamships, because of their size and stateliness in comparison with the ordinary side wheel steamer of that time. The Grand Haven steamers bore a strong resemblance to the side wheelers, which were employed on the ocean in former days.

However, as the trunk railway lines were extended to the Northwest, the service rendered by steamboat lines on the great lakes became less general. Just prior to the passage of the Panama Canal Act, which lead to the divestiture of the railway lines from their auxiliary steamboat lines, eleven freight and passenger lines rendered service to and from Milwaukee. Six lines operated between Milwaukee and the lower lakes during the season of navigation. Three lines maintained service across Lake Michigan during the entire year, and two lines operated steamers between Chicago, Milwaukee and intermediate ports. During the summer months this shore line service was extended northward as far as Green Bay and northern Michigan ports. In addition to these freight and passenger steamboat lines, two lines of carferries operated constantly, winter and summer, between Milwaukee and Grand Haven and Milwaukee and Ludington, Michigan.

Just prior to the breaking out of the World War, six lines of steamers conducted freight traffic between ports on Lakes Michigan and Erie and Ontario and in Georgian Bay. As a result of the divestiture of the railways from their lake line connections and the diversion of lake tonnage to the ocean for war service, package freight service between Lake Michigan and lower lake ports has become negligible in comparison with that of previous years. The shore lines, however, have maintained regular traffic between Milwaukee and Chicago, and ports to the north as far as Green Bay.

Carferries made their first appearance on Lake Michigan in 1892, when a line of this type of steamers was established between Frankfort, Mich., and Kewaunee, Wis., by the Ann Arbor Railway Co. Manitowoc, Menomonee and Manistique were included later. Subsequently the Pere Marquette Railway Company put carferries in service between Milwaukee and Ludington, Mich. The Grand Trunk Railway Company followed by connecting Milwaukee and Grand Haven, Mich., in like manner. These carferries, which operate throughout the year, summer and winter, are of vast importance to Milwaukee industries, as they represent the main factor in keeping Milwaukee on the Chicago basis of rates to and from Eastern ports. There are now eleven carferries in daily service between Wisconsin and Michigan ports, summer and winter. The largest of the carferries carry thirty railway cars and have accommodations for passengers. Between 25% and 30% of the total lake commerce of Milwaukee is handled by carferries.
PORT AUTHORITY

Up to the time of the creation of the Board of Harbor Commissioners, harbor administration was vested entirely in the Department of Public Works. The Harbor Commission, which preceded the present Board or Harbor Commissioners, was purely an advisory body, without any authority whatever. It simply submitted recommendations in connection with harbor development to the Common Council. The carrying out of the recommendations rested with the judgment of that body.

The Board of Harbor Commissioners was created by the Common Council on Monday, June 1, 1920, under authority granted by Chapter 289, Laws of Wisconsin, 1919. The membership of the Board is confined to five qualified electors of the City of Milwaukee with terms of office extending over three years.

The law empowers the Board to plan, construct and maintain such docks, wharves, warehouses, piers, slips, basins, railway tracks, belt railways or other structures for the conduct of commerce as it may deem necessary subject to the approval of the Common Council, and gives it exclusive charge and control of the same. The law also gives the Board jurisdiction over street end docks and docks protecting other public property, and places all dock lines in the harbor under its supervision. The law requires that moneys for construction work be used out of any taxes or bonds which the city may levy or issue for permanent harbor improvements, but for the repair, maintenance, operation and administration of harbor facilities and for the redredging of waterways, funds specifically provided for such purposes must be used.

The Board formally organized on Thursday, July 15, 1920, the members having been appointed by Mayor D. W. Hoan on Monday, June 14, and immediately confirmed by the Common Council. The personnel and terms of office of the original Board was as follows: Wm. George Bruce, 3 years, Bennett Larson, 3 years, R. H. Pinkley, 2 years, Henry Leisk, 2 years, G. J. DeGelleke, 1 year. Wm. George Bruce was elected President, and R. H. Pinkley Vice President. Herman Bleyer was chosen Secretary.

Captain Henry Leisk was unable to qualify as a member of the Board, as he was a resident of Wisconsin, and F. C. Reynolds was named in his place. In consideration of his long and faithful service in behalf of Milwaukee harbor, the Board requested Captain Leisk to continue his connection with it in an advisory capacity.

Subsequently, on the expiration of the one-year term of G. J. DeGelleke, Carl F. Ringer was appointed in his place.

The Board’s office and engineering department is quartered on the seventh floor of City Hall. A field office is also maintained on Jones Island.

MILWAUKEE’S RAILWAY FACILITIES

Milwaukee’s railway transportation needs are supplied in the main by three great systems, the Chicago, Milwaukee & St. Paul, the Chicago & North-Western and Soo Lines, with something like 25,000 miles of trackage, the ramifications of which extend over a wide radius of productive territory, reaching from the southwest to the northwest. In addition, car ferry lines operating across Lake Michigan enable the Grand Trunk System and the Pere Marquette Railway to give prompt and direct connection with Eastern lines whose trackage extends to the Michigan shore of the lake. Both of the railway systems last named which operate over 10,000 miles of trackage, maintain important terminals at Milwaukee. The combined outbound and inbound tonnage of the three first named railway systems averages over 12,000,000 tons annually, of which enormous volume of business Milwaukee is held to be next to the largest contributor.

The services afforded by these major railway systems are supplemented by the Chicago, North Shore and Milwaukee electric line, which conducts a passenger and freight business between Milwaukee and Chicago; also by the interurban lines of the Milwaukee Electric Railway & Light Co., and its connections, which afford transportation service with the most important cities and villages west and southwest of the city, and extend as far north as Green Bay. These latter lines also carry freight and passengers. It is estimated that the trolley systems centering at Milwaukee embrace over 300 miles of trackage.

While Milwaukee is seemingly well provided with rail shipping facilities, a strong public sentiment prevails in favor of more diversified railroad connections. This feeling manifests itself sporadically in communications to the public press and in agitation by commercial bodies and other civic organizations. The dissatisfaction is largely due to the fact that the service rendered at present by the railways which control the local situation lacks economic co-ordination, and that too many industries are confined to the use of only one railway system unless an extra charge for switching is met. There would be less agitation in Milwaukee for more railways if this situation could be so adjusted that all manufacturers and shippers, no matter in which section of the city they are located, would be on the same basis in the matter of service and rates.

The Board of Harbor Commissioners is confronted by this same situation in its efforts to solve the prob-
Coal-Laden Steamer Going Up Milwaukee River

Passing through Grand Avenue Bridge, where the river takes a disadvantageous turn.

BRIDGES IN MILWAUKEE HARBOR

The navigable channels of Milwaukee harbor are spanned by 29 bridges, 23 of which connect city highways, and 6 are a part of railway systems.

Some idea of the delays to street traffic by bridge openings can be gleaned from the fact that bridge openings during the year 1921 aggregated 42,800. Grand Avenue bridge, which is situated in the heart of the retail district of the city and connects two of the busiest thoroughfares, was opened 2,289 times. Five other bridges were opened between 2,000 and 2,500 times. It is because of these annoying interruptions to land traffic that the city is developing the Jones Island and lake front harbor, in the hope of greatly diverting water commerce to these points.

The city bridges are manned by three crews of two men each, the men being kept on duty day and night. Bridge repairs and maintenance are a heavy burden on the municipality. The cost of the same during the year 1921 amounted to $271,375.34.
Milwaukee’s Interest in the Great Lakes-St. Lawrence Waterway

The port of Milwaukee is vitally interested in the movement to open a way to the ocean through the St. Lawrence River for the larger class of lake vessels.

Milwaukee is essentially a grain shipping port, and anything which will tend to increase the volume of grain shipments by lake will stimulate the business of the port to a corresponding degree. Much of the grain that now goes out of Milwaukee harbor during the season of navigation, is consigned to Montreal, where it is trans shipped to foreign ports. The major portion of these shipments go by way of Georgian Bay and thence over the Grand Trunk System to Montreal. A moderate quantity is carried direct by steamers of minor capacity.

The largest steamer on the Great Lakes will be able to reach Lake Ontario ports when the enlarged Welland Canal is completed. This will be only a matter of a few years. Grain can then be delivered at Kingston or Prescott, Ont., where it can be transferred to barges for transportation down the St. Lawrence River, a distance of about 100 miles. The flow of grain over the St. Lawrence route will then be greater than ever. When the proposed St. Lawrence River ship channel is completed grain can go direct by water from Milwaukee, Chicago or Duluth to Montreal or ports across the ocean, without the expense attendant upon the transfer of cargoes to river barges. Economists figure that when this unrestricted commerce becomes a reality the difference in freight rates on grain will be between 6 and 8 cents in favor of the new route as against the old lake-and-rail route to New York, Boston or Baltimore.

Milwaukee has a slight advantage over both Duluth and Chicago in the matter of distance to Montreal or Liverpool. According to the United States hydrographic office the distance to Liverpool in nautical miles from the three leading ports is as follows:

<table>
<thead>
<tr>
<th></th>
<th>Nautical miles to Liverpool</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milwaukee</td>
<td>3813</td>
</tr>
<tr>
<td>Chicago</td>
<td>3867</td>
</tr>
<tr>
<td>Duluth</td>
<td>3947</td>
</tr>
</tbody>
</table>

It will be seen that Milwaukee is 54 nautical miles nearer Liverpool than is Chicago, and 134 miles nearer than Duluth. The difference may appear very slight to the landsman, but it is an incontroversible fact that every hour gained by a ship in making port, especially when that port is equipped with efficient terminals, is of great economic advantage.

While, as far as Milwaukee is concerned, the grain trade will be the first to receive an impetus from the St. Lawrence River route to the ocean, it will only be a matter of time when products of all kinds from Wisconsin and other Northwestern states, designed for export, will find their way to the port of Milwaukee because of the economy presented by the shorter and more economical haul direct to European ports. Heavy machinery and other iron or steel products of a bulky nature, can be lifted aboard steamers at a Milwaukee terminal and conveyed direct to South Africa or any other far distant port without the expense attendant upon re-handling.

There is an equal advantage in the matter of imports. The new route is bound to open up direct trade by water between Great Lakes ports and ports in New England and on the Southern Atlantic and Gulf Coasts and the West Indies. Steamers with provision for refrigeration can bring fruits and other perishable products direct to the Northwest from these semi-tropical regions and also from California and other points on the Pacific Ocean via the Panama Canal. Hides from South America and lumber from the Pacific Northwest can also be counted on. The saving in freight on lumber from the Pacific Coast will be enormous as against the present all rail traffic.

Direct traffic between Milwaukee and foreign ports will also eliminate the commissions now exacted from importers by middlemen in the East. Goods from abroad destined to Milwaukee, can come direct to harbor terminals here without having to receive special attention on arrival at the expense of the importer. Aside from the elements of expedition and safety, the saving on imported goods by reason of this direct delivery, will run into big figures in the course of a season.

Milwaukee’s new harbor terminals on the lake front and in the Kinnickinnic basin will be especially fitted to accommodate vessels of the class that will engage in the trade to Montreal and ports on the ocean, when the St. Lawrence route is open. The terminals will be easy of access, with water from 25 to 30 feet in depth, and will be provided with the latest and best freight handling equipment.
Excursion Steamer Christopher Columbus

Unique type of vessel, a relic of the world's Columbus Exposition, which makes daily trips between Milwaukee and Chicago during the summer season.

SALT, LUMBER, CEMENT, IRON ORE

Salt has figured conspicuously in Milwaukee's commerce since the earliest days of lake navigation, Michigan being the main source of supply. Existing records give the receipts for the year 1861 at 135,570 barrels. The trade steadily increased until in 1908 the receipts of salt by lake aggregated 1,184,470 barrels. This was the highest point reached by the trade. Receipts now average about 800,000 barrels annually.

Lumber, shingles, lath, wood, bark, cedar posts, railway ties, etc., were handled in large quantities in the early years of the port's history but as the forests adjacent to lake shipping points became depleted, less and less of these products were received by vessels annually. The bulk of the lumber received at Milwaukee at present comes by rail. The same is true of other forest products. Shipments of lumber by lake consist entirely of through consignments over the earferry routes. Cargoes of bark, wood and ties are also few and far between.

Cement, sand and stone have been received at the port in increasing quantities following the introduction of concrete in the construction of buildings and roadways. This class of tonnage promises to make up for the loss in receipts of lumber and other forest products. Over half a million barrels of cement were received by lake in 1921.

Milwaukee receives a little over 200,000 tons of iron ore by lake, annually. The iron ore trade of the port is confined to the requirements of the Illinois Steel Co., and the Thomas Furnace Co. The volume of receipts of iron ore varies with the needs of these two industries, and has run as high as 275,000 tons or more during a season.

WHY THE ODD NAME?

Kinnickinnic was the Indian name for a mixture of red willow bark and tobacco. Red willow grew abundantly along the river near the residence of Dr. Enoch Chase, a Milwaukee pioneer. The river was originally called Bois de Gris, but in time it became changed to that of this Indian smoking mixture.

Self-unloading steamers, usually employed in transporting stone and gravel, are invading the coal-carrying trade. A number of cargoes of coal have been delivered at Milwaukee in the past two years by this class of craft. The steamers are equipped with conveyors and discharge booms which enable them to deposit their cargoes at any point in the dock.
Coal Terminals in Milwaukee Harbor

Following is a list of coal terminals in Milwaukee harbor, with character of unloading machinery and storage capacity:

Milwaukee-Western Fuel Co.—

Menomonee River — Thirteenth Street Dock, —
One electrically operated Mead-Morrison portable man-trolley bridge with 10-ton clamshell; unloading capacity 800 tons per hour; storage capacity 200,000 tons bituminous coal.

Menomonee River — Sixteenth Street (anthracite) Dock — Two Mead-Morrison electrically-operated portable towers with 2-ton clamshells; unloading capacity 500 tons per hour; storage capacity 100,000 tons anthracite;

Menomonee River — Sixteenth Street (bituminous) Dock — One Mead-Morrison electrically-operated portable bridge with 8-ton clamshell and one Heyl & Patterson electrically-operated portable bridge with 7-ton clamshell; unloading capacity 1,000 tons per hour; storage capacity 150,000 tons bituminous coal.

Kinnickinnic River — Washington Street Dock — Three electrically-operated Mead-Morrison towers with two 2-ton and one 5-ton clamshell; unloading capacity 400 tons per hour; storage capacity 250,000 tons bituminous coal.

Kinnickinnic River — Greenfield Avenue Dock — Three electrically-operated Heyl & Patterson portable bridges with 2-ton clamshells; unloading capacity 400 tons per hour; storage capacity 150,000 tons bituminous coal.

Kinnickinnic River — Kinnickinnic Avenue Dock— Five Johnson portable steel towers with 1-ton clamshells; unloading capacity 450 tons anthracite, 150 tons bituminous coal per hour; storage capacity 45,000 tons anthracite and 40,000 tons bituminous coal; steam power.

Menomonee River — Canal Street Dock — Canal Street — Employs self-unloading steamers; capacity 80,000 tons bituminous coal.

Milwaukee River — Cherry Street Dock — Six Johnson portable steel towers with 1-ton clamshells;

Kinnickinnic Bay, Milwaukee Harbor
Big Steel Steamer In Dry Dock

unloading capacity 500 tons anthracite and 350 tons bituminous coal per hour. Storage capacity 35,000 tons anthracite, 35,000 tons bituminous coal; steam power.

Milwaukee River — Commerce Street Dock — Two Heyl & Patterson electrically-operated portable bridges with 2-ton clamshells; unloading capacity 350 tons per hour; storage capacity 75,000 tons bituminous coal.

Menomonee River — Gross Dock — Sixth Street bridge — Four Mead-Morrison hoists with 1 1/4 ton clamshells; unloading capacity 300 tons per hour; storage capacity 150,000 tons anthracite, 250,000 tons soft coal.

Menomonee River — West Side Dock at Twenty-second Street — Three Brown hoists with 2-ton clamshells; unloading capacity 300 tons per hour; storage capacity 250,000 tons bituminous coal.

Kinnickinnic Basin — Independent Dock, foot of National Avenue; Two Lakeside bridges with 4-ton Haywood clamshells and Haywood clean-up buckets; unloading capacity 500 tons per hour; storage capacity 200,000 tons bituminous coal.

Milwaukee Coke & Gas Co.

Kinnickinnic River — Two Brown hoists, (steam) and one Johnson hoist (electric) with three 2-ton clamshells; unloading capacity 600 tons per hour; storage capacity 400,000 tons bituminous coal.

Great Lakes Coal & Dock Co. —

Menomonee River, Canal Street — One electrically-operated Mead-Morrison trolley bridge with 10-ton clamshells; unloading capacity 600 tons per hour; storage capacity 250,000 tons bituminous coal.

Central Coal Co. —

Menomonee River, Canal Street — Eleven Brown hoists with 2 1/2-ton clamshells; unloading capacity 600 tons per hour; storage capacity 300,000 tons bituminous coal; steam power.

Youghiogheny & Ohio Coal Co. —

South Menomonee Canal — Two electrically-operated Mead-Morrison bridges with 5-ton clamshells; unloading capacity 600 tons per hour; storage capacity 200,000 tons bituminous coal.

Philadelphia & Reading Coal & Iron Co. —

Menomonee River, Canal Street — Four steam-operated hoists with 2-ton clamshells; unloading capacity 350 tons per hour; storage capacity 75,000 tons anthracite.
Milwaukee Gas Light Co. —

Menomonee River, Twenty-fifth Street — Three Brown hoists with 2-ton clamshells; capacity 300 tons per hour; storage capacity 140,000 tons bituminous coal; steam power.

Lehigh Valley Coal Sales Co. —

South Menomonee Canal, Canal Street — Two Mead-Morrison portable towers with 2-ton clamshells; unloading capacity 500 tons per hour; storage capacity 75,000 tons anthracite; steam power.

Callaway Fuel Co. —

Milwaukee River, at Cherry Street bridge — One electrically-operated Lakeside bridge with 3-ton clamshell; unloading capacity 300 tons per hour; storage capacity 20,000 tons anthracite, 20,000 tons bituminous coal.

Fellenz Coal & Dock Co. —

Milwaukee River, at Racine Street bridge — One electrically-operated Lakeside bridge with 3-ton clamshell; unloading capacity 360 tons per hour; storage capacity 35,000 tons anthracite, 25,000 tons soft coal.

Joseph Schlitz Beverage Co. —

Milwaukee River, Commerce Street — One electrically-operated man-trolley bridge; unloading capacity 100 tons per hour; storage capacity 45,000 tons bituminous coal.

A. F. Gallun & Sons Co. —

Milwaukee River, North Water Street — Three derrick rigs (steam); unloading capacity 75 tons per hour; storage capacity 9,000 tons bituminous coal.

Kanawha Fuel Co. —

South Menomonee Canal (Pabst Slip) — Four hoists with 2-ton clamshells and 1-ton buckets; unloading capacity 250 tons per hour; storage capacity 200,000 tons bituminous coal.

Valley Coal Co. —

Menomonee River near Muskego Ave. — Four hoists with 1½-ton clamshells and 1-ton buckets; unloading capacity 250 tons per hour; storage capacity 150,000 tons anthracite.

W. H. Warner Coal Co. —

Menomonee River, Canal Street — Employs self-unloading steamers; storage capacity 100,000 tons bituminous coal.