UNIVERSAL
LIBRARY
OU_166096
UNIVERSAL
LIBRARY

OUP—23—4-4-69—5,000.

OSMANIA UNIVERSITY LIBRARY

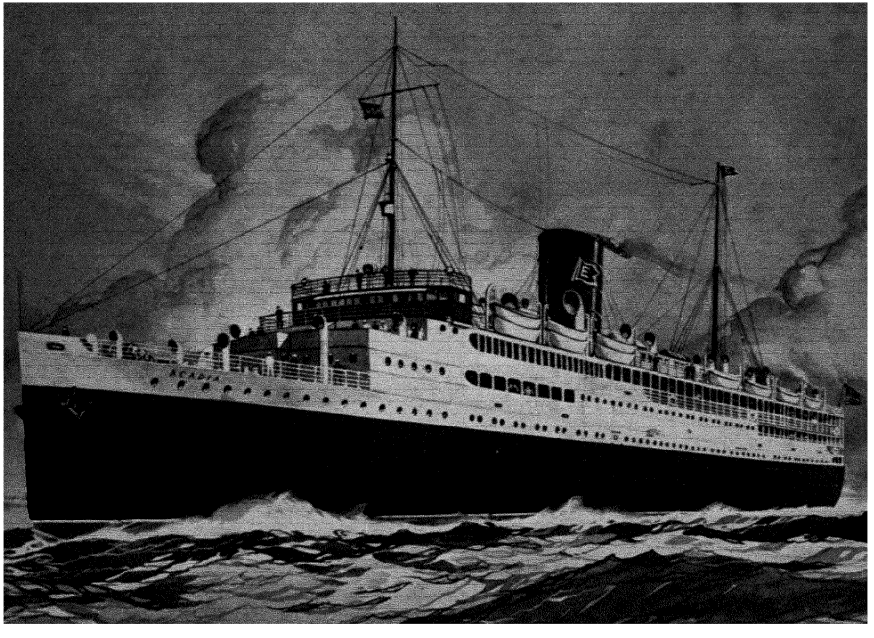
Call No. 551.482 I 65 G Accession No. PG 4552

Author Ireland, Tom.

Title Great lakes- St. Lawrence deep Waterway to the Asia, 1934

This book should be returned on or before the date last marked below.

THE GREAT LAKES–ST. LAWRENCE DEEP WATERWAY TO THE SEA



Courtesy of the "Cleveland Plain Dealer"

EASTERN STEAMSHIP LINES

The "Acadia," combining passenger service with that of freight and with draft of 20′ 1¾", is an ideal vessel for the Seaway.

THE GREAT LAKES–ST. LAWRENCE DEEP WATERWAY TO THE SEA

By TOM IRELAND

HARVARD LAW SCHOOL LL.B.; PRINCETON UNIVERSITY A.B.;
MEMBER OF THE OHIO BAR; OFFICERS RESERVE CORPS

Illustrated



G. P. PUTNAM'S SONS
NEW YORK :: LONDON
1934

COPYRIGHT, 1934, BY TOM IRELAND

All rights reserved. This book, or parts thereof, must not be reproduced in any form without permission.

PRINTED IN THE UNITED STATES OF AMERICA

To those members of the United States Senate Committee on Foreign Relations who were appointed as a subcommittee to consider the Great Lakes-St. Lawrence Seaway project this book is respectfully dedicated. The subcommittee was headed by SENATOR WILLIAM E. BORAH *of Idaho, and included as members* SENATORS ROBERT M. LA FOLLETTE, JR., *of Wisconsin,* ARTHUR H. VANDENBERG *of Michigan,* OTIS F. GLENN *of Illinois, Republicans, and* SENATORS JOSEPH T. ROBINSON *of Arkansas, the late* THOMAS J. WALSH *of Montana and* ROBERT F. WAGNER *of New York, Democrats.*

THE Great Lakes-St. Lawrence Deep Waterway to the Sea was favored by Wilson, Harding, Coolidge and in fact by every President of the United States who has ever considered the matter. The story of the Seaway is particularly a story of two of the country's foremost citizens. To Herbert Hoover, the Seaway's aspects of improved navigation and of hydro-electric power make it one of the leading undertakings in the life of a civil engineer. As Secretary of Commerce he headed the St. Lawrence Commission to thoroughly study the matter for the United States. As President, he negotiated the Seaway Treaty with Canada of July 18, 1932. Franklin D. Roosevelt's interest in the Seaway arose when as Governor he sought cheap power for the small home owners in the upper section of New York State. As President he has repeated on several public occasions that he favors the ratification of the Treaty in its existing form. The Treaty now stands first on the Executive Calendar of the Senate for the session commencing in January, 1934. It seems that a reading of the Seaway story will reveal much of the character of these two outstanding Americans. In their earnest championing of the Seaway as a cause of the people, in their combating of the interests of selfish and of individual gain to restore to the people of the nation a share at least of the prosperity of former times, Herbert Hoover and Franklin D. Roosevelt have both shown themselves to be great men.

ACKNOWLEDGMENTS

To the generous and kindly encouragement of Walter B. Briggs in the Widener Memorial Library at Harvard many years ago of the youthful effort to write a book on Canada, is due the original interest in the Great Lakes-St. Lawrence Seaway that prompted the starting of this little book last summer. Statements of Major General Lytle Brown and of Brigadier General George B. Pillsbury, former Chief of Engineers and Assistant Chief of Engineers, respectively, of the United States Army, have been used. Grateful acknowledgment is hereby made to Harold Burton, former acting mayor of Cleveland, for aiding with ideas on the improvement and development of ports. For kindly help and interest, acknowledgment to Captain George F. Forrest of the same city is also made. From Charles P. Craig, Executive Director of the Great Lakes-St. Lawrence Tidewater Association, Washington, D. C., to whose patriotic devotion to his country's welfare the Seaway project will greatly owe its success, came a large part of the material. Charles J. McManus of the same Association in charge of Transportation and Research is also to be thanked for much helpful information. Another source for this book is "Economic Aspects of the Great Lakes-St. Lawrence Ship Channel" by Roy S. MacElwee and Alfred H. Ritter, specialists in transportation and port development, who are so able in assembling facts as to seem not only experts but wizards. Thanks are also due to Arthur Cyril Player for the help from his enlightening articles in the Detroit *News* of December, 1932. The articles by Hon. E. C. Drury, former Prime Minister of the Province of Ontario, which appeared in *Maclean's* in 1929, have also been instruc-

tive and helpful. Of use also has been the valuably analytical treatment of the St. Lawrence Seaway project by Daniel Whiting in *Editorial Research Reports,* Volume II, 1932, Number 4. Of intense interest has been also the *Report of the Joint New England Committee.* To H. J. Cabral of Cleveland thanks are due for aiding with the illustrations.

TOM IRELAND.

CLEVELAND, OHIO, January, 1934.

CONTENTS

CHAPTER I

PAGE

THE NECESSITY FOR CHEAP AND EASY OCEAN TRANSPORTATION FOR THE MID-WEST UNITED STATES. The Importance of Cheap Transportation in General. Mid-West United States Needs Deep Water Outlet to the Sea. Effect of St. Lawrence Seaway is to Bring Ocean Front to Mid-West. Measures Taken Towards Seaway Development. Unexpected Adverse Effects of the Panama Canal. The Question of Remedies 19

CHAPTER II

THE SAVING BY AVOIDANCE OF RELOADING OF TRANSFER, STORAGE AND INSURANCE CHARGES. Five Agencies to Transfer Grain. Congestion in Normal Seasons at the Terminals. The Seaway as an Aid to the Mid-West Farmer. Cheapness of Water Haul as Compared to Rail Haul 40

CHAPTER III

THE GREAT LAKES-ST. LAWRENCE SEAWAY WILL ABOLISH EXCESSIVE SHIPPING RATES. The Regions and Industries to be Benefited. Commodities to be Carried 59

CHAPTER IV

FAVORABLE INFLUENCE OF THE SEAWAY ON NEW ENGLAND. Also, Relief of Population Congestion on the Atlantic Seaboard 68

CHAPTER V

PAGE

THE GREAT LAKES-ST. LAWRENCE SEAWAY WILL HAVE JUSTIFIABLE USE. Present Commerce on the Grea Lakes and on the River. Answer to the Objection of Fog and Ice. Answer to the Objection of Restricted Channel Navigation 76

CHAPTER VI

THE KIND OF SHIPS THAT WILL USE THE SEAWAY, AND THE TYPES THAT WILL NOT. The Situation with Regard to Return Cargoes. The Influence of the Seaway towards Building up an American Merchant Marine. The Influence of the Seaway on Ship Building on the Great Lakes 91

CHAPTER VII

SECTIONAL OBJECTIONS TO THE ST. LAWRENCE SEAWAY IN THE UNITED STATES AND CANADA. Alternative "All-American" Ontario-Hudson Route and Objections to It. Comparative Benefits from the Seaway to Canada and to the United States 105

CHAPTER VIII

HYDRO-ELECTRIC WATER POWER INCIDENTAL TO THE NAVIGATION DEVELOPMENT. The Amounts Respectively Available to Canada and to the United States. The Interest in the St. Lawrence Power Development on the Part of the State of New York. Power to Which Canada Is Exclusively Entitled. Answer to Objection of United States Dealers in Coal 125

CHAPTER IX

PAGE

THAT WHICH IS ALREADY DONE TOWARDS SEAWAY COMPLETION AND THAT WHICH REMAINS TO BE DONE. A Review of Preceding Chapters. That Which is Already Done. That Which Remains to be Done. Six Sections of Operations from Duluth-Superior to the Atlantic Ocean at the Strait of Belle Isle 140

CHAPTER X

THE GREAT LAKES-ST. LAWRENCE DEEP WATERWAY TREATY OF JULY 18, 1932. Discussion of the Sections in Detail 152

CHAPTER XI

CHICAGO DIVERSION. The Treaty Concluded . . 164

CHAPTER XII

COST IN DETAIL OF THE GREAT LAKES-ST. LAWRENCE SEAWAY. Many Improvements Counted in Gross Cost Necessary Regardless of the Seaway Project. Comparison of Seaway Cost with That of Panama. The Seaway as a Public Works Administration Measure . . . 175

CHAPTER XIII

THE SEAWAY AND THE RAILROADS. The Seaway Would Not Detract Appreciable Traffic from the Railroads. It Would Aid the Western Lines. Seaway Vessel and Train Have Mutually Dependent and Non-Competitive Functions 186

CHAPTER XIV

PAGE

PORTS AND PORT DISTRICTS. The Seaway's Influence on the Great Lakes Ports. Ports Originating Exports and Ports of Distress. Coöperation with the Seaway of Great Lakes Ports. The Necessity of Port Commissions and of Port Districts 196

CHAPTER XV

THE UNITED STATES SHOULD COÖPERATE WITH CANADA'S PRESENT DISPOSITION OF WILLING COMPLIANCE. The Seaway is Primarily Desired in the United States. The "All-American" Ontario-Hudson is a Neither Desirable Nor Practicable Alternative Route . . 208

LIST OF ILLUSTRATIONS

1. The Acadia . . . . . *Frontispiece*

FACING PAGE

2. Great Lakes to Ocean Shipway Routes 32
3. The Lemoyne 48
4. The Buffalo 64
5. The Leviathan 80
6. Great Lakes–St. Lawrence System 96
7. The City of Detroit 112
8. Six Sections of Operations 144
9. The City of Baltimore 160
10. The Welland Canal 176
11. The Manhattan 192

THE GREAT LAKES–ST. LAWRENCE DEEP WATERWAY TO THE SEA

CHAPTER I

THE NECESSITY FOR CHEAP AND EASY OCEAN TRANSPORTATION FOR THE MID-WEST UNITED STATES. The Importance of Cheap Transportation in General. Mid-West United States Needs Deep Water Outlet to the Sea. Effect of the St. Lawrence Seaway Is to Bring Ocean Front to Mid-West. Measures Taken Towards Seaway Development. Unexpected Adverse Effects of the Panama Canal. The Question of Remedies.

AUTHORITIES—MacElwee and Ritter, Craig, Hoover, Player, Whiting.

The Importance of Cheap Transportation in General

THE wonderful development of manufacturing throughout the world during and after the War, rests upon transportation. Improvements in the physical means of transportation during the last half century have so extended the limits of commercial intercourse among nations that the interchange of products around the world is as freely accomplished now as was the local trade of a group of villages when this country was founded. The disposal of the surplus of American factories and farms abroad, has been the foundation stone of industrial progress by mass production in the United States. The future of America will be determined by the success of efforts to extend commercial relations with other countries for the disposal of this surplus production, and for the cheap reciprocal inflow of raw materials. Our factories no longer confine themselves to the fabrication of

raw materials found at their doors but they locate where some one great essential, wood pulp or cotton or rubber, for example, is easily and cheaply available, drawing the remaining essentials from all quarters of the globe and distributing the finished products to every land. Raw products are frequently imported many thousands of miles from distant lands and the finished manufactures return for consumption a part or the whole of the way to the countries of origin of the raw materials. Crude rubber from Brazil and long staple cotton from Egypt, as brought out by MacElwee and Ritter, find their way for example to the factories of Akron, Ohio, where they are made into tires and are thence exported to one hundred countries and provinces throughout the world. For American manufacturers to hold their own with competitors and rivals abroad not only is it necessary to keep up the superior quality of American goods, not only is it essential to have the latest improved machinery. Economical transportation between producing areas in the United States and foreign markets is one of the first requisites of a successful foreign trade. Improvements increasing the economy of overseas business are national in their character and directly contribute to the welfare of every citizen in the land. They are vital to the continuation of mass quantity production in the United States. The greater the efficiency in obtaining cheap transportation the greater will be our ability to meet competition in world markets, the greater will be our opportunity to remain a first-class power among the nations.

The demand for a deep draft waterway connecting the Great Lakes for shipping purposes with the Atlantic Ocean arises principally from the interior states of our own country and Ontario Province and sections in Western Canada, in which parts of the United States and of the Dominion a very substantial portion of the world's food supply is produced,

together with many other commodities entering into export commerce. These sections, in addition, originate shipments of a miscellaneous character in considerable volume bound for domestic seaports and their contiguous areas on the Atlantic Ocean. Since deep water transportation is generally accomplished at a small fraction of the cost of railroad haul, a persistent demand has existed for many years in these districts for the opening up of a deep draft water route to the sea so that their people may have the benefit of cheap water transportation for a large portion of their goods moving to and from the seacoasts of the United States and Canada and foreign points. While this demand has persisted over a very long period it has grown particularly urgent during the last twenty years. While price increases have affected domestic industrial output at various times, the fact that transportation rates by rail have enormously increased, up to 50 per cent as to the Mid-West United States within these last twenty years, and that the net price for the American and Canadian farmer is the world price less transportation cost, has prevented the agricultural population of the United States and of the Dominion from participation in any such increase. With the farmer therefore injured by the post-war readjustment process to a much greater extent than any other element of our population, it is obvious that any reduction to be effected in the cost of carrying agricultural products to their ultimate markets will benefit the farmer and will serve to reduce to that extent the disproportionate handicap that he now suffers.

The pioneer settlement of the Mid-West United States was peculiarly due to its natural waterways. Then came the railways, more efficient than the shallow barges and packet boats that plied the tow-path canals and unimproved rivers and these means of transportation eventually died out of importance in this country's economic life. But once more

science and engineering skill have brought about a revolution in river improvement, in canal building and in ship and barge construction that return to the waterways the shipment of many kinds of goods due to their far cheaper rates.

For the first time in history a great civilization of factories and farms has been built up between one thousand and twelve hundred miles from tidewater and the sea. Its location is in the Mid-West United States. The center of gravity of the population of the United States as found by the American Census has passed West of the Alleghanies long ago and now appears far away in the Mississippi Valley, namely in Indiana close to the border of Illinois. This shifting is the result of more than the agricultural colonization of the West of the United States taken as a whole. It is the result of the recent and intense industrialization of the Middle West. The development in these central states in its present phase has been even more of the factory than of the farm. The present American civilization is essentially characterized, it seems, in mass production with the proven ability of raising the living standards of millions. Such American mass production tends to be more and more confined to the States of the Middle West.

Mid-West United States Needs Deep Water Outlet to the Sea

The only examples of successful inland or river people in the past was in building up a civilization based on agriculture and pastoral pursuits. This interior American civilization is far more than agricultural and pastoral: it is highly industrial. Never before in the history of the world has the attempt ever been made by Man to build up an industrial

and highly complex civilization so far from tidewater as the Mid-West United States. All human history is a story of the seas. The best guarantee of the present and future greatness of the inland empire of the North American Mid-West, is in its clearing the channel-to-the-ocean in its very heart and in enabling that natural waterway to completely fill its purposes. Then this inland empire that has become the producing center of America, not only by the facts of the case but by the recognition of fair observers, will stand where all empires of duration have ever stood in the past, must in the present and in the future stand, on its own share of the world's ocean front.

That one-third of the people of the United States, inhabiting the Mid-West, could long send their surplus production to tidewater before shipment abroad and with profit to spare was due, no doubt, to an unusually high average intelligence among the people of the Mid-West United States and was due also to vast natural resources of the region in close proximity as coal and iron but was mainly due, it seems, to the fact that the people of the Mid-West United States had developed in advance of their competitors abroad. The producer abroad though closer to tidewater used crude methods. But now the time has come when the foreign manufacturer, forced to a degree of independence by the blockades of the World War, has applied many of the secrets of efficient production learned from the United States as well as having procured much machinery from here. And effective farming implements of American origin such as the reaper and binder have now become familiar to the producer of Argentina, Australia, Russia and India who along with every other foreign exporter of grain have far shorter hauls to tidewater and much less delivery cost than the farmer of the Mid-West United States.

Before this terrible recent depression, the world was beg-

ging for our products, able and willing to pay any price to obtain them. During the World War no price, no promise, seemed too great for foreign nations to pay for the supplies then urgently needed for the attainment of victory or for food where the production of it was brought to a standstill. While during this period the manufacturers of the United States were enabled to extend their trade into many new fields, Americans bought in return large quantities of raw materials in these lands and developed a trade of vast proportions which from various world forces has been fast drifting away. Needless to say, with the return of better times, Americans will meet the keenest sort of competition in their endeavor to regain even a part of this former trade. Having in mind the fact that our Labor, the most efficient in the world, has through long and bitter labor wars attained a standard of living that makes it justly more costly than the labor of most of the competitor nations of the United States, it is for the people of this country to take other means than the reduction of the living standards of Labor to place American goods in foreign markets as cheaply as foreign competitors place theirs. And while suitable tariff legislation has prevented the flooding of our shores with the output of foreign factories at prices with which our producers cannot compete, still all the more care must be taken on account of our tariff not to impose any greater shipping costs than we possibly can upon materials required in American industries. The most important factor, then, in regard to our ability to meet competition abroad, is cheap and economical transportation.

Many who visited the Century of Progress Chicago World's Fair last summer will remember the high circular structure of yellow and purple and green known as the Travel and Transportation Building. The thought which this exhibit meant to convey was, it seems, that Man's progress through

the ages is measured largely, if not first, by his increasing ability to cancel space and time: in the keen competition of modern nations to get their wares to their fellow-man by the shortest route, the earliest possible completion of the Great Lakes-St. Lawrence Waterway to the Sea is indispensable to maintain even the present world commercial position of the whole United States.

If industry or agriculture is distant from tidewater as in the Mid-West United States, then heavy costs of transportation to tidewater for handling, breaking bulk and reshipment must be either added to the selling price or subtracted from the producer's earnings. The result is waste, spread needlessly over agencies which separate artificially the producer from the consumer. The early pioneer of the American Mid-West had to produce almost everything he required but produced only enough to meet his needs. He had to be his own farmer and his own hunter and his own tailor and his own builder. He knew of no such thing as division of labor. He produced enough of each thing for the barest living and had no energy left for a surplus. Obviously it is the very essence of modern civilization that there should not only be production for local needs but an excess of goods available for exchange with people in other places. When the settlers of the Mid-West came to specialize in particular products and barter their surplus for others' surplus of some other thing, this exchange brought trade and the first step towards realization of the great modern industrial and commercial potentialities of this region began. It is the teaching of all history that trade or commerce is the very lifeblood of nations. There are two essential conditions to commerce, first the abundance of resources raw or made up, to sell. That first condition exists in the Great Lakes region of the Mid-West United States, still immensely rich in natural resources and efficient in mass production of the factory and

of the farm. The second and equally important condition of commerce is easy and direct access by cheap transportation to the markets of the world. Great natural resources and efficient production can assure fullest realization of potential economic life of the Mid-West only if shipping out the surplus is feasible and cheap. Nearly all of the Great Lakes freight is at the present time in bulk. There is also an enormous Lakes regional production in manufactured goods. It is impossible in general for either bulk commodities or the mass production of manufactured goods to pay high freight. If low rates cannot be conceded, the commodities of either kind simply do not move. In the landlocked area of the Mid-West United States much of the surplus output of factory and farm now burns or rots away for lack of a cheap and profitable rate to ship it out. When surplus cannot be shipped at a profit, needless to say, initiative slackens, factories close from the high cost of raw materials and people drift away. At the same time, across the sea from the landlocked area, many go hungry and ragged for lack of the wasting surplus mass production and abundant crops of the Mid-West United States. That is irony, for, as if Providence were lending a helping hand, it grants a natural waterway, 2,339 miles long, from the Mid-West productive area, through the Great Lakes and the St. Lawrence River to the Strait of Belle Isle and the sea.

While an immediate beginning of the St. Lawrence Seaway project is being urged to relieve one of the most devastating depressions that the United States and the Dominion of Canada throughout their history have ever had, by way of affording employment, there is an even more important reason why the Seaway project can relieve the depression. This depression is primarily due, it seems, to the undistributed surpluses of the farms, mines, forests and industrial plants. All the toil and expense of cultivation or manufac-

ture of commodities for commerce do not in themselves make value. Products in excess of the immediate needs of the community where grown or made have value only to the extent they can be transported to market. In depressions even more than in normal times, they must be moved from the place where they are of no use to the place where they are needed and wanted. Therefore, the need of normal times is paramount today, for a project or formula that will put value into those surpluses by lifting them above the horizon of profitable shipment to market. Through the St. Lawrence Seaway will be provided a transportation route, suitable for the cheap shipment of the raw and the manufactured products of the United States Mid-West and for the importation of the products of other lands direct to this consuming area. Furthermore new industries will be established on the banks of this waterway where all the raw material of manufacture can be assembled at lowest cost, or in other words with value added to goods. And lowering the cost of transportation of goods does more than add value. By lengthening the radius for profitable distribution it multiplies outlets and markets. The St. Lawrence Seaway is just such a project, bringing ocean shipping to the heart of the Mid-West United States and Canada, creating one-third more seacoast and adding it on to the Atlantic and Pacific Coasts, enlarging the outlet and releasing the productive energy of all the West; with the aid of railroads terminating on it and with these again supplemented by highways it will bring about a broad interconnection of numbers of great cities and their agricultural and industrial hinterlands, not only between themselves but between them and the Atlantic seaboard. Rendering possible the shipment of more goods, the St. Lawrence Seaway likewise makes possible the cultivation and manufacture of commodities that heretofore have been below the horizon of profitable production. No greater

opportunity has ever been presented to our country for the establishment of industries under such favorable conditions with respect to economical production and distribution.

The great and productive territory in the heart of the continent is situated at distances of 800 or 1,000 to 1,500 miles from the seaboard. In order that its commerce can be placed on ocean vessels to be taken to foreign ports, such commerce must proceed to tidewater by routes that have become excessively costly and unreliable. There is a handicap to successful foreign trade that is shared by none of the principal nations competing with the United States. The cost of transportation by rail has now reached the point where a haul of 800 or 1,000 to 1,500 miles across the country, completely wipes out the margin of profit on many commodities entering largely into our foreign trade and limits the markets for many others, with the attendant expense of transfer and terminal delays. It cannot be too strongly impressed upon those responsible for our national policies that either this condition must be soon eliminated or the foreign trade of the United States will be permanently impaired.

Effect of the St. Lawrence Seaway Is to Bring Ocean Front to Mid-West

For practical purposes the Great Lakes-St. Lawrence Waterway to the Sea is to take the Atlantic Ocean from the Strait of Belle Isle at the mouth of the St. Lawrence River and place it at the waterfront of Duluth, 2,339 miles in the heart of the continent, granting to the ports on this new seacoast

the full benefits of low ocean rates to the markets of the world.

With the Great Lakes forming an arm or estuary of the Atlantic for all purposes of commerce, their shoreline at once becomes a seacoast lengthening by thirty-five per cent the seacoast of the United States. The radius of ship operation will be extended, opening up to ocean vessels a score of ports already great on these inland seas, increasing cargo tonnage and thus employing more ships. The Seaway will go far in the direction of placing the Merchant Marine of the United States on a self-sustaining basis. The domestic share of the carrying trade will be reserved to vessels of American registry because under Title 46 of the United States Code, only such vessels can transport merchandise or passengers from one United States port to another. Between the ports of this new seacoast and the ports of the world, ocean transportation, namely the world's lowest cost transportation, will apply. Since distance from raw materials to factories and distance of finished goods to market is measured by rates for freight, the Seaway remakes the world transportation map. Besides adding value to the present products of industry and agriculture of the United States by reductions in freight, it will reveal, develop and create new markets, new industries and new businesses with all which that implies by way of increased purchasing power of the fifty millions of people on both sides of the international boundary line, of the Great Lakes tributary area. For the building of a seaway of the projected 27-foot depth to send ocean vessels from former lake ports out into the Atlantic will abolish the handicap of excessive shipping costs to a vast landlocked interior of the continent. The United States section of the St. Lawrence basin is itself about seven per cent of the total area of the entire country, but since ports here are the points of collection and distribution for tributary interiors where cheaper

rates to the shipper mean cheaper prices to the consumer, a vast proportion of the total area of the United States is directly concerned. This area within the United States, according to the Report of the United States St. Lawrence Commission of December 27, 1926, appointed by President Coolidge, includes all or large portions of the states of Ohio, Indiana, Kentucky, Illinois, Iowa, Missouri, Kansas, Nebraska, North Dakota, South Dakota, Montana, Wisconsin, Minnesota, Michigan, Pennsylvania and New York. The Seaway would also benefit the industrial part of Canada as well as the grain provinces west of the Lakes. The area to be directly benefited in the United States is the region of the basic industries of factories and farms where forty-five millions of our people get their livelihood, not including the eight millions of New England who with high cost of living and dwindling manufactures and commerce, also look eagerly to the completion of the Seaway for relief. The area tributary to the Seaway in the United States provides over one-half of the agricultural wealth of the nation and 48 per cent of its manufactures: in more detail 75 per cent of the wheat, 65 per cent of the corn, 100 per cent of the flax, 86 per cent of all its products of iron and steel, 90 per cent of all its automobiles, 39 per cent of the copper, 74 per cent of the zinc and 46 per cent of the lead products. Diversified industries line the shores of these Lakes, producing in great volume a wide variety of manufactures that contribute one-half of the country's entire foreign trade.

A great surplus is produced by this territory in normal times both from agriculture and manufactures, most of which require long transportation to market for sale. There is a reciprocal inflow to this region in normal times from customers at home and abroad. The interior sections of this area were under transportation disadvantages even before the Panama Canal, which, completed in 1915, reduced rates from

cities near the seacoasts of the United States but made shipping costs almost prohibitive from inland points.

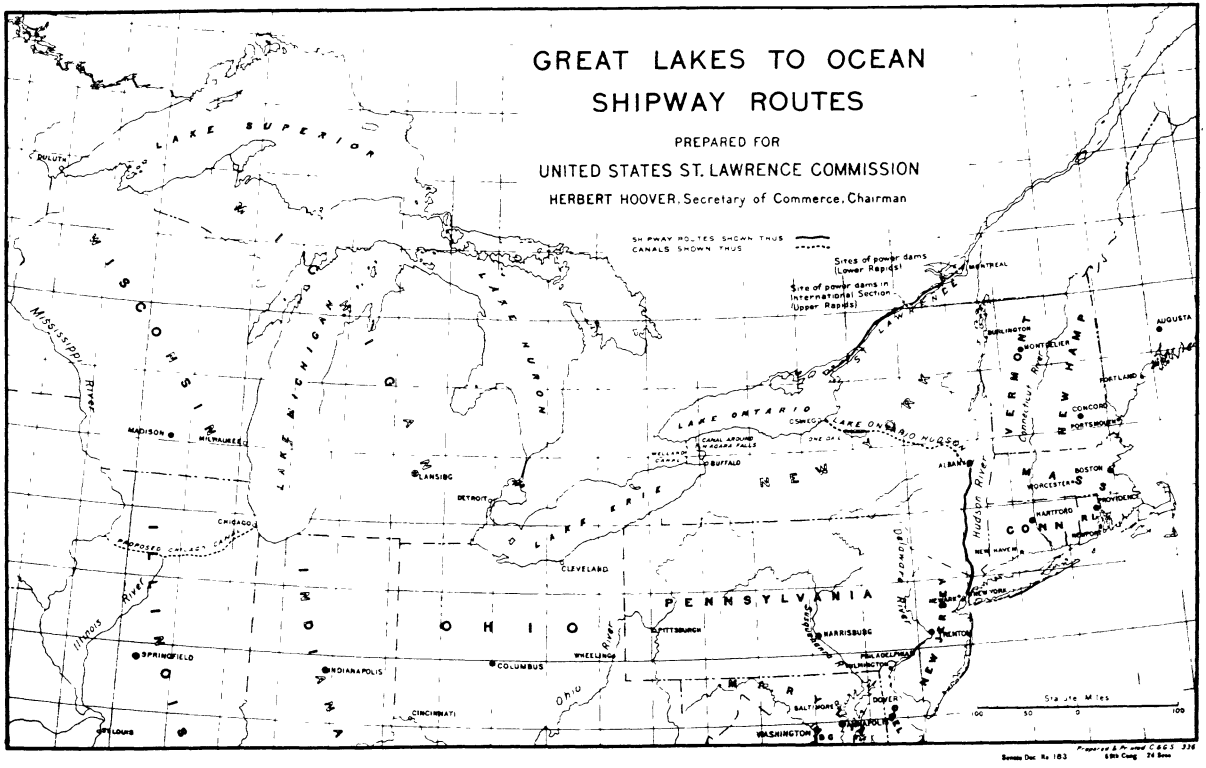
The estimate was made in 1926 by the United States Department of Commerce that completion of the Seaway would mean an average saving to the farmer of the United States of approximately six cents to the bushel on the cost of shipping grain to the markets of Europe. As a result of this saving the price enhancement of grain would hit almost the entire American crop since the price of grain is what Liverpool gives for the export surplus less shipping costs. The increased purchasing power to a great proportion of the continent's producers from savings on their shipments of grain and other things would substantially benefit the populations over the entire areas of both Canada and the United States. Furthermore, while in normal times high shipping rates mean only industrial and agricultural stagnation, with people able to find work elsewhere and drift away, in times of financial depression and abnormally low prices, the lowest possible cost of getting stuff to the consuming centers becomes a matter of real life and death.

Measures Taken Towards Seaway Development

On the Waterway the obstacle to deep draft vessels at Niagara Falls has been overcome by the new Welland Canal. The barriers in the St. Lawrence River remain for engineering skill to surmount and since mostly on the Canadian boundary, require joint and international work. The whole project, then, was jointly conceived between the United States and Canada. After the efforts and negotiations of many years the present plan originated in the report of an

International Waterway Commission appointed in 1895 to study the question of connecting the Great Lakes for shipping purposes with the sea. The International Joint Commission is a permanent body created in 1909 to investigate and arbitrate questions arising in the boundary waters between Canada and the United States. Several states, now numbering twenty-three, formed the Great Lakes-St. Lawrence Tidewater Association in 1919 to give life to the century-old ambition of connecting the Great Lakes for shipping purposes with the sea. While other states, especially in New England, have affiliated themselves with the twenty-three in this enterprise, the chief proponent of the proposal has been this voluntary association of states located in the middle and western sections of the United States. Its members represent an aggregate population of 45,000,000. The activities of this Association are supported entirely by public appropriations voted by the legislatures of these states. The Association, therefore, possesses an official character differing materially from ordinary organizations of this general type. While in addition to the Great Lakes-St. Lawrence Tidewater Association, many other organizations as well as individuals have independently supported the affirmative side of the question, this Association has directed most of the publicity and political effort in regard to the project. The New England-St. Lawrence Waterway Committee, an affiliation of separate committees representing the six New England states and organized in 1923 to make a comprehensive study and render an impartial opinion on the matter, has reported unanimously in favor of the Seaway project.

The Great Lakes-St. Lawrence Tidewater Association coordinated activity in behalf of its member states and was influential in obtaining the passage by the Senate of the United States of an amendment to the Rivers and Harbors


GREAT LAKES TO OCEAN
SHIPWAY ROUTES
PREPARED FOR
UNITED STATES ST. LAWRENCE COMMISSION
HERBERT HOOVER, Secretary of Commerce, Chairman
SHIPWAY ROUTES SHOWN THUS
CANALS SHOWN THUS
Sites of power dams (Lower Rapids)
Site of power dams in International Section (Upper Rapids)
LAKE SUPERIOR
DULUTH
MISSISSIPPI RIVER
WISCONSIN
LAKE MICHIGAN
LAKE HURON
MADISON
MILWAUKEE
CHICAGO
PROPOSED CHICAGO CANAL
ILLINOIS
SPRINGFIELD
ST. LOUIS
INDIANAPOLIS
COLUMBUS
CINCINNATI
OHIO
LAKE ONTARIO
LAKE ONTARIO-HUDSON
CANAL AROUND NIAGARA FALLS
BUFFALO
LANSING
DETROIT
LAKE ERIE
CLEVELAND
PITTSBURGH
WHEELING
Ohio River
PENNSYLVANIA
NEW
YORK
HARRISBURG
PHILADELPHIA
WILMINGTON
BALTIMORE
DOVER
WASHINGTON
MONTREAL
ALBANY
Hudson River
Delaware River
BURLINGTON
MONTPELIER
VERMONT
NEW HAMPSHIRE
CONCORD
PORTSMOUTH
AUGUSTA
PORTLAND
BOSTON
WORCESTER
PROVIDENCE
HARTFORD
NEW HAVEN
CONN
NEWARK
TRENTON
Statute Miles
100 50 0 100
Senate Doc. No. 183 69th Cong. 2d Sess.

Act of 1919 requesting the International Joint Commission above mentioned to report what further improvements of the St. Lawrence River between Montreal and Lake Ontario were necessary to make it navigable for ocean vessels together with the estimated cost. The International Joint Commission studied the St. Lawrence Seaway project, holding public hearings in twenty-five cities of fourteen states and in twelve cities of five provinces, and in 1921 recommended that the two countries enter into an arrangement by way of a treaty for a plan of improvement. This commission was assisted by an engineering board of two members, one appointed from each country. The findings of this engineering board were reviewed by a new and enlarged Joint Board of Engineers appointed by the two governments in 1924 comprising six prominent engineers, three of whom were designated by each country. These studies indicated that the improvement of the river as proposed would produce about 5,000,000 horsepower of hydro-electric energy that could be developed in its entirety or by progressive stages as might seem most desirable. In 1926 the enlarged Joint Board of Canadian and American Engineers submitted a report unanimously favorable on the engineering feasibility of the project.

The American members of the Joint Board of Engineers as a result of their study carried out between 1924 and 1926 favored the improvement of the International Rapids section of the St. Lawrence where the principal power development would be located, by a single stage plan, while the Canadian engineers proposed the construction of two dams. The Canadian plan after further study has prevailed in the treaty.

Meanwhile, the two countries appointed national advisory commissions. The United States St. Lawrence Commission was headed by Herbert Hoover, who was at that time the

Secretary of the United States Department of Commerce. Both of these advisory commissions reported that the development of such a Seaway was entirely feasible and practicable from a physical standpoint as well as being highly desirable if not absolutely necessary from an economic standpoint.

The efforts of twenty-three states to bring ocean rates to the marooned interior of the United States have finally resulted successfully in the present Treaty of July 18, 1932. The Treaty of 1871, granting the United States perpetual use of the St. Lawrence below the boundary, is basic to the present treaty which gives American vessels the same right to use the Welland Canal and other channels wholly within the Dominion. Canada receives in return a perpetual right to navigate American locks at Sault Ste. Marie and Lake Michigan. The Seaway Treaty of July 18, 1932, makes the waterway for navigation usage an international seaway throughout its entire extent.

Unexpected Adverse Effects of the Panama Canal

The Panama Canal was opened up in 1915 with the favorable outcome of drawing the Atlantic and Pacific seaboards economically closer together, but with the unexpected result that the entire middle region of the continent finds itself seriously handicapped in shipping rates. As brought out in 1926 by the St. Lawrence Commission of the United States, in terms of the dollars and cents it takes to carry a ton of staple goods and taking in every case the cheapest route, we find that before Panama, New York was $19.04 away from San Francisco while now it is only $16.80 away. In other words the Panama Canal moved New York $2.24

closer to the Pacific Coast. But Chicago, which was $26.10 away from the Pacific Coast before Panama, is today $29.46 away so that the Panama Canal moved Chicago $3.36 away from the Pacific Coast and in the same period $5.94 away from the markets of the Atlantic seaboard and South American ports. Or to express the matter somewhat differently, also according to the Commission, whereas the opening of the Panama Canal reduced the transportation costs between New York and San Francisco by as much as 11 per cent, the rate between Chicago and San Francisco was actually increased 13 per cent due to the disproportionately higher railroad rate involved in the case of shipments between the Pacific Coast and this Mid-West point.

The reason for this is easily seen. It follows from the fact that for long distances water hauls are enormously cheaper than rail hauls. A short rail haul to an Atlantic or Pacific port and a long water haul through the Panama Canal with a short rail haul to destination, means a relatively low shipping bill between two points near the opposite coasts of the United States. But a rail haul half or two-thirds of the way across the continent to or from points distant from tidewater of the United States, means a relatively high transportation bill. The Atlantic and Pacific seaboard points and their proximate hinterlands have, therefore, a relatively low transportation figure and a decisive advantage in buying power over their competitors of the Mid-West States whose costs must include higher hauling rates. Only one thing can restore the people of the Mid-West to parity in competition and that is to move themselves to tidewater or to move the tidewater to themselves.

In conjunction with Panama, the Seaway means broader commercial relations between markets and distributing centers on the Pacific Coast and those of the region tributary to the Great Lakes. Likewise, the markets and distributing

centers of the Gulf-Atlantic-New England coastal regions are also brought into closer business contact with the Great Lakes area. The Seaway will be of distinct benefit to the coastal and inter-coastal steamship services of the United States.

Then came the War with its shifts in great economic currents adversely affecting the Middle West that today make it doubly urgent to take advantage of the Great Lakes-St. Lawrence Seaway. The necessarily large advance in the rates of the railroads of the United States as a result of the realignment of values from the War contributes to this putting a row of toll gates around the Middle West, which, together with the Panama Canal as seen above and with ocean rates maintained at the low pre-war level, distort the economic setting of this section of the country. The advance in American railroad rates as a result of the War, has placed Mid-West agriculture and Mid-West industry in a new relationship to different parts of our country as well as to the world markets as a whole. It is not as if all trade routes had remained the same and all rates of transportation had advanced an equal amount. There is also a shift in the currents of trade and an unevenness of advances in rates that both work to the serious disadvantage of the Middle West.

This disturbance in relative rates affects agriculture more deeply than industry. The competitors in agriculture of the American farmer, to a large degree the producers of Argentina, Australia and India, are all, as already mentioned, much nearer to seaboard and ocean rates remain the same as before the War while rail rates in the United States on wheat, for instance, have increased in good times about 6½ to 12 cents a bushel. Foreign producers, therefore, reach European markets at less cost in proportion to pre-war costs than our Mid-West American farmers can. Though the short rail hauls of these foreign countries also show some increase,

their rise has not approached that to be met in this country by the producers of the affected area. If nothing were done to remedy the situation, certain types of Mid-West business would eventually be compelled to migrate to seaboard. The present tendency is to establish manufactures nearer to seaboard and farther from the heart of agriculture to the mutual disadvantage of both. Adverse rates do not apply wholly to goods shipped in and out of the Middle West but have unfortunate effects upon all interior distribution.

The Question of Remedies

Then the question of remedies arises. To alleviate the condition of the Middle West, fundamentally cheaper transportation must be found for the shipment of bulk commodities and raw materials exported from and imported into the Mid-West. With the relatively higher cost of labor and materials, no arbitrary and effective reduction in rates of the railroads of the United States can be made without ruin to that vital system of transportation. Having reached the highest degree of efficiency in their history, the railroads must not be arbitrarily reduced from that condition. Also it would be folly to close the Panama Canal. Also to raise Atlantic ocean and other sea rates is entirely out of question because the standards of living in the rest of the world have not fluctuated as our own over pre-war standards. A study by the Department of Commerce of the United States has shown the plight of the Mid-West to be attributable to no one cause but to a combination of factors operating adversely to the interests of that region.

In any examination of the country for remedies, the most

striking characteristic is the marvelous natural setting of waterways, the deepening of the Great Lakes-St. Lawrence system of which would render access of ocean shipping to its inland ports. The Great Lakes are even today in their restricted state, the greatest system of inland transportation in the world. The vast fleet of ships they have developed under handicaps carry a freight tonnage amounting to more than twenty-three per cent of the total freight ton-mileage of all of the country's railroads. The Great Lakes' depths are sufficient to bear ships of ocean size. But ocean going vessels cannot move through the 12-foot Erie and 14-foot St. Lawrence canals that connect the Lakes with the sea. These incomplete links to the sea require that exports and imports shall be reloaded at least twice and also that a part of the journey shall be made in more expensively operated craft, causing a definite handicap on goods in transit between the Mid-West United States and Atlantic seaboard points along with those abroad. It seems that the solution of the shipping problem of the Mid-West United States lies in no longer regarding the transportation system from Duluth-Superior to the Strait of Belle Isle as a series of disconnected lakes, canal and river projects, but rather in visualizing it as one great connected highway of transportation to and from the sea.

Though Manchester, Amsterdam, Ghent and Antwerp abroad have each had to build their own separate canal for access to the sea, by the economy of North American geography the completion of this one Seaway connecting the Great Lakes with the Atlantic would serve an area including great American and Canadian cities of enormous industrial strength. Conferring the advantages of an ocean base upon the ports of the Great Lakes means nothing more than the rendering of justice to the economic and social welfare of fifty millions of people residing on both sides of the interna-

tional boundary by placing the interior of the continent in a position to compete in world trade on equal terms. It is indeed inevitable that the Great Lakes shall be opened to the sea and that their ports shall take a direct part in the ocean trade of the world.

CHAPTER II

THE SAVING BY AVOIDANCE OF RELOADING OF TRANSFER, STORAGE AND INSURANCE CHARGES. Five Agencies to Transfer Grain. Congestion in Normal Seasons at the Terminals. The Seaway as an Aid to the Mid-West Farmer. Cheapness of Water Haul as Compared to Rail Haul.

AUTHORITIES—Arthur Cyril Player of the Detroit *News*, McManus, MacElwee and Ritter, Drury, Whiting.

Five Agencies to Transfer Grain

THE transfer of grain from the head of the Lakes to the hold of the ocean vessel in the harbor of Montreal involves five agencies under present conditions. The first agency is the Lakes head elevator where the grain is received from the railroads, cleaned, blended, stored and finally discharged into the holds of the upper lake type of vessels. The second agency is these great and highly specialized boats often 600 by 60 by 21 feet, with engines, boilers and coal bunkers placed in the stern, with the hold a series of great bins, extending the full breadth and depth of the ship and with the capacity to carry half a million bushels of grain. These boats under present conditions carry the grain to Port Colborne or Buffalo or take it through the Welland Canal and down the St. Lawrence River to Prescott. The third agency is the transfer elevators now situated at Buffalo or Port Col-

borne where modern mechanical devices unload the grain at the rate of 20,000 bushels an hour from the upper lakers and load it into the canal boats or lower lakers. This reloading would be avoided by the completion of the St. Lawrence Seaway. The fourth agency in this trade is the canal boat or lower laker, in general design and appearance like the vessel on the upper lakes but limited in size by the locks in the St. Lawrence canals, not to exceed 253 by 43 by 14 feet, with a carrying capacity of only 90,000 bushels. This boat is much less efficient as a freight carrier than the upper laker, the cost per ton-mile being almost four times as great. This smaller vessel seldom goes to the head of the Lakes but usually receives its cargo from the transfer elevator and carries it through to the assembling elevators on the harbor front of Montreal, that constitute the fifth agency in the chain where ocean vessels take orders in detail for their ultimate market and where these assembling elevators serve as a sort of exchange counter for the meeting of cargoes and of ships.

The grain and other cargo of the Mid-West United States is moved by rail for reloading on Lakes steamers at Duluth and Chicago. The Upper Lakes district at present floats vessels of 20 feet draft. The new Welland Ship Canal can take steamers up to 25 feet draft, its locks having a 30-foot depth in anticipation of future needs. As already told, the St. Lawrence channel from Montreal along 1,003 miles to the sea has a 35-foot channel. But vessels of 20-foot draft must stop long before reaching Montreal and this channel. Barely out of Lake Ontario from the head of the St. Lawrence Rapids to Montreal only vessels of 14-foot draft can navigate the so-called Bottleneck in the present Great Lakes-St. Lawrence transportation system. Thus it is obvious that at the Welland Canal or Buffalo or at some other point at the foot of Lake Erie or somewhere on Lake Ontario the ship-

ments must be broken and transferred to smaller vessels or rail for the purpose of advancing the commodities towards ocean shipside. Due to the necessity for boats of small draft to navigate the shallows in the waterway at present, the cargoes must be reloaded back and forth from barges to elevators and vice versa several times before reaching ocean vessels at New York or Montreal for transit to Europe. Whichever method of transshipment is employed, each rehandling means more delay as well as expense for transfer and storage and insurance at every traffic breaking point. The cost is added to the market price of the cargoes and eventually subtracted from the producer's earnings. Reloading drawbacks are not imaginary: they are very real.

Congestion in Normal Seasons at the Terminals

There is more difficulty from reloading than the transfer cost. In normal seasons grain seeking the St. Lawrence route flows down to the transfer elevators at the lower Lakes ports faster than their capacity to receive it, and this applies also to the elevators farther down the route at Montreal and the small bulk freighters. The congestion in the fall months becomes so great as to seriously retard the moving of the crop to seaboard so that a portion of it must remain in storage in elevators on both the upper and lower Lakes for expensive forwarding by rail. Delay is cumulative since barges forced to wait at these transfer elevators are precluded from returning in good time for further loads to points where most needed. The result is ever increasing congestion at the lower Lakes points of transshipment, meaning increasing port expenses through delayed turn-around of the

ship whose crew maintenance and overhead continues along whether the vessel is efficiently transporting cargo or waiting for days in line. The hardship comes back on the producer of ever higher and more prohibitive rates for the carrying of grain.

As to what would happen if the St. Lawrence River were improved for navigation in accordance with the plans, the canals and locks and waterways between Montreal and Lake Superior would be made wide enough and long enough, to accommodate the large size ocean freighters and would permit these vessels to take on their cargoes at the head of the Lakes and to go right on through to destination without the necessity of breaking bulk. It would also permit the upper Lakes steamers to pass on to Montreal to discharge their cargoes. After the Seaway is finished, these strictly Lakes vessels will cause one reloading, that at Montreal, but aside from that the Seaway reduces loadings to Europe to just one for formerly three. Over the deep 27-foot channel, steamers will glide past the reloading stations that now consume profits by expense and delay. Furthermore, access all the way up the Lakes would be granted at the same time to 88 per cent of the entrances and clearances at our ocean ports, excluding combination passenger-cargo ships and tankers, comprising over 81 per cent of the deadweight tonnage, including transoceanic and coastwise vessels now entering American ports. The 75 per cent of all transoceanic vessels able to navigate the 27-foot channel need be loaded just once for direct transit abroad. Benefits will not stop here. The dividing line of traffic between the Atlantic and Pacific coasts will be definitely moved westward in favor of the Atlantic so that a good deal of grain now going out by way of Seattle and Vancouver will come eastward with lower rates to the benefit of the producer and the two countries generally. The only interests to lose their present importance by Seaway

completion will be those of the small and higher cost boats of the present St. Lawrence side canals and the transfer elevators at Buffalo or Port Colborne.

As we shall later see the tonnage normally passing over the system of Great Lakes each year exceeds that of the Panama and Suez Canals combined, with the port of London thrown in for good measure, and yet it is not so much the total amount of tonnage that counts in reckoning the economic value of the St. Lawrence Seaway. That this Waterway when achieved will open up a new outlet for surplus goods is the fact that mainly counts. With this new outlet reducing the ultimate cost of goods the saving will be spread over both ends of the trip. At the point of shipment the competitive position will be so much improved as to cause to arise a circle of new potential original points for the profitable production, manufacture and shipment of goods and lying to the interior from the prior point of origin for profitable shipment. At the point of destination savings from cheaper cost of shipment will not only be felt in lower cost of living there, but at the same time there will spring into being a circle of new potential destination points or brand new markets beyond the prior destination point and still within the range of profitable shipping. So the Seaway when completed will open up a vast number of new combinations of routes that either lessen the cost of getting goods to present markets or open up new markets at one end of the trip and new productive areas at the other. Indeed the St. Lawrence Seaway will extend the area of production and profit out of all proportion to the tonnage moving through this particular outlet.

The magnitude of the possibilities contained in the tidewater enterprise are such as to make its influences when completed world-wide rather than local in their scope. As a rapid glance at the map will show, the distances between

two ports of the United States often comprise as great a journey as that along the coasts of several different nations of Europe. And a trip from Duluth to Seattle by way of the St. Lawrence Waterway would be almost the equivalent of paralleling the entire coast of continental Europe. Proportioned to the dimensions of the land it penetrates it is a seaway on a grand scale. Nature created it with Man having only to develop it to meet his needs. The chain of Great Lakes and their navigable connecting waters starting 2,339 miles from tidewater in the remote regions of the continent and flowing down to the sea is today within a short distance of realizing its destiny as the most useful seaway in the world.

The Seaway as an Aid to the Mid-West Farmer

The completion of a deep waterway connecting Great Lakes ports with the Atlantic is generally regarded throughout the central west of the United States as an achievement that will contribute enormously to the entire development of that region. While it is asserted that it will confer great benefits on the manufacturing industries of the Middle West and will stimulate the growth of Lakes ports and of Lakes shipping, the Seaway is most strongly advocated as an aid to agriculture. Provision for farm relief by way of a direct outlet to the sea, it is contended, will not only result in lower transportation rates, but will thereby operate to raise the price paid farmers for the domestic portion of their crops, since the price of agricultural products having an export surplus is in general determined by subtracting transportation costs from the world price.

The United States and Canadian territory tributary to the

Great Lakes is the most important grain producing area in the world. Of the world production of all kinds of grain in recent years, varying between twelve and one-half and fifteen billion bushels, the amount produced in sixteen states shipping by way of the Great Lakes and in the Canadian Provinces of Alberta, Saskatchewan and Manitoba during the period 1919-1923 averaged 32.2 per cent of the total of the world.

A cheap outlet for surplus is a requisite of farm prosperity and on the prosperity of the American grain farmer is based in great part the economic prosperity of the United States. Ever subject to the invariable law of supply and demand, his products unlike manufactured goods cannot be stored for long to wait a favorable market. For usually forced to count on bank help to harvest his crop in the busy part of the season, he must make a prompt sale of his grain to meet his debts. His products are subject to the law of supply and demand not only at home but as affecting the world price. His having to place his surplus in foreign markets in competition with other producing countries determines what he gets at home as well as what he gets abroad, for what he gets both at home and abroad is the world price less what it costs him to deliver the grain. Not only is the cost of transportation a deduction from the farmer's return at the world markets but the price at which he realizes from his surplus in foreign and seaboard markets influences the price of his whole product so that the effect of increased transportation rates to these markets is far greater than the bare amount exported out of the Mid-West. An enormous sum when applied to the nation's crops, it is one of the main contributing causes of the difficulties of the American farmer after the War.

The present delivery cost to the American farmer puts him at a very serious disadvantage with the producer of

Argentina, Australia, Russia and India. Every foreign producing country at present is far closer to shipside than the American farmer, the distance abroad being from 200 to 500 miles from where the grain is grown to the sea. In the United States and Canada the wheat belt is at least that distance from the head of the Lakes, and grain must then travel 2,339 miles down the Lakes to tidewater. Shipments must be broken several times with charges for transfer, storage and insurance and with more expense in shipping the grain a considerable part of the way by small barges or by rail. All these charges subtracted from the world price the farmer must meet leave the margin between profit and loss so hazardous that the American producer gets very little or nothing or even debts for his painstaking efforts. It should be further remembered in this connection that the agriculture of the American farmer is based upon higher standards of living than that of his foreign competitors. If we would maintain these standards, we must omit nothing in the economies we can bring about in transportation. Every cent he can save in transportation to market is an addition to the income of the American farmer and an assurance that he can maintain the present high standards in American agriculture. This problem does not apply to agriculture alone. We must provide our manufacturers and our workmen with the most economic assembly of the raw materials they must receive from all parts of the world, and we must provide them with the cheapest access to the world markets for their finished goods if it is to remain possible for American Labor to maintain its present high standards of living as compared to those of competitors abroad. This purpose can be accomplished only by providing farmer and worker alike with the cheapest possible water-borne transportation. The completion of the Great Lakes-St. Lawrence Waterway, by making the head of Lake Superior identical

with the sea and in offering savings of from 10 to 50 per cent on the shipping cost of grain, is the only conceivable way of meeting the geographical handicap of the American farmer so as to put his grain belt on a competitive basis with that of the producer abroad. With the farmer getting at least one-half of these savings, with another portion going to the transportation agencies and a small balance to the European consumer, it is clear that the Seaway promises an entirely new phase of American farming, with the farmer prosperous again and not crushed by financial burdens.

Taking the figures of Alfred H. Ritter, transportation and port expert, over the representative years 1921, 1922 and 1923 as to the origin of grain,—wheat, oats, corn, barley and rye—from the various producing states, they show an average annual shipment of 476,700,000 bushels to North Atlantic ports including Montreal and Quebec, 98,900,000 bushels to Gulf of Mexico ports and 65,800,000 bushels to Pacific ports, a total shipment to seaboard of 641,000,000 bushels of which 550,000,000 bushels were for export. The normal grain production in the area tributary to the Great Lakes is 3,925,000,000 bushels. It is conservatively estimated by rate experts that farm prices on grain would be improved by transportation through the Seaway as much as six cents a bushel as far south as Wichita, east of south-central Kansas, and almost as far north and west as Teton, Montana, in the northwest central part of that State. It is further conservatively estimated by experts on rates that farm prices on grain in territory north of Kansas City, north of west-central Missouri and east of Frazer in northeastern Montana should be benefited from 7.2 to 12.1 cents a bushel assuming the full saving is reflected in the farm price. But supposing this not to be the case it is still conservative to estimate that farm prices would be improved to an average minimum of five cents a bushel throughout the entire Great



Courtesy of the "MacLean's," Toronto

CANADIAN STEAMSHIP LINES

This greatest of "upper lakers," the "Lemoyne," has had its operations extended to Lake Ontario by completion of the new Welland Canal in 1932 and by Seaway completion could go to Montreal and on to the sea.

Lakes-St. Lawrence tributary area. That area includes all of the territory north of a line including the northwestern halves of New York and Pennsylvania, all of Ohio, the northwestern half of Kentucky, northern third of Arkansas, northern three-quarters of Oklahoma, the Panhandle of Texas, the line including north northeastern New Mexico to touch the southwestern corner of Colorado and including the northeastern half of Utah, the eastern half of Idaho and nearly the whole of Montana and comprising also within this area the whole of Indiana, Illinois, Michigan, Wisconsin, Iowa, Missouri, Kansas, Nebraska, the Dakotas, Wyoming and Colorado.

Now conservatively assuming that the farm prices on grain were to be improved to an average minimum of five cents a bushel on each of the 3,925,000,000 bushels of the normal yearly grain output throughout this Great Lakes tributary area in the United States, that enhancement would mean $196,250,000. The total feasible saving on the cost of transporting the grain moved to seaboard in normal times is estimated by Alfred H. Ritter, the transportation and port expert, to be $44,000,000 more, which added to the price enhancement of the normal 3,925,000,000 bushel crop conservatively figured at five cents to the bushel as $196,250,000 makes a gain of $240,250,000 on the grain crop alone of the stranded area in the United States for one year—against what we shall see to be the net cost wholly attributable to the Seaway to this country of about $126,000,000 over a period of construction of seven years. Price enhancement hits not only the export grain but the entire crop of the tributary area above described since the price of grain within that area in the United States is the world price received for the American surplus abroad less delivery costs. With about one-quarter of the total grain crop of the United States produced in regions outside of the tributary area above de-

scribed, three-quarters of the total output of the country is subject to price enhancement through improvements of Great Lakes-St. Lawrence rates.

The St. Lawrence Waterway will not only encourage the development of this particular agricultural and industrial territory tributary to the Great Lakes, important though it is. It will not only stimulate the foreign and domestic commerce of this particular region. In providing better transportation and communication between this territory and points on or near the Atlantic, Gulf of Mexico and Pacific coasts through new outlets for surplus goods, in lowering the cost of living by facilitating a reciprocal inflow of trade, and in making profitable new production at one end of the trip and new markets at the other, it will benefit directly or indirectly the entire extent of the United States. The St. Lawrence Seaway is as indispensable, in short, to the people of the United States and Canada as the English Channel is for navigation to northern Europe, as the Straits of Gibraltar and the Mediterranean are to the people of its South and as the Dardanelles and Bosporus are to the people of Russia and the Balkans.

Cheapness of Water Haul as Compared to Rail Haul

An outstanding reason rendering the transportation of many farm and factory products cheaper by water than by rail and thus affording both relief and stimulus to agriculture and industry, is the fact that while the advance over the years in cost of labor and materials has necessitated great increases in our railway rates, the increased costs are less in the case of water-borne traffic than in rail traffic because labor

and material are employed there in less ratio to the tonnage carried.

The cost of shipment by rail so greatly exceeds the cost of shipment by ocean vessels that conservatively speaking, the cost of transportation over long distances by ship as compared to rail is often in the ratio of ten miles by ship to one by rail. It often happens that a difference of 50 to 100 miles in haul by rail may be equivalent in rates to a difference of from 500 to 1,500 miles of ocean haul. The rate on certain commodities from Australia to New York, a distance of over 12,000 miles, is no greater than the rail rates from Chicago to New York for 912 miles. The rail rate on a bushel of grain from Kansas City to New York, 1,342 miles, exceeds the ocean rate all the way from Sydney, Australia, to Liverpool, or 14,050 miles. To carry wheat from New York to Liverpool costs less than it does to carry the same wheat from Buffalo to New York. The rate from Atlantic ports to Europe for a haul of about 4,000 miles averages in normal times about 8 cents a bushel or two cents a bushel for every thousand miles, and less than for about 400 miles of distance between Buffalo and New York.

Charles P. Craig, Executive Director of the Great Lakes-St. Lawrence Tidewater Association, has worked out the table on page 52 showing the marvelous practical value of the St. Lawrence Seaway as to shipments between Cleveland, for example, and foreign points.

In point of miles from Cleveland, the Seaway is 556 miles shorter to Liverpool, than via New York; 591 miles shorter to Copenhagen, key point to north Europe and Baltic ports; 104 miles shorter to Bishops Rock, key point to East Coast of England and northwestern European ports—London, Hamburg, Antwerp, Rotterdam, etc.; 71 miles shorter to Gibraltar, the key to southern Europe, Mediterranean ports, East Coast Africa, India, Straits Settlements and East Indies.

Key Point	*Market*	*Miles via Seaway*	*Miles via N. Y. Harbor*	*Miles shorter via Seaway*
Liverpool	Western England	3,735	4,291	556
Copenhagen	North Europe and Baltic ports	4,421	5,012	591
Bishops Rock	Northwestern Europe. London, Hamburg, Antwerp, Rotterdam, etc.	3,859	3,963	104
Gibraltar	Southern Europe .... Mediterranean ports, East Coast Africa, India, Straits Settlements and East Indies	4,199	4,270	71
				Miles shorter N. Y. Harbor
Pernambuco	East Coast So. America Rio de Janeiro and Buenos Aires	5,461	4,842	619
Colon	Pacific Coast ..... West Coast South America, Hawaiian Islands, Philippine Islands, Orient, Australia and New Zealand	4,167	2,857	1,310

In point of miles from Cleveland, the Seaway is 619 miles longer to Pernambuco, the key point to East Coast of South America, and the ports of Rio de Janeiro and Buenos Aires; and 1,310 miles longer to Colon, key point to Pacific Coast, West Coast South America, Hawaiian Islands, Philippine Islands, Orient, Australia and New Zealand.

In appraising the comparative merits of different routes two elements beside distance must be considered—cost and time in transit; each, of perhaps greater importance than distance.

From Cleveland to Montreal—528 miles—there will be a 12-hour detention in transit, due to passage of fifteen locks and 36 miles of canal. Converting that 12 hours of ship time into miles, using an average ship steaming 12 miles per hour, requires us to add 144 miles to the distance from Cleveland over the Seaway route in each instance.

Over the New York route, 584 miles is by rail, and it is

conservative to say that the cost of movement over long distances by ship as compared to rail is in the ratio of ten miles by ship to one by rail. Our 584 rail miles from Cleveland to New York Harbor are in point of cost of movement, equal to 5,840 ship miles. Disregarding delays due to transfer to ship and port charges in New York Harbor, but giving effect to ship detention via the St. Lawrence route, due to locks and confined channel, adding 144 miles to 3,735 we get 3,879 miles, and converting rail miles via New York into ship miles via the Seaway, subtracting 584 from 4,291 and adding 5,840 instead, our comparative distance tables, so adjusted and corrected, become as follows:

Key Point	*Market*	*Miles via Seaway*	*Miles via N. Y. Harbor*	*Miles shorter via Seaway*
Liverpool	Western England	3,879	9,547	5,668
Copenhagen	No. Europe and Baltic Ports	4,565	10,268	5,703
Bishops Rock	Northwestern Europe and Eastern Coast England	4,002	9,219	5,217
Gibraltar	Southern Europe .... Mediterranean ports, East Coast Africa, India, Straits Settlements and East Indies	4,343	9,526	5,183
Pernambuco	East Coast So. America	5,605	10,098	4,493
Colon	Pacific Coast ..... West Coast South America, Hawaiian Islands, Orient, Philippine Islands, Australia and New Zealand	4,311	8,113	3,802

Cleveland now enjoys a considerable coastwise and foreign business. No one will question the great stimulus to existing business, and to the creation of new industries—especially those engaged in coastwise and foreign trade—which Cleveland, in common with other Lake ports, will feel by the establishment of a sea base in mid-continent.

Cleveland, a seaport—directly connected with world markets by ocean ship—fires the imagination. It presents potentialities to conjure with; it will present *problems* for Cleveland.

The distances to Gibraltar are almost identical from Montreal and New York. While it is approximately equidistant from the Great Lakes ports by water to Montreal as it is from these ports to New York by rail, it is no farther from Montreal to Gibraltar than it is from New York to Gibraltar and Montreal is also no greater distance than New York from all of the Mediterranean ports and from those of the Black Sea. In other words, all of southern Europe, north Africa, the Near East, south Russia and India are just as close to the Great Lakes ports by the all-water route as by the rail-and-water route through New York. When one considers all of the rich area of northwestern and northern Europe and Russia, the North Sea and the Baltic Sea ports, the advantage is distinctly in favor of the St. Lawrence route by several hundred miles. Therefore, port expenses and steaming time of any two ships being equal, when the St. Lawrence Seaway is once opened, the Great Lakes ports would have an *advantage* over New York in time and distance to all northern Europe and the British Isles and an *equal* chance to southern Europe, north Africa, the Near East and India. And then, considering in addition the enormous cost of getting goods in normal times through the congested port of New York and the possibilities of building modern ports on the Great Lakes, the advantages to shippers by Seaway over shippers by rail are too evident for argument.

Certain articles such as canned goods and some products of iron and steel are shipped from Atlantic to Pacific ports at distances of 7,000 miles for 40 cents per hundred pounds. The same commodities can be shipped only 500 miles for the same amount by rail of 40 cents per hundred pounds.

Corresponding rates for wool are 90 cents as against $3.05, for drugs and chemicals 90 cents as against $2.10, for hides $1.25 by ship as against $2.70 for the railroad rate. And it does not even follow always that freight sent by rail travels faster than the water-borne freight. The railroad train must also gather a load, fill space in not one receptacle but in a vast number of cars and spend time and money at way-stops and terminals, or in other words in port. The objection of slowness of travel, therefore, applies to some railroad freight as much as to water-borne freight and cannot be any sort of an argument as to the kind of freight that the Seaway is mainly being built to serve, namely freight that has to take to water eventually anyway to reach its destination. Situations where the high value of the cargo such as that of silk represent such a large investment that the shipper can save by speed in interest more than he spends on fast rail freight as well as making sure of a high price on the market, are the exceptional cases. From London to Genoa by water is 2,500 miles or 2½ times the distance by rail and yet the usual custom is to ship by water from London and not by rail. From London to Constantinople the distance by rail is 2,176 miles. Regardless of the saving by rail of 1,600 to 1,700 miles over the trip by water, the main freight traffic between the two cities is around Europe through Gibraltar by water and not through Europe by rail.

One of the most significant features of the international competitive position is the tremendous distance between the North American and Canadian wheat fields and the seaboard. Though, broadly generalizing, wheat shipments are on approximately even footing in the international market when they are once on a navigable open ocean, the haul of the wheat of Canada and the United States to tidewater costs much more than the long ocean haul. It is this costly rail haul that constitutes the handicap which the Middle West

suffers and from which the Seaway is planned to give relief.

How an industry can be wiped out of existence by adverse rates is seen in the tragic case of Minneapolis whose primacy as a milling center has passed to Buffalo. The great milling houses of Minneapolis are scattering over the land for cheaper access to markets. And herein lies the secret of that city's plight, that an equal amount of money spent on the freight to get wheat from the spring belt of Minnesota, the Dakotas and Montana to Minneapolis would get the wheat to water at Duluth and Superior one hundred forty miles away, with six cents per hundred pounds added to shipments consigned via Minneapolis to Duluth or Superior to cover this extra haul. Or the rate on wheat or flour all-rail from Minneapolis bound for the Atlantic Seaboard or New York, Pennsylvania or New England points is about nine cents per hundred weight higher than the rate on the same amount of wheat or flour to the same points by steamer down the Lakes from Duluth or Superior. And Minneapolis loses the milling trade because it is cheaper to ship the wheat through Duluth or Superior to Buffalo and have it milled there. In 1916 Minneapolis' output of flour was 18,541,650 barrels, but by 1931 had dropped to scarcely over 9,000,000 or only one-half of that amount. The export of flour of Minneapolis, amounting to 4,702,000 barrels back in 1900, had dropped by 1931 to 1,517 barrels!

Just as the region of Minneapolis has been decisively beaten by Duluth and Superior on account of rates, so will the North American grain producing region be defeated by Argentina, Australia, Russia, India and other more favored close-to-tidewater competing regions if nothing is done. The cost of getting wheat to the sea, therefore, has an important relation to the future of Canada and the United States as exporters to the competitive wheat market of the world.

Where excessive freight rates take from what the producer receives for his grain on the one hand, on the other they add to the price the consumer must pay and create in effect for both of them a burdensome tax. It is the purpose of the Seaway in saving excess transportation costs to both producer and consumer to cancel this tax.

There have been objections to the Seaway that exports and imports have almost entirely disappeared. As other financial depressions have all had an end, so out of the present chaos of world trade will come in the comparatively near future an orderly development of international commerce with vast assembling and distribution of goods. But when the depression ends it seems that many countries once affording extensive markets for American goods will be patronizing their own industrial equipment. And furthermore, the days are past when the United States could find relief for their people in the opening of productive virgin territory or in the large-scale exploitation of some other natural resource. It is likely, therefore, that this country will have to meet the next era of international exchange of goods on a basis unparalleled in its history for intensity of competitive conditions where national efficiency in distribution will be a condition of vital importance to the survival of American trade. To enable the United States to meet impending competition, transportation routes must be developed for the distribution of commodities within the nation and overseas along the lines of least possible cost resistance. That means that the arm of ocean comprised in the transportation system of the Great Lakes and the St. Lawrence must penetrate the interior of the continent to the greatest feasible and practicable extent.

The age-long struggle of landlocked peoples of all places and of all times to gain access to the sea rests upon the fact

that oceans while physically dividing continents and peoples commercially unite them—truer now than ever before since goods once aboard present day ocean vessels move to their destinations in many cases at ten times less cost than over equal distances by land.

CHAPTER III

THE GREAT LAKES-ST. LAWRENCE SEAWAY WILL ABOLISH EXCESSIVE SHIPPING RATES. The Regions and Industries to be Benefited. Commodities to be Carried.

AUTHORITIES—Player, Hoover, McManus, MacElwee and Ritter.

THE shortest distances from any point on the Ohio River or Great Lakes to England and the rest of northern Europe is by way of the St. Lawrence River. Buffalo, Cleveland, Toledo and Detroit, Quebec, Montreal, Kingston and Toronto, as important commercial centers of the Middle West United States and of Canada, already on the water, are situated on the most direct shipping route to Liverpool that nature can provide, a latitudinally straight line. The Canadian ports of Fort William and Port Arthur on Lake Superior as well as Duluth and Superior in the United States on that lake and Milwaukee and Chicago on Lake Michigan are slightly removed from this latitudinally straight line. And yet Chicago is more than 2,000 miles closer to Liverpool by the Waterway than by the Illinois and Mississippi Rivers through New Orleans.

Although the Great Lakes commerce represents everything the enormous Inland Empire of the Mid-West United States produces in raw and in manufactured goods and all that it consumes in exchange for its surplus, the most important

export traffic that may be expected to utilize the Seaway is grain and the products of grain including flour and meal, hominy and grits, starch, glucose and corn sugar and other cereal foods.

The shorter the rail haul in a shipment involving both rail and water haul the smaller, generally speaking, will be the total of the transportation bill. And the resulting lowering of freight costs is of the greatest importance under present conditions of the keenest competition in trade when the difference of a few cents of freight may cause the diversion of business to a competitor more favorably situated as to ocean transport. Furthermore we must have the Great Lakes-St. Lawrence system completed in order to secure that volume of tonnage and variety of craft that is necessary to most economically carry the varied products and to care for the seasonal ebb and flow of goods.

On the basis of freight rates it will be more desirable to ship to Great Lakes ports and then by the Waterway over the sea than to Atlantic ports and then abroad, throughout the western portions of New York and Pennsylvania, all over Ohio, Indiana and Illinois, practically all of western Virginia and Kentucky and from as far south as Nashville, Tennessee. The total territory to be benefited by the St. Lawrence Seaway in the United States, has, as already mentioned, a population of some 45,000,000 people. The territory tributary for commerce with the United Kingdom and western Europe has a population of about 41,000,000. The area tributary for commerce with South America has a population of 30,000,000, much of the territory thus being tributary to the Great Lakes-St. Lawrence transportation system for the purpose of commerce with both South America and with Europe. While the area tributary to the Lakes for coastwise traffic is smaller, it includes all of the important manufacturing districts adjacent to the Great

Lakes as is also the case with the area tributary to them for traffic with Central America and the West Indies.

As has already been mentioned, the saving on grain will amount in some cases to from 8 to 10 cents a bushel, the saving not only affecting the grain that actually moves for export but practically all that produced within the area tributary to the Great Lakes. As mentioned elsewhere the yearly saving on grain alone approximates the entire cost of the St. Lawrence Waterway improvement required to admit ocean vessels into the Lakes and is of such great national importance as alone to justify the opening of this deep water route to have available at all times a way to enable the producers of the great Northwest to market their products expeditiously and economically at the moment of greatest demand.

Using wheat, since it is a factor of paramount importance in American economy as the product for which transportation rates can be worked out over alternate routes to show the superiority of carriage by ship to long hauls by rail, and figuring in all normal shipping charges, insurance, interest, terminal costs and all other charges included, from the Lakes wheat ports of Duluth, Superior, Port Arthur and Fort William to New York and by ocean vessel to Liverpool, the cost of shipping wheat via Buffalo in cents per bushel would be 22.6 cents according to findings by the United States Department of Commerce, under normal conditions before the completion of the St. Lawrence Seaway. By ocean vessels through the St. Lawrence Seaway, the cost for shipping the same bushel of wheat to Liverpool is estimated at 11.5 cents.

To the port of Liverpool, Chicago has four possible routes. To send a bushel of wheat by rail to New York and then by ocean vessel to destination the cost would be 22.5 cents. By Lakes to Buffalo, to New York by rail and by ocean vessel to Liverpool the saving by sending to Buffalo on the water

would be neutralized by breaking shipment at that point and with the negligible saving of one mill the cost would be 22.4 cents. Or by sending the same bushel of wheat the roundabout way by the Illinois and Missouri Rivers through New Orleans and then by ocean vessel to Liverpool the cost would be one mill more than the first route named or 22.6 cents. By the all-water trip through the St. Lawrence Seaway when completed it is estimated that the cost would be only 11.3 cents.

From Minneapolis to Liverpool there are five alternate routes. The cost of sending a bushel of wheat by rail to New York, then by ocean vessel to Liverpool is 30.3 cents; by rail to Duluth, by lake vessel to Buffalo, by rail to New York and then by ocean vessel to Liverpool, the cost is 26.5 cents; by the Mississippi River to New Orleans and by ocean vessel to Liverpool costs 22.2 cents; by the Mississippi and Illinois Rivers around to Chicago, then by ocean vessel through the St. Lawrence Seaway when completed is estimated to be 18.6 cents; while by rail to Duluth, then by the Seaway to Europe is estimated at 15.4 cents.

Of Kansas City's six possible routes to Liverpool, by rail to New York, then by ocean vessel to Liverpool would cost 33.0 cents; by rail to Chicago, by lake to Buffalo, again by rail to New York and then by ocean vessel to Liverpool would cost 32.9 cents; by rail to New Orleans and then by ocean vessel to Liverpool would be 26.4 cents; by the Missouri and Mississippi Rivers to New Orleans, then by ocean vessel to Liverpool would cost 20.6 cents. In case the bushel of wheat is sent by rail to Chicago and then to Liverpool by the Seaway, the cost is estimated at 21.8 cents, but if the shipment is by the Missouri, Mississippi and Illinois Rivers to Chicago before setting out on the St. Lawrence Seaway trip for Liverpool the cost is estimated at only 16.9 cents or the saving by sending the wheat from

Kansas City to Chicago by water instead of by rail is just one mill short of the substantial saving of five cents to the bushel.

The United States Department of Commerce estimated an average saving from 6.4 cents to 9.6 cents per bushel in the transportation of unbroken cargoes of wheat via the proposed St. Lawrence shipway, which is substantially a 50 per cent saving on the lowest existing combination rail-ocean rate between Duluth or Chicago and Liverpool.

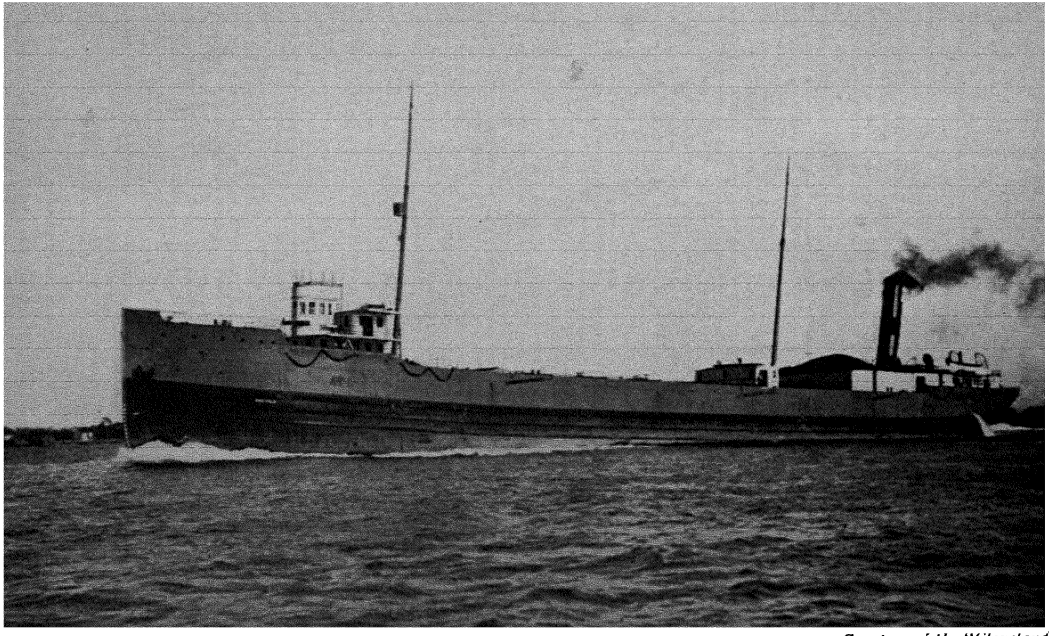
What is true of grain is also true of other products with the saving through using the Seaway in each particular case varying with the nature of the product and the handling it must receive. The United States Department of Commerce estimated an average reduction of at least from $2.50 to $3.50 per ton on all traffic other than wheat that is expected to use this route. Comparison of distances and transportation costs from all parts of the world to the areas tributary to the Great Lakes by existing routes and by the Great Lakes-St. Lawrence Waterway when completed, as worked out by transportation experts, shows that the St. Lawrence route will affect important savings amounting in extreme cases to as much as $10 a ton.

The Michigan and Ohio auto industries will greatly benefit from the Seaway. The Studebaker corporation of Detroit after experimental shipment to Europe in 1928 to test the economy in water transportation of automobiles, estimated a possible saving of $25 per car after the Seaway is completed when a vessel with a capacity for 500 cars can navigate the St. Lawrence channel and when a large volume can be rapidly handled. According to this concern even with the route open only part of the year, transportation of American cars to overseas markets will be over this all-water route. Except for New Orleans in 1931, Detroit through its Board of Commerce claims to be the largest exporter in the

United States and possibly in the world, 627 miles removed from the nearest seaport of New York. It has exported nearly $1,000,000 worth of products a day, its biggest item being automobiles. This commerce is not accidental but reliable and substantial since Detroit originates a large portion of its own exports. Detroit, in 1931, exported $146,000,000 worth of motor vehicles, parts and accessories, the bulk of which were produced in Michigan. Automobiles, parts and accessories made up 6.2 per cent of total American exports in that year and ranked second only to cotton. An examination of the railroad and steamship rates shows that the cost of transporting automobiles boxed for export from Detroit to New York the distance of 627 miles is 82½ cents per hundred pounds and from New York to Antwerp or more than four times the distance, the cost is only 32 cents. Other important manufactures originating at the important industrial cities of the Great Lakes region and adjacent territory are chemicals, medicinal and pharmaceutical preparations, iron and steel, copper, paper, soap, sulphate of ammonia, agricultural implements and machinery, cotton manufactures, hardwood flooring, wooden furniture, batteries, radio apparatus, spark plugs, accounting and calculating machines, printing and bookbinding machinery, hydroxide, paint and varnish pigments, office appliances, musical instruments, electrical apparatus, metal working machinery, rubber tires and a large number of other miscellaneous manufactured articles.

Another important industry of the Great Lakes region is that of packing house products. The total United States exports of packing house products in 1931 was $79,000,000. Other important exports are meats, animal oils and fats and linseed cake and meal.

To illustrate a new available commerce, 125,000 tons of tobacco are grown for export per year in territory that may advantageously ship by way of the St. Lawrence Seaway, the



Courtesy of the "Cleveland Plain Dealer"

GRAIN TRANSIT CORPORATION

The "Buffalo" is a "lower laker" of the type that navigate the 14-foot canals of the St. Lawrence River at present.

larger share of it proceeding on a direct line from the Seaway to the United Kingdom and the rest of Europe. Louisville has become an important accumulating center with rail rates to Lake Erie points to ship from which would mean a heavy saving in comparison with any Atlantic port.

Much of the vast commerce on the system of the Great Lakes would never have even stirred except for access to maritime transportation by the Lakes though in its present handicapped condition. Near the Great Lakes there are still enormous stores of natural resources from which manufactures would never be produced at all were the St. Lawrence Seaway not to be perfected and completed. New coal deposits are being found near Lake Michigan. Along the shores of this lake and of Lake Huron there lie great stores of valuable limestone used in the making of steel. In Michigan's upper peninsula a vast tonnage of iron ore is waiting for new markets to be opened from the new channels of trade to be created by the Seaway. In the territory bordering on Lake Superior is probably the greatest developed body of iron ore in the world and more than half of the total output of the ranges is shipped to Duluth and Superior for transportation by the Great Lakes route. The Great Lakes system forms the connecting link between the raw material and the finished iron and steel products of the manufacturing region of the Lower Lakes. In providing steel at low shipping cost for extensive building, the St. Lawrence Waterway will not only benefit the iron miner and steel manufacturer of the ore district, but will stimulate manufacturing and industrial activity throughout the region of the Great Lakes. Lower Lake industrial centers that already under the present conditions receive their ore at low cost will find in the perfection of the Seaway in the St. Lawrence route, new low costs of distribution to points on the Atlantic and with the expansion of their markets will expand themselves.

Among the most important goods brought by way of reciprocal inflow up through the system of Great Lakes to the Middle West of the United States are fish, rice, vegetables and preparations and also many tropical products among others, as bananas, pineapples, other fruits, nuts, cocoa and cacao, coffee, sugar, tea and spices; asphalt, china, earthenware and stoneware, vegetable oils and oil seeds, rubber and substitutes, gums and resins, dyeing and tanning materials, chalk, pyrites, magnesite, manganese, ferromanganese, tin, hides and skins.

The population interested in an exchange of products between the Pacific Coast and the Great Lakes territory is large. Michigan, Ohio, Illinois and other states tributary to the Great Lakes region annually import much Pacific and western lumber and the freight bill for bringing it is high. By 1910, Michigan had stopped exporting its hardwood and in 1920 imported one billion board feet of lumber on which the people of the state paid a freight bill of approximately $15,000,000 according to the United States Department of Agriculture. Ohio paid $13,500,000 to import lumber that year; Illinois paid $28,000,000. Many of these heavy shipments of lumber to the interior move either partly or wholly by rail. The savings on lumber shipped in full cargoes from the Pacific Coast to Montreal have been reported as actually $12 per thousand feet.

Domestic traffic from the Pacific Coast to the Great Lakes would also include canned goods, beans, dried fruits, and articles from the Orient transshipped at Pacific Coast ports. On the return trip from the Great Lakes to the Pacific Coast ships would carry iron and steel, automobiles, machinery, paper and miscellaneous products.

Among the principal coastwise shipments into the Great Lakes region from Gulf of Mexico ports would be petroleum, gasoline and lubricating oil and there would be also sulphur,

phosphate rock, fertilizer, rice and hardwood. From North Atlantic ports there would come miscellaneous manufactured goods including textiles and hardware, machinery, boots and shoes as well as refined petroleum products and fertilizer.

There is not a single commodity imported to the Middle West of the United States that cannot reach that territory cheaper by water than by any other existing route. While all of those named would be economical imports for some part of the territory affected by the Seaway many of them when the Seaway is completed would be carried farther than they now are on present importation costs and would become economically profitable imports for a much wider region than that for which they are at present.

Totaling the savings on all of these exports and imports of vital need to the full development of the North American Mid-West, the total potential saving to the United States as well as to Canada is so great as to make the cost of completing the Seaway a bargain investment.

CHAPTER IV

FAVORABLE INFLUENCE OF THE SEAWAY ON NEW ENGLAND. Also, Relief of Population Congestion on the Atlantic Seaboard.

AUTHORITIES—New England Committee, Hoover, Player.

WE have seen that the New England 3tates with their 8,000,000 people, their high cost of living and industries dwindling, although not members of the Great Lakes-St. Lawrence Tidewater Association, have identified themselves with the Seaway enterprise. New England is primarily an industrial region with 80 per cent of its food supply brought to it from beyond its own borders. Not only do the raw materials for its industries come from remote regions but its manufactured products must necessarily find their principal markets at great distances from the point of their origin. Low cost transportation, therefore, is one of the most vital requirements for the recovery and for the future prosperity of New England. That New England will be greatly aided by the St. Lawrence Seaway is shown by the effects of the Panama Canal on this region, the opening of which has had a marked and unexpectedly beneficial effect upon many New England industries enabled to reach Pacific Coast markets in competition with inland producers located geographically much nearer to them, because of the lower water rates that Panama has afforded, resulting in a constantly growing com-

merce between the ports of remote sections of the country and New England's ports.

New England at the present time is entirely dependent upon the railroads for reaching the interior sections of the country. The importance of New England's desire for the Seaway is still better understood when it is remembered that the rail differential to New England ports is unfavorable as compared to other North Atlantic ports. The shipment of railroad tonnage to and from New England at the present time consists of approximately 33,000,000 tons per year into the district and 7,000,000 outward or nearly five tons of traffic enters the territory by rail for each ton that leaves it. This disparity in tonnage is due to the large volume of fuel and the bulky raw products brought in with the food supply of the people and very peculiarly adapted to the large lake freighters for which the St. Lawrence Seaway is being designed, while outgoing shipments from New England consist mainly of manufactured goods that require comparatively little space.

Statistics show that when the unit cost of transportation on the ocean and the Great Lakes is $1, on rivers and sounds the cost is $2, on canals $6 and on steam railroads $16. With the completion of the Seaway and the substitution of even the canal cost of $6 for the steam railroad cost of sixteen over a distance of some 650 miles as from Detroit to Boston, considerable sums from the cost of distribution would obviously be saved. We have already seen that certain articles such as canned goods and some products of iron and steel are shipped from New England and other Atlantic ports to Pacific Coast ports while the same commodities can be shipped only 500 miles for the same amount by rail. Since water distances between New England and the Great Lakes ports are two or three times the corresponding distances by rail it is certain that rates on steamers between New England and Great

Lakes ports after the Seaway is completed should be from only 30 to 50 per cent of the rates by rail. For example, the rail rate for first class domestic freight from Chicago to Boston is $1.49 per hundred pounds but should not exceed 75 cents by the St. Lawrence Seaway when completed. The present rate over this distance for sixth class freight of about 50 cents, should be reduced at least to twenty-five. With the St. Lawrence Seaway open to deep draft vessels and with water freights averaging one-eighth of freights for equal distances by rail, claims H. I. Harriman, President of the Boston Chamber of Commerce, the distances as measured by freight charges between New England and the Middle West will be reduced from one-half to two-thirds and New England industries can favorably compete with rival industries between the Alleghanies and the Rockies that have drained much of the Yankee industrial vigor of former days. When the Seaway is completed, in Harriman's opinion, the total traffic to and from New England over the Seaway will be 6,000,000 tons a year at least and may be twice that figure while the annual saving to Yankee industries in normal times will be at least $16,000,000, which figures out to be a five per cent dividend on the sum of $320,000,000. The Seaway is worthwile it seems, from the standpoint of New England's benefit alone.

It is then evident that some considerable share of New England's 40,000,000 tons of annual commerce could be handled just as satisfactorily and at a much lower cost via the St. Lawrence route than is now possible by rail. With particular reference to the unfavorable and even unfair rail differential to New England ports over other North Atlantic shipping centers in the United States, the fact has been repeatedly demonstrated that competition between water and rail carriers always tends to reduce rates on the part of the railroads.

As to any apprehension that the diversion of commerce over the St. Lawrence route might dry up the export business of the New England ports, the Joint New England Committee reported after a careful study of the St. Lawrence Seaway project that present export commerce of this locality could not be seriously affected by any such diversion since the great proportion of existing export tonnage is grain exported during the closed season of the St. Lawrence River originating in Canada and utilizing the New England ports as overflow outlets for the surplus that cannot be handled by Canadian facilities. The Joint New England Committee also believes that the New England export business of local origin would not be affected in any manner by the existence of the St. Lawrence route, while other export cargo from the New England ports in transshipments of commodities principally from the South would also not be affected by the successful operation of the St. Lawrence Seaway.

There is a very positive demand in New England for the St. Lawrence Seaway as shown by the activities of local authorities towards the abolishing of differential rates affecting grain shipments from the Great Lakes to Boston. It is believed that the doing away with these differentials will induce a large flow of western and northwestern grain via the Lakes to Buffalo and thence by rail to Boston. With the completion of the Seaway there is obviously no good reason why this grain should not travel all of the distance by water at a much cheaper rate than that afforded by the combination of rail and water.

There is a further positive demand for the Seaway on the part of New England from the fact that New England ports will be the nearest of the North Atlantic American ports to the St. Lawrence route and there is inevitably bound to be a large bulk of transfer cargo to be moved by American vessels from the Lakes and transshipped to ocean carriers at the New

England ports. The aggregate seems likely to bulk large in total value.

Another important possibility for New England through the completion of the St. Lawrence Seaway is the opportunity to be provided by this water route for the establishment of certain industries in New England debarred under present conditions, from prohibitive cost of transporting their necessary raw materials. For an example in point, the Mystic Iron Works at Everett, Massachusetts, is obliged to haul its iron ore all the way from Cuba while cheap and direct water service from the great iron district on Lake Superior would enable this concern to do more profitable business by getting its iron ore from there and would also permit the establishment of other such plants. The establishment of steel mills also in New England would very probably take place when iron ore and coal could be delivered there at rates approximating the present combined lake and rail rates to Pittsburgh and similar steel manufacturing points.

Each year large quantities of the grain crop are stored in elevators and in boats at Buffalo, Georgian Bay and other lake ports, then shipped by rail to the open Atlantic ports and throughout the winter season are sent overseas. The question may arise in the minds of some whether the opening of the St. Lawrence Seaway would cause a serious fall in the price of grain, if the entire crop were to glide easily down the Seaway and be thrown on the European market altogether in the summer and fall. A solid reason why this will not happen is the interest of Boston and Portland and other ports to secure grain and flour for bulk cargo for their ships. So this is one of the reasons for New England's definitely wanting the Waterway even if it means that coastwise cargoes bound for the Lakes proceed ahead instead of transferring their cargoes at Boston or Portland or other Atlantic coast harbors for forwarding shipment to the interior. With the

Seaway completed much of the grain crop now stored at the foot of the Lakes will pass on to the New England and other North Atlantic ports before the close of navigation in the St. Lawrence and will be stored there for shipment to Europe as bulk cargo during the winter months. Grain is sought at present by the vessels at Gulf ports for deadweight since cotton is too light for handling in full cargoes and some heavy material is necessary to balance the load. Therefore, vessels carrying cotton at a comparatively high rate of freight are able to offer low freights on grain. The use by New England of grain as bulk cargo does not necessarily mean delay in the case of these shipments since the time will come after the Seaway is completed in many cases when a freighter will take on its ballast of grain at the head of the Lakes for a low rate of freight, pick up automobiles at Detroit and metal products at Cleveland and be ready to go directly to European ports or those of the Pacific Coast without intermediate stops of any kind.

So it seems that the St. Lawrence Waterway will do a great deal more for New England than to restore its industrial prestige. Low transportation costs by an all water route on much of its food supply from middle America to Boston and other North Atlantic ports, dispensing with the costly rail haul from Buffalo or Albany or Ogdensburg, New York, would have an appreciable effect in bringing about a lower cost of living. The Seaway will provide cheap transportation to New England of the raw materials required by its industries from the sources of supply. It will reduce the costs of shipment of New England's finished products to many markets. The Seaway will mean a supply of export grain and flour used as ballast for light cargoes at prices low enough to revive the export business of the port of Boston and other maritime cities of New England. Furthermore, since the industrial centers of the northern and western sections of

New England are easily within the 300 mile radius for economical transportation of power from the 1,100,000 horse power projected development of the United States in the International Rapids section of the St. Lawrence River, New England may look forward to some sort of profitable arrangement with the State of New York which has bought the American hydro-electric rights, for a reasonable supply of cheap power. And what alone makes the St. Lawrence Seaway worthwhile from New England's standpoint, is the removal of this section of the country from the blighting handicap of adverse railroad differentials.

Relief of Population Congestion on the Atlantic Seaboard

But there is another great problem in national development of the United States for which considerable relief could be found with the completion of the Great Lakes-St. Lawrence Waterway to the sea. There is a great congestion of population in the Atlantic seaboard states. Manufacturers have congregated there in the realization that in many cases the cost of transit over long distances by ship as compared to rail is in the ratio of ten miles by ship to one by rail. Industry, in its efforts to find location where there is some sort of balance between the transportation of raw materials and the distribution of finished goods together with a cheap labor supply, has created a great national problem today in the disproportionate growth of the Atlantic coastal region. Through the Great Lakes-St. Lawrence Seaway completion, it will be possible to better distribute industry and population because the Waterway will attract many factories and much production nearer to the Mid-West consuming areas.

While obviously the full development of the Seaway is of direct assistance to those producers located immediately along it in affording the cheapest possible transportation for the output of factories and farms, the improvement in highway transport has incidentally enlarged to a great extent the zone of direct water traffic. When collection and distribution to and from the water were dependent on horse and wagon the region served was limited to a belt five or ten miles wide. But with the new highways and the motor truck this belt has been widened many miles and has enormously increased the population that will benefit from direct water transportation. And by bringing many industries closer to the Mid-West United States, a market there will be provided for agriculture, stimulating a diversification of the farmer's products and will create in turn a greater diversification of industry as well as of agriculture, mutually beneficial to both.

CHAPTER V

THE GREAT LAKES-ST. LAWRENCE SEAWAY WILL HAVE JUSTIFIABLE USE. Present Commerce on the Great Lakes and on the River. Answer to the Objection of Fog and Ice. Answer to the Objection of Restricted Channel Navigation.

AUTHORITIES—McManus, MacElwee and Ritter, Player, Drury.

WHAT certainty is there that either Lakes or ocean-going vessels would use the Great Lakes-St. Lawrence Seaway when completed? Ocean ships will go up the St. Lawrence to the Great Lakes for cargo from the Atlantic and Lakes vessels will descend the river to Montreal with cargo because it will be profitable to divide the savings from present rehandling charges with the shipper. That the Seaway would not be of justifiable use is one of the favorite arguments of the enemies of the project, of certain Lakes carriers and eastern railroads, contradicting another of their statements that injury would result to the barges and rails from competition with deep-sea-going ships. Obviously there would be no disturbance of existing monopolies to fear were the Seaway only to be slightly used.

An all-water route from the head of Lake Superior to the sea is by no means new. It already exists and has served the United States and Canada for over one hundred years in its imperfect and restricted condition. And yet, restricted as it was prior to the opening of the new Welland Canal on August 6, 1932, by a 14-foot canal section for 73 miles and

46 locks between Lake Erie and Montreal, this section carried 8,400,000 tons of freight in 1928. Already some small seagoing vessels, 37 in 1931, have been going back and forth between foreign and Great Lakes ports with freight at material savings. A Wisconsin concern saves over four dollars a ton on clay brought directly from England. An auto maker of Indiana as a result of experimental shipments abroad claims a twenty-five dollar reduction attainable per car on freight brought by the larger vessels that will navigate the Seaway's twenty-seven foot channel. A Chicago daily on the basis of all-water newsprint shipments from Three Rivers, Quebec, affirms that a saving of three dollars a ton on the shipment of newsprint, will result from Seaway completion. The St. Lawrence Seaway project is not an experiment with something new. It is to place modern locks and machinery and equipment in the place of those that are obsolete, to standardize depths of all channels at a uniform twenty-seven foot level and to increase capacity to meet present day shipping needs, of this already existing and already broadly used transportation system.

The contention that import and export business will always be confined to the seacoast is contrary to the facts. The history of shipping has demonstrated as a recognized rule of transportation that vessels will proceed as far inland as navigation conditions permit if at the end of their trip they can find the profitable loads of a productive interior. Since railroads and all other routes of land transportation seek the shortest way to deep water, the farther inland that ocean-going ships can penetrate, the greater is the resulting economy and the more extensive is the benefited area. The addition of 500 miles to a haul by rail results in a heavy transportation tax while a similar addition to an ocean voyage is of no great consequence. There is no material difference for instance, in rates between the United Kingdom and

Baltimore and between the United Kingdom and Boston although the distance to Baltimore is 550 miles greater than to Boston. As an example of the fact that ocean vessels will proceed as far inland as physically practicable, take the typical case that the Amazon River is navigated by ocean vessels of between nine and ten thousand tons to Manaos, 900 miles above its mouth, while ocean vessels of lighter draft proceed on to Iquitos, 2,200 miles from the sea. This is even despite the fact that between Iquitos and Manaos and the ocean there is no very varied commerce. The outbound cargo is almost entirely limited to rubber, while the inbound cargo consists mainly of rubber gatherers' supplies. The population of Manaos consists of only about 50,000 and all of its exports and imports could be handled on light draft boats and transshipped at Para and yet the small ocean vessel has ascended 900 miles of difficult river navigation to get the business. With this instance in mind it seems highly unreasonable to believe that the rich and populous industrial and shipping centers of Duluth, Milwaukee, Chicago, Detroit, Cleveland, Toledo and Buffalo will fail to attract the ocean cargo liner.

In further considering the principle that ocean vessels will proceed as far into the interior as navigation conditions permit, and that ports are generally developed at the head of ocean navigation, we need no other analogy than that of the St. Lawrence River itself. Montreal, at the head of ocean navigation, 1,003 miles up the St. Lawrence from the ocean proper, has developed into the most important commercial city in Canada and it is only the physical obstacles to navigation that prevent the further penetration of ocean vessels beyond this port into the Great Lakes. According to MacElwee and Ritter, in winter, when the St. Lawrence is not navigable, ocean vessels proceed to St. John, which is the farthest point inland that can be reached.

Numerous other examples could be cited showing the tendency of ocean vessels to proceed as far inland as possible. Hankow is 615 miles from the ocean up the Yangtse River, Portland is 113 miles distant up the Willamette, Baltimore is 180 miles up the Patapsco, Philadelphia is 101 miles up the Delaware and 100 miles up the Mississippi is New Orleans.

The advantage of developing ports as near as possible to the center of population in the United States seems self-evident. The area within economical collection and distribution of such central ports will be far greater than from any port on the Atlantic seaboard. The position of the Lakes ports as gateways to one of the most important farming and factory districts of the world is a guarantee that ocean vessels will proceed through the Seaway, when completed, into the Great Lakes. The Great Lakes constitute at the present time a link in the cheapest route to seaboard for the surplus grain of a large section of the United States and of Canada. Due to the severe congestion particularly at the lower end of the Lakes normally occurring in the fall of the year from the obstacles to navigation existing at the present time, they do not carry all of the grain that even now seeks this route.

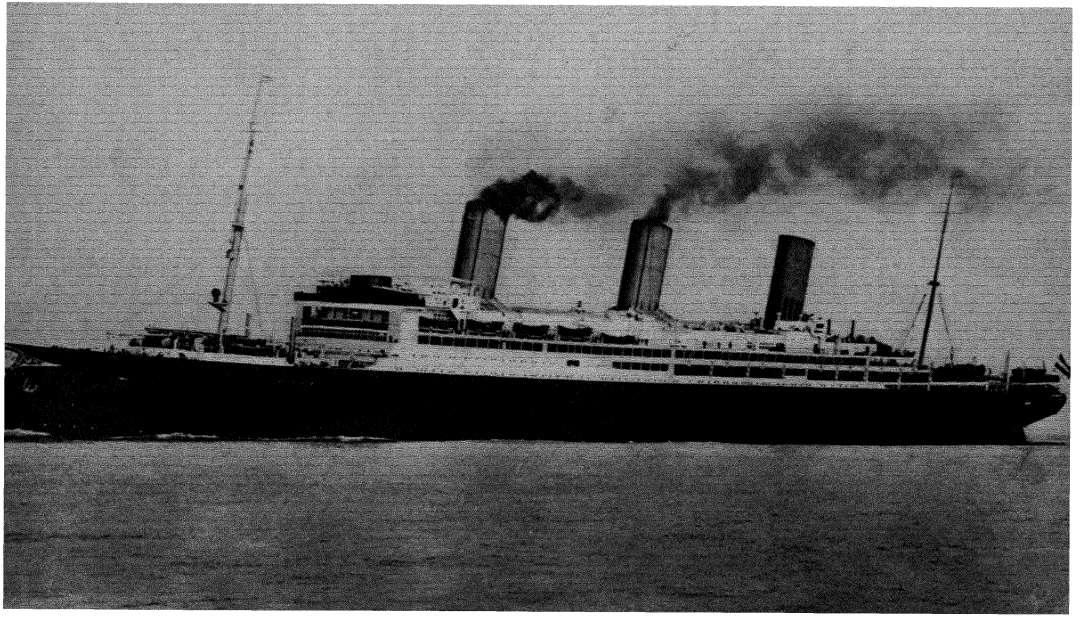
It is claimed by experts of ports and transportation that each foot of depth added to that of the Great Lakes connecting channels is immediately reflected in new deeper drafts in the construction of ships. As in the case of the Suez Canal as large vessels are built as can possibly clear successive deepenings of channel. The increase in depth through Detroit River, Saint Clair Lake and River and at Sault Ste. Marie was ordered by the Government without any regard to the St. Lawrence Seaway project: it was made to meet the insistent and crowding demands of constantly growing Great Lakes commerce which increased steadily

from 1925, ranging from 130,000,000 tons in that year and attaining in 1928 the total of 150,000,000 tons. Most importantly, there is as much commerce now on the Great Lakes as on any other two waterways in use in the world today.

To give a further idea of the commerce moving on the Great Lakes, in the peak year of 1929, on the eve of the depression, nearly 100,000,000 tons of traffic passed through Sault Ste. Marie—more than passed through the Panama and Suez Canals combined, with the Port of London thrown in for good measure. This commerce was carried in 1929 by a total of 738 registered vessels of which 686 were in the registry of the United States. In this same year the United States domestic traffic on the Great Lakes of 141,185,000 tons was even greater than the ocean coastwise traffic of 125,000,000 tons.

To this total of Great Lakes United States domestic commerce for 1929 of 141,185,000 tons must be added 20,158,000 tons of traffic to and from Canadian ports, a total of 161,343,000 tons. There still remains to complete the picture all the Canadian commerce, including the Canadian grain crop flowing from the prairie provinces of Manitoba, Saskatchewan and Alberta through Port Arthur and Fort William, together with that commerce from overseas transshipped at Montreal for distribution to Lake ports.

With the decline of the present depression well under way in 1930, eight customs districts on the system of the Great Lakes including Ogdensburg on the St. Lawrence exported merchandise to the value of more than $540,000,000 and imported to the amount of $377,000,000, a total commerce very close to the billion dollar mark. No other district group in the country has been able to better those figures over a period of years except the North Atlantic District which includes the Port of New York.



Courtesy of the "Cleveland Plain Dealer"

UNITED STATES LINES

The super liner "Leviathan" would not dock at Cleveland or any other port on the Lakes. It could not navigate the St. Lawrence Seaway, nor with its vast capacity to fill would it have any reason to do so.

But the commerce of the Great Lakes, great as it is, furnishes no complete basis for estimating the commerce of the Great Lakes-St. Lawrence Waterway. The package freight consists partly of local and interlake freight that is not interested in reaching the seaboard. Practically all of the grain and some iron ore, pig iron and coal will use the deep waterway. The general freight interested in the Waterway is the enormous tonnage which moves entirely by rail between the Great Lakes region and the Atlantic seaboard, which totals 250,000,000 tons annually in normal times. Within a short period after completion of the St. Lawrence Seaway it is estimated by government experts that the commerce carried on it should amount to 20,000,000 tons yearly with continued future growth. The St. Lawrence Commission of the United States appointed by President Coolidge, have estimated the annual tonnage available for the St. Lawrence Seaway to be from 19,000,000 to 24,000,000 tons in normal times, a figure that may be considerably increased by the time of completion of the Seaway, seven years from the time of commencing operations in the International Rapids section of the St. Lawrence River. This estimate seems conservative in view of the 8,400,000 tons of commerce that in the prosperous year of 1928 succeeded in using the inefficient and limited facilities of the existing navigation works, namely the St. Lawrence side canals and locks with a depth of only fourteen feet. The Department of Commerce estimates an export shipment via the Waterway of from 8,000,000 to 12,000,000 tons annually against import traffic of from 3,000,000 to 4,000,000 tons. It likewise estimates that the total of intercoastal and coastwise commerce likely to move via the St. Lawrence route would amount to 7,000,000 tons more.

Alfred H. Ritter, transportation and port specialist, after careful studies that make his reasoning an estimate and not a

prediction, states 30,000,000 tons as the figure. The United States Department of Commerce found a probable traffic of not less than 18,600,000 tons and of not more than 23,700,000 tons of commerce.

This estimate includes, of course, coastwise, intercoastal and foreign trade and is almost as much as the annual tonnage of the Suez or Panama Canal. It is expected confidently by experts that 52 per cent of the total wheat exports of the United States will use the route, 43 per cent of the exports of meats, 34 per cent of the exports of agricultural machinery and 39 per cent of the exports of automobiles. This list affects vitally the very life of the north-central area of the country, agricultural, industrial and commercial.

Then further, the total of the grain traffic alone available for shipment by the Waterway is known to amount to 10,000,000 tons a year. And certainly of the heavy shipments of lumber to Illinois, Michigan and Ohio from the Pacific Coast, 1,500,000 tons at the least are available for the Seaway.

Certain traffic, it is true, listed by Ritter or the United States Department of Commerce as available for the Seaway may not use it because the lower water rate brought about by the Seaway has a lowering effect on the rail rate. Sight of the fact must not be lost that the Seaway aids the shipper in two ways, first by the economy of carrying on the water and second, by the equalizing effect on railroad rates. A firm, for example, bringing 43,000 tons of goods from Quebec mills to a port on the Upper Lakes sent some by rail and some by boat. The water rates from two mills were $4.27 and $4.61 while the rail rate was $6.40 a ton. The railroad then reduced the rate to $4.86 a ton at one point and to $4.61 at another with the result that tonnage was diverted from water to rail. While this lowering of rates brought other

factors such as the time element in the foreground, the existence of a lower water rate produced the lower rate by rail. Experience with the Panama Canal and the railway built along it and with other canals and seaways would show that much of the estimated available traffic of 30,000,000 tons for the St. Lawrence Seaway will use it and that all of it could do so with savings. With the total saving in normal times on the coast of shipping grain estimated at $44,000,000 and with the price enhancement of the grain crop of the region tributary to the Lakes in normal times estimated at $196,250,000 more or a total saving of $240,250,000 on the grain crop alone of the stranded area for one year, it seems that the indicated savings would warrant the belief that a large part of the estimated available traffic will be benefited either directly through using the Waterway or indirectly through the influence which the Waterway will have in lowering the rates of competing routes.

Answer to the Objection of Fog and Ice

The fact of the winter closing of the St. Lawrence River due to freezing has been urged against the practicability of the St. Lawrence Seaway. Navigation on the Great Lakes opens up about the latter part of April and closes in December, making an average of eight months each year. Although the length of the navigation season on the Great Lakes-St. Lawrence Seaway will be approximately seven months, it will be possible to extend this season for two weeks at each end by the use of spoon-bowed vessels as ice breakers. While harbors and bays in the lower part of the

river begin to freeze early in December, the river itself below Quebec and the Gulf seldom if ever freezes completely over. As to the objection that the mouth of the St. Lawrence River is ice-locked for four or five months in the year and for too great a season to make the Seaway project worthwhile, the closed season of navigation is a negligible factor. Closed navigation annually for five months in the river below Montreal has not prevented that city from becoming one of the greatest ports in the world and on the Atlantic seaboard second only to New York in the matter of passenger liner service. Just as the closed winter season has not interfered with the development of the commerce of Montreal neither has it affected the maintenance and growth of the much greater volume of commerce upon the Great Lakes themselves. Closed navigation on the Great Lakes for slightly over four months in the year has not prevented 141,000,000 tons of purely domestic commerce from passing there in 1929 and in normal times from 10,000,000 to 20,000,000 tons of annual trade between United States and Canadian ports.

In considering the objection to the Seaway of closed navigation for four or five months in the year there arises the question whether most water-borne traffic is constant throughout the year and will be likely to be deterred from entering the Seaway at all because of being barred in the winter season. The answer is that even the Black Sea has some frozen harbors in the winter, while the Baltic too is seasonally closed by ice. It is stated by MacElwee and Ritter that experience on the Baltic has shown that the use of spoon-bowed vessels as ice breakers and the maintenance of an international ice patrol and an ice signal system would render possible and feasible a great extension of the period of navigation by modern steamers between the upper St. Lawrence River and the open sea.

The fact that the low reaches of the St. Lawrence River

particularly between Montreal and the sea are known to be subject to extensive fog and floating ice has been taken up by opponents of the St. Lawrence Seaway project as adverse conditions that would seriously affect its practicability as a navigation route. As just seen above, such conditions have not interfered with the commerce of Montreal whose business is necessarily subject to all of the inconveniences and disadvantages imposed by four months of ice and fog. Furthermore it is said by officials of the Dominion Government that the fog and ice conditions at the mouth of the St. Lawrence River are no more extensive or dangerous than those encountered by all of the transatlantic liners bound for European destinations from North American ports. In view of the statements of the St. Lawrence Seaway opponents regarding the prevalence of fog on this route, a careful study has been made of the most reliable data on the subject. According to the Hydrographic Office of the United States Navy, the area of greatest fog frequency in the North Atlantic Ocean is southeast of Newfoundland where the warm waters of the Gulf Stream meet the cold waters from the Arctic. The heavy fogs from this source have no connection with the St. Lawrence Seaway, but extending southward and enveloping the steamer tracks from North Atlantic ports to Europe they are found to be very much greater than the fogs encountered on the way between the Strait of Belle Isle at the mouth of the St. Lawrence River and the United Kingdom and other European points. Also according to the Hydrographic Office of the Navy, the route from the St. Lawrence to Europe compares very favorably with the Northern Pacific routes which involve a much greater distance in areas of great fog frequency during the larger part of the navigation season.

It should also be remembered it seems in this connection, that an alternative shipway from Lake Ontario to the Hud-

son through the State of New York would be similarly affected so far as the effects of the closed winter season are concerned.

Answer to the Objection of Restricted Channel Navigation

The question of restricted navigation may come to mind. What good is a canal if vessels must seriously curtail their speed in channels so narrow that banks would otherwise be subjected to damage from heavy action of the waves of water displacement or if smaller craft would be capsized or impaired? Would not an appreciable number of deep-sea-going vessels be deterred from entering the Seaway on such very grounds? The answer is simple. The restricted navigation in the 2,339 miles from Belle Isle Strait to the head of the Lakes will be negligibly small. As mentioned before, from Belle Isle Strait to Montreal there are 1,003 miles of unbroken navigation. In the 1,677 miles of the Seaway between Father Point, 340 miles below Montreal, the beginning of the high seas and the head of the Lakes, there are 1,638 miles, or more than 97 per cent of the route, in open water or through channels no more restricted than the channel entrances to most of our ocean ports; there will be a maximum of river navigation with a minimum of canal and locks. There will be only 39 miles of canal navigation with 16 locks; three miles at Lachine with five locks between the lower end of Montreal Harbor and Grand Isle; six miles around Barnhart Island Dam and two locks; two miles around Crysler Island Dam and one lock; twenty-five miles of the new Welland Canal and seven locks; and three miles at Sault Ste. Marie and one lock. Then there will be 218

miles of channel navigation that is not restricted as in the case of canals but where caution is required: of the Beauharnois project above Montreal which is not a canal but a channel with 600-foot bottom width, there are 15 miles; in the Thousand Islands section, 67 miles; in the Detroit River, 31 miles; in the Saint Clair River, 42 miles; and in the St. Mary's River, 63 miles. These channels are not restricted in the real sense of that word, for according to Charles J. McManus, capable research expert in navigation matters, they are not any more restricted than the inner channels of many of our harbors where caution controls the speed.

Calculating the rate of speed of a vessel traveling the entire route from the Strait of Belle Isle to the head of the Lakes at 12 miles per hour, the delay due to restricted navigation and caution would be only 12 hours each way or 24 hours for a round trip. It would take the vessel passing on the open ocean over a distance equal to that between Belle Isle Strait and the head of Lake Superior, 8 days and 3 hours of steady traveling. Restricted navigation in the Seaway will lengthen the time to cover that distance to 8 days and 15 hours. While a round trip over the Seaway distance unrestricted would take this ship 16 days and 6 hours to spare, restricted navigation in the Seaway will lengthen the time to 17 days and 6 hours over. Or in other words the detention time due to passing through locks and canals between Montreal and the Lakes-head to a 12-mile-an-hour steamer as compared to unrestricted navigation in the open sea amounts to simply adding 144 miles to an 8-day journey that at the present time cannot be made at all. This additional distance has no influence on the choice of routes and counting as negligible as to the earning power of a ship it will have no effect upon the rates. It is customary for vessels operating over the trade routes of the world to make identical rates to different ports within certain ranges. Thus,

the North Atlantic range includes all ports between Portland, Maine, and Norfolk, Virginia, and rates from abroad to any points within this sector would be the same. Though Baltimore is nearly two days farther out from Liverpool than Boston, there is no difference in the rate. There is an extremer case. The same rates are granted by intercoastal lines between any Atlantic and Pacific coast port. The rate is the same on a given cargo from Boston to Seattle, a distance of 7,100 miles, as it is from Norfolk to San Francisco, a distance of only 5,800 miles. In fixing the rate, the difference of 1,300 miles, equivalent to four and one-half days' steaming, is entirely disregarded.

The St. Lawrence Waterway with its twenty-seven-foot depth of channel has locks and canal reaches wide enough to accommodate all utility vessels except warships. The depth of the Suez and Panama Canals is thirty-five feet at mean low tide. The St. Lawrence Waterway differs from the Canals of Suez and Panama in one main respect, that it was not devised for men of war. Battleships, therefore, will not steam up the Seaway.

A coastwise commerce of traffic from port to port has grown to great proportions out of the Panama Canal amounting to 125,000,000 tons in 1929. The Panama Canal has brought the Atlantic and Pacific seaboards closer together to the disadvantage of the Mid-West United States in their shipping rates as brought out above. The St. Lawrence Seaway would not only counteract the adverse effect of the Panama Canal on this landlocked interior area. It would bring the benefits of Panama to the people of this Mid-West United States since Panama and the St. Lawrence Canals would supplement each other. The ship that comes through the Panama Canal from San Francisco, Seattle or Vancouver to Boston or Portland, Maine, or to Montreal could and would with equal purpose continue up the St. Lawrence to the

Great Lakes with the same sort of cargoes and similar savings for obviously the limits of coastwise routes are the utmost points to which a vessel can penetrate.

While the confined channel and locks of the St. Lawrence and the new Welland Canal will not exceed thirty-nine miles, wide river navigation with the channels well lighted offers no particular obstacles to ocean vessels. Bearing in mind this thirty-nine miles of restricted waterway, we find that 5,000,000 tons of shipping are willing every year to pass by Liverpool and to ascend thirty-five and a half miles of canal and go through five sets of canal locks to reach the one city of Manchester. By entering the Great Lakes through the St. Lawrence Seaway a vessel could reach numerous Manchesters and have a choice of any one of them. A strong argument to show that the small restricted navigation in the St. Lawrence Seaway would not deter navigation there is the case of the Kiel Canal, sixty-one miles long. The St. Lawrence would be the only water access to Great Lakes ports. The Kiel Canal is not to reach places otherwise inaccessible by water but only to save ships plying for instance between London and Riga from 412 miles of steaming over the alternate course around Jutland, to go in and out of the Baltic. Most vessels in times of peace prefer to go through the sixty-one miles of Kiel Canal and pay the dues, cutting down the trip to 988 that around Jutland would be 1,400 miles. Since vessels from London and other North Sea ports and channels will pass through sixty-one miles of restricted navigation by canal to Baltic ports to save only 400 miles in distance, it stands to reason that they would willingly pass through thirty-nine miles of restricted channel that is the sole avenue of approach to 4,345 miles of new American coast that would be comprised in the system of Great Lakes whose shores are dotted with the rich and productive cities of the Mid-West United States. The Great Lakes system with all

of the navigation limitations of an eight-months' season and with even the handicap of such natural obstacles to navigation as Niagara Falls has already become one of the great arterial highways of the world.

CHAPTER VI

THE KIND OF SHIPS THAT WILL USE THE SEAWAY, AND THE TYPES THAT WILL NOT. The Situation with Regard to Return Cargoes. The Influence of the Seaway towards Building up an American Merchant Marine. The Influence of the Seaway on Ship Building on the Great Lakes.

AUTHORITIES—Hoover, Player, Drury, MacElwee and Ritter, McManus, Major General Lytle Brown.

WILL the *Majestic* and other de luxe White star liners and Cunarders and other super and cabin liners of their class tie up at the Cleveland waterfront, and if not is the Great Lakes-St. Lawrence Waterway to be condemned therefor? No one after a moment's reflection expects the greatest ocean liners to enter the Lakes. There would be no more sense in running the *Majestic* and other ships of its kind to Cleveland than there would be in running the Twentieth Century Limited of the New York Central Lines down to Columbus or Marion, Ohio. The justification for the existence of these gigantic express boats is their quick passage from the great ports of Europe to New York whence passengers may make the most rapid travel to all parts of the United States by train or by plane. Speed and not size is their most important characteristic. No matter what size they are the fact remains that none of the de luxe liners carry freight. They carry a few tons of mail and express at high rates where again, speed and not size is the consideration. The world's largest vessels would not be

suited to the Seaway were it deep enough to admit them, even granted that the ships of this type were freighters and they are not. Vessels must be able to enter several ports at either end of their journey to obtain a load. While on the one hand frequent and regular service on the Seaway will be demanded, on the other, large quantities of general cargo merchandise for one or two far distant ports cannot be accumulated at sufficient Lakes ports for ships of great size at a moment's notice nor can vast quantities of imports be absorbed in a very brief period at the majority of our ports. Such ships would be forced out of business through overhead due to waiting at the ports. Small vessels and those of medium size are used on the majority of the world's trade routes in preference to the larger vessels: not only could they travel the channel of the St. Lawrence Waterway but they are best adapted to it. There are many smaller combination passenger and freight vessels taking ten days or more to cross the Atlantic. Specializing on passengers as well as freight traffic to the interior these vessels could favorably compete with other ships combining passengers and freight that terminate their trip at New York.

When it is said that the greatest ocean liners will not use the Seaway, popular misconception of the word "liners" would make this exclusion much broader than warranted by the facts. A liner is any vessel, however small, engaged in scheduled service between relatively fixed points. A freighter of great size may be a tramp. A small and filthy tub may be a liner. The character of a vessel does not change by the service it is engaged in. Until the World War, most of the ocean-borne freight was carried by tramp steamers. But since the War cargo liner services have come into prominence and the very nature of the goods produced and consumed in the area adjacent to the Great Lakes means that this type of carrier will enter the Lakes-ocean trade. The

tramp freighter is still a factor in transportation, with the world as its range of operations. This tramp shipping goes wherever bulk cargoes may be had at a profit. And on long water hauls each 1,000 miles of the 2,339 miles of completed Seaway shrinks in terms of cost into relative insignificance. The average ocean freighter of 25-foot draft could almost as easily take a cargo to Liverpool from Duluth as it could from Montreal or any Atlantic port and far more cheaply for the shipper than it is carried at present.

Throughout the history of the deepening of channels there has been a coördinate improvement in the sort of craft. Great barges, specialized to different types of traffic, convey ten times the volume of their shallow predecessors. The Great Lakes traffic at present is moved in two very distinct classes of vessels, the upper laker and the lower laker. The upper laker is a steel vessel about the length of an average city block or 600 feet long, of 60-foot beam and of 21-foot draft with a carrying capacity of about 12,000 gross tons. The greatest freighter on the Lakes at present and the world's largest carrier of grain is the *Lemoyne,* whose name, reminiscent of the early French explorers of the region of the Lakes, means "the monk." This vessel of the Lakes holds the world's record of 16,538 tons for a single cargo of coal. The *Lemoyne* is 633 feet long, of 70-foot beam and of 29-foot depth and has a tonnage of 10,480. It seems important to notice that only 21 of the world's greatest de luxe vessels exceed in length the *Lemoyne.*. The modern lower laker is sometimes termed the canal ship since it is designed to closely fit the locks of the former Welland Canal and the present shallow St. Lawrence canals some of whose depth is only fourteen feet. This craft is one example among many of the fact that vessels will be specially built for local needs wherever profitable trade is met. The modern lower laker is a steel vessel of 253 feet keel length, 43-foot beam and 14-

foot draft with a carrying capacity of 2,800 gross tons. The upper laker plies between Kingston, Ontario, at the foot of the lake of that name, and Duluth at the head of Lake Superior. It has been able to enter Lake Ontario from Lake Erie since August 6, 1932, the date of the completion of Canada's fourth Welland Canal. The lower laker plies generally between Lake Erie and Montreal with an occasional trip to the head of the Lakes. While neither the upper nor the lower laker is suited to deep sea service both could ship for cheaper rates from Lakes ports to the ocean than the present cost if spared the present necessity of breaking cargo whether using the Lakes and transshipping to canal boats or whether shipping by Lakes and rail.

It is sometimes contended that by building the Seaway, injury is to come to the present Lakes carriers from competition with, and replacement by, deep-sea-going ships. These fears are frivolous. The Lakes freighter will always have its usefulness. It is the most efficient vessel ever known. Low operating costs would preserve its monopoly in the carrying of the ore, coal and a good share of grain and other freight in bulk. But there is also available on the Waterway a vast volume of general cargo items that could make the long inland trip profitable for ocean ships.

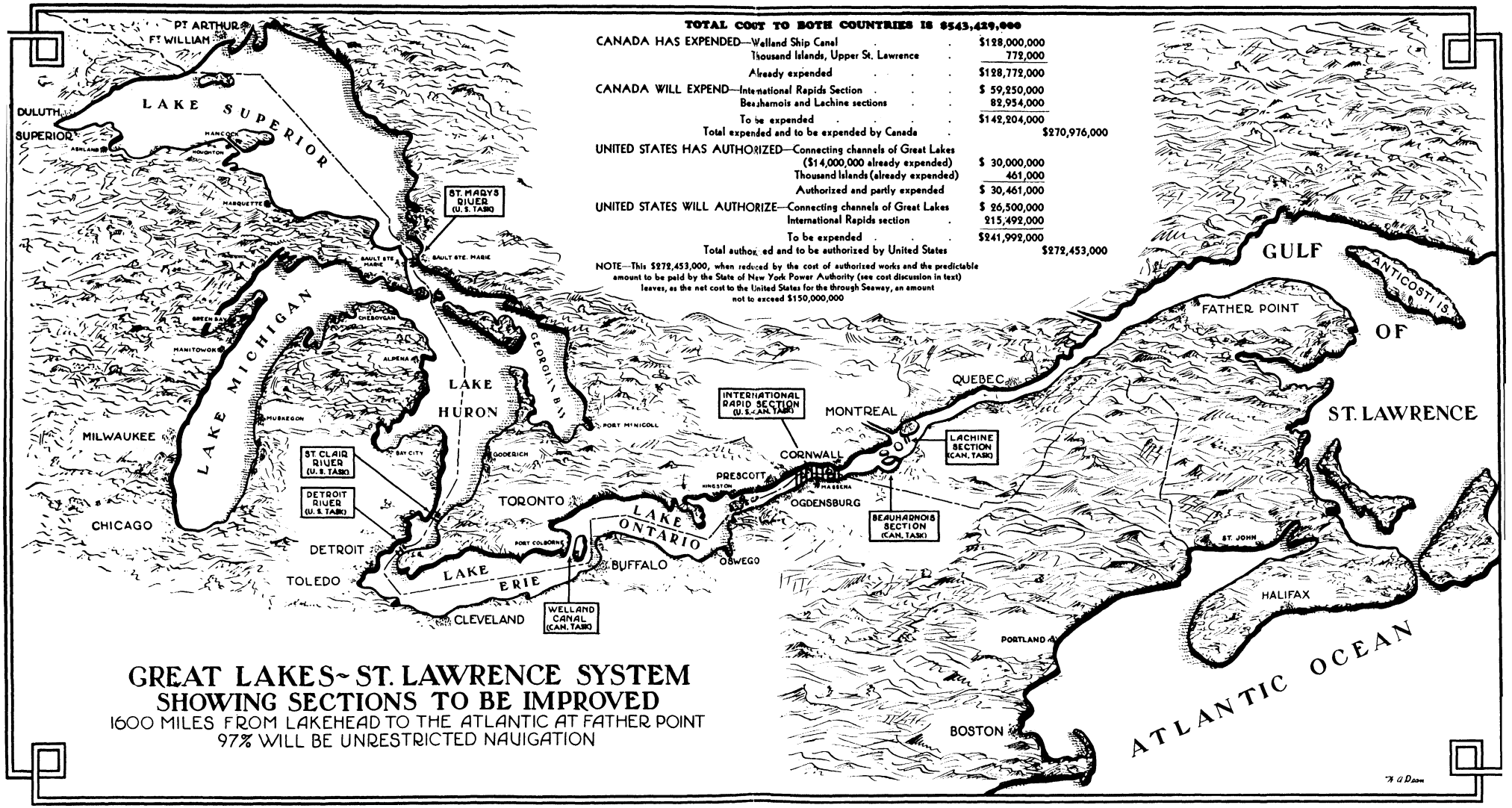
To find the vessels for the Seaway takes only a glance around the coast of the North American continent. As General Pillsbury, Assistant Chief, Corps of Engineers, United States Army, pointed out only a few months ago, there is a line of passenger-freight vessels now in operation between Baltimore and Norfolk and European ports. These vessels are 506 feet in length, 56-foot beam, and 24-foot draft, and with their ordinary loading drawing only 20 feet. The cruising speed of these vessels is 16 knots or 17.5 miles per hour. They accommodate approximately 100 passengers in addition to their freight, which includes 1,000 tons of refrig-

erated cargo space. With weekly sailings from Baltimore and Norfolk to Europe at attractive rates, their accommodations are well filled. Obviously enough a vessel 506 feet long and 56 feet wide can pass through the locks provided in the Seaway of 820 feet long and 80 feet wide. It is equally obvious that a competent ship captain can take a vessel of less than 24-foot draft through a channel 27 feet deep. The time required for such a vessel to pass through the proposed waterway from Detroit to Montreal will be two days. Since Montreal is one day nearer to European ports than Baltimore Detroit would be only one day farther from Europe than the latter port.

There are great fleets in the Caribbean including the little Norwegians of 2,000 tons many of which already push up the Gulf of St. Lawrence and into the river. Some of these small ships come all the way from Europe up into the Great Lakes. Unloading part of their cargoes at Montreal and setting higher in the water they can navigate the shallow fourteen-foot side canals of the St. Lawrence. There are now engaged in coastal trade some types of ships admirably suited to commerce both on the Lakes and on the oceans and with sufficient tonnage. Along the South Atlantic and Gulf ports nearly all the vessels draw less than the twenty-seven-foot depth of the St. Lawrence Seaway and could navigate its channels. There is a certain American line operating down the coast whose trim new ships built for both passengers and freight beat the train to Florida. There are other lines of vessels carrying both passengers and freight built for pleasure cruises and yet also capable of quick handling of cargo by both port side and over top hatch loading. Outside the winter season in Florida and the Carolinas these ships are out of use and seek a summer employment. Mainly under twenty feet of draft and all able to use the completed Seaway, they are ready to visit the Great Lakes as a vacation

cruising ground with an economical though important package-freight business on the side. So not to be forgotten is the passenger and tourist business aside from the bulk and cargo business the Seaway will develop. There is almost no vessel doing business in coastal service between Atlantic and Pacific ports, or in the Gulf of Mexico or in the Caribbean Sea which suited to carry passengers or freight or both could not comfortably travel the Seaway at its twenty-seven-foot depth. From experience with the Panama and Suez Canals and every other waterway in existence there is every reason to believe that traffic will pass through the Seaway to Great Lakes ports and no reason to think that it will not. For where there is cargo either actual or potential, vessels will be chartered, bought or specially built to go there. Towards a guarantee of heavy use of the Seaway when completed, there is already a very considerable shipping on the Lakes to carry exports from, and a reciprocal inflow of imports to, the tributary area of the Great Lakes in the Middle West of the United States. As this shipping has always developed in the past it will continue to develop to meet and anticipate the demands of the future on it.

The Hoover Commission and the Joint Board of Engineers have agreed in definite findings that an allowance of two feet will permit safe vessel operation through such a watercourse as the St. Lawrence Seaway will be, at regular rates of speed. There is a large coastwise shipping exactly suited to Great Lakes commerce that will seek and share the St. Lawrence Seaway as eagerly as such shipping penetrates any other suitable navigation channel. There is further, 75 per cent of all transoceanic freight, package and passenger shipping capable of using the twenty-seven-foot depth of the Seaway, that will do so when the traffic invites it. Based upon the findings of the Hoover Commission, the Joint Engineering Board and the United States Department of Commerce.



TOTAL COST TO BOTH COUNTRIES IS $543,429,000

CANADA HAS EXPENDED—Welland Ship Canal	$128,000,000	
Thousand Islands, Upper St. Lawrence	772,000	
Already expended	$128,772,000	
CANADA WILL EXPEND—International Rapids Section	$ 59,250,000	
Beauharnois and Lachine sections	82,954,000	
To be expended	$142,204,000	
Total expended and to be expended by Canada		$270,976,000
UNITED STATES HAS AUTHORIZED—Connecting channels of Great Lakes ($14,000,000 already expended)	$ 30,000,000	
Thousand Islands (already expended)	461,000	
Authorized and partly expended	$ 30,461,000	
UNITED STATES WILL AUTHORIZE—Connecting channels of Great Lakes	$ 26,500,000	
International Rapids section	215,492,000	
To be expended	$241,992,000	
Total authorized and to be authorized by United States		$272,453,000

NOTE—This $272,453,000, when reduced by the cost of authorized works and the predictable amount to be paid by the State of New York Power Authority (see cost discussion in text) leaves, as the net cost to the United States for the through Seaway, an amount not to exceed $150,000,000

GREAT LAKES-ST. LAWRENCE SYSTEM
SHOWING SECTIONS TO BE IMPROVED
1600 MILES FROM LAKEHEAD TO THE ATLANTIC AT FATHER POINT
97% WILL BE UNRESTRICTED NAVIGATION

it appears that the twenty-seven-foot depth for the Seaway would accommodate 88 per cent of the entrances and clearances including all ships in either coastwise or transoceanic service now entering American ocean ports, excepting combination passenger-cargo ships and tankers. Large quantities of general cargo cannot be accumulated at all ports for one or a few destinations in a brief period and neither can large quantities of imports be absorbed in a similarly brief period at the majority of our ports. Since the large ship would go out of business through port overhead in being too long detained in one port, therefore the small and medium-sized vessels are the ones used on the majority of the world's trade routes in preference to the larger vessels. Not only are they best adapted to the St. Lawrence route, but they all could use it. Taking a typical year at the Panama Canal, the total number of merchant vessels to and from all parts of the world was 2,813 of which 71.49 per cent drew under 25 feet and 98.79 per cent drew under 30 feet, figures which according to the careful tables of Alfred H. Ritter would apply for practical purposes to navigation in any part of the world. So the channel ascending the St. Lawrence to Montreal will accommodate practically 99 per cent of the vessels customarily engaged in ocean trade. At our principal ocean ports with harbors of a minimum 30-foot depth, scarcely one per cent of the vessels utilize the full available depth although the building of vessels on the Great Lakes has proceeded along with the deepening of the channels to take advantage of every available foot. The ocean freight vessel of average tonnage has a loaded draft of about 24 feet.

The Situation with Regard to Return Cargoes

It has often been asserted that ships must have return cargoes. It has also been asserted that ships sailing through the St. Lawrence would not be able to obtain such cargoes. While a large flow of imports to the Mid-West United States is anticipated through the Seaway it is neither certain nor entirely desirable that all of the ocean vessels departing fully loaded from Great Lakes ports will return from abroad fully loaded to those ports. While it is desirable in most cases, of course, that ships should have return cargoes because the carrying cost is thereby reduced, there may be conditions that offset such result. The assertion that ships *must* have return cargoes, is not borne out by the facts in many cases. For instance, the ore carrier of the Great Lakes often, according to MacElwee and Ritter, returns light in preference to taking on a cargo of coal at Lake Erie ports, the reason being that the freight rate on ore is more than twice as much as the rate on coal. Therefore the vessel can show a larger net return on the season's operations by saving the time required for the loading and unloading of coal. Time spent in port is unproductive time so vessels often find it more profitable to operate with a one-way haul that pays good freight instead of a two-way haul involving either a considerable detention in port or the taking on of cargo with low returns.

It is a mistake to believe that the trade of the United States with the various countries of the world is so well balanced that there is a uniform shipment in both directions. As a matter of fact, full loads both inward and outward while usually affording the most profitable operating conditions for vessels, are rarely obtainable in practice. At a number

of successful ocean ports of the United States the exports are many times the imports. At Galveston the ratio, according to MacElwee and Ritter, has been about 12 to 1, at Los Angeles, 20 to 1, at Portland, Oregon, 40 to 1, and at Newport News 70 to 1. Besides, the imports do not proceed in any quantity from the countries to which the exports from the United States are destined. Vessels engaged in the trade with Europe have averaged about one-seventh load inward as compared with the load outward in value. Furthermore many vessels carrying full loads from the United States to Europe return practically empty so far as real bulk is concerned. Many vessels bringing full loads to the United States from South America do likewise. Our exports to Europe comprise large quantities of coal and iron and steel providing the heavy tonnage required for full loads, while the imports from Europe largely consist of manufactured goods of small tonnage as compared with their value. Some ships rather than return empty to northern American ports from Europe, proceed on a triangular route, touching at some southerly point before returning to the home port. The conditions on the Great Lakes are exceedingly more favorable for operations tending to good inward as well as outward loads than are conditions between United States Atlantic ports and Europe since the consuming ability of the territory tributary to the Great Lakes and the importance of the manufacturing industries which now import large quantities of raw materials from abroad, insure a more equal distribution of imports and exports than in the case of a majority of our ocean ports. A number of Great Lakes ports are large cities all situated directly upon the through route and requiring no triangular diversion in order to have a profitable inbound trip back to the point of departure. Vessels taking grain from Duluth to Liverpool could bring back general merchandise for Quebec, Montreal, Oswego, Rochester, Buffalo,

Erie, Cleveland, Toledo, Detroit and Duluth without material alterations of their courses.

As far as reciprocal inflow of commodities through the Seaway is concerned, that great collecting center, the city of Chicago, already serves a larger area than any South Atlantic port although these imports now proceed through Atlantic ports before distribution from Chicago. As a distributing point for imports it has the transportation facilities for serving a wide area, for besides being the country's second largest city, it is the railroad center of the United States.

The important cities of the Great Lakes have far greater opportunities than many coastal ports of the United States with a present successful maritime commerce. Important business will be developed at these ports in proportion to production and consumption in the territories tributary to them, just as similar business has been developed at other world ports accessible to ocean vessels and with good interior communications. These Lake cities now take millions of tons of imports yearly including some of the chief tonnage producing imports of the United States, brought from the seaboard by rail and destined mainly for the industries of the Mid-West region. The most ideal conditions for the creation of great world terminal ports are to be found existing at the principal Great Lakes ports. Bulk and package freight abound here for the loading of outbound vessels, manufacturing industries require large quantities of raw materials and a large neighboring population consumes the food products and the manufactures of many other states and nations.

The Influence of the Seaway Towards Building up an American Merchant Marine

It would seem that a factor of major importance not to be overlooked in any treatment of the St. Lawrence Seaway is the influence of the project upon the country's Merchant Marine. One hundred years ago over 92 per cent of the foreign commerce of the United States was carried in the holds of American vessels. However, in more recent times, the percentage has dwindled to as low as 8 per cent. With the impetus of the shipbuilding program of the World War it had again risen to almost 43 per cent. It is mainly the coastal population of the country that appreciates a large and prosperous Merchant Marine in developing the economic welfare of the nation. The completion of the Great Lakes-St. Lawrence route will extend the coast line of the United States by 4,345 miles or one-third again as much as it is at present. Not only will interest replace apathy in the interior sections as to the country's maritime development, but there will also inevitably result as a consequence of the Seaway a very substantial increase in the number of vessels entering into domestic commerce and a potential increase in the number of ships available to handle the country's commerce with foreign nations when the emergency arises. The urgent need for an adequate American-owned merchant marine was forcibly demonstrated during the recent World War when a shortage of vessels seriously restricted the transportation of men and of supplies. If no provision is made for an American Merchant Marine before the next maritime national emergency arises, the United States may find itself at a still more serious disadvantage than in the recent War. It is natural

and reasonable to expect that when the services of foreign-owned ships are required for carrying the commerce of their own ports of registry they will be diverted to that purpose regardless of any simultaneous shipping needs of the United States. High shipping rates reacting unfavorably to the commercial interests of the country have already been necessary at times to pay for the services of foreign-owned vessels to fulfill the transportation requirements of the United States when these foreign-owned vessels were needed at home. Strenuous efforts have therefore been made in recent years by the Shipping Board of the United States and other maritime interests along the seacoast to promote an American-owned Merchant Marine on which the country could always depend to fulfill the requirements of its ocean commerce. And a substantial aid to the building of a greater American Merchant Marine as well as to the bringing of American ships into the Great Lakes-St. Lawrence Seaway when completed, are these existing provisions of law that necessitate the carrying of all domestic commerce in American vessels. The provision in the United States Code under Title 46, providing that foreign vessels cannot transport merchandise or passengers from one United States port to another, permitted only without either to sail from one United States port to another, has already had an important influence especially since the opening of the Panama Canal in 1915, in promoting the entry of more vessels into the registry of American ocean ports.

The Influence of the Seaway on Ship Building on the Great Lakes

The same physical obstacles that have limited heavy water traffic on the Great Lakes-St. Lawrence system to the confines of the Lakes themselves, have likewise limited the commercial building of ships although the possibilities of shipbuilding on the Great Lakes have long been recognized. Construction of large vessels on the Lakes took on a new importance as a result of the War. In 1918 there were thirteen yards on the Great Lakes constructing vessels for the Government of the United States. The dimensions of the vessels built were generally the maximum that could be passed through the Welland and the St. Lawrence River canals. Vessels of more than 261 feet in length were cut in two parts. Although the yards of the Great Lakes are well equipped for the construction of vessels of all types, according to MacElwee and Ritter, construction has obviously been largely limited to vessels that can be passed through the canals as entities and the necessity for sending the larger ones through in sections has been a deterrent as to the building of many vessels of this type. The uniform twenty-seven-foot depth planned for the St. Lawrence Seaway is sufficient for the passage without cargo of the larger type of commercial vessels and with the Seaway locks, 820 by 80 by 30 feet to accommodate such vessels, it is certain that the activities of the shipyards of the Great Lakes can and will be extended to include the construction of large ocean-going freight and passenger vessels.

The low cost of the raw materials of iron ore, stone and coal, required for the manufacture of steel of which ships

are made, together with low cost of transportation of these materials and deep channel access to get new ships to the ocean, both resulting from Seaway completion, justify the conviction, it seems, that conditions on the Great Lakes will be peculiarly favorable for successful competition in the shipbuilding trade of the world. The benefits to be afforded the Mid-West United States by the advancement of this industry on the Great Lakes, may annually amount to millions of dollars.

The Lakes have continually developed new vessels to meet their needs—the long and effective bulk freighter; ships especially designed for carrying automobiles; ships that refrigerate the dairy products from Wisconsin and Minnesota; ships for every particular purpose. Great Lakes ports have developed the fastest loading and unloading equipment of any in the world. In fact, west of the so-called "Bottleneck" in the International Rapids section of the St. Lawrence River, the forty-five million people of the marooned interior of the United States now demanding an outlet have bestirred themselves to produce as highly developed a commerce as any in the world right up to the point where due to obstacles in this transportation system, cargoes must be broken up and transferred.

The ships are in existence, the Seaway can soon accommodate them, the whole interior of the United States guarantees their loads. Every experience in water transportation proves that given the cargoes, the terminal facilities at ports and destination and distributing points, freight and passenger vessels and those with both purposes combined will continue on their course and penetrate inland on navigable waters just as far as they possibly can go.

CHAPTER VII

SECTIONAL OBJECTIONS TO THE ST. LAWRENCE SEAWAY IN THE UNITED STATES AND CANADA. Alternative "All-American" Ontario-Hudson Route and Objections to It. Comparative Benefits from the Seaway to Canada and to the United States.

AUTHORITIES—Player, Whiting, McManus, Drury, Hoover, International Joint Commission's Report of 1922.

WHILE a vast part of the United States and Canada want the St. Lawrence Waterway, there are objections from those who now gain either from the present handicaps to unobstructed navigation or from letting the water power go to waste. The opposition to the St. Lawrence Seaway project has been chiefly led by the State of New York and particularly by its two cities of Buffalo and New York. Buffalo has feared the loss of its business of transferring grain from large freighters to the railroads and of storing and insuring. Criticism comes from certain shipping and financial interests of the City of New York who profit from this community's position as a toll gate for part of the great inland empire that it serves, exacting toll on commerce bound for North American Atlantic ports or overseas. According to Arthur Cyril Player of the Detroit *News,* the revenue of New York banks for handling export documents from Detroit alone in one normal year is well over $5,000,000. When steamship lines can issue bills of lading on board direct to the exporter in Detroit, Cleveland, Chicago and other ports

of the Great Lakes, the local banks at these new points of origin of the ocean voyage will share in the revenue from this business.

It is certain that New York as the center point would remain the financial and commercial center of this country's foreign trade regardless of the Seaway's completion. In this connection it may be observed that the completion of the Welland Canal built by Canada and opened in 1932 has already gone part of the way in diverting some tonnage from the Erie Canal-Hudson River route destined for New York City and from other present routes and terminals to lower Lake Ontario. A certain section of the state, namely that lying adjacent to the international boundary line and near the 1,100,000 horse power of hydro-electric energy to which the United States is entitled and to be developed there, has on the other hand seemed to favor the proposition and has in the main been active in giving support to the measure. In answer to the objections of New York City, if we consider as a unit the State of which it forms a part, a great portion of the State of New York would be richer by Seaway completion from the standpoint of navigation and from the standpoint of power.

There seems to be a more favorable attitude on the whole toward the Seaway project on the part of the State of New York. It will be recalled that an amendment on the part of the Senate of the United States to the Rivers and Harbors Act in 1919 called for the original investigation of the proposed development. This amendment was adopted by a vote of forty-three to eighteen. Twelve of the eighteen negative votes were cast by senators from states north of the Potomac and east of Ohio. Although the two senators who were representing the State of New York at that time were both included in the negative vote, of the two present senators from that state only Senator Copeland has announced his oppo-

sition to the Treaty. Senator Wagner, who is one of the subcommitee of seven of the Foreign Relations Committee considering the Seaway, has spoken only of the possibility of demanding a revision of the Treaty document in respect to construction costs if New York cannot get an allocation of those costs that will permit the sale of cheap power.

In addition to that of the New York interests, opposition has been registered at various times by individuals and organizations connected with the activities of certain North Atlantic ports including those of Philadelphia, Boston and Portland, Maine, though it now seems that New England as a whole is in favor of the Seaway.

There is dissatisfaction in Illinois over the Treaty provision limiting the amount of water to be diverted from Lake Michigan into the Illinois waterway connecting Chicago with the Mississippi River. Although Chicago has long desired a water connection with the Atlantic, it is equally interested in the successful operation of the Lakes-to-the-Gulf Waterway. The Sanitary District at Chicago has been exerting political influence against the Seaway since July, 1933, not because of any objections on principle, but because of the very special interest that the Seaway Treaty would affect its plans for power development along the Sanitary Canal for drainage from Chicago. Fearing that an adequate channel cannot be maintained with the amount of diversion limited by the United States Supreme Court decree in the Chicago Diversion case, the terms of which have been included in the Treaty with Canada, that city contends that since Lake Michigan is a domestic body of water, this is not a matter for a treaty with a foreign country.

As to these various special objections to the Seaway, according to Herbert Hoover, as Secretary of the United States Department of Commerce, the restored or increased prosperity of the mid-continent, the relief of many of their

present economic difficulties and the development of huge water power for the stimulation of industry and of commerce in the State of New York and in New England will restore and increase over normal times the prosperity of the country as a whole, and thereby benefit every citizen and every city.

On the other side of the international boundary the same picture is presented. There has appeared to be much opposition to the Seaway from Montreal, the New York of Canada, and for identical reasons and also from Quebec City and in general from the Province of Quebec in which these two cities lie. It seems that the opposition to the Seaway on both sides of the international boundary has not been based on any principles of general public policy but has been actuated entirely by selfish considerations in the belief that certain very local and very individual interests might be adversely affected in case that large shipments of tonnage were diverted from these several ports to a through route via the St. Lawrence Waterway.

Far from losing its preëminence in the grain trade, Montreal stands to gain because of the lower rates brought about by the upper lakers coming down to its transfer elevators. This will draw trade from wider areas as well as divert down the channel of the St. Lawrence to Montreal a good deal of wheat that now goes out by Buffalo and New York. Not only is Montreal the financial center of Canada but through it passes every important rail, water and road artery of the Dominion. It is situated at the junction of two great rivers, the Ottawa and the St. Lawrence, besides its being at the head of the old highway to the City of New York by way of Lake Champlain. Situated in such a strategic trade position at the joining of arteries of commerce, it is apparent that the completion of the St. Lawrence Waterway cannot check Montreal. On the contrary, the primary effect on that city of

the Seaway as a navigation enterprise, will be an intensification of the activities that have made its prosperity. The conjunction near Montreal of magnificent transportation facilities and of hydro-electric power incidental to the Seaway, of which 2,800,000 horsepower, it will be remembered, is Canada's share in the Quebec section of the river, can have but one result, the increased growth and wealth of this great commercial center. Furthermore the Seaway will create in the neighborhood of Montreal and in the Province of Quebec of which it forms a part, a more intensive industrial area. Several communities in the neighborhood of that city, with an increase of financial and transportation business from means of navigation unsurpassed and with access to ample power would have the possibility of becoming important industrial sites. And that is not all. The St. Lawrence Seaway would contribute to the growth and prosperity of entire industrial as well as wheat growing Canada, whose industrial areas, it can be noted, are already concentrated at the projected Seaway's edge.

The Seaway is not, as has been objected, predominantly through a foreign country. By a Canadian statute Father Point on the south shore of the St. Lawrence is the dividing point between inland waters and the high seas. Eastward of Father Point, vessels are no longer within the jurisdiction of Canada but the law of the high seas applies. This point is 340 miles below Montreal and is 1,677 miles east of the head of the Great Lakes or namely of the harbor of Duluth-Superior. Of this distance, 1,243 miles or 74 per cent lie in international waters while 434 miles or only 26 per cent lie within the Dominion. The Seaway then, for the most part, is to be for purposes of navigation an international thoroughfare. There is nothing new in this thought since the free and mutual use of the system of the Great Lakes and the St. Lawrence River has been enjoyed by the people of the

United States and Canada from the close of the Revolution with slight interruption in 1812-14 right down to the present day.

Alternative "All-American" Ontario-Hudson Route and Objections to It

Indeed three different routes for a shipway have been put forward, first, by reconstruction of the present canal from Lake Ontario to the Hudson, making use of the fourth new Welland Canal now completed by Canada to connect Lake Ontario and Lake Erie. The United States has treaty protection of equal treatment in the use of the Welland Canal. Second, by developing an "All-American" route which would include the Lake Ontario-Hudson project plus a new ship canal on the south and American side of Niagara which would duplicate the new Welland Canal simply to traverse American soil in traveling between Lakes Ontario and Erie; third, by utilizing the St. Lawrence River as a joint undertaking with Canada.

It has been estimated by the United States Department of Commerce by a study in 1927 that an average annual tonnage of 17,500,000 is available for transportation in normal times on either the Ontario-Hudson or "All-American" route and that an average annual tonnage of 23,000,000 is available for transportation in normal times on the St. Lawrence route, 80 per cent of both figures representing exports and imports as distinguished from domestic traffic.

In accordance with a provision of the Rivers and Harbors Act of Congress of 1925, a special board of United States Army Engineers investigated the Great Lakes-to-the-Hudson

route and reported that its construction at that time would be economically unsound. It found that it would be a longer route to Europe, that it would involve longer reaches of restricted channel and more bridges and locks and that little or no water power could be developed. The Engineers further held that the annual return in transportation savings on the New York route would not exceed by any fair margin the annual operating and maintenance costs. Further its cost estimates were higher than those for the St. Lawrence route, partly because there would be little if any offsetting revenue from the development of power.

According to the reports of the Army Engineers of December 6, 1926, in more detail, the cost to the United States of constructing the Lake Ontario-Hudson route would be $506,000,000 and that of the "All-American" route would be $631,000,000, both estimates being figured without interest during construction. It is to be noted that while the sale of the water power to be developed on the St. Lawrence route is to heavily reduce the total expenses of the project, in case of the Ontario-Hudson or "All-American" routes there would be no consequential relief by any water power that could be developed. The net cost to the United States of the St. Lawrence route after deductions through the sale of hydro-electric power would be approximately $126,000,000 while the net cost to Canada would be under $40,000,000, exclusive of the cost of the new Welland Canal.

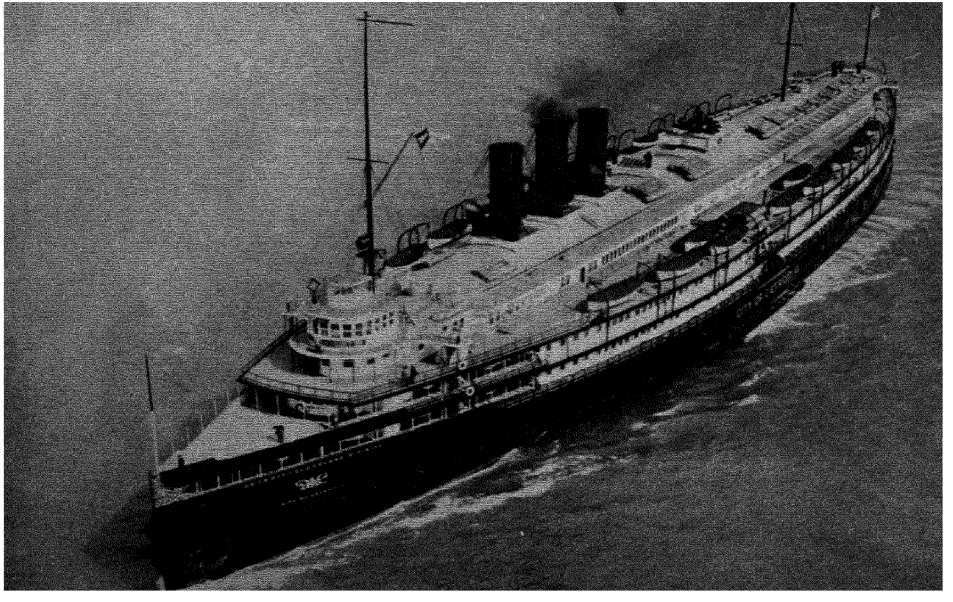
There are still other important considerations in the comparison of routes. The amount of restricted and retarded navigation through actual canals would be 137 miles on the "All-American" route and 128 miles on the Ontario-Hudson route as against 39 miles on the St. Lawrence route, 11 miles between Montreal and the foot of Lake Ontario, 25 miles through the new Welland Canal and 3 miles through Sault Ste. Marie. The operating season free from ice is the

same on all of the routes. The St. Lawrence route requires 16 locks as compared with 35 locks on the Erie Canal route from Tonawanda on the Niagara River to Troy, New York, on the Hudson. The St. Lawrence route will be crossed by only 8 bridges as against 54 on the Ontario-Hudson alternative.

The actual distance from Lakes ports to northern European points by the St. Lawrence route would be less by 625 miles as compared with the Ontario-Hudson route and while the actual distance from Great Lakes ports to the City of New York would be greater by 1,550 miles and from 540 to 1,350 miles to South Atlantic points by the St. Lawrence, these items are more than outweighed by better navigation and lesser fixed charges.

In fact one of the most fantastic of all objections to the Great Lakes-St. Lawrence Waterway has been based on this demand for an "All-American" route. Between Detroit and Sault Ste. Marie, for example, the channel crosses the international boundary some twenty or more times, many captains with their eye on the channel not knowing whether they are in American or Canadian waters and caring less. In some places, it happens, there is not room for two separate and jealous channels, each providing as it must, for two-way travel. Right in the Detroit sector, all the way from Windmill Point Light to Trenton the channel is over Canadian soil. For an "All-American" route a new canal would have to be dug right through the heart of Detroit. Then to be consistent the new Welland Canal which is entirely in Canadian territory and built entirely by Canada but which the United States has the right to navigate by treaty, would have to be discarded by American ships.

In fact the suggestion of an alternate route connecting Lake Ontario with the Harbor of New York suffers seriously in comparison with the St. Lawrence Seaway project.



Courtesy of the "Cleveland Plain Dealer"

DETROIT AND CLEVELAND NAVIGATION CO.

Although the "City of Detroit" is not built for ocean travel, the St. Lawrence Seaway would enable it to meet the ocean liners at Montreal or the Strait of Belle Isle so as to afford an all-water voyage between points abroad and Duluth and Chicago.

To summarize in brief, it would cost from four to five times as much to construct, it would require more than twice the number of locks, it would contain five times as much restricted channel and it would be crossed by nearly seven times as many bridges. According to the United States Army Engineers who have reported upon the "All-American" project, its operation would entail an annual deficit of several million dollars without the possibility of any compensating development for power. The "All-American" route is further not to be preferred because it would intercept almost the entire flow of traffic passing from west to east and would direct the great portion of this traffic slowly down to the already over congested Harbor of New York as the sole transshipment terminus.

Although the New York State Waterways Association and the Merchants Association of New York have both passed resolutions within the last year and a half in order to have commerce detoured down through New York State and City and opposing the St. Lawrence project, agitation on the whole, however, in behalf of the Great Lakes-to-the-Hudson "All American" route has been much less active in the last few years. The New York Legislature way back in 1920 created a commission to oppose the St. Lawrence project, presenting a brief to the International Joint Commission that the St. Lawrence improvement would be uneconomical. The Legislature adopted in response to a recommendation by Governor Alfred E. Smith a memorial to Congress urging construction of the Lakes-to-the-Hudson Canal and two years later a Great Lakes-Hudson Waterways Association was organized in New York to advance the "All-American" route. That took place in 1926. A crushing blow to this route was the report of the United States Engineers appearing at the end of the same year and just described in detail above. This was shortly followed by the also above mentioned report of

the Bureau of Foreign and Domestic Commerce from a study in 1927 to the effect that the New York route would attract a definitely much smaller volume of traffic. Then in 1930, it seems that a finishing blow was struck against the "All-American" New York route when the Rivers and Harbors Act of Congress contained a statement of policy of the United States Government that New York canals should be developed only as barge canals with no intention of making them ship canals or of hindering the Great Lakes-St. Lawrence improvement.

The old controversy over alternative routes that dominated discussion of a Lakes-to-the-Sea project in earlier years, seems to have become a matter of the past, with the weight of economic and engineering opinion not only favoring the St. Lawrence Seaway but with emphasis on the larger power potentialities of that route also helping to reconcile the people of New York to abandonment of the plans they advocated for the construction of a Lakes-to-the-Hudson ship canal. Though echoes of the former controversy may still be heard, future consideration of the Seaway from the standpoint of New York will in all probability turn mainly on the aspects of power development. It happens that the subsiding of that controversy over the "All-American" route has coincided with the ardent advocacy by Franklin D. Roosevelt, then Governor, of the St. Lawrence Seaway project as a means through its power development of bringing cheap electricity into the homes and farms of the State of New York.

What does it matter that we have not an "All-American" route? The thought in the minds of objectors to the Seaway on these grounds seems to be that of the possibility of war. Supposing in other words, that either Canada or the United States was at war, would not the transportation of munitions or troops by the warring country over a channel that kept

crossing back and forth over the boundary violate and offend the neutrality of the other? One alternative is to build duplicate locks and channels at enormous expense. Another is to await the event and it is not entirely unlikely that in the next emergency that calls the Canadians to war, the armies of the United States will be among the first to rally to their side. At any rate there are enough railroads, highways, rivers and canals auxiliary to the Waterway that some sort of solution short of Seaway duplication can rather easily be found. The possibility of war, instead of an argument for doing nothing with the Seaway it seems, should be an added incentive for earnestly completing it in these times of peace to enable this country to attain its maximum potential strength before the unfortunate event of war. As a measure of future protection as well as to provide for industry's growing needs, the important resources of the country should be developed to the point where they may be quickly brought into use when needed.

While the idea that military advantages by either route are to be seriously considered is absurd in the extreme in connection with any relationships with our most friendly neighbor, the Dominion of Canada, the military advantages of the proposed waterway across the State of New York, according to the Chief of Army Engineers, are not sufficient to justify the cost to the United States of hundreds of millions of dollars more to go this way. Many points of both routes, it will be noted, are so close to the international border as to make them subject to destruction with the consequent blocking of the Seaway in case of war. Indeed this joint undertaking for bringing the Atlantic Ocean to the heart of the North American continent is a major world accomplishment second only to more than a century of disarmament along the boundary between Canada and the United States in willing compliance with the Treaty of 1818.

There is no fear of disturbance of present possession to American soil from defective title after expenditure for the construction of the Great Lakes-St. Lawrence Waterway enterprise; the legal title of the United States to the boundary line in the Great Lakes and in the St. Lawrence River rests on a firm foundation. France discovered and possessed the region. England succeeded in title to all of the possessions of France east of the Mississippi in 1763. Within two years by treaty the boundary line between French-speaking Quebec to the north and the original Thirteen English Colonies was established as the mid-channel of the Great Lakes and connecting waters. The sovereignty of the United States and Great Britain and the exact location of the boundary line has been adjusted in a series of treaties from 1782 down to 1909 and all disputes regarding it have long ended. The physical properties of the two nations of Canada and the United States are distinct and separate at the present time, except as it should be, for the joint right of usage of the waters of the Great Lakes and of their connecting channels and of the St. Lawrence River. So it has worked out between Americans and their very good Canadian friends that through the St. Lawrence Canals wholly within the Dominion or through Lake Michigan wholly within the United States or back and forth over Canadian and American waters in going between Detroit and St. Mary's River, the course of navigation is free and clear to the ships of both nations, each reserving sovereignty with police powers and civil jurisdiction over the territory on its own side of the border right up to the international boundary line.

Comparative Benefits from the Seaway to Canada and to the United States

For Canada also, the St. Lawrence Waterway has real and great importance. The lower St. Lawrence basin contains approximately only 6 per cent of the total area of the Dominion but within this small region about 55 per cent of the population and 70 per cent of the industrial development of the entire country are included. The regions in Canada surrounding and tributary to the Great Lakes have enormous wealth in nearly all important natural resources excepting coal and are by far the richest in unexploited natural resources of the continent. The Canadian pre-Cambrian shield touches the Lakes on the north ready to contribute not only the precious metals but also in unmeasured quantities the even more important commoner minerals necessary to modern industry and life, copper and nickel and lead and a dozen less spectacular but equally useful products and in their raw state at close proximity to the water's edge so as to be available for cheap transportation in Canada as well as in the United States. And where coal and iron are more generously supplied by nature to the American side, the water-borne transportation of the Lakes makes them cheaply available to Canada. There are forest resources in abundance to supply the newspaper, rayon and other industries founded on wood-fiber. The richest agricultural regions of Canada as well as those of the United States contribute their varied products not only directly to market as immense populations' food but also indirectly as the raw materials for dozens of industries.

As in the case of the United States there is a sentiment in

favor of the Waterway particularly strong in Ontario and on the part of those interests who need a more direct outlet to the sea with a contrary sentiment on the part of those who now enjoy some of the business of shipping, storing or insuring goods now traveling for lack of a better way by routes of distress. The forces of opposition have not prevented in Canada, however, a present unity of purpose for the accomplishment of the project. Though Canada's several geographical sections would by nature trade principally with complementary sections of the United States on north and south lines, it has been the policy of the Canadian empire builders and statesmen since confederation of the Provinces in 1867 to build their systems of transportation and communication in the direction east and west. The Fathers of Confederation were impressed at that time by the lack of unity in the United States that had brought on the Civil War as well as by the abrogation on the part of the American Congress of the Reciprocity Treaty between the United States and Canada in 1865. They desired to bind together the string of Provinces and Territories stretching east and west across the continent at great intervals from each other by the physical bond of rails. So it happens today that practically all of the commercial, industrial and financial life of the Dominion is along that east and west line. In accordance with Canadian policy of fostering their interprovincial trade and in improving transportation connections to the east and west, the St. Lawrence Waterway when completed will play an important rôle. Some 400 miles from the Gulf of St. Lawrence and on the river is the city of Quebec and above it, at the head of deep-water navigation on a thirty-five foot channel, is the great port of Montreal. Both of these cities are in the only French-speaking Province in the Dominion, of Quebec. On Lake Ontario and in the Province of that name is the magnificent harbor development

of Toronto while at the head of this lake and adjacent to Canada's fourth new Welland Canal is the growing industrial port of Hamilton. Near the head of Lake Superior and still in vast Ontario Province are Canada's grain ports of Port Arthur and Fort William. So there are great Canadian cities as well as those of the United States which developing so far in spite of present handicaps in the system of Great Lakes would likewise by St. Lawrence Waterway completion have brought to them the ocean front.

In accord with Canadian policy of promoting transportation connections on east and west lines, the St. Lawrence Waterway will promote one of Canada's foremost ambitions of closer trade relations with the United Kingdom and with the rest of the Empire. The British Parliament has been gradually yielding on free trade and has adopted a tariff to give preferences to the Dominions and Colonies on certain goods in the English market to reciprocate for preferences by them to certain English products. The last Imperial Conference held at Ottawa in 1932 gave impetus to the organization of the British Empire into more of an economic unit. Windsor, Hamilton, Toronto and Kingston, all in Ontario Province, and Montreal and Quebec City in the Province of Quebec are situated in relation to Liverpool on the most direct shipping route that nature can provide, a latitudinally straight line. The position of these ports of Canada on the system of Great Lakes will make the St. Lawrence Waterway an important artery of imperial trade. The improved St. Lawrence route will effect the economies of deep-water navigation between the Dominion of Canada and Great Britain as well as between Canada and the other Dominions and Colonies as a prerequisite for the closer economic unity of the Empire.

Yet the benefit from the Seaway to the United States is bound to be far greater than the benefit to the Dominion

of Canada. The population of Canada by the 1932 census is 10,506,000, while that of the United States for 1930 is 122,775,000, so that the population of the United States is twelve times that of Canada. The population throughout the whole of Canada is exceeded by that of the State of New York which by the 1930 United States Census was 12,588,000. The population of the area of the United States tributary to the Seaway and to be directly benefited by it is 45,000,000 or still more than four times the total population of Canada, so granting that every one in Canada is to be benefited by the Seaway but only those Americans living in the area tributary to the Great Lakes region are to be benefited in the United States, this country on the basis of persons to be benefited by the Seaway gets a four to one advantage as compared to the Dominion. Population is not the only basis for judging comparative advantage, for taking the figures of ship tonnage of Canada and those of the United States respectively using the Great Lakes-St. Lawrence Waterway in the normal year of 1928, the United States tonnage was 2,525,437 and the Canadian was 608,166. We find, therefore, that the United States gets a four if not a five to one benefit from the Seaway as compared to Canada. The statement is attributed to Herbert Hoover as Secretary of Commerce that if for any reason our Canadian friends did not wish to join us in this enterprise that the needs of our own population would sooner or later compel us to undertake to free Lakes shipping to the sea even at the cost of $500,000,000.

Canadians in fact, are not so vitally interested in the completion of the Great Lakes-St. Lawrence route as the citizens of the Mid-West United States. It is important to note that throughout the international conversations on the Seaway extending over a generation of time from the appointment of the International Waterway Commission in

1895 to the report of the Joint Board of Canadian and American Government Engineers in 1926-7, the dates of nearly all decisions and appointments by the United States have been prior in time to the corresponding decisions and appointments by the Canadian Government. Canadians have not been so much interested in the Seaway as Mid-West Americans since until quite recently they have been preoccupied with the merits of alternative routes to the seaboard. This was particularly true in the Western Provinces where very keen interest has been expressed in the possibilities of the route from the Great Lakes region by railroad to James Bay and thence to overseas points by way of Hudson's Bay for the successful completion of which railroad the Dominion Government has spent or committed itself to the sum of nearly $40,000,000, which happens to be the total net cost to Canada to finish the Great Lakes-St. Lawrence Seaway. In the eastern part of Canada a similar lack of stress has been placed until recently on the Great Lakes-St. Lawrence Seaway due to the sentiment in favor of the proposed Georgian Bay route to cut a canal from Georgian Bay which is contiguous to Lake Huron, to the Ottawa River which flows into the St. Lawrence just above Montreal. This route would connect the Great Lakes for shipping purposes with the ocean by way of Canadian territory throughout its entire extent. This project has been before the Canadian public for many decades.

A more powerful though perhaps less obvious reason for lack of so much enthusiasm for the St. Lawrence Seaway on the Canadian side will be found in the radically different character of the two regions, Canadian and American, tributary to the Great Lakes. The United States tributary area consists of a compact group of states containing this industrious, progressive and ambitious population of approximately 45,000,000. That the populations of Chicago and

Detroit increased respectively 2,500 and 2,200 per cent in only sixty years is in itself a sufficient indication of the extent to which this region has been favored by nature. The resources of this region, rich in the raw materials of the basic industries, are both varied and enormous in their extent. In spite of a tremendous production for years past, this territory still contains immense resources in iron ore, copper, coal and timber, producing substantial surpluses for export as well as constituting a great consuming market. It is assured that to keep pace with the development of the very rich territory tributary to the Great Lakes in the United States, every practical means of transportation will ultimately have to be brought into play.

The region in Canada similarly tributary to the St. Lawrence Waterway on the other hand, consists of two distinct areas of productive land separated by a long narrow stretch of comparatively unproductive country, roughly in the form of an hour-glass, one end being the eastern portion of the Province of Ontario and the other, the prairie Provinces of Manitoba, Saskatchewan and Alberta, while the neck of the hour-glass is the sparsely populated region north of Lake Huron and Lake Superior. The compactness and uniform productiveness of the United States tributary area are lacking in the Canadian area. The density of population of the United States to that of Canada is nearly eight to one in a comparison of the tributary areas. The production of the Canadian tributary area falls far below that of the United States both in raw materials and in manufactures. Except in grain it has nothing approaching the same quantity of products to fill the holds of ocean vessels sailing from Great Lakes ports to overseas points. And that is not all. The Canadian tributary area offers today and will continue to offer for long to come a comparatively small market for return cargoes from coastal points and abroad.

Another point not to be forgotten in considering the characteristics of the Canadian and United States sections of the Great Lakes tributary area and ability to make effective use of the St. Lawrence Seaway is the unique advantage enjoyed by the United States in the possession of Lake Michigan which runs far down into the heart of this territory. The immense coast line of Lake Michigan with its numerous excellent harbors, each of which is linked up with the network of railways that cover the Middle West, puts all the surrounding American territory in a most favorable position to take full advantage of the transportation facilities to be offered by the Seaway.

In Canada, railway facilities even in normal times are in advance of the requirements of the country while in the United States, at least so far as the area tributary to the Great Lakes-St. Lawrence Waterway is concerned, population and production up to 1929 have outstripped railway facilities. One of the reasons in the United States that impel to vigorously undertake the completion of the Seaway is the necessity to provide more transportation facilities for the future of the country as a whole. The great railway gateways and terminals of the United States have already shown serious congestion in normal times. Their traffic in twenty-five years nearly tripled, growing from 114 billion ton-miles to 338 billion ton-miles in that comparatively short space of time. As all depressions have an end so within another quarter of a century the country must provide for expansion in facilities to handle even more traffic than was handled in the most prosperous times. Present railways will be inadequate to meet that task. The cost of expansion of railway terminals to accommodate any further growth of traffic in the United States or to accommodate the peak load of normal times with ease would be prohibitively high. The reverse of this situation is true in Canada where far from its

population and industrial development having outrun its transportation facilities, the fact is that at the present time the railways of Canada have already advanced beyond the country's requirements. With 40 per cent of its railway mileage in the Canadian Pacific, privately owned and operated, and 60 per cent in the Canadian National, directly owned and operated on behalf of the people of Canada, the Dominion has a total of 56,600 miles as against 430,000 miles in the United States, or the United States have only 7½ times as many, which serve a population in this country twelve times as great as that of Canada.

As shown by the foregoing facts, the need for the Seaway improvement at the present time is not felt as so apparent in Canada as it is in the Mid-West United States. While the St. Lawrence Seaway will be extremely advantageous to our northern neighbors, especially when the population to be served in Canada becomes larger in the future, and while it is certain that the Dominion regardless of the United States would put through the enterprise sooner or later, it is still far from the facts that the United States in coöperating in the building of the St. Lawrence Seaway is engaging in an enterprise primarily desired by a foreign power. Rather than being disparaged for its international aspect, the St. Lawrence Seaway project should be hailed as setting a new high mark for international coöperation in the progress of the world.

CHAPTER VIII

HYDRO-ELECTRIC WATER POWER INCIDENTAL TO THE NAVIGATION DEVELOPMENT. The Amounts Respectively Available to Canada and to the United States. The Interest in the St. Lawrence Power Development on the Part of the State of New York. Power to Which Canada Is Exclusively Entitled. Answer to Objection of United States Dealers in Coal.

AUTHORITIES—Craig, McManus, Player, Drury, Whiting, MacElwee and Ritter.

THE St. Lawrence River, because of the immense storage provided by the Great Lakes, possesses the most even flow of any river in the world. The total fall of water level between Lake Ontario and tidewater at Montreal, is approximately 224 feet, causing accordingly an aggregate potential water power susceptible to the development of hydro-electric energy. Since in the process of developing the river for deep draft navigation along this particular stretch, all or any part of the power can be made readily available as an incident to the construction of the necessary navigation works, the plans for the St. Lawrence Seaway are not confined to navigation but include the development of 5,000,000 installed horsepower of hydro-electric energy.

When the American and Canadian Government Engineers reported to the International Joint Commission in 1921 they found the physical conditions of the St. Lawrence favorable for navigation improvements that would be permanent with very low upkeep costs; that it was wise in following out the

navigation improvement plan to give equally careful consideration to providing the possibility of eventually developing the full potential hydro-electric power. The Engineers further believed that simultaneous development of the maximum water power was not the soundest economic procedure since the market for the full output was not yet in being; erection of permanent power works should therefore be planned so that the entire 5,000,000 horsepower capacity of the river may be developed on a progressive basis; that along those parts of the river where improvement for navigation was necessary and where side canals and locks were the most feasible means of attaining it to build the canals and locks in such a way as not to hinder the future development there of power; that where the construction of locks and dams offered a better situation for navigation there should be provided the means of developing incidental hydro-electric power obtainable by falls to lower levels from the surface of the dams. That view adopted in the Report of 1926 of the enlarged Joint Board of Canadian and United States Engineers has remained essentially unchanged and the plan now awaiting the ratification of the Treaty of July 18, 1932, fixes the project for navigation improvement as an immediate task and provides for so constructing the side canals and locks and dams and locks that neither the plans for improvement of navigation nor those for hydro-electric power obstruct each other but leaves the hydro-electric development to progress as the power is needed. That the improvement of the St. Lawrence for purposes of navigation and for purposes of power are to a large degree interdependent is not only seen from the fact that with the development of power the growth of industries will result in New York and Ontario and Quebec, but without the improvement to navigation such industries would be handicapped in the matter of cheap transportation cost. There-

fore, it would seem to be a fair statement of the case that navigation and power development are complementary to each other. While the benefits from improved navigation will in all probability be more immediately felt and the most widespread in their effects, the benefits of power development would not reach their maximum benefit if carried on without an accompanying navigation improvement.

The Amounts Respectively Available to Canada and to the United States

Of the 5,000,000 approximate available horsepower, 2,200,000 within the International Rapids section of the St. Lawrence River belong in equal parts to Canada and the United States, while 2,800,000 capable of development below the international boundary and wholly in the Province of Quebec, belong to Canada. As to the 2,200,000 horsepower within the International Rapids section of the St. Lawrence River each nation may determine the method of development and distribution of its own share of the power, since the power developed by either nation is a domestic matter.

As to the American portion of 1,100,000 horsepower in the International Rapids section of the St. Lawrence River, the United States has arrived at a tentative understanding with the power authorities of the State of New York by which New York will assume the cost of the power works provided in the Seaway Treaty and will own the power accruing to the United States. It is with reason that the power authorities of the State of New York have agreed to pay the Government of the United States $89,726,000 for this power. With a vast reservoir of low cost hydro-electric

energy at the immediate disposal of a two hundred mile new seacoast from Rochester's Harbor down the St. Lawrence to Massena, the competitive position of this section westward to the interior of the continent and eastward to the markets of the world will be immeasurably enhanced.

In that part of the St. Lawrence River below the international boundary where the power is to belong to Canada entirely there are falls in the 25-mile Lake Francis section, in the 19-mile Soulanges section and in the 22-mile section of Lachine of respectively 1 foot, 83 and 48 feet. The Thousand Islands section of the river, extending a distance of 67 miles along the boundary from Tibbetts Point to Oak Point, both in New York, has only a one-foot fall. But in the 48-mile stretch of the International Rapids section where the United States and Canada are equally to share the power there is a fall of 92 feet. One cannot view the rushing masses of water there without being impressed by the tremendous forces latent in them and by the prospect of applying their energy to useful work. This vast international resource now running to waste has indeed appealed to the imagination of the people and according to the St. Lawrence Power Development Commission of the State of New York the plan to utilize it is supported by public sentiment that is firmly established. The Commission of New York divides the benefits into two separate classes, the first referring to the reduction of rates for electricity to the ultimate consumer with disposal of the power under a public authority as in Ontario Province, reductions rendered possible direct to consumers through savings from water power at low cost, reductions by way of creating a rate-reduction reserve out of profits from selling water power to large industrial firms, reductions where power is under contract by improved rate control. The second class of benefits would comprise the development of new industries in the neighborhood of the

St. Lawrence River, conservation of natural resources in so far as it is possible to replace exhaustible coal with inexhaustible water power, helping the deep waterway navigation project by erection of dams and harnessing of waterfalls produced by the overflow, and finally by adding to the world's technical experience as well as to public experience in rate control.

The construction of the Great Lakes-St. Lawrence Waterway project for both navigation and power makes the hydroelectric energy available at exceedingly low capital investment per horsepower unit. Its advantages over coal make the utilization of it decidedly worthwhile. It is easy to develop. It is inexhaustible. It is of great mobility. And finally it is clean in causing no smoke or soot. In order to express the value of the 1,100,000 horsepower of electric energy from water power to which the United States is to be entitled in the International Rapids section of the river, it seems fitting to translate the figures to more familiar terms. It is estimated, according to MacElwee and Ritter, that from six to fifteen tons of coal are required for the development of one horsepower year, the former figure being for the most efficient plants while the latter figure more nearly represents the average. Assuming that it takes ten tons of coal to develop one horsepower year, then the 1,100,000 accruing to the United States and to be sold to New York, represents a saving of 11,000,000 tons of coal a year. While this some two per cent of the total annual production of coal in the United States in normal times is too small a proportion of the whole to weigh heavily against the exhaustion of coal reserves and though a great proportion of this electricity will be put to domestic use in homes, it is still true that this power will release for use a quantity of coal that will produce a vast industrial development in upper New York State and that will add materially to the future commerce of the new

ocean route. And this source of power, however small a proportion of the total normal annual production of coal in the country, is a sure supply. While in time of emergency it is generally possible to increase the output of raw materials to meet increased requirements of manufacture within a reasonable space of time, it is not feasible to materially increase the supply of power in an emergency without the long delay required for the construction and equipment of new plants. As a measure of future protection, therefore, as well as to provide most conveniently for domestic and industrial needs, the important power resources of the country should be developed to the point where they may be quickly brought into the fullest possible use when emergencies require.

The Interest in the St. Lawrence Power Development on the Part of the State of New York

As to those power concerns in the eastern United States who seek to disparage the hydro-electric project in connection with the St. Lawrence Seaway, it seems that their attitude is not based on any contempt for hydro-electric power, in which business they are, but rather on the fear that the State of New York will afford keener competition than private power interests. That this power project has been long considered for development is shown by the fact that persistent applications for the last fifteen years have been made by private interests for franchises from the State of New York to utilize this power. The Power Commission of the State of New York insists on the necessity of developing power in connection with the St. Lawrence Waterway enterprise in

order that a navigation project to benefit the greater part of the continent may in hydro-electric power create new wealth in savings from fuel expense estimated at from five to twelve million dollars a year to the State of New York.

Franklin D. Roosevelt as Governor of the State of New York, in a special message to the New York Legislature, March 12, 1929, proposed the creation of a group of five citizens to act as trustees of the water-power resources of the St. Lawrence River. These trustees were to be charged with the duty of reporting to the Legislature a plan for the development of those resources and a form of contract for the sale of power to distributive agencies and if approved, to carry the plan into effect. The trustees were to be guided, declared Roosevelt, by two basic principles, first, permanent possession of the St. Lawrence water-power sites by the people of the State of New York, with construction, ownership and operation of the generating facilities to be carried out by the trustees in representing the state and second, the transmission and distribution of electrical energy was to be by private companies on the condition that consumers should be guaranteed the lowest rates consistent with a fair and reasonable return on the actual cash investment. Instead of trusting to the efficacy of rate regulation by commissions, the governor proposed that the state power should be sold on a contract basis, the rate to consumers to be fixed so as to yield only a carefully limited return. The governor admitted that if it should prove impossible to get the signatures of private companies to such contracts, the state might have to go into the transmission business itself. Though the Republican-controlled Legislature did not then accede to Roosevelt's request for legislation creating specifically trustees, it did provide for a commission to study the power question.

Roosevelt in summarizing the commission's report in a

special message to the Legislature, January 19, 1931, repeated his belief that the individual consumer should be given first consideration, receiving his power at the lowest possible rate compatible with a fair return on the investment; that the home user was the one to be given the first consideration because today small home owners and storekeepers are carrying a relatively far greater burden than the industrial user; that the entire commission as well as the governor were interested not so much in the disposition of this power to industries that might locate near the St. Lawrence River, but in its cheap transmission and sale to household consumers.

In pointing out that the three largest holding companies of power corporations had recently merged into the Niagara-Hudson Power Company, controlling practically all of the transmission lines in the St. Lawrence River, Governor Roosevelt observed that in seeking contracts for the distribution of the power of the State of New York, the power authorities would have to treat with a single company. In order to not be at the mercy of the monopoly of that company, he insisted on the necessity of the state's possible alternative of sponsoring a new transmission company under state auspices or of building transmission lines itself.

The legislative act of April, 1931, creating the Power Authority, met with the governor's wishes to the extent of providing that in case the trustees were unable to obtain a favorable contract from private companies, they should submit an alternative plan of distribution for legislative sanction. Through his various speeches, messages and acts relating to the power question in New York, Roosevelt constantly placed himself in a position to be regarded as the champion of cheap power for the small consumer.

In correspondence with the Power Authority of the State of New York, United States Secretary of State Stimson ex-

pressed a desire for harmony between federal plans for improving St. Lawrence navigation and the New York plans for the development of power but stressed the view that navigation was the primary purpose of the project. He said that whatever the rights of the State of New York might be in respect to any electric power developed by the navigation project on the international boundary along the river, utilization of that electrical power must in the end depend upon the authority and the permission of the federal government.

In a report sent to Governor Roosevelt, July 9, 1932, the Power Authority stated that oral agreements had been reached with the Department of State of the national government that the project was to be a joint enterprise of the federal government and of the State of New York, the federal government to be responsible for the general project on the American side, the State of New York to construct the power house superstructures and install the machinery and equipment, the State of New York to have representation on all agencies created to plan and construct the works, the State of New York to pay for its power house superstructures and their equipment and to reimburse the federal government over a period of years for the full cost of the power house substructures, head and tail races and for an agreed share of the cost of works common to navigation and power, and that in consideration therefor, the State of New York should have title to the power houses and should own and control in perpetuity all of the power produced on the American side. The State Department of the federal government took the position that it could not decide the question of division of costs until it knew the terms of the agreement between the Dominion of Canada and Ontario Province as to which matter Premier Bennett of the Dominion Government announced at the conclusion of the Treaty of July 18, 1932,

that the Dominion and Ontario agreed that the costs fairly attributable to navigation should be borne by the Dominion of Canada and those attributable to power, by Ontario Province, while as to economies effected from the construction of the navigation and power works as a joint enterprise there was to be an equitable division of savings.

Power to Which Canada is Exclusively Entitled

As mentioned above, in addition to the power to be developed in the International Rapids section of the St. Lawrence River there is below the international boundary a further possible 2,800,000 hydro-electric horsepower available for development by Canada when the demand for it arises, over purely Canadian soil. Although the United States has full rights to navigation in the Canadian section of the river, it has no interest in the part of the power to be developed there. The Dominion of Canada while reserving to itself navigation rights to the Seaway concedes the rights of the Provinces to the power. As to Canada's share of 1,100,000 horsepower of the hydro-electric energy to be developed in the International Rapids section of the St. Lawrence River, Ontario by separate agreement with the Dominion has assumed for $104,000,000 the cost of power works and ownership of the power which it will develop within its boundary waters.

Regarding this 2,800,000 horsepower capable of development below the international boundary and wholly in Quebec and belonging to Canada, the Dominion as it has dealt with Ontario's power will also deal with that of Quebec, which province is similarly at liberty to dispose of the

hydro-electric power within its boundary waters. While Ontario's policy is public development of hydro-electric power, Quebec favors private enterprise. This difference of opinion is no longer an obstacle to Canadian approval of the Seaway: in the Soulanges sector of the wholly Canadian portion of the St. Lawrence River, the development of the Beauharnois Channel and power works above Montreal is already being developed by private enterprise granted their rights by the Province of Quebec. The arrangements between the Dominion and its provinces of Ontario and Quebec and those between the United States and the State of New York are contingent, of course, on the ratification of the Seaway Treaty of July 18, 1932, by the Canadian Parliament who are waiting on ratification by the Senate of the United States.

One of the real questions connected with the development of the St. Lawrence power sites is the matter of the possible export of surplus power to the United States. As a result of the combined navigation and power development of the Seaway project, nearly four million horse power of electric energy or 3,900,000 to be exact, will become available for Canada above and below the international boundary. This is such a vast amount of power that if the whole development were to take place at once Canada might not be able to absorb the power as fast as it is produced. In that event, the question arises whether Canada should allow the export of surplus power to the United States until such time as its own people can use it since across the line here, there is a market for all of the power they can spare and at profitable rates. While some Canadians argue that the power supplied to Canadian users could be made cheaper because of the export of this surplus power until needed in the Dominion, the majority in the Dominion feel that the export of power is not of the same nature as the export of other commodities

since it has a trick, according to the Hon. E. C. Drury, former Prime Minister of Ontario, of building up permanent channels for itself, of making lasting connections, of attaching to itself whole tribes of dependents. Canadians feel that in spite of treaties and regulations with the United States, it is not by any means certain that once they allowed its export they could get it back when they needed it. In their report of 1928, the Canadian National Advisory Committee appointed by the Dominion Government to study the Great Lakes-St. Lawrence Seaway project stated that they were in complete accord with the general feeling throughout Canada that the export of power should not be permitted. It is believed that the export of this power should not be allowed because Canada will eventually need the entire supply available there for the great industrial development that is sure to come as the next stage in the country's growth and because it is a vital factor in the Dominion's prosperity and progress. As to whether Canada by refusing to sell power to industries in the United States, runs a chance of facing years of partial load with only a fraction of the power developed needed, with heavy capital charges unsupported by sufficient income from the sale of power and continually mounting up interest on the capital involved, the probability is all to the contrary. Take for instance the precedent on a smaller scale of the Queenstown-Chippawa development of the Ontario Hydro-Electric, begun as a War measure and not completed when the War was over and when the post-War depression had set in. The Chippawa Canal had to be completed at a cost of nearly $80,000,000 before a single turbine or generator could be installed and this entire capital cost had to be carried whether power was sold or not. Experience has proven that fears as to the rapid absorption of this half million horsepower of electric energy were groundless. As a matter of fact it was utilized almost as

quickly as it became available and by the time it was completed the Province of Ontario was seeking still more power.

Hydro-electric energy seems to have a way of creating its own market, it is so clean, so convenient and so adaptable to innumerable uses industrial and domestic. It sells itself in an almost miraculous manner.

Since the whole transportation system of the Dominion by land and water comes to the one vital center of Montreal, the Great Lakes-St. Lawrence Seaway project is highly important to Canada from the navigation standpoint. The fact that there is no coal in the central regions of Canada has made water power for many years a prime concern of Ontario and Quebec and has made it perhaps as vital an aspect of the Seaway project to Canada as the navigation feature itself. This power can be distributed economically from its sources of production by dams and falls to the great consuming districts over a distance of 300 miles. Montreal and the City of Quebec are within practical reach of sources of Canada's share of the 2,800,000 lower river power out of the 5,000,000 total potential horse power to be developed through the Seaway. As mentioned recently above, the district of the St. Lawrence River basin in Canada while containing only six per cent of the total area of the Dominion has 55 per cent of the population and 70 per cent of the total industrial development of the country and enormous wealth in the form of minerals, timber and pulp-wood: the water power from the Seaway project is, in fact, the commodity basic to an industrial civilization in this region to take the place of coal.

As to the absorption by Canada of its nearly four million horse power from the Seaway project, it is to be further remembered that the Seaway construction according to Herbert Hoover, expert engineer as well as ex-President of the United States, even if proceeding with the utmost dispatch, will take

a period of at least seven years. And having in mind the experience of Chippawa and also the great industrial possibilities of the region to be served and the development that is expected there, it seems that the power market in Ontario and Quebec will prove more than sufficient to use all of the available Seaway power. In the opinion of experts Canada will eventually require not only the 3,900,000 horse power to be developed under the Seaway project and to be allotted to the Dominion, but all of the remaining hydro-electric energy to be had in the entire basin of the St. Lawrence.

Answer to Objection of United States Dealers in Coal

A minor objection to the Seaway from the American side is that it would cost dealers in coal to the south of Lake Erie the loss of the Ontario market. The trade in this coal involved in the desire for monopolistic control by American operators opposed to the Seaway is only a possible trade of six million tons. It is feared that this coal may be supplanted in whole or in part by Canadian water power from the St. Lawrence Seaway project or that English ships might bring Welsh coal to Ontario through the new channel. In answer to this objection it is the settled policy of the Dominion Government to make full use of its water powers as it needs them irrespective of the St. Lawrence Seaway. It would seem obvious to these American dealers that by the building up of great new industries and terminal ports through the more favorable shipping rates to be afforded the Lake Erie region through the Seaway it will be no longer necessary for them to send their product over to Canada for a market.

It should be noted here in passing that the element of possible power development incidentally defraying a large share of the cost of the navigation project, does not exist in the case of the proposed "All-American" alternate route through the State of New York.

CHAPTER IX

THAT WHICH IS ALREADY DONE TOWARDS SEAWAY COMPLETION AND THAT WHICH REMAINS TO BE DONE. A Review of Preceding Chapters. That Which is Already Done. That Which Remains to be Done. Six Sections of Operations from Duluth-Superior to the Atlantic Ocean at the Strait of Belle Isle.

AUTHORITIES—Player, McManus, Hoover, Whiting.

A Review of Preceding Chapters

So far, we have seen that there exists the greatest factory or farm region in the world, comprising not only the heart of Canada but the whole or large part of each of 28 American States with a population exceeding forty-five millions. From 1,000 to 1,200 miles to seashore, on any basis of equal competition with producers abroad this great region is stranded by excessive rates of freight on long rail hauls to tidewater and due to the charges for transfer, storage and insurance on having to repeatedly transship the load. As if by stroke of Providence there pierces this region a Seaway five-sixths of which is all ready for ocean shipping today. Every port of the Great Lakes and of the St. Lawrence River will be placed directly on the ocean front with the clearing of the remaining one-sixth of the channel. The completed Seaway will enable these ports to ship directly to Montreal,

to Atlantic, Gulf and Pacific ports and to all other ports of the world without the necessity of reloading. In this way not only will the terminal costs of reshipment, storage and insurance be saved but a large portion of the freight since goods once on shipboard travel from five to ten times more cheaply than they travel by rail. Besides improving rates on the Lakes direct, the Seaway will act as an equalizer of the rates of railroads operating in the neighborhood of and parallel to the system of Great Lakes. Savings on rates will be reflected in better prices to the Middle West producer on the exports from the region: lower rates of freight on the goods imported there will mean a lower cost of living for the Middle West consumer. This price enhancement for the producer and lower cost of living for the consumer will be reflected in the entire area tributary to the system of Great Lakes and for which the Lakes ports are accumulating and distributing centers. The beneficial effects of the Seaway will be felt from the Dakotas to New England in simplification of the shipment of raw materials as well as of manufactured goods. Price enhancement will hit three-quarters of the grain crop of the nation. With the natural export business of this inland empire stimulated, new areas of production will open up from the ease of shipment, hitherto unforeseen. So the opening of a new and cheaper navigation channel will not only facilitate existing commerce but will create considerable new traffic. It will increase the size of present manufacturing centers in the region tributary to the Lakes, it will create new industrial sites, and it will make of several cities on the Lakes great terminal ocean ports. And contingent on the completion of the Seaway as just shown 5,000,000 horsepower of inexhaustible hydro-electric energy will be utilized and available for transmission 300 miles from the generating source, 3,900,000 of which will be at the service of Canada as markets

develop there, while 1,100,000 horsepower will be at the service of the United States.

That Which Is Already Done

While the Saint Lawrence River system actually arises near the headwaters of the Mississippi River in Minnesota and flows into Lake Superior, the name applies only to the lower third of the chain of navigation flowing a distance of 770 miles from Kingston, in Ontario, Canada, at the foot of Lake Ontario, to Cape Gaspé in Quebec. The Saint Lawrence Basin is third in size among North American rivers, coming after those of the Mississippi and Mackenzie. The general stream of the Saint Lawrence drains a basin of some 530,000 square miles, an area exceeding that of France and Germany combined, with the British Isles and Holland thrown in for good measure. Unlike the Mississippi, the Saint Lawrence River has no alluvial delta at its mouth so that the greatest liners afloat can clear its sharp straight banks.

The Great Lakes-Saint Lawrence system of navigation until the completion of the Seaway is, for ocean-going vessels, a broken chain. Lakes Superior, Huron, Michigan, Erie and Ontario are navigable as well as Lakes St. Francis and St. Louis which are widenings of the Saint Lawrence River between New York State and the Province of Quebec. Until the completion of the new Welland Canal on August 6, 1932, the Niagara River and Falls have been obstacles to shipping from Lake Erie as are the Saint Lawrence Rapids to Lake Ontario's east-bound water commerce. The Lachine Rapids in the Saint Lawrence above Montreal are also a

break in the navigation chain. From Duluth at the head of Lake Superior to Montreal is 1,336 miles. From Montreal to the Strait of Belle Isle at the mouth of the Saint Lawrence there are 1,003 miles of unbroken navigation to the sea. Of this total of 2,339 miles of natural waterway from Duluth to the sea, five-sixths is already available for the navigation of deep-sea-going ships and only a small part of the remaining sixth remains for the engineering skill of men to develop to move the landlocked area to the sea.

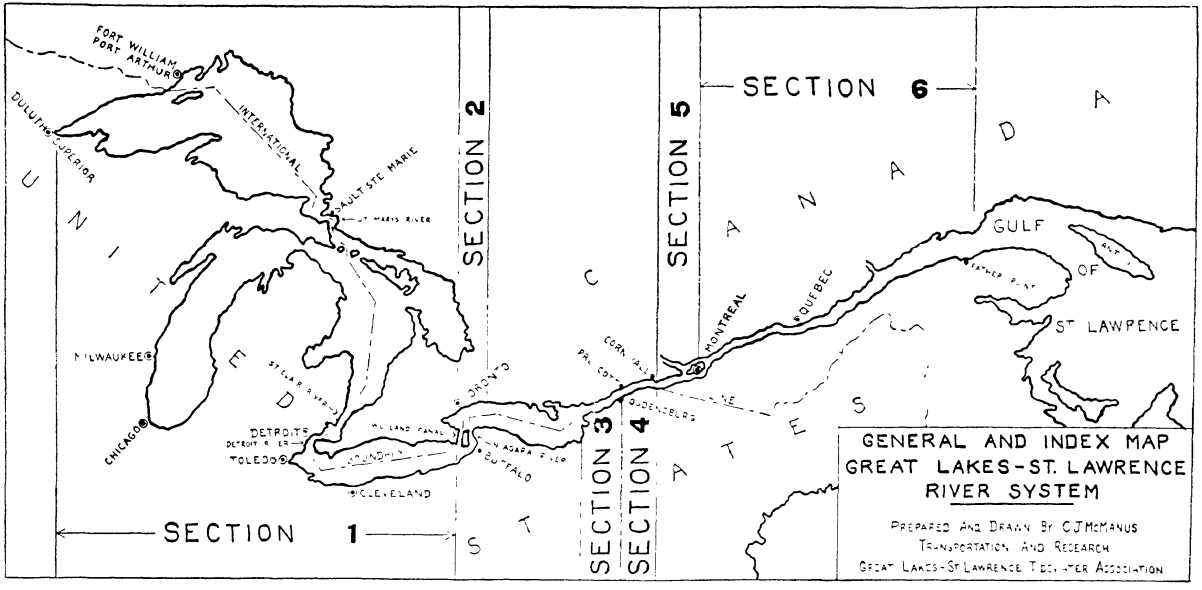
From the foregoing story it can be seen in other words that the Great Lakes-Saint Lawrence system of navigation is a number of vast deep pools connected as a whole by rivers with shallow channels, with rapids and with falls. Generally speaking the obstacles to deep-sea-going ships are to be found in the upper stretches of the Saint Lawrence River.

After a fashion the Saint Lawrence route from the Great Lakes to the sea is already and has been for many years a navigable waterway for its entire length. From the Atlantic Ocean to Montreal for 1,003 miles, its channel has a 35-foot minimum depth accommodating ocean vessels. Above the city of Montreal for a distance of about 120 miles, there are a series of side canals and locks with a minimum depth of only fourteen feet with their use limited to that of small canal steamers and vessels drawing only thirteen and one-half feet of water, excepting for some ocean vessels of small size that unload a part of their cargo at Montreal before undertaking the restricted waterway of these canals. Beyond Prescott, Ontario, on the Canadian side or Ogdensburg, New York, on the American side above the western terminus of these canals, the river is navigable in general for deep draft vessels to and into Lake Ontario. And the difference in elevation between Lake Ontario and Lake Erie of 325 feet, has been made up by Canada's fourth new Welland Canal. From the easterly end of Lake Erie to Duluth at the western

extremity of Lake Superior, there is no impediment to navigation by deep draft vessels with connecting channels being deepened to twenty-five feet and requiring for seaway purposes further dredging to twenty-seven feet, in the Detroit and St. Clair Rivers between Lakes Erie and Huron and St. Mary's River between Lakes Huron and Superior, and with one thirty-foot lock to be put in by the United States at Sault Ste. Marie. It will be seen, therefore, that the only existing obstacles to the complete navigation of the entire length of the Seaway by vessels of heavy draft are those imposed by the limited size of the Saint Lawrence River side canals between Montreal in Quebec Province and Prescott, Ontario.

That Which Remains to be Done

The Great Lakes-Saint Lawrence Waterway is a plan to complete the construction of a ship channel 27 feet deep at regulated low water levels from the open water of Lake Superior to Montreal. This system of navigation has two natural divisions, that of the Great Lakes beginning with Duluth at the head of Lake Superior, to Kingston at the foot of Lake Ontario and at the beginning of the Saint Lawrence Rapids, a distance of 1,155 miles. The Great Lakes connecting channels are of 20 to 22 feet in depth and are being still further deepened. Second is the Saint Lawrence Division from Kingston, whose minimum passages have only a 14-foot draft, 183 miles along the Saint Lawrence to Montreal and from Montreal down the open 35-foot channel to the Strait of Belle Isle and the Atlantic Ocean, a distance of 1,003 miles or a total distance of 1,186 miles from Kingston to the



GENERAL AND INDEX MAP GREAT LAKES-ST. LAWRENCE RIVER SYSTEM

PREPARED AND DRAWN BY C.J.McMANUS
TRANSPORTATION AND RESEARCH
GREAT LAKES-ST LAWRENCE TIDEWATER ASSOCIATION

Strait of Belle Isle. The plan comprised in the pending Treaty of July 18, 1932, is to improve the Saint Lawrence River Section both for navigation and power, the absorption of the Welland Ship Canal into the Seaway, the construction of compensating works to restore the levels of Lakes Erie, Huron and Michigan, improvement in the interlake connecting channels and the building of a new lock or deepening of one of the present locks at the Sault Ste. Marie. In a general way the proposed treaty provides that it shall be for the United States to effect ocean navigation from the head of Lake Superior to the end of the international boundary excepting the Welland Ship Canal detouring Niagara Falls and wholly in Ontario and owned by Canada. From the end of the international boundary to the ocean is Canada's concern.

To detour around Niagara Falls Canada has already built the fourth Welland Canal, 25 miles long, of Seaway depth of 27-foot channel, with Seaway locks 820 by 80 by 30 feet. Canada has completed its own side of the upper Saint Lawrence channel and is well towards completion of the 15-mile bypass of the Soulanges Rapids Canal at the Beauharnois section of the Seaway, in Canadian territory, just west of Montreal. The Dominion has also removed all of the obstacles to navigation below Montreal, and has beaconed and buoyed the Saint Lawrence channel all the way out to sea. There remains for Canada only six more locks and eight miles more of canal to build, or in more detail one lock with three miles of canal in the International Rapids section of the Waterway, two locks at Beauharnois and three locks with five miles of canal around the rapids at Lachine, in Canadian territory in the immediate vicinity of Montreal. The United States has finished the clearing of its own side of the upper Saint Lawrence, and is now deepening the rivers of St. Mary's, St. Clair and Detroit to a 25-foot chan-

nel, which remain to be carried only two feet more to complete the Seaway in the Great Lakes section of the Seaway. Shallows, shoals and bars of the interlake channels have been removed; locks have been built at Sault Ste. Marie; coasts and harbors have been beaconed and buoyed. There remains for the United States to build one great sea-ship lock at Sault Ste. Marie and two bank to bank dams together with two locks and seven miles of canal in the International Rapids section of the St. Lawrence.

The pending Treaty of July 18, 1932, is not to construct the Seaway but to complete it. From Lake Ontario to Montreal by the St. Lawrence is 183 miles, along 115 miles of which this river forms the international boundary between Canada and the United States, and necessitates therefore a treaty to complete the Seaway. For convenience this 115 miles of international boundary is divided into two parts. The 67-mile stretch eastward from Tibbetts Point at the foot of Lake Ontario to Oak Point, also in New York, with only a one-foot fall and only some comparatively light dredging to be done to deepen the channel to a uniform 27-foot depth, is called the Thousand Islands Section of the Seaway project. The remaining 48 miles of the 115-mile international boundary stretch along the river with a 92-foot fall and shallows and rapids to surmount, is the bottleneck in the Lakes-to-Ocean route. The international agreement set forth in the pending Treaty of July 18, 1932, affects essentially just these 48 miles out of the 2,339 miles of waterway from Duluth to the Atlantic where the St. Lawrence flows into the ocean at the Strait of Belle Isle. It is true that the actual work to be done includes the deepening by the United States of the St. Mary's and St. Clair and Detroit Rivers to a channel of twenty-seven feet and an enlarged lock at Sault Ste. Marie, but the work to be done in these connecting channels is relatively small compared to what has

already been accomplished and would have to be performed eventually anyway to meet increased demands of navigation entirely irrespective of the Seaway project. The real purpose of the pending treaty is, therefore, to rectify St. Lawrence River stretches on the boundary line essentially amounting to 2 per cent of the water route from Duluth to the sea. Only this rampart of nature remains to be dissolved by the engineering genius of Man that the great cities of the Lakes, Cleveland, Toledo, Detroit, Chicago, Duluth and Buffalo, as well as Port Arthur and Fort William, Sarnia, Windsor, Hamilton, Toronto, Kingston and Prescott, can pour their products and those of their vast tributary areas on the decks of ocean freighters for the markets of the world: only this trifling obstacle remains to be swept aside that Ohio, Michigan, Indiana, Wisconsin, Minnesota and that 350-mile stretch of the State of New York on Lakes Erie and Ontario and the St. Lawrence as well as Ontario and Quebec may have moved to them for shipping purposes the sea.

Since through the bottleneck section of the St. Lawrence River or through the 14-foot canals for a 73-mile stretch the traffic was 8,400,000 tons in the normal year of 1928, and since it is estimated the normal annual traffic on the completed St. Lawrence Seaway will be at least 23,000,000 tons of traffic, from an economic point of view the system is but one-third complete while from a physical point of view it is five-sixths complete. It seems impossible to insist too strongly upon the necessity of this full connection and upon its similarity to a completed railway system. If we were to break an important railway system into segments with intermediate stretches of say narrow gauge track at points between Chicago and Toledo, between Cleveland and Pittsburgh, between Wilkes-Barre and New York City, that system would make a very poor showing, and yet the Great Lakes-St. Lawrence system is today broken into just this sort of segments.

Six Sections of Operations from Duluth-Superior to the Atlantic Ocean at the Strait of Belle Isle

There now follows a brief summary as to the specific steps already taken and necessary yet to be taken for the completion of the Seaway. Starting at Duluth-Superior at the head of the chain, the Great Lakes form collectively a ready-made inland ocean with a steamer track of 900 miles to the foot of Lake Erie.

1. For purposes of this study the distance between the head of the Lakes and the foot of Lake Erie comprises the first of six sections of the project, and in this section the task of improvement is allotted to the United States. Only in their connecting channels, the St. Mary's, St. Clair and Detroit Rivers of a total length of 135 miles, have dredging and blasting been necessary to clear the way for navigation. To provide a uniform 27-foot channel in these connecting channels requires simply the dredging of two additional feet beyond the 25-foot depth authorized in the Rivers and Harbors Bill of 1930. A new 30-foot lock at Sault Ste. Marie and compensation works in the St. Clair and Niagara Rivers remain for the United States to build for compliance with specifications in the Seaway Treaty of July 18, 1932. The cost to the United States for improving this section of the Seaway is $56,500,000, of which $14,000,000 has already been authorized or appropriated, and much of it has already been spent irrespective of the Seaway in deepening the channel to 25 feet as provided in the Rivers and Harbors Bill of 1930.

2. Canada's fourth new Welland Ship Canal, 25 miles long and comprising section 2, has been completed for use

since August 6, 1932. It is of 27-foot Seaway depth and to overcome the 325-foot drop between Lake Erie and Lake Ontario it has seven lift locks. These locks set the dimensions for all new locks to be installed in the Seaway, and are each 80 feet wide, 30 feet deep and with usable length of 820 feet. This Welland Canal was built at an expense of $128,000,000 and represents one of Canada's major Seaway costs.

3. Of the 183-mile stretch from the foot of Lake Ontario to Montreal, the first 115 miles are international waters. For convenience the first part of these 115 miles where the St. Lawrence flows through the 67 miles of the Thousand Isles has been designated as section 3, while the remaining 48 of the 115 miles of boundary waters constitute section 4 of the project. Through the Thousand Isles the river is wide and deep excepting a few rocky shoals that required being blasted away for a 27-foot channel, a minor task that is now completed. The expenses of the United States in the third section are $461,000. Those of Canada are $772,000.

4. The International Rapids part of the project along the remaining 48-mile stretch of the 115 miles of boundary waters calls for the preponderant work and expense of the whole Seaway undertaking, and it is for the construction in this section that ratification of the Treaty is necessary. In this 48-mile stretch as provided in the Treaty, it will be the task of the United States to provide the major portion of 27-foot channels and other works involving navigation. Two great dams are to be built across the river drowning out a series of rapids and creating two broad and deep lakes or pools. The upper dam with one lock and two miles of canal is to be constructed at Crysler Island on the Canadian side of the river. The lower dam with two locks and six miles of canal is to be at Barnhart Island on the United States side. The locks will be of 30-foot depth. The flow

of water over the two dams will produce some 2,200,000 horsepower of electric energy, one-half of which belongs to the United States and one-half to Canada. The United States will spend $215,492,000, from which may be deducted the sums to be received from the power authorities of the State of New York as the beneficiaries of 1,100,000 horsepower or $89,726,000. The Dominion of Canada by agreement with Ontario Province will receive $104,000,000 for its share of this power of which the Dominion will spend $59,250,000 in the International Rapids Sections of the river.

5. In the remainder of the 183-mile stretch from the foot of Lake Ontario to Montreal, after subtracting the Thousand Isles section of 67 miles and the International Rapids Section of 48 miles, there remains a channel 68 miles long entirely within Canadian waters. Navigation will traverse a widening of the river known as Lake St. Francis, and will then proceed through the Beauharnois Channel around the Soulanges Rapids and into Lake St. Louis. That work is already more than three-quarters completed. The Lachine Rapids between Lake St. Louis and Montreal will be passed around by a three-mile canal with three locks and carrying navigation to the harbor of Montreal. For this latter work and the installation of two locks at the eastern end of the channel of Beauharnois, Canada will spend $82,954,000.

6. From Montreal 159 miles down to the City of Quebec, Canada has already provided a first-class ocean ship channel of 35-foot depth. Also from Quebec to the end of inland navigation at Father Point, the channel has a minimum depth of 35 feet and eastward of Father Point there is no restriction as to depth.

The Joint Board of United States and Canadian Engineers has considered seven years a reasonable period in which to complete the entire Great Lakes-St. Lawrence Waterway enterprise. Thus at the end of seven years, the

Great Lakes-St. Lawrence system, a distance from Duluth-Superior of 1,336 miles to Montreal, and of 2,339 miles from Duluth to the ocean waters of the Strait of Belle Isle, will be transformed from a restricted and imperfect water lane as at present into one of the foremost ocean highways of the world.

CHAPTER X

THE GREAT LAKES-ST. LAWRENCE DEEP WATERWAY TREATY OF JULY 18, 1932. Discussion of the Sections in Detail.

AUTHORITIES—Craig, Whiting, McManus, Treaty Text—United States Department of State, Player.

SINCE for 115 miles as above mentioned, the Seaway follows the international boundary between Canada and the United States, and since a 48-mile stretch from the Thousand Isles section of the project to the end of the international boundary calls for the preponderant work and expense of the entire Seaway undertaking both as to navigation and power, there must be a treaty between Canada and the United States to carry on the operations. Such a treaty was entered into between the United States and Canada on July 18, 1932. Before this treaty can become binding upon the United States, it must be ratified by a vote of two-thirds of the Senate by Article II, Section 2, of the Federal Constitution, providing that the President shall have power by and with the advice and consent of the Senate to make treaties provided two-thirds of the Senate present concur. To make the treaty binding upon Canada it is not necessary that the British Parliament ratify since by long practice the Dominion of Canada is conceded the treaty-making power as to matters peculiarly of Canadian concern and that are not of a nature to involve the United Kingdom or any other part of the

British Empire than Canada. For ratification of the treaty by Canada, a majority of the Dominion Parliament as for any other bill, must vote their approval.

The negotiations of the Great Lakes-St. Lawrence Seaway Treaty of July 18, 1932, began November 14, 1931, with an exchange of views between Secretary of State Stimson and Canadian Minister Herridge. The terms of the agreement are based on a report of the Joint Board of Engineers dated April 9, 1932, but which was not made public until after the signing of the Treaty. Provision is made for the construction of a 27-foot waterway from the head of the Great Lakes to Montreal, from which city down to the Atlantic Ocean the channel has a present minimum depth of 35 feet. The United States agrees to carry out improvements in the Great Lakes section to provide this 27-foot depth of water and the Canadian Government agrees to complete canals in the Soulanges and Lachine areas of the river in the section lying wholly within the Dominion. The international section extends from the outlet of Lake Ontario to the head of Lake Francis. The Treaty provides for allocation between the two countries of construction, operation and maintenance of side canals, locks and rehabilitation works in the international section of the river.

For the forty-eight miles making up the lower portion of the International Rapids section of the river, provision is made in the Treaty for the setting up of a special temporary international authority known as the St. Lawrence International Rapids Section Commission, to construct the dams and other works necessary for power development, excluding power house superstructures, machinery and equipment. This group is to have ten members, five appointed by each government. Funds for the whole development under the jurisdiction of this commission are to be provided by the United States. The treaty stipulates, however, that in so far as pos-

sible, the part of the works lying wholly within Canadian territory or an equivalent proportion of the whole development shall be executed by Canadian engineers, labor and material, and the remainder by United States engineers, labor and material. Approximately two-thirds of the works to be constructed in this International Rapids section are in the territory of the United States. The agreement of the United States to bear the whole cost of dam construction is explained by Canada's building of the new Welland Canal. The aim of the negotiators was to divide the cost of the entire St. Lawrence project as evenly as practicably possible between Canada and the United States.

The final report of the Joint Board of Engineers on which the Treaty is based adopts the two-stage plan for the development of hydro-electric power advocated by the Canadian engineers in 1926. Engineering opinion had differed on the number of points at which power should be taken out. The United States members of the Joint Board of Engineers and all of the Army, originally advocated a "single dam" or "single stage" plan to produce power at just one point, taking advantage of the entire eighty-five foot difference in level between Lake Ontario and Cornwall, Ontario. The "two dam" or "two stage" plan favored by the Canadian engineers called for two water-power developments, for one dam at Crysler Island and another dam at Barnhart Island, each dam to have two power houses, one on each side of the international boundary line.

The preference of the American engineers for the "one dam" plan was that it would cost even less than the present reasonable cost estimate based on the "two dam" plan and that the output from the one extreme difference in elevation would be more than from the two lesser. They yielded to the Canadian preference, however, on being shown that the safety of Canadian cities on the river below the power

developments will be definitely secured if two dams are built instead of a single high dam. The Canadian "two dam" plan, therefore, is the arrangement that has been selected in the pending Treaty.

The total installed power capacity in the International Rapids section would be approximately 2,200,000 horse power evenly to be divided between Canada and the United States, with each country to be assured an equal share in the water utilized for power. The Treaty also provides that the parties may arrange for construction of such power house superstructures, machinery and equipment as may be desired in their respective territories, thus leaving each country free to deal with the domestic question of its own manner of the utilization of its power.

One section of the Treaty provides for reduction of diversion from Lake Michigan at Chicago to the point required by the United States Supreme Court. Proposals for additional emergency diversion by Chicago if meeting with Canadian objections, would be submitted for arbitration to a tribunal of three, one to be appointed by each government and the third to be chosen jointly by both of the governments, the tribunal to be empowered to authorize increased diversion in such amount and for such time as it deemed necessary. No other diversion from Lake Michigan or any other part of the Great Lakes system or the international section would be permitted except under the authorization of the International Joint Commission. It is further provided that compensation works to restore and maintain lake levels at their natural range shall be undertaken in the Niagara and St. Clair Rivers at the cost of the United States as regards compensation for diversion at Chicago.

PREAMBLE

The Treaty between the United States and Canada for the construction of The Great Lakes-St. Lawrence Deep Waterway, of July 18, 1932, consists of ten Articles after the Preamble with a separate schedule relating to the Saint Lawrence International Rapids Section Commission introduced under Article Three of the Treaty. In the Preamble it is recognized that a waterway of twenty-seven-foot channel through the Great Lakes and Saint Lawrence to the Sea with the development of the water power incidental thereto, would be of marked and enduring benefit to the agricultural, manufacturing and commercial interests of both Canada and the United States, with a view to making the Waterway from the head of Lake Superior to the Strait of Belle Isle a settled policy of both Canada and the United States. In the Preamble is expressed Canada's intention to complete the new Welland Ship Canal detouring Niagara Falls and all canals around the rapids in the Soulanges and Lachine sections of the Saint Lawrence River, not later than the completion of the deep waterway in the international section of the Saint Lawrence River. The Preamble also declares the intention of the United States to complete the works recommended in the Great Lakes connecting channels above Lake Erie, also not later than the completion of the works in the international section of the Saint Lawrence. Since the work in the International Rapids Section of the river is predominantly this country's task, the date for completion of the Seaway may be determined from the construction program adopted by the United States.

FIRST AND SECOND ARTICLES

The international boundary section of the St. Lawrence from Tibbetts Point, New York, at the foot of Lake Ontario to the village of St. Regis, also in New York, where the Canadian boundary intersects the southern bank of the St. Lawrence and at the head of Lake St. Francis, is 115 miles. That part of this International Rapids Section of the St. Lawrence from Tibbetts Point to Oak Point, New York, is a distance of 67 miles and is known as the Thousand Islands Section of the St. Lawrence. It is with the remaining stretch of 48 miles between Oak Point, New York, and St. Regis, with which the Treaty proper mainly concerns itself since one shore of this distance is Canadian and the other is in the United States. So a treaty is required to enable effective international work to be done there.

Under the First Article of the Treaty, Canada agrees in conformance with the final report of the Joint Board of Canadian and United States Government Engineers to construct, operate and maintain the works in the Section of the St. Lawrence River below Oak Point and a side canal with a lock opposite Crysler Island and to construct rehabilitation works on the Canadian side of the international boundary.

By the Second Article of the Treaty, the United States agrees in conformance with the final report of the Joint Board of Engineers to construct, operate and maintain the works in the Thousand Islands Section of the St. Lawrence above Oak Point and a side canal with two locks opposite Barnhart Island, and to build rehabilitation works on the United States side of the boundary.

The work in the Thousand Islands Section of the St. Law-

rence with which the first two articles of the Treaty primarily deal is practically a United States task. The work of deepening the channel to a uniform twenty-seven feet both in the American and Canadian parts of the Thousand Isles Section of the St. Lawrence has already been done. This deepening extends the operating radius of Lakes ships down to Ogdensburg on the New York side and Prescott on the Ontario side of the river. Ogdensburg is already equipping itself to be a distributing point while Prescott is also preparing for its destiny as an important Canadian port near the lower Lakes.

After dealing with the Thousand Islands Section of the work to be done on the Seaway, the rest of the first two articles of the Treaty apply to work primarily for navigation and secondly for power in the International Rapids Section of the St. Lawrence River, forty-eight miles long from Oak Point, New York, to St. Regis, the real essence of the subject matter for the Treaty.

a. A dam is to be built at Crysler Island together with two power houses, one to be on the Canadian and one on the American side of the international boundary. The average fall from the top of the dam to river level at Crysler Island will be 24.2 feet in summer and 19.6 feet in winter.

b. A dam is also to be erected at Barnhart Island, here again together with two power houses, one to be on the Canadian and one on the American side of the international boundary. The average fall from top of dam to the surface of the St. Lawrence at Barnhart Island will be 60.4 feet in summer and 56.4 feet in winter.

c. A short side canal with one lock on the Canadian side at Crysler Island and a side canal with two locks opposite Barnhart Island on the United States side are to carry deep water navigation past the power houses and dams.

d. Works are also planned to protect towns and villages

subject to possible damage from operations in connection with the Seaway enterprise and included in the estimates. This is because the construction of the work at Crysler Island will raise water levels opposite the village of Iroquois and the town of Morrisburg on the Ontario side to an elevation of from 241 to 245 feet, inundating the easterly part of Morrisburg and almost the whole of Iroquois. Fortunately there is no extensive rehabilitation work required, it happens, on the United States side of the river.

THIRD ARTICLE

The Third Article of the Treaty provides for the establishment and maintenance of a temporary St. Lawrence International Rapids Section Commission of ten members, five to be appointed by Canada and five to be appointed by the United States, to construct the works in the International Rapids Section of the river included in the project described in the final report of the Joint Board of Engineers, and not included in the works provided for in the first and second articles of the Treaty and excluding power-house superstructures, machinery and equipment. Approximately two-thirds of the works to be constructed by the Commission are in territory of the United States and one-third in Canadian territory. The parties expressly reserve the right by mutual agreement to modify the plans.

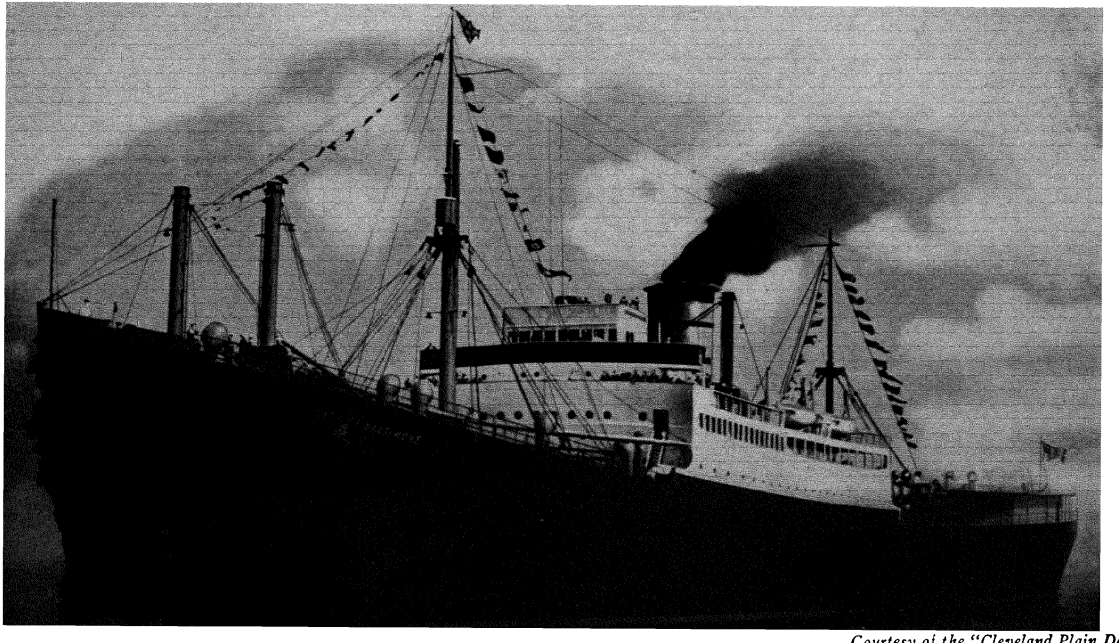
The river works on the American side of the international boundary will be carried out by American engineers, workmen and material. Those on the Canadian side of the boundary will be effected by Canadian engineers, workmen and material. The entire cost of these river works in the Inter-

national Rapids Section of the St. Lawrence will be met by the United States.

The Third Article also provides that the United States and Canada may arrange for construction in their respective territories of such power-house superstructures, machinery and equipment as may be desired for the development of power. This provision leaves each of the governments free to settle the purely domestic question of the utilization of water power.

FOURTH ARTICLE

By the Fourth Article the High Contracting Parties agree that the quantity of water utilized during any daily period for the production of power on either side of the international boundary in the International Rapids Section shall not exceed one half of the flow of water available for that purpose during such period. In other words, there shall be an equal division as between the United States and Canada of the 2,200,000 hydro-electric horsepower to be developed in the International Rapids Section of the St. Lawrence River. This article also provides that the flow of water out of Lake Ontario into the St. Lawrence shall be controlled and the flow of water through the International Rapids Section shall be regulated to protect the down-river shipping facilities in the harbor of Montreal and throughout the navigable channel of the St. Lawrence below that city.



Courtesy of the "Cleveland Plain Dealer"

CHESAPEAKE STEAMSHIP LINES

The "City of Baltimore" is of the type of coastal vessels that could find one-third again more United States seacoast by coming up into the Lakes.

FIFTH ARTICLE

The Fifth Article safeguards the sovereignty of the parties, clearly providing that the construction of works under the Treaty shall not confer rights upon either party but that each nation preserves all proprietary as well as all legislative, administrative or other jurisdictional rights within its own territory and in conformance with a familiar principle of the English common law that personal property affixed to the soil for the erection of structures becomes an integral part of the realty, the works built under the Treaty shall constitute a part of the territory in which they are situated.

SIXTH ARTICLE

By the Sixth Article of the Treaty the High Contracting Parties may within their own respective territories at any time construct alternative navigation canals or channels either in the International Section of the St. Lawrence River or in waters connecting the Great Lakes.

SEVENTH ARTICLE

By the Seventh Article rights of navigation accorded either country under existing treaties shall be maintained notwith-

standing termination provisions in any of such treaties. The Boundary Water Treaty of 1909 made all navigable boundary waters between the two countries free and open for commerce to the inhabitants and ships of both countries forever. By the Fourteenth Article of the Boundary Waters Treaty the right of navigation so far as it extended to Lake Michigan and present or future canals connecting boundary waters as the Welland Canal and canals and locks in the 115-mile international stretch of the St. Lawrence River, might be terminated after five years by a twelve months' notice by one party to the other. The Seventh Article of the pending Treaty annuls the right of Canada to terminate American perpetual use of the Welland Canal as well as the right of the United States to terminate Canada's same perpetual right to use American canals at Sault Ste. Marie and Lake Michigan.

By that clause of the Treaty of Washington of 1871 purporting to give to the United States free and open navigation in the St. Lawrence from the termination of the international boundary "from, to and into the sea" there was a question whether "navigation of the River St. Lawrence ascending and descending," should be restricted to mean only the navigation of the river "in its natural state" precluding use of present or future Canadian canals around the rapids and without the use of which navigation "from, to and into the sea" would be impossible. The Seventh Article of the recent Treaty has cleared any possible ambiguity by not only precluding Canada from terminating American rights to navigate the St. Lawrence channel forever as granted by the Treaty of Washington of 1871, but also precluding the Dominion from terminating the United States' right to navigate present or future Canadian canals connecting boundary waters as granted by the Boundary Water Treaty of 1909

heretofore terminable as to those canals, and without which the right "to navigate the St. Lawrence channel forever," would be of no use.

CHAPTER XI

CHICAGO DIVERSION. The Treaty Concluded.

AUTHORITIES—Daniel Whiting in *Editorial Research Reports*, McManus, Treaty Text, Brigadier General Pillsbury.

ARTICLE VIII. DIVERSION

By Article VIII the diversion of waters from the Great Lakes through the Chicago Drainage Canal shall be reduced by the end of 1938 to the quantity permitted by the decree of the Supreme Court of the United States, in the Lakes levels case, Wisconsin et al. *v.* Illinois and Sanitary District of Chicago. The case was decided on January 14, 1929, the Court appointing Charles Evans Hughes as special master, whose report was the basis of the Supreme Court's decree of April 21, 1930. That decree enjoined diversion after July 1, 1930, in excess of 6,500 cubic feet a second and after December 31, 1935, in excess of 5,000 cubic feet. It then fixed the annual diversion permitted at Chicago after December 31, 1938, at 1,500 cubic feet per second plus the amount of water pumped from Lake Michigan for domestic purposes estimated at the date of the decision to be about 1,900 cubic feet per second or permitting a total diversion of 3,400 cubic feet per second.

Way back in 1899 the Secretary of War of the United States had issued a permit authorizing a diversion from Lake Michigan into the drainage canal of 5,000 cubic feet a second. The Chicago Sanitary District, created by an Illinois law of the same year, claimed, however, the right under an Illinois statute to divert 10,000 cubic feet per second and kept on withdrawing that amount for years. Legal proceedings to restrain the District were started in 1906 but did not reach the United States Supreme Court until nearly twenty years later, when, with the Sanitary District still continuing to defy the federal authority, the Supreme Court in January, 1925, rendered an opinion that the District had no inherent right to divert water for sanitary or domestic purposes. A temporary permit, however, was issued by the Secretary of War permitting the diversion of 8,500 cubic feet a second on the condition that Chicago should immediately undertake the construction of sewage disposal plants. The whole matter was then brought to a conclusion by the Supreme Court decision in the Lake levels case and its above described decree providing for progressive reduction in the amount of diversion.

It has come to be recognized that the maintenance of at least the present levels of the system of Great Lakes is of the most vital importance to deep water navigation: any considerable diversion means shallower channels and access for vessels of only limited capacity and draft. Due to the drainage of Lake Michigan at Chicago for domestic and sanitary needs coinciding with low water cycles at times, the level of Lake Michigan and through it the level of the system of Great Lakes is depressed on occasion to an extent very seriously affecting the cargo capacity and the earning ability of the vessels on the Lakes. A fall in the levels of the Lakes after 1919, amounting at times to two or three feet, seriously interfered with navigation, causing large losses to transpor-

tation companies and shippers. The Supreme Court of the United States in the Lake levels case of Wisconsin et al. *v.* Illinois and the Sanitary District of Chicago, decided January 14, 1929, had evidence presented to them that the diversion from the system of Great Lakes through the Chicago Drainage Canal in 1928 of 8,500 cubic feet per second meant a six inch lowering of Lakes Michigan and Huron and a five inch lowering of Ontario and Erie. The operating loss for the Lakes Fleet due to a decrease in the level of the Lakes of just one foot has been approximately $7,000,000 in just one season with reduction in carrying capacity of at least as many tons a year.

Although United States Army engineers reported that less than one-sixth of the fall in Lake levels was due to diversion and the remainder to climatic cycles, and although Lake levels have improved in recent years without diversion from Lake Michigan having yet been greatly reduced, the belief gained wide currency that the low water was caused by diversion at Chicago and brought protests from Canada as well as law suits from other Lake states. Wisconsin and the other complaining states had charged that the Chicago diversion had substantially lowered the levels of the Great Lakes and had thereby seriously damaged navigation and commerce. New York claimed that its water power interests had been injured to the extent of over $100,000,000. Missouri, Kentucky, Tennessee, Louisiana, Mississippi and Arkansas joined the case as defendants, contending that the Chicago diversion raised the level of the Mississippi and aided navigation on that river. Charles Evans Hughes reported as special master in the case that the complaining states had proven substantial damage to their navigation, commercial and other interests from the diversion through the Chicago Drainage Canal without there having been substantial evidence as to the improvement of navigation on the Mississippi. The

Court further decided that since the diversion was for purposes of sanitation rather than navigation, the Secretary of War did not have any power to issue permits in this case, but might issue temporary permits pending the completion of sewage disposal plants.

Since Canada as well as the most of the United States has come to realize that a fixed minimum level is a fundamental problem and that control of all diversion of water from the Lakes is vitally indispensable to any waterway project for either navigation or power, Ontario Province agreeing with the Dominion to divert the Ogoki River from where it now empties into James Bay to flow backwards into Lake Superior to restore and maintain navigation levels on the Lakes, the two nations have been bearing down on Chicago against excessive diversion for its Sanitary Canal. Premier Bennett of Canada in his statement announcing the terms of the new treaty noted that "for the first time in the history of international negotiations with the United States, the abstraction of water from Lake Michigan is placed under international control." It is this aspect of the matter that disturbs Chicago and other neighboring communities particularly interested in the Illinois waterway connecting Lake Michigan with the Mississippi River and the Gulf of Mexico. They contend that the matter of diversion is a domestic question since Lake Michigan lies wholly within the boundaries of the United States.

Chicago's position on the St. Lawrence Seaway development is therefore complicated by its interest in the Illinois waterway. Although this city has long desired a direct water outlet to the Atlantic and although strongly supporting such a project, it is insistent that this development shall not be carried out in such a way as to prejudice successful operations of the Lakes-to-the-Gulf waterway. Therefore the treaty provision in Article VIII limiting the diversion of

water in the Chicago Drainage Canal according to Daniel Whiting in *Editorial Research Reports,* Volume II, 1932, No. 4, has aroused bitter opposition to the St. Lawrence Seaway in Chicago.

The Chicago Sanitary District, created by a law of Illinois of 1889, now has an area of more than 400 square miles and includes more than fifty cities and towns with a frontage on Lake Michigan of approximately thirty-four miles. The primary object of the Drainage Canal, completed in about 1900, was to facilitate sewage disposal and to clear up pollution of the port of Chicago with improvement of navigation as a secondary purpose. Later it has been under development as an integral part of the waterway to the Mississippi and upon this project Illinois has already spent about $70,000,000. While the work involved the causing to flow backwards of the Chicago River, which formerly ran into Lake Michigan with diversion from the Lake to maintain a current in the canal, considerable incidental power development has been recently carried on by the Sanitary District.

Concern of the Chicago community over the treaty provision limiting diversion in Article VIII arises from apprehension that the amount of diversion permitted by the Supreme Court decree may prove insufficient for an adequate navigation channel on the Illinois waterway after 1938. As to this apprehension that the restraints imposed by the St. Lawrence Seaway Treaty on the flow of Lake Michigan water at Lockport, near Chicago, will destroy the usefulness of the Illinois waterway, Lytle Brown, Major General and Chief of Engineers of the United States Army, reports that it has no basis of fact. He says that the flow at Lockport permissible under this Treaty will be more than three times the average low water flow of the Ohio River at Pittsburgh, two and one-half times the yearly average amount of water required for locks in the Panama Canal, seventeen times the

low water flow of the Monongahela River which carries an average yearly tonnage of 25,000,000 or two and one-half times the estimated potential commerce of the Illinois waterway of 10,000,000 yearly tonnage. General Brown added that if additional locks and dams in the Illinois River were found to be necessary to provide the requisite 9-foot channel in low water stages, the cost would be negligible in comparison with the expenditures made on other waterways and in comparison with the advantages resulting from the St. Lawrence Seaway improvement. While 3,400 cubic feet per second is to be permitted by the Treaty, the Chief of United States Army Engineers has also stated that a diversion of only 1,000 cubic feet would be sufficient to maintain the proposed channel on the Illinois River.

The Emergency Provision

Article VIII further provides that should the Government of the United States propose an increase in the permitted diversion "to meet an emergency" and should the Canadian Government take exception to the proposed increase, the matter should be submitted for final decision to an arbitral tribunal. The tribunal would be empowered to authorize for such time and to such extent as is necessary to meet the emergency an increase in the diversion of water beyond the limitation of the above mentioned Supreme Court decree and to determine the compensation. It shall consist of three members, one appointed by the Canadian Government, one by that of the United States, and the third member and chairman to be selected by the two governments jointly. "Emergency" has particular reference to critical periods of

low water in the Mississippi River where it has been feared by some that maintenance of normal water levels on the Lakes and curtailment of the diversion through the Chicago Drainage Canal might defeat the Illinois waterway's proposed minimum nine-foot depth of Mississippi River channel between St. Louis, Missouri, and Cairo, Illinois. According to G. B. Pillsbury, Brigadier General and Assistant Chief of Engineers of the United States Army, the above treaty provision insures an American emergency water supply for the nine-foot channel between these points; such a limited diversion would have a minor and inconsequential effect on Great Lakes levels and on the flow of the St. Lawrence; while the possibility of calling on the emergency provision of the Treaty to assure nine-foot depth of channel on the Mississippi between St. Louis and Cairo is exceedingly remote.

As matters now stand under the decree of the United States Supreme Court of April 21, 1930, and before the Seaway Treaty goes into effect, according to the sentiment in Chicago, the decree might be modified if the amount of diversion permitted should not prove to be sufficient for an adequate navigation channel on the Illinois waterway, since it is argued by Chicago, the Supreme Court limitation applies to diversion for sanitation and does not apply to diversion for navigation which was left to the determination of Congress. The Treaty on the other hand, it is felt in Chicago, would limit diversion for both navigation and sanitation, and in adopting the amount fixed in the Supreme Court decree would establish the limit by international agreement, capable of modification only through the long drawn out and vexatious processes of arbitration.

In answer to the contention of Chicago of not faring as well under the Treaty as under the Supreme Court decision on which the Treaty is based, it has been increasingly evident that even present diversions from Lake Michigan at

Chicago for only sanitary and domestic requirements might be difficult to sustain from a legal standpoint without liability for heavy damages being assessable for diversion of water tributary to one watershed forming an international boundary to another watershed for any purposes whatsoever. In a note of February 5, 1926, to the Government of the United States, Canada objected to diversions from Lake Michigan for navigation purposes at Chicago, pointing out as a recognized principle of international practice that no permanent diversion should be permitted from any watershed naturally tributary to the waters forming the boundary between two countries to another watershed unless by joint consent of the countries on either side of the boundary. Canada later referred also to the case of the Sanitary District *v.* the United States, 268 U. S. 426, decided January 5, 1925, where the United States Supreme Court there brought out that the Boundary Waters Treaty of 1909 expressly provided against uses affecting the natural level or flow of boundary waters without not only the authority of the United States or Canada within their respective domains but also without the approval of the International Joint Commission, set out in that treaty as requisite. As a general rule of law diversions of water forming an international boundary to another watershed for any purposes whatsoever are looked upon with disapproval by American as well as by almost universal law. Article VIII, therefore, not only legalizes diversion of Lake Michigan into Chicago's Drainage Canal for sanitary and domestic needs, but for navigation purposes also and in so doing not only validates a previously very doubtful legal position of permitting diversion for sanitation or for any other purpose but even enlarges the Supreme Court decree to permit diversion "to meet an emergency." It is to be noticed that the emergency provision of Article VIII in recognizing the principle of further diversions at Chicago,

if necessary, does not restrict them to sanitary requirements. Again according to Lytle Brown, Major General and Chief of Engineers of the United States Army, there is not any conflict between the decree of the Supreme Court and Article VIII of the Treaty; the decree specifies a minimum withdrawal after December 31, 1938, of 1,500 cubic feet per second in addition to domestic pumpage, unless good cause can be shown to the contrary, whereas, the treaty provisions while limiting the diversion to the same amount provides that in an emergency an increase may be permitted. Chicago's attitude towards the Seaway should be much improved by the announcement that the Public Works Administration has just granted $33,948,000 by way of combined loan and grant in addition to $8,000,000 already allowed towards two and one-half years of work on the $120,000,000 sewage disposal project that the Supreme Court of the United States ordered Chicago to complete by 1938.

Article VIII also provides that no diversion of water other than that through the Chicago Drainage Canal from the Great Lakes system or from the International Section of the St. Lawrence River to another watershed shall hereafter be made except by authorization of the permanent International Joint Commission of members representing equally Canada and the United States.

Each government is to measure the quantities of water that may at any point be diverted from or added to the Great Lakes system and is to record the measurements semi-annually with the other.

The country diverting water into the Great Lakes system from watersheds lying wholly within its borders has exclusive rights to use of waters equivalent in quantity to the waters diverted, and the country diverting is entitled to use of the water below the point of diversion so long as it constitutes a part of boundary waters.

Compensation works in the Niagara and St. Clair Rivers to restore and maintain the Lakes at their natural levels will be undertaken by the United States as respects compensation for the Chicago Drainage Canal diversion and at the cost of Canada as respects diversions for power other than that used to operate locks in the Welland Canal. Costs of alterations in the compensation works to meet changes under Article VIII in the water supply of the Great Lakes system will be borne by the country effecting such change.

ARTICLE IX

Article IX releases both countries from responsibility for any damage or injury to persons or property that may be caused by operations under the Treaty in the territory of the other. By this article also the two countries will severally assume responsibility and expense of acquiring rights to land necessary to carry out the Treaty.

ARTICLE X

By Article X the Treaty shall be ratified in accordance with the constitutional methods of the High Contracting Parties. Ratifications are to be exchanged in Washington or in Ottawa as soon as practicable and the Treaty is to come into force on the exchange of ratifications.

The Treaty Was Placed on the Calendar of the Senate

An exhaustive inquiry covering many public hearings by a subcommittee of the Senate Foreign Relations Committee took place during the latter part of 1932 and early part of 1933. On February 23, 1933, the Treaty, carrying the recommendation of the Foreign Relations Committee, was placed on the Calendar of the Senate. There it now lies awaiting the action of that group.

CHAPTER XII

COST IN DETAIL OF THE GREAT LAKES-ST. LAWRENCE SEAWAY. Many Improvements Counted in Gross Cost Necessary Regardless of the Seaway Project. Comparison of Seaway Cost with That of Panama. The Seaway as a Public Works Administration Measure.

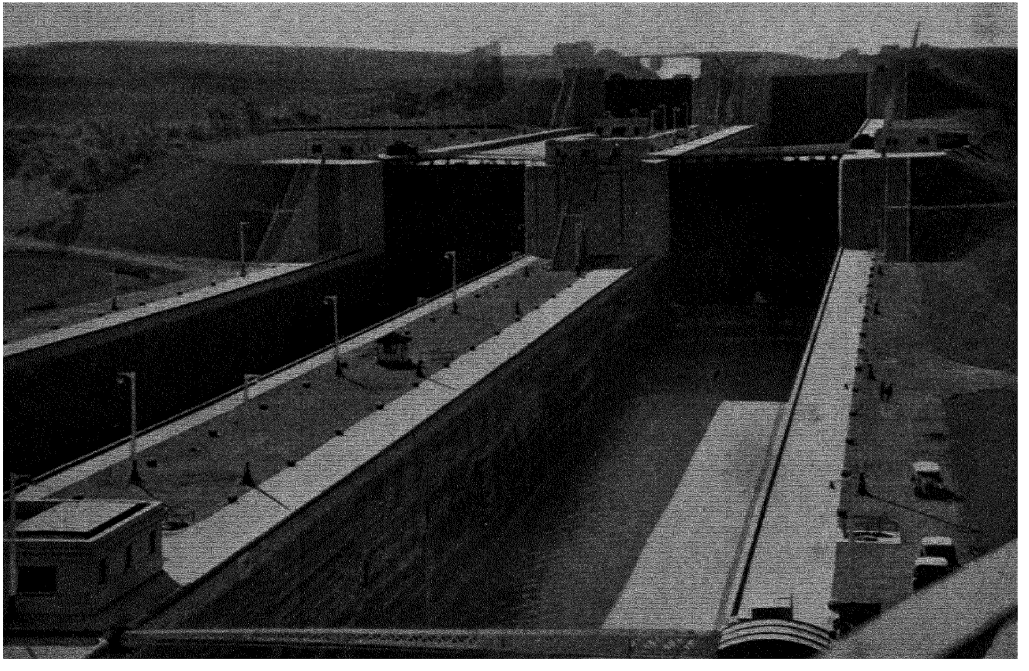
AUTHORITIES—McManus, Player, Ritter, Cleveland *Plain Dealer*, Whiting.

THE total net cost for navigation to the United States of the Great Lakes-Saint Lawrence Waterway would be not over $126,000,000 and the period of construction would be seven years. Hoover, when President, transmitted to the Senate the figures of the Joint Board of Canadian and United States Government Engineers which seems to be the very highest and most official authority on the subject. According to the estimates of the Joint Board of Engineers Reconvened, the cost of the entire enterprise with a 27-foot channel all the way from the head of Lake Superior to Montreal, a distance of 1,337 miles, for both navigation and power, will cost Canada and the United States, including permanent navigation works and improvements already made and to be made, the sum of $543,429,000. Farther down the river 159 miles to Quebec, Canada has already provided a first-class ocean ship channel 35 feet deep which is also the minimum depth for a distance of 181 miles more down the river to the end of inland navigation at Father Point. Completion of the Seaway will carry ocean navigation from Duluth-Superior at the head of the Lakes for a distance of 2,339 miles to the

Strait of Belle Isle on the high seas through one of the foremost sea-lanes of the world. The estimates of $543,429,000 are based on unit prices prevailing in 1926. According to the Joint Board of Engineers a reduction of 20 per cent at least would result if the estimates were to be based on present prices. On this supposition, the estimate of total net cost to the United States solely attributable to the Seaway enterprise of $126,000,000 would be reduced to barely over $100,000,000.

TREATY ALLOCATION OF TASKS AND COSTS

To Canada:		
The New Welland Ship Canal	$128,000,000	
Deepening a portion of Thousand Islands Section	772,000	
Total already expended	$128,772,000	
International Rapids Section	$ 59,250,000	
Lake St. Francis-Soulanges & Lachine Sections...	82,954,000	
Total to be expended	$142,204,000	
Grand Total		$270,976,000
To United States:		
For deepening Great Lakes connecting channels, providing a new lock at the outlet of Lake Superior and constructing compensation works, $56,500,000. For these items there has already been authorized or appropriated and largely expended	$ 14,000,000	
Deepening a portion of the Thousand Islands section	461,000	
Total already expended	$ 14,461,000	
Completing Great Lakes connecting channels, building new lock at the Soo and constructing compensation works	$ 42,500,000	
International Rapids Section	215,492,000	
Total to be expended	$257,992,000	
Grand Total		$272,453,000



Courtesy of The Commercial Press, St. Catherines, Ontario.

This is a view of Twin Flight Locks Nos. 4, 5 and 6 at Thorold, Ontario, of Canada's fourth new Welland Canal detouring Niagara Falls.

Under the Division of Tasks as contained in the Treaty, the share of the United States is $272,453,000 and that for Canada is $270,976,000. It is important but often overlooked that both nations have spent sizeable proportions of these sums in already completing large sections of the works planned entirely irrespectively of the Seaway but ultimately to become a part of it. In this grand total are included $128,000,000 already spent by Canada for the completion of its fourth Welland Canal to detour Niagara Falls, $772,000 already spent by Canada for the improvement of the Thousand Islands Section of the upper Saint Lawrence River. The grand total also includes $59,250,000 to be spent by Canada on the Seaway in the International Rapids section of the St. Lawrence River and $82,954,000 to be spent by Canada in the Lake St. Francis, Soulanges and Lachine Rapids sections of the Seaway, which are wholly in Canadian territory. The actual cost to the Canadian Government will be reduced by the $104,000,000 that Ontario Province pays to the Dominion for power. Subtracting this amount from the total remaining to be spent by the Dominion leaves $38,204,000 as Canada's new figure of total cost.

The sum of Canadian expenses of $270,976,000 subtracted from the grand total leaves $272,453,000 as the sum of the Seaway expenses to the United States. But this figure includes $30,000,000 already authorized for improving navigation by deepening the Great Lakes connecting channels from 23 to 25 feet of which $14,000,000 has already been spent and of which $16,000,000 remains to be raised. This figure also includes $461,000 for providing a 27-foot channel through the Thousand Islands section of the Saint Lawrence River, leaving $257,992,000 as the total amount of new funds which the United States will be called upon to spend for both navigation and power. Of the $257,992,000 of new funds to be raised, there is $16,000,000

already mentioned for deepening channels from 23 to 25 feet. Furthermore, $26,500,000 will be allocated to the deepening of Great Lakes connecting channels from 25 to 27 feet and building a new enlarged lock at Sault Ste. Marie, all irrespective of the Saint Lawrence Waterway, so properly subtracting both of these figures we get $215,492,000, which is the amount to be spent by the United States on navigation and power works in the International Rapids section of the St. Lawrence River. This figure includes the cost of two dams in the International Rapids section but not power houses or installation of power machinery as these are to be financed by the power authorities of the State of New York independently of the Treaty as in the case of Canada by the Ontario Hydro-Electric Commission.

The New York power authorities have tentatively agreed to pay to the Government of the United States $89,726,000 for American rights to 1,100,000 hydro-electric horsepower of the 2,200,000 to be developed in the International Rapids Section of the St. Lawrence out of the 5,000,000 horsepower all told. Subtracting again we have $125,766,000, a figure based on estimates in the Report of the Joint Board of Canadian and American Engineers of November 16, 1926, as the total net cost to the United States solely attributable to the St. Lawrence Seaway.

The power authorities of New York have estimated direct savings to the State at from five to twelve million dollars a year. Since the investment of the State of New York is not to exceed $89,726,000 with amortization not to come until about forty years, according to the tentative agreement with the United States, and with the enterprise to be tax free, even at the most conservative figure of $5,000,000 of direct savings a year, New York could pay off the debt to the United States Government in less than eighteen years and be $110,000,000 ahead in forty years at amortization time. As

the markets for power in the State of New York become developed for power so as to replace other fuel on a greater scale, it is estimated that the savings will be far greater. Hydro-electric power as we have seen, can be economically transmitted 300 miles and though New York is barely within that distance from the source of power, Boston and the industrial centers of New England are well within it.

To arrive, in fact, at the true net cost of the Seaway to the people of Canada and to those of the United States it seems worth emphasizing that all improvements already made or now going forward on the Great Lakes-St. Lawrence transportation system, the present deepening of river channels, the contemplated deepening of Great Lakes connecting links from 25 to 27 feet, the recently completed new Welland Canal, the Sault Ste. Marie Locks, each and all have been done or are in process of being done as above mentioned to meet existing needs and the yearly demands of 150,000,000 tons of Great Lakes commerce and entirely regardless of the project of the Great Lakes-Saint Lawrence Waterway to the Sea. These undertakings are necessary even if no seaway were ever contemplated and should not, therefore, be rightfully included in finding the total net cost of the Seaway either to Canada or to the United States.

Not included in the Dominion's share of the total cost are some $50,000,000 worth of canals to be rendered obsolete by the Seaway's completion. Since long ago Canada has been building series of canals to permit the navigation of certain types of small craft from Lake Ontario to Montreal and on to the Gulf of Saint Lawrence. These canals the Dominion has generously made available to whatever suitably small American craft might choose to use them. Inadequate for any purposes of the Seaway, they will all be discarded with the completion of this enterprise. Thus passes an investment of over $50,000,000 that a fraction of the 10,000,000

people living in the whole of Canada today staked on navigation improvement.

The American Government has so far expended a substantially like amount over a long term of years in improving and developing the navigation on the Great Lakes and their connecting rivers. These facilities have been open on free and equal terms to the use of the Dominion vessels and citizens.

There are other investments which will be used and directly enhanced in value by the completion of the Seaway. The freight ships of both nations on the Lakes, now exceeding 750 in number, represent an investment of more than $300,000,000 while a further $300,000,000 is invested in terminals and other necessary works in various Lakes harbors.

The total net cost of the Seaway to the United States of $125,766,000 was figured in 1926 when labor was high. It is the opinion of the Joint Board of United States and Canadian Engineers that if the contracts for the recommended works should be let at price levels prevailing at present, an appreciable saving in construction cost would result. Facts have already shown this opinion to be correct. For example, the cost of deepening the Livingstone Channel in the Detroit River to 26.1 feet as estimated by the Engineers in 1926 was $7,000,000. The contract to do this work has been actually let for less than one-half this amount or $3,400,000. In another example the estimated cost is reduced by one-third. The Engineers' estimate of 1926 to provide a twenty-seven-foot depth of channel in the Thousand Islands section of the St. Lawrence River was $1,532,000. This work is now under construction, to cost $1,021,000.

Comparison of Seaway Cost with that of Panama

As mentioned before, the total net cost of the St. Lawrence Seaway to the United States of $125,766,000 is less than one-third of that of the Panama Canal. Four hundred million dollars was invested at Panama by the United States to make possible the continuous voyage, to eliminate the costs of transfer from one transportation agency to another, to avoid double terminal costs and as the essence of the contract to move goods to markets never reached without sea transport and to bring to life new industries that would not have existed but for these markets. The purpose of achieving the St. Lawrence Waterway is no exception to the rule. The Suez Canal, the Panama Canal, the Sault Ste. Marie Canal and the new Welland Canal, all are intended to produce the economy of water carriage by substituting an unbroken and continuous haul for a broken voyage. As we have already seen the price enhancement from unbroken voyage of the normal grain crop of the United States from the completion of the Seaway in the tributary area conservatively estimated at five cents to the bushel added to actual saving on getting the grain to seaboard by continuous haul makes a gain of $240,250,000 on the grain crop alone of the stranded area in the United States for one year or nearly twice the net cost wholly attributable to the Seaway to this country of $125,766,000 to be spread over a period of construction of seven years.

The Department of Commerce of the United States and the Hoover Commission estimated the commerce available for the St. Lawrence route in normal times at from 19,000,000 to 24,000,000 tons of traffic as elsewhere shown, with

the average saving in transportation costs estimated at $3.00 per ton. Assuming conservatively the figure of only 20,000,000 tons of traffic over the Seaway, a saving of $3.00 per ton will aggregate $60,000,000 a year. Of course, not all of the traffic using the St. Lawrence Seaway may be expected to move to its final destination in unbroken cargoes with savings of $3.00 for every ton. Presumably a considerable proportion will be carried by Lakes vessels to Montreal or Quebec for transshipment at those points, while other cargoes may be shipped via the Seaway route to North Atlantic ports for transfer there to ocean carriers. But making due allowance for all such contingencies and uncertainties and assuming even the estimate of the Hoover Commission of $10,000,000 as the probable annual charge for interest, amortization, maintenance and operating expenses of the St. Lawrence route, it would appear that an average reduction of only 50 cents per ton on a conservative allowance of 20,000,000 tons of yearly traffic would meet the upkeep of this proposed development. It is estimated that the dispensing with a single reloading of cargo will accomplish more than this amount of saving. From an economic standpoint, therefore, the expenditure for the annual upkeep of the St. Lawrence Seaway will be easily repaid from the savings effected by its use.

As to how the interest, depreciation and cost of operation of the St. Lawrence Waterway are to be met there is a precedent for the policy in the United States as to rails and roads in the past and that has been in the absorption of capital cost. In other words by many such improvements, and the Seaway is included, highly valuable new taxable wealth is created, many times in excess of constructing and operating costs. Tolls as in the case of Panama upon all shipping navigating the Canal are impracticable for the St. Lawrence Waterway. The Panama Canal has the definite course of

fifty miles for practically every ship that enters there; the service on which tolls are based is in every case accurately measurable. In the case of the St. Lawrence Waterway, however, with great variation of deep water and channels over 2,339 miles, it is as difficult to fix points where service could be measured to make tolls fair as it would be to assess each ship its proportionate benefit from Nantucket Light. No sincere contention therefore could be made for tolls, and this is true even granted their practicability. For in substituting for nature's obstacles of rapids on the system of Great Lakes, the man-made obstacles of tolls so as to bring about the result of diverting the very traffic to competing routes of distress that it was the object of the Seaway to serve, the very purpose of building the Seaway would be set at naught. The toll question as to outgoing commerce is put to rest forever it seems, by Article I, Section 9, of the Constitution of the United States that Congress shall impose no tax or duty on articles exported from any state. And tolls on incoming commerce would be an interference with the tariff laws. Just as surely as commerce is the lifeblood of nations, that which hinders trade is nationally detrimental while that which improves the circulation of commerce is good for the nation's health.

The expenses of the building and operating of the St. Lawrence Waterway are not real taxes but rather a cost of service paid by all society included within the United States as the real and direct beneficiary from the service. With the return from shippers' savings and from Seaway-created commerce greater than building and operating charges, costs disappear in leaving a social profit. Hydro-electric power no matter how developed, is not regarded as a service but as a commercial commodity. Its development is simple and it pays for itself by an immediate return. For an enterprise of such magnitude as that of the St. Lawrence Waterway

the expense is not great and in comparison with the commerce it can already serve, aside from the new commerce it will create, the Waterway is an extremely cheap bargain investment.

The Seaway as a Public Works Administration Measure

The Administration of Franklin D. Roosevelt, who has expressly and publicly approved the Seaway, has the opportunity of greatly advancing its cause. With the Great Lakes-St. Lawrence Deep Waterway Treaty of July 18, 1932, awaiting ratification by two-thirds of the Senate, the Administration might appropriate from the fund of $3,300,000,000 for emergency public works the comparatively small sum of $200,000 to finish the work of preliminary engineering already authorized by Congress. This would hasten the completion of the Waterway by six months. The Chief of Engineers of the United States Army has recommended to the Secretary of War that it be included in the recovery program. The Assistant Secretary of War acting for his chief indorsed the recommendation and sent it to the Administrator of Public Works where the matter now rests. The Administration might further allot from the $3,300,000,000 provided by Congress for public works creating permanent national wealth the sum of $126,000,000 to finish the Seaway. It seems highly unfortunate if this vast reservoir of recovery money is exhausted while the most important and the most deserving enterprise of all is left in want. Not only will the Seaway need the hire of many men and not only will it give them the buying power so indispensable to the return of normal times but it is for the justifiable and

worthy end of creating permanent capital gain to the national wealth of the United States.

In an explanatory statement accompanying the Treaty, the State Department said the St. Lawrence Seaway project would furnish employment for a large number of workmen. Premier Bennett of the Dominion of Canada also stressed this benefit in announcing the terms of the Treaty saying that the agreement was timely in providing constructive work for great numbers of men now unemployed and would also furnish a genuine stimulus to industries whose products would go into the building of the Seaway.

CHAPTER XIII

THE SEAWAY AND THE RAILROADS. The Seaway Would not Detract Appreciable Traffic from the Railroads. It Would Aid the Western Lines. Seaway Vessel and Train Have Mutually Dependent and Non-Competitive Functions.

AUTHORITIES—Hoover, Player, McManus, MacElwee and Ritter, Craig.

AGAINST the Seaway it has occasionally been claimed that if it succeeds the railroads will lose. It has been urged against the construction of the Seaway in this connection that its probable adverse influence on the economic welfare of the railroads now hauling the great bulk of the commerce which it is expected will use the Seaway on completion would be the loss of so much business to the railroads as to be a most serious handicap. Worries are from time to time expressed that the St. Lawrence Seaway will injure the interests of our eastern states by decreasing the terminal business of seaboard cities and will divert traffic from American railways. Calling off the Seaway cannot help the solution of their fundamental problem which is, it seems, that there should be an equalization of the taxation and other restraints and burdens imposed on the railroads and on other present competing transportation means. As to the contention that the railroads are to be taxed along with the rest of the country to create in the Great Lakes-St. Lawrence Seaway a new competing system of transportation, there is nothing new about the governmental policy of modern countries to sup-

ply their citizens with the means of highway haul and travel, whether by railroad, by auto road or by water. Both in the United States and in Canada the railroads at the outset of their career received substantial federal support in addition to local help. Canadian railroads received the equivalent in normal times in money and in land of $30,000 for each mile of track. The railroads of the United States aside from vast financial coöperation which they received, obtained over 155,000,000 acres by various acts amounting to a realm of 242,000 square miles, the size of Germany with England thrown in for good measure. Loans to the railroads were approved by the Reconstruction Finance Corporation of $350,000,000 in 1932, almost three times as much as the St. Lawrence Seaway will cost the government to build in seven years. Wagon and auto roads have been an increasing cause for governmental attention. In Ohio, where the cost of government has increased more than forty times faster than the population in the last one hundred years, there was spent on highways in 1932, forty-eight and one-half cents out of every tax dollar or nearly as much as for all other state purposes combined despite that $33,000,000 of federal aid was received by Ohio that year for roads. From the far off time of laying Roman military roads, the providing of adequate transportation means has been an important function of government. The Great Lakes-St. Lawrence Waterway project is an application of the old principle of provision by the State of adequate highways of communication. The transportation and navigation aspect of the Seaway is by historical precedent the special care of the State.

The Seaway Would not Detract Appreciable Traffic from the Railroads

That injury would result to the railroads from Seaway competition contradicts, it seems, another contention that the Seaway would not have justifiable use. If it were to be only slightly used, there would not of course be competition to fear by the railroads. There is this somewhat contradictory claim against the Seaway in behalf of some of the railroads that the Seaway would compel the railroads to maintain excess facilities for the handling of its business during the four months of the year when it would be closed for the winter season. In regard to this contention it will be found on analysis of the month to month variation in the traffic figures of the railroads that there is an enormous fluctuation in its total amount. Usually the peak of demand is reached in October, declining rapidly after the crop rush period to January when the tonnage is scarcely one-half of the peak requirement. In other words throughout the four-month period when the Waterway will be closed by ice the railroads are the most in need of additional traffic to level out the fluctuation in demand and the surplus railroad capacity available during this period is considerably more than enough to accommodate any increased demand that the diverted water traffic could possibly impose at that season.

The Seaway when completed, in fact, has an opportunity to render real service. On the shores of the Great Lakes there are the conditions most likely to develop successful water transportation, namely large quantities of bulk commodities that may be by machinery cheaply loaded and where there is also a large volume of package freight, origi-

nating at or near the shores of the Great Lakes and not requiring long haul by rail. The United States traffic on the Great Lakes reached as its maximum 160,000,000 tons in 1929, a great part of which would not only not move at all but would not even be produced except for access to cheap maritime transportation by the Lakes. This traffic compares with 2,500,000,000 tons moved in one year by all of the railroads in the United States or in other words is one-fifteenth of the tonnage hauled by rail. While the margin of competition to take place on the Seaway is relatively large in the economics of the handicapped population of the North and Middle West, in railroad operation it is relatively small. A decisive answer it seems to the contention that any considerable amount of traffic will be diverted by the Seaway from American railroads is the report that Herbert Hoover as chairman of the St. Lawrence Commission of the United States presented to President Coolidge. He said that the total estimated tonnage available for the Waterway amounted to under 4 per cent of the tonnage carried by the American railway systems connecting the Lakes with the seaboard and 12 per cent of the sea shipments moving through the affected American ports.

The Seaway Would Aid the Western Lines

Of the whole railway system of the nation it is only a small segment east of the Lakes that, it has been claimed, can fear adverse effect from Seaway rates and only temporarily; it stands duplications of trackage at the present time of infinitely more wasteful and damaging competition than the Seaway could ever be. Why humor the fears of certain

lines by fighting a Seaway approved by most of them! The Seaway in bringing the ocean to the interior and in putting, in effect, the terminals of the big western railroads on the Atlantic as well as on the Pacific Ocean, will place them on an equality with the eastern carriers who have long enjoyed the richest of the country's carrying trade and have left the less lucrative to western lines. In affording passage for 88 per cent of the world's transoceanic and coastal cargo ships to ports on the Lakes forming the eastern termini of western lines, it confers the same privilege of direct access to the Atlantic that the eastern roads now enjoy only because of the improvement of the approach channels to Atlantic ports forming the eastern termini of eastern lines by the Federal Government at a cost to the Lakes region along with the rest of the country of many hundreds of millions of dollars. Furthermore, it has long been the western carriers' view that they have been accorded disproportionate rates with the distance and service considered, to those received by their eastern railway connections. Placing the eastern termini of western systems on a sea base will improve the economic status of 40 per cent of the railroad mileage in the United States.

Seaway Vessel and Train Have Mutually Dependent and Non-Competitive Functions

In the long run the Seaway will help all the railroads, including eastern lines. It will call for great new terminal ports on the Lakes. It will make dormant but potential productivity along their lines enter the field of profitable production, setting up a brisk new railroad commerce be-

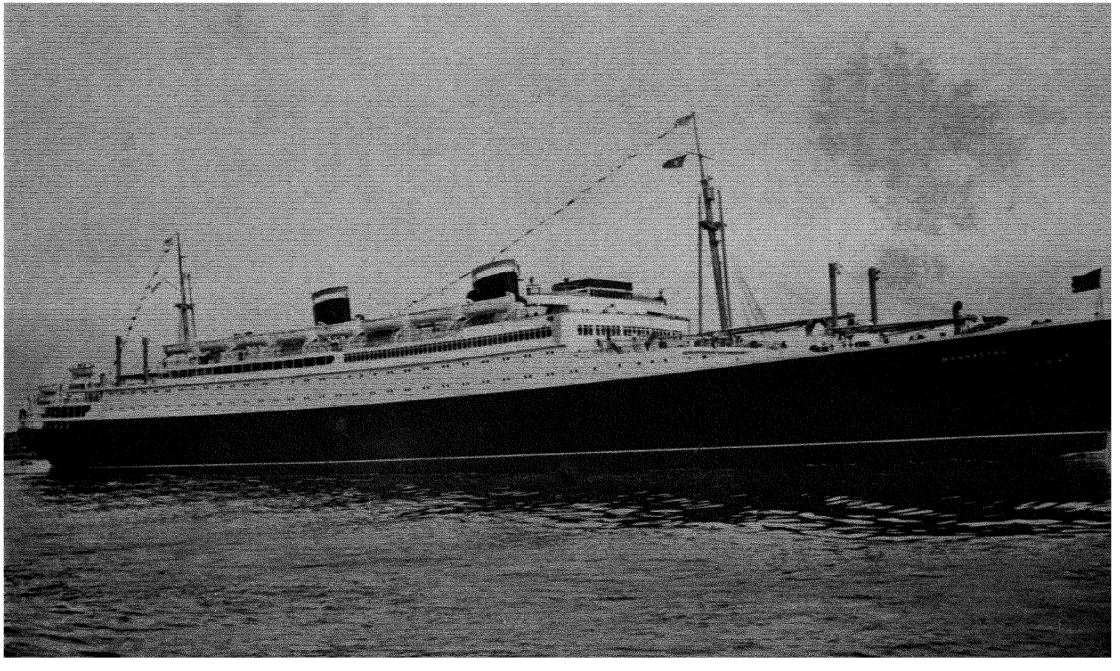
tween the Seaway area and at least the South and West. In fact sea and land, boat and train, have mutually dependent and non-competitive functions, each confined to its own performance in commerce. Most merchandise shipments, in fact all of those from one land to another or from one seacoast to another of the same land, require a combination of routes and of rates. In at least such cases where both water and rail route must be invoked to get the same shipment of merchandise to its destination, these two means of transportation are mutually necessary and complementary to each other. Competition, if any, turns on the relation of line haul to terminal costs. The relation of waterways to railroads is that of railroads to trucks. Trucks can carry their cargoes right past railroad stations and avoid at these points the delay and added expense to shipments of unloading and of reloading, by completing their hauls on a single loading. Yet the truck can beat the train on low cost of carriage only on a short haul, for rail haul is cheaper than truck haul once the train is in motion. At no great distance between any two points far enough apart to absorb terminal costs, the superior economy of the railroad prevails over auto carriage and the highway vehicle can no longer compete with the railroad.

This relation between truck and railroad is illustrative of that between railroad and inland waterway since the margin of competition between them turns likewise on terminal costs. The railway, spreading its trackage in all directions on land, can pick up its cargo at every shipping station and factory door and has the initial advantage. At some point, however, it may be cheaper to turn over the cargo to a boat to continue the transportation to some distant port, that point depending on the length of the haul and terminal costs as determined by the boat loading facilities provided. Between any two points far enough apart to absorb terminal

costs the superior economy of water transportation asserts itself over carriage by rail and if transportation over water is available the boat controls the traffic. Yet, even though the Waterway may parallel to some extent its serving rails, carriage by sea is not competitive but supplementary to internal transportation by rail. Especially if shipments are from one land over water to another or from one seacoast to another of the same land, the railroad must eventually give up its cargo at some port since in such case ships are the only conveyance. And the converse is just as true, that what a boat receives at any port must be first brought by rail and what a boat unloads at any port must be distributed by rail for the ship is confined to water and the train, to land.

The railroad systems in the eastern part of the United States who resent the St. Lawrence Seaway, as well as all of the railway systems the world over, are invariably built for just one purpose and that is to reach or to aid in reaching ports. In fact the great rush for the construction of railway lines in the last half of the Nineteenth Century from the Atlantic Ocean to the Mid-West of the United States was to capture a share of the grain crop to take it to shipside. The old-time tow-path canal was also constructed to carry loads to ports and competed with the railways in so doing but was an entirely different matter than ocean extensions such as the Mediterranean or the Baltic or the Great Lakes-St. Lawrence Waterway system which themselves of ocean dimensions create their own ports and in them new objectives for the railroads to reach.

The St. Lawrence Seaway is not an inland waterway or canal but it is an arm of the ocean, a sea road into the continent, practically bringing the ocean to the interior. It carries freight by the shipload to and from destinations that neither barge nor rails can reach. It is a case of ocean transportation and ocean ships being projected inland for



Courtesy of the "Cleveland Plain Dealer"

UNITED STATES LINES

The cabin liner "Manhattan" could not come up the Seaway.

2,339 miles to bring the world's lowest cost transportation from the Strait of Belle Isle to the head of the Lakes. Fundamentally the Seaway belongs in a class with approaches to our ocean ports such as the Delaware to Philadelphia, the Hudson to Albany, the Mississippi to New Orleans, the Columbia to Portland. It differs from these examples only in the far greater distance it projects ocean transportation inland and the vast extent of territory and the great number of ports that it serves. While the Great Lakes-St. Lawrence transportation system is not comparable to the Mediterranean in expanse of navigable water but is rather comparable from that standpoint to the Black Sea and the Baltic, the principle to be brought out in the case of a comparison with the Mediterranean is the same. In fact the enormous economic strength of middle North America is far superior to that of the shores of the Mediterranean or to that of any other of these inland seas.

Where some measure of duplication of transportation exists and where rail and ship supplement each other with some margin of competition between them, the public, it seems, is entitled to the economy of the cheapest form. That is only progress. The margin of competition on Seaway completion between ship and train will, anyway, be negligibly small. Only four per cent of marine transportation on the Seaway is to be subject to competition by rail. For the other 96 per cent there would be no chance to compete. The St. Lawrence Waterway is not a plan to eliminate rail haul: it is a plan to cancel terminal costs. And granted a continuous water voyage of any reasonable length and suitable terminal facilities available, there is no competition between ship and train any more than where the train lays down its cargo for the ship to take it up at the Atlantic seaboard. In either case the train is paramount on land: on the water the ship is supreme.

It is physically possible to haul iron ore from Minnesota to Pennsylvania by rail but none is carried that way. There is not even a rate published at which the railroads would take it. They are out of the business. There is obviously no competition in that field. That traffic has been relinquished to the superior economy of the ship. As an extreme present case to show how the Seaway when completed and the railroads will be supplementary to each other, the Duluth, Mesaba & Northern limits its operations almost exclusively to hauling ore from the mines down to the Lakes while the Pittsburgh & Lake Erie confines itself to hauling the same ore from the Lakes to the furnaces. It pays to move the iron ore by rail from the mine to the port on the Upper Lakes, by ship down the Lakes and from the nearest port on the Lower Lakes to the furnace again by rail just as it pays to transport dairy products from Minnesota or the Dakotas to the head of the Lakes by rail, down the Lakes under refrigeration by ship and then from the Lower Lakes port to the consumer again by rail. Likewise to take a more extreme case, it pays to bring lumber from Puget Sound in the State of Washington for the long water haul way around through the Panama Canal and along the Atlantic Seaboard to Baltimore or Philadelphia or New York to be delivered by rail as far inland as Ohio. Or vice versa it pays to move steel products from Youngstown or Warren, Ohio, or Pittsburgh to the Pacific slope by rail in the direction opposite its destination to an Atlantic port for the long water haul by way of Panama. With the understanding between ship and rail that transportation by each should be developed in coöperation with the other and with the understanding that each has its own special field in which it particularly excels, the public would have the best form of service that each can produce or that can be rendered by the two jointly in combination.

Not only is the Seaway not competing but supplementary to the railway system of the nation, but just as surely as the welfare of the country's railroads depends upon the welfare of its factories and farms to provide commodities to carry, the Seaway in reducing shipping costs and in creating and expanding markets and in enabling freight to move that would otherwise not even be produced, will benefit both directly and indirectly the nation's rails.

CHAPTER XIV

PORTS AND PORT DISTRICTS. The Seaway's Influence on the Great Lakes Ports. Ports Originating Exports and Ports of Distress. Coöperation with the Seaway of Great Lakes Ports. The Necessity of Port Commissions and of Port Districts.

AUTHORITIES—Player, Craig, Harold H. Burton of Cleveland.

COMMERCE of any magnitude is conditioned not only on the existence of cargoes and of ships but also on that of ports. There are now altogether on the American and Canadian sides of the system of the Great Lakes approximately 400 harbors. About 80 of those on the United States side are of sufficient importance to warrant improvement by the Federal Government. At 76 of these harbors on the United States side, statistics are returned by ports. On the Great Lakes the Department of Commerce recognizes more than 42 principal United States ports. The great importance of the Lakes is seen from the fact that Atlantic ports of the United States total only 33, Pacific ports including Hawaii number but 23 and of the Gulf of Mexico ports there are only 15, making a total of 71 principal coastal ports of the United States as compared with 42 principal United States ports on the system of Great Lakes: by the completion of the Seaway they too, will be seaports.

Canada's list, though of a lesser total, includes such great centers as Montreal and Quebec, Toronto and Hamilton, Port Arthur and Fort William, together with Kingston,

Sarnia, Windsor, Prescott and many others. The Province of Ontario has fifty-six ports furnishing statistics of which most are on the Lakes and some on Georgian Bay while there are twenty-four ports officially reporting in the Province of Quebec.

The commerce of the smaller and less important harbors consists mainly of receipts of coal, supplies for local consumption and shipments of such things as pulp-wood and lumber. The more important ports on the Lakes have storage and loading and unloading facilities and railroad connections for handling through traffic in addition to local commerce. The problem of those larger ports in which or near which manufactured goods originate, is one of distribution. Many of these ports have developed to the present point in spite of handicaps which the completion of the Seaway will remove.

The Seaway's Influence on the Great Lakes Ports

Not only does the completion of the Seaway mean to Great Lakes cities a lower cost of living, reopened factories, a new release of energy and diminished unemployment. The Seaway in bringing the ocean to the points of collection and distribution on the Lakes will make of vastly greater importance these now inland ports. At present they are developed to collect, forward and receive products only so far as their restricted hinterlands require. On becoming seaports with the completion of the Waterway they will serve far greater tributary regions by handling unbroken water shipments to and from all of the markets of the world and in so doing they will make of themselves great terminal

ports. The extent of the territory served by any port and affecting its greatness is largely determined by relative transportation rates to this and to competing ports. If the port is only a Lakes port and only a forwarding point for one or two or more transshipping centers to complete the haul to tidewater, then all the rates from the point of origin to the final shipping point at the seaboard must be added together before the cargo is even at sea. If the port is an ocean port as well as a Lakes port its cargoes are already at the side of the deep-sea-going ship without further rail and water hauls to get to the ocean. Freight is sent to the port either at cheaper rates or from farther away and its tributary area vastly increases.

In this connection it may be well to remember that the tremendous traffic of the port of New York is the result of serving the shipping demands of a vast tributary area of surrounding states extending banking, transporting, storing, insuring and other services across the Alleghanies to Pennsylvania's coal fields, to the great iron and steel centers of the Ohio Valley and to the territory of the Great Lakes.

In looking across the boundary it is interesting to note how close the Canadian areas of production lie to the St. Lawrence. In looking at this side it is equally impressive to observe how many American cities of the Middle West have attained their present greatness from access to the waterway system of the Great Lakes even with its existing handicaps. Of Great Lakes ports Duluth-Superior led in the tonnage handled with an average for the ten-year period from 1920 to 1929 of 47,363,000 tons. It is surpassed by very few ocean ports in the volume of water-borne commerce and in the United States takes second place only to New York. Buffalo, the leading flour milling center in the world, ranked second with an average of 18,000,000 tons. Toledo, the premier coal port of the Great Lakes over whose docks

passes half the soft coal shipped on the Lakes, came third as to general commerce, averaging 15,000,000 tons a year. The other American ports in the order of average tonnages for the ten-year period are Chicago, Ashtabula, Cleveland, Conneaut, Calcite, Ashland, Milwaukee, Agate Bay, Lorain, Escanaba, Detroit, including the traffic of the River Rouge, Sandusky, Gary, Indiana Harbor, Fairport, Erie and Ludington.

So commerce on the Great Lakes exists. World markets exist. The Seaway will bring Great Lakes commerce and world markets even more effectively together. It means then for the Great Lakes ports, in serving greater hinterlands through facilities for further service, to procure themselves an era of prosperity and growth such as they have never known or forecasted.

Ports Originating Exports and Ports of Distress

There is a distinction to be made between two kinds of ports. Ports like New York and New Orleans are receiving centers for territories tributary to them by economic distress, for districts lacking in direct outlets. Detroit, Cleveland, Chicago, on the other hand, in common with most Great Lakes ports originate a very large portion of the exports from their docks and originate even more exports which going over the docks of New York and other maritime centers are credited in the export return of these latter ports. This distinction between two kinds of ports explains away objections of certain interests in Buffalo to the Seaway's completion, for Buffalo is both kinds of a port. At the foot of Lake Erie, it has a very large commerce originat-

ing in the rich areas near the Upper Lakes, for which trade it is the logical and well-equipped receiving and distributing center. This first sort of commerce is sufficient to sustain Buffalo as a first-class port and like the commerce of other lake ports looks to the Seaway's completion for its maintenance and growth. But Buffalo is also a port of distress for some of the commodities of the Middle West United States unable to reach tidewater without transshipment at some point before the end of the Lakes is reached. That second sort of commerce that transships to boat or rail at Buffalo as port of distress, going there by necessity rather than by right and reason is what some interests fear losing from Seaway completion. It is not one-tenth of the sound trade originating in the Great Lakes region for which Buffalo is the logical and natural receiving and distributing center. Buffalo's average annual commerce over the ten-year period from 1920 to 1929 was in excess of 18,000,000 tons, of which the New York State Barge Canal took less than 6 per cent. But whatever small proportion of its total commerce Buffalo should lose as port of distress to the Seaway in transshipment trade would obviously be made up many times over by the economies offered that commerce which Buffalo serves as a receiving and distributing center by natural right and by economies offered its own originated flour-milling and other industries from direct water-borne shipment through the world.

Coöperation with the Seaway of Great Lakes Ports

For ports on the Great Lakes and connecting channels to take full advantage of the Seaway it seems there should be

kept in mind the difference between the actual and potential importance of a port. Potential importance is the result of geographical location. Actual importance depends upon whether those occupying the port make the necessary engineering improvements in their harbor and take their port responsibilities seriously in providing up-to-date loading and unloading and storage facilities. According to the circumstances of each particular case local harbor improvements may be necessary to make the best use of the new deep sea going navigation advantages to be afforded. Before the ships can come to dockside or goods can be brought to shipside or before certain ports can gain the benefits of cheap carriage on the Seaway there may have to be dredging to deepen and straighten the particular local basins and channels of approach to the Waterway and there also may have to be the construction ashore of proper warehouses and elevators for storage and joint terminals or other facilities and means for the rapid loading and unloading of ships. It is obvious that to realize the advantage of the low rate and to make the Waterway count, the haul must not only be fairly long but the terminal facilities must be sufficient and prompt. Gain from the Waterway is by substituting the cheaper continuous voyage for the hitherto broken voyage. To cancel the extra costs of transferring cargo from one transportation agency to another and to provide continuous voyage to dockside, cities on the Seaway must look to their particular needs. Toronto on Lake Ontario has found necessary and seen fit to spend over a period of years some $40,000,000 on harbor improvement; its trade more than doubled in four years from the time that improvements were completed there. Liverpool since 1859 has spent more than $190,000,000 to improve its port, while, says Charles P. Craig, Executive Director of the Great Lakes-St. Lawrence Tidewater Association, it has proven profitable to expend $80,000,000 that

some vessels may dock at Manchester instead of Liverpool. London has spent $170,000,000 to coax shipping up the Thames. British maritime supremacy is more than an accident. On this side of the ocean at Baltimore, the federal, state and city governments have devoted $73,000,000 to harbor improvement. San Francisco has spent $50,000,000 for the same purpose since only 1909. The sum of $39,000,000 was invested to obtain improved draft for the shipping approaching Philadelphia while $30,000,000 has been spent at Staten Island alone by the City of New York.

As to harbor improvements, there has been a similar vision in Canada: the total capital values of various harbor developments in the Dominion have been approximately as follows: Montreal, $61,000,000, St. John in New Brunswick, $52,000,000, Toronto with its total municipal project of port, parks and reclamation, $40,000,000, Quebec, $26,000,000, Vancouver, $22,000,000 and Halifax, $20,000,000.

Geography and history both show that there is no city anywhere and never has been any within the reach of tidewater that would not choose to be a port if it could possibly make itself one. Some ports, as brought out by Dr. Roy S. MacElwee, an expert on ports, are blessed with natural harbors like Boston, New York, Galveston, San Francisco and Seattle. Many of the Great Lakes ports are out-on-the-lake-front port developments. In this class are Cleveland, Erie, Buffalo, Chicago, Milwaukee and Toledo. Some ports have at great expense been dug out of the mud, including London, Liverpool, Amsterdam, Hamburg and Bremen. Still others have moved behind breakwaters out along the beach like Marseilles, Naples and Buenos Aires.

Perhaps from the size of such figures as the above there is a vast misconception about ports. These sums have been raised to meet a logical program of port development and construction over a period of years to produce at each of

these ports, to the extent that natural facilities rendered possible and the particular situation required, the economies of the unbroken voyage. All sorts of fantastic figures have been set up as the requirement for a port while all a port needs in the beginning is a comprehensive plan. The plan can be developed to keep one step ahead of expanding needs with taxpayers able to witness the growth and to always keep slightly ahead of it. According to Arthur Cyril Player of the Detroit *News,* it is highly likely that those cities on the Lakes that adopt such a formula will follow the example of Toronto and profit 100 per cent from it in a few years, while those that refrain from extensive port improvement from the misconception that the whole enterprise must be completed at once will be grieving their lost opportunities. While a few hundred thousand dollars may have to be spent to set a harbor on the road to maximum benefit from the St. Lawrence Waterway, all lake port development can, in a general way, be gauged to meet the gradually increasing demands of commerce. And the actual costs of starting the operation of a real port, according to George B. Sowers, port expert of Cleveland, are only $50,000. This is enough to pay the expenses of organization, engineering and any legal expense incurred in connection with the organization of a port district and the preparation of a general plan.

The Necessity of Port Commissions and of Port Districts

There is a keen competition not only between the individual ports of a state but also between the ports of one state and those of another state. Although docks on the

Great Lakes designed for a single commodity and built for private interests hold the world record for their economic and rapid handling of bulk cargoes, still the Atlantic ports will be merciless competitors of all ports on the Great Lakes when these Lakes ports become seaports. With the coming of the St. Lawrence Seaway it will be for the citizens of these ports to plan ocean terminals for the handling of miscellaneous and package freight, not only for their immediate cities but also for the producers in the hinterland served by the port. The importance of the individual ports of a state is measured by low handling charges and quick turn-around of the ship, in short, the adequacy and efficiency of port facilities. The importance of the ports of one state over those of another state is also measured by the kind of state enabling law that permits the formation of districts for ports with boundaries, finances and control independent of the politics of existing state, county and municipal subdivisions.

Only a permanent and nonpolitical commission and a special port district will insure continuity of policy in the building up of a port over a period of years through independent control. The maritime cities of New York, San Francisco, Seattle, New Orleans, Portland, Oregon, and Toronto, Canada, have benefited from the establishment of a special port authority. Minnesota and Michigan have also passed enabling acts. Experience in the United States and abroad has demonstrated that an adequate port is rarely developed until a state enabling act creates an agency of a permanent nature with no other conflicting duties than those of supervising the port and whose membership is free from political considerations, and the state enabling act should also create a special port district. It is desirable to provide for a permanent port commission who may be so

appointed that only the terms of a given fraction of the commission expire in any one year so as to retain a majority in office and to insure continuity of policy. The development of a port necessarily covers a long period of time. If the port is to be merely one of the minor incidents of municipal policy confronting a city council it will almost inevitably suffer from serious neglect. This sort of situation destroys the confidence of those who would make investments dependent upon the continuity of policy and control of the port. It would be well by legislation to make the port commission appointed by the judges of the court of appeals of the appellate district within which the port district is located so as to remove these appointments so far as possible from any political considerations. The chances for securing a well considered initial plan of port development are increased when the sole and direct responsibility for the development of the port is fixed clearly upon certain individuals free from political influences.

The first duty of a port commission would be to prepare a survey and plan for the development of the port, something in the nature of a zoning plan so that future development of the port over a long period will conform to a well considered plan for the port as a whole. This adoption of a program for the development of a port makes it possible to examine into each intended use of the port and lake-front lands so as to make sure that any development for private or selfish interests does not interfere with the general public interest or the program for the systematic development of the port. Such a commission would take up the task of definitely determining and disposing of legal claims to lake-front property on the part of private claimants. Rights of the state in submerged or filled lands within the port district would be placed in the control of the port commission who, though not

having authority to sell or deed in fee the title of the state, could lease from time to time to the highest and best bidders for purposes not running counter to the plans for the development of the port.

It is imperative for any state whose citizens desire to give their ports a fair chance to compete with the ports of other states that the enabling act creating the permanent port commission should also provide for the formation of special port districts. Legislation enabling port districts to be formed at the will of their inhabitants is preferable to general arbitrary legislation creating port districts because the several ports of a state may not be ready to act at the same time and some may not be willing to act at all. It is desirable that the special port district should be larger than the particular city where the port is located. This plan gives an opportunity to include in the port district whatever area larger than the city may be appropriate and as approved by vote of the people within the area. It is also desirable that the boundaries of the special port district may differ from those of other existing political subdivisions. It is of the utmost importance that the finances of the port district should be separated from those of the closest municipalities whose finances may be complicated with matters having nothing to do with the port. Since the community through its port deals directly with interests located outside of the community and even outside of the state or of the United States it is important that the port district should have a separate financial structure and credit standing unaffected by local political contingencies.

Truly enough the responsibility of taking full advantage of the Great Lakes-St. Lawrence Seaway as an outstanding asset rests with the Great Lakes ports. They, in turn, however, depend upon the legislatures of their respective states for authority to create a form of governmental port authority

that will enable them to separate their port responsibilities from the confusion and hindrance of unrelated and often political considerations, and thus insure progress over a long period in the gradual development of a port.

CHAPTER XV

THE UNITED STATES SHOULD COÖPERATE WITH CANADA'S PRESENT DISPOSITION OF WILLING COMPLIANCE. The Seaway is Primarily Desired in the United States. The "All-American" Ontario-Hudson is a Neither Desirable nor Practicable Alternative Route.

AUTHORITIES—Drury, Hoover, Whiting, Republican and Democratic Platforms of 1932.

INDEED for the United States to fail to avail itself of the disposition of the present Conservative Government of Canada to coöperate in putting through the Seaway would be the utmost folly. It is a question fraught with difficulties and dangers from many points of view with interprovincial interests in Canada as well as international interests involved. Furthermore, the industrial and commercial rivalries of Canadian cities play an important and not always a favorable part.

There is enough dynamite in the power situation alone that may make it next to impossible for the United States to get even Canada's consent to the St. Lawrence Seaway at some future time with Canada's coöperation entirely out of the question. Ontario is fanatically devoted to public ownership in the development of water power. On the contrary, the Province of Quebec is just as strongly prejudiced in favor of private enterprise. With Ontario's policy prevailing and with some slight turn in the political balance, it would take ever so little agitation on the part of office-seeking

opportunists to raise Quebec strongly against the Seaway issue. And on the other hand, if Quebec succeeds through political fate in eventually having its policy prevail in Quebec's section of the river, it means that the three million horsepower there becomes the property of one or another of the powerful financial groups unpopular elsewhere in Canada so that Ontario and the West would be very quickly roused on that issue.

The whole Seaway question is so charged with political dynamite that in case the United States fails to grasp the opportunity of the present, any future Canadian Government not enjoying the statesman-like qualities of Prime Minister Bennett may refuse to have anything to do with the matter as surely as a recent Canadian Government proudly rejected the Reciprocity proposal of President Taft in 1911, a measure eagerly desired and sought by Canadian cabinets for many years. The lesson of 1911 is not forgotten in Canada, the "no truck or trade with the Yankees" campaign in which the Liberals, a great historical Canadian party, abandoned their traditional policy in favor of reciprocal trade with the United States to take advantage of an appeal to national prejudice and won the election. Quebec Province, lacking the magnetic leadership of Sir Wilfrid Laurier and inclined to be prejudiced against the St. Lawrence project in any case, might be as susceptible to such tactics in the future as Ontario in 1911 was in the past, and Ontario is only slightly less susceptible than Quebec. So the present statesman-like government of Premier Bennett, to carry out its policy of putting through the St. Lawrence Seaway, must expose itself in any event to attack in what might prove a vulnerable spot, an attack not only destroying the tenure of power of the present Conservative Government, but making finally impossible any reasonable coöperation of Canada with the United States in developing the St. Lawrence Seaway

either in whole or in part at some future time. There is a real danger from the way shown to popularity in the Dominion by the defeat of the Reciprocity Treaty of 1911 at the hands of the Liberal Party, that some Canadian politician may, and most certainly will, if the United States does not grasp the present opportunity for Canadian coöperation, put forward the policy of an "All-Canadian" route, hoping to be carried into power on the wave of prejudice that the cry of "nothing to do with the Yankees" would probably again create.

There is no public opinion in Canada that can be relied on for a sustained effort to have the St. Lawrence Seaway go through at some indefinite future time. The Maritime Provinces of eastern Canada are at best indifferent. The City of Quebec, as fanatically jealous of sovereignty for French-speaking people of both banks of the St. Lawrence River as Montreal is jealous of its ship reloading business, makes Quebec Province only lukewarm if not potentially hostile. The West of Canada is distracted by the possibilities of other routes to the ocean by way of Hudson and Georgian Bays. Ontario is the only Province of Canada actively friendly to the project. Though now succeeding in keeping the other provinces of Canada in line, Ontario may, however, at a future time have sympathy turned to antipathy at the thought of partnership with the United States in developing the Waterway, yielding to appeals to prejudice or passion just as already happened in the case of the Reciprocity question in 1911. Seaway Treaty ratification this winter by the Senate of the United States and by the Parliament of the Dominion of Canada is an unexcelled opportunity for high minded and unselfish service on the part of the statesmen of both countries. If this opportunity is permitted to slip by, the Seaway project is then in danger of becoming the political football of small politicians on either side of the

boundary line who would stir up national passions to defeat the measure simply to attain office, when the question comes up for consideration again.

The St. Lawrence River with its extensions, the Great Lakes, is the most important single factor in the transportation system of the North American continent, in fact for Canada as well as for the United States. For the Dominion too, it draws its freight from the prairies of the West. It also serves the industrial life of Winnipeg. And with the help of the River Ottawa, it serves the forest and the mineral resources of northern Ontario and encircles the peninsula of that province, rich in factories and in farms and in water power. It flows past Montreal to serve this metropolis of Canada as well as Quebec. But important as is the Seaway's completion to the Canadian people, it is of even more immediate and urgent importance to those of the United States. For the present at least, most of the development is on the American side with forty-seven American cities situated on the shores of the Great Lakes with a combined population of seven millions or with forty-five millions in the American region tributary to the Lakes as against ten millions of people throughout the whole of Canada. As expressed by Hon. E. C. Drury, former Prime Minister of Ontario Province, the region in the United States served by the Great Lakes and by the St. Lawrence River is not only great in population but it is supremely great in resources and industry. This system of water transportation not only touches the great coal and iron fields of the United States respectively on Lake Erie and on Lake Superior, but it penetrates to the heart of the Middle West at Chicago, the second city and greatest railroad center of the country, and head of the nation's wheat and corn and livestock enterprises. Detroit, also on this system of Great Lakes, dominates the motor manufacture of the world. The superior interest of the United States in

this commerce on the Lakes, amounting in 1926 to 90,000,000,000 ton-miles, is shown by the fact that vessels of American registry in the prosperous year of 1928 had a total tonnage of 2,525,437, while those of Canadian registry totaled only 608,166 tons. While the 90,000,000,000 ton-miles in one year are carried mostly between the several lakes and hence no indication therefore of the tonnage that would move through a deepened St. Lawrence Waterway, this figure in representing approximately one-quarter of the railroad ton-mileage of the country for that year is a striking indication of the commercial importance of the regions tributary to the Great Lakes-St. Lawrence system of transportation. A region of such intense activity and of such great resources has urgent need of this connection with the ocean, granted that the enterprise can be internationally arranged. This need is realized to a far greater extent in the United States than it is in Canada where sentiment believing in the necessity and favoring the urgency of the project is not nearly so well formed. In the United States, Wilson, Harding, Coolidge, Hoover and Franklin D. Roosevelt, in fact every President who ever considered the Great Lakes-St. Lawrence Seaway, has endorsed it.

The Seaway Is Primarily Desired in the United States

Ex-President Hoover for a number of years has been the most prominent advocate of the economic advantages to be derived from the St. Lawrence Waterway. In a series of addresses in mid-western cities in 1926 and 1927 while Secretary of Commerce, he indicated the benefits that would be gained from the completion of this project, and in 1928

while campaigning for the presidency he emphasized the same theme. His principal arguments were that completion of the Seaway was a form of farm relief for the agriculture of the Mid-West United States, suffering from a condition of economic distortion brought about by increase in railroad freight rates since the War. For example, by way of review, while ocean freight remained at about the same levels as before the War, the cost of moving grain to the world markets was at that time about six to twelve cents more than formerly. This reduction in the return on the export part of the crop did not affect the return on that part of the crop alone moreover, but depressed the return on the whole crop. Hoover believed that the Seaway would nullify the effects of these increases in railroad rates. He also noted that Mid-West industry was affected by the opening of the Panama Canal which, though drawing the Atlantic and Pacific seaboards economically closer together, pushed the Middle West and the present coastlines of the United States farther apart. These influences, said Hoover, not only made it more difficult to market Middle Western products but increased the cost that manufacturers of the Middle West had to pay for outside raw materials and other goods purchased at distant points with the result that a great number of them were forced to go under, while many others were compelled to migrate to the seaboard in order to survive the competition of their foreign rivals.

Hoover's remedy for this distorted economic condition was in providing such cheaper transportation as only the completion of the St. Lawrence Seaway would grant from the Middle West to the seaboard, to Europe and to South America. Such outlets, he contended, would not only assure greater returns on farm products but would attract industries away from the congested areas of the seaboard of the United States into the agricultural area with mutual benefits to both

factory and farm, would assure a better distribution of population and would increase the consumption of goods. It was with these convictions that Hoover, as President, hailed the signing of the Seaway Treaty of July 18, 1932, as another step forward in "the greatest internal improvement yet undertaken on the North American Continent."

> The treaty represents to me the redemption of a promise which I made to the people of the Midwest. Its influence in cheapening transportation of overseas goods will stretch widely into the interior. Its completion will have a profoundly favorable effect upon the development of agriculture and industry throughout the Midwest. The large by-product of power will benefit the Northeast. These benefits are mutual with the great Dominion to the north.

The 1932 Republican platform contained the following plank on the project:

> The Republican party stands committed to the development of the Great Lakes-St. Lawrence Seaway. Under the direction of President Hoover negotiation of a treaty with Canada for this development is now at a favorable point. Recognizing the inestimable benefits which will accrue to the nation from placing the ports of the Great Lakes on an ocean base, the party reaffirms allegiance to this great project and pledges its best efforts to secure its early completion.

The Great Lakes-St. Lawrence Waterway project was too much favored over large sections of the United States to become any issue in the 1932 presidential campaign, as shown by the fact that the Resolutions Committee of the Democratic National Convention at Chicago approved a plank recommending "expansion of the federal program of necessary and useful construction affected with a public interest, such as

flood control and waterways, including the St. Lawrence-Great Lakes deep waterways." Though the final phrase of the plank relating to the St. Lawrence project was not read to the Convention and does not appear in the platform as published by the Democratic National Committee, officials of the party say that it was omitted only by inadvertence.

Later, Governor Roosevelt, on July 9, 1932, after he had received the nomination for President, telegraphed to President Hoover offering to go to Washington to confer with the chief executive in an effort to reach a final agreement on the points of the Great Lakes-St. Lawrence Waterway project in which the State of New York was interested so that the treaty might be forthwith concluded and presented to the Senate prior to the adjournment of Congress. It will be recalled that nine days later the Seaway Treaty was concluded with Canada, without the matter having constituted any party issue in the United States. Roosevelt, who favored the St. Lawrence Seaway, as Governor, was an ardent advocate of the project in foreseeing in its possibilities for the development of power the means of bringing cheap electricity into the homes and farms of New York State.

Now further, by way of review, there is no other grand scale remedy for the central United States than to go through with the Seaway. Arbitrarily decreasing railroad rates even if that were desirable would not avoid the seasonal congestion at terminals in normal times. The Panama Canal, of the utmost value to the coastal regions of the country, cannot be wisely scrapped or abolished. The only effective remedy then for the Mid-West United States is to deepen the St. Lawrence Waterway to a twenty-seven-foot channel that will permit large sized lake freighters to go down the river to tidewater and that will permit more than three-quarters of the ocean vessels in the world to come up the Lakes.

It is to be remembered by way of further review that after

forming the international boundary between Canada and the United States from Lake Ontario for 115 miles, the St. Lawrence River for the remaining 68 miles to the head of ocean navigation at Montreal flows entirely through the Dominion of Canada with the French-speaking Province of Quebec situated on each bank. So the United States asks the coöperation of Canada to complete the Seaway project. Two-thirds of the Canadian people speak English, and nearly one-third French, in a country where the jealousy of the prerogatives of this French-speaking Province of Quebec is the greatest factor in the politics of the entire Canadian nation. The representatives of the United States find at Ottawa, the Dominion capital, by the purest chance, a receptive and cordial attitude for Seaway coöperation on the part of the Conservative Dominion Government in power. The Seaway Treaty entered into by both countries of July 18, 1932, for the completion of the deep water project, remains to be ratified by the Senate of the United States and by the Dominion Parliament. The St. Lawrence Seaway is already practically deepened except for the 119 miles of rapids between Prescott, Ontario, and Montreal, Quebec.

While canals have been built by Canada along this section and while the use of them has been permitted to American vessels, there has been some questioning as to whether the clause of the Treaty of Washington of 1871 purporting to give to the United States the navigation of the St. Lawrence "ascending and descending" meant only the right to navigate the river in its natural state but not the side canals without which the right to navigate the St. Lawrence would be of no possible use. The pending Seaway Treaty of July 18, 1932, will, if ratified by the Senate, settle all doubts on this matter by precluding Canada from terminating the right of the United States to use these side canals. The Seaway Treaty is also necessary to so enlarge and deepen these canals

to a uniform twenty-seven-foot depth as to make them of practical use to large vessels of the Lakes and three-quarters of all ocean vessels.

This shipway improvement has been in contemplation in a general way for the last one hundred years, and has been considered in its present form ever since a comprehensive study was made in 1919 by an International Joint Commission, assisted by an International Engineering Board, both appointed by the governments of the two countries soon after the adverse railroad rates were felt by the American Mid-West as a result of Panama and as a result of the War. For the Senate to not ratify the Seaway Treaty of July, 1932, and for the country to not go through with the Seaway now, would throw away the international deliberative efforts of the past fourteen years. But the damage would be far greater. The United States, by failing to go forward with the ratification of the Treaty after approaching Canada on the subject, cannot rest on the assumption that a future Canadian Government will be equally cordial to the United States in encouraging and even in permitting American operations on Canadian soil.

The "All-American" Ontario-Hudson Is a Neither Desirable Nor Practicable Alternative Route

And with the Mid-West still unrelieved, the only alternative would be to put through the "All-American" route. As we have already seen there is another route from the Great Lakes to the ocean entirely within the United States. From Oswego at the southeastern angle of Lake Ontario, a canal may be built to join with the Hudson at Albany and pro-

ceeding down the Hudson, may find its outlet to the sea at New York. This route is a very poor second choice and, although the old controversy as to alternative routes that dominated discussion of the Lakes-to-the-Ocean project in earlier years seems to have largely subsided, still it may be well to review the disadvantages of the "All-American" route in case the refusal of the Senate of the United States to ratify the Treaty for the presently considered St. Lawrence project compels the resort of this country to the "All-American" route at some future time as an only alternative. It is to be remembered that this "All-American" route to confine itself to the territory of the United States would have to duplicate the new Welland Canal a few miles to the south of it in passing between Lake Ontario and Lake Erie simply to traverse American soil. Canada's fourth new Welland Canal was completed in June, 1932, at a cost of $128,000,000. Though considerably less tonnage is estimated to be available for the "All-American" route by the United States Department of Commerce, its cost to the United States would be no less than $631,000,000 according to the report of the United States Army engineers. It is obvious that, after having made the Treaty with Canada of July 18, 1932, if this country does not ratify the agreement when it comes up for ratification this winter and does not go ahead with the project, we could not expect Canada to share in the cost of a shipway confined to American territory. Therefore, since the total net cost to the United States to complete the St. Lawrence Seaway and solely attributable to it is only $126,000,000 in counting on Canada's aid as against $631,000,000 for the "All-American" route, it is to be noted that approximately $505,000,000 is to be saved to the United States by going ahead with the coöperation of Canada at the present time. This difference in figures is also due to the fact that while the sale of water power to be developed on the St.

Lawrence route is to heavily reduce the total expense of the project by the $104,000,000 that Ontario Province pays the Dominion for power, and by $89,726,000 that the New York power authorities have tentatively agreed to pay to the Government of the United States, on the "All-American" route there would be no important relief by any water power that could be developed. Furthermore, the "All-American" route would cost the United States annually for maintenance, many times over what the St. Lawrence route will cost to maintain. And after all of this heavy and unnecessary expense to build a shipway to the sea by the "All-American" route what have we in return for the trouble! The amount of restricted and retarded navigation through actual canals would be 137 miles or approximately twelve times greater on the "All-American" route than on the St. Lawrence. With only 16 locks slowing up navigation on the St. Lawrence route all the way from Duluth to the ocean, there would be 35 on the "All-American," in the short stretch from Tonawanda on the Niagara River to Troy, New York, on the Hudson. As against 8 bridges crossing the St. Lawrence Seaway there would be 54 on the "All-American" alternative route. This route is so much more costly and so less efficient than the more natural shipway from the Mid-West to seaboard via the St. Lawrence and Montreal that even if completed it is of questionable benefit and relief, for with so many obstacles and with so much delay and additional shipping cost it would be of doubtful practicability and use.

Now assume that after this American request for Canadian aid, the Senate did not ratify the Seaway Treaty, preferring to treat a shipway project as a wholly American enterprise, scorning the present excellent opportunity of coöperation and help from our good friends who just now control the Dominion Government and who this time answered our call. This apparent suspicion of friends and neighbors, this rude-

ness of manners, could hardly fail to provoke resentment to the north of the border on the part of a Conservative Government which has risked its very political life to comply with our desires. It could hardly fail to provoke tense feeling on the part of the Canadian people, who, famed for their generosity of spirit, are highly sensitive in their national pride. Refusing Canada's friendly coöperation, which we have already asked for, at this time could not fail to arouse suspicion and distrust and even dislike on the part of our very good friends to the north of the border, who could not be then counted on after the "All-American" plan had failed, to go ahead with us at some future time on the St. Lawrence route—the outstanding and unanimous choice of all possible routes for a shipway to the sea when measured by the standard of transportation economics and engineering feasibility.

It is highly difficult to find any sound reasons for preferring the so-called "All-American" route. So far as any information on the subject is available, the "All-American" plan appears to be predicated on the dictates of some sort of military expediency. It seems to be assumed that navigation over this route shall not be subject to interruption in case the United States in the future shall be at war. If this is the correct interpretation of the motive prompting the suggestion of an "All-American" route, that suggestion is subject to two possible implications, namely that the foe which is contemplated may be some distant nation or that it may be Canada. In case the foe may be some distant nation it may be presumed that Canada as a neutral might be required to prohibit the passage of American ships through its territory to the disadvantage of the United States as to the transportation of troops and supplies. While this question has never been raised in the past by either country and in all probability never will be, if the assumption were valid, nevertheless, the "All-American" route to effectively remedy this

situation would have to stop at the westerly end of Lake Erie since the river connections beyond that point lie partly in each country and since the channel of the system of Great Lakes between Detroit and Sault Ste. Marie crosses the international boundary some twenty or more times. To be strictly consistent with an "All-American" route, it would be necessary to cut a canal to parallel the Detroit River right through the heart of the city of Detroit and to build canals also paralleling the St. Clair and St. Mary's Rivers respectively at the approaches to Lake Huron and Lake Superior, all at prohibitive cost, damage, ridicule and delay. Furthermore, in the event that Canada was neutral, its own ships could, if found necessary, serve without molestation by the enemy the commercial interests of the United States. If, on the other hand, the "All-American" route were put through, a successful blockade of New York harbor would completely destroy the usefulness of this alternative shipway. Even assuming then the fear of war with a distant enemy felt by opponents of the St. Lawrence Seaway came true, even the very dictates of military and naval expediency cited by St. Lawrence Seaway opponents as a reason against it, demand a preference for this route over the "All-American" alternative. Therefore, to either leave the Mid-West without transportation relief or to spend over one-half billion of dollars above the cost of the St. Lawrence Seaway for a separate route from that of Canada, extending no farther westward than the approaches to Detroit from Lake Erie and duplicating the Welland Canal to be consistent with an "All-American" route would be of the utmost national folly.

If the thought behind the proposal for an "All-American" route should contemplate the possibility of a future conflict between the United States and Canada, then it is evident that the proposal of either refraining from the building of the St. Lawrence Waterway with Canada or the proposal of an "All-

American" route for any such reason is an unwarranted affront to the kindliest neighbor this country has ever had among the nations of the world and its very best friend. No two peoples on the face of the earth are more closely united in family ties, racial and religious characteristics and customs and viewpoints. Though strictly respectful of each other's sovereignty and independence, they have traveled along in peace and harmony so long together that to all intents and purposes they have identical though separate national interests. For more than one hundred years by the Disarmament Treaty of 1818, the 3,000 miles of international boundary between the United States and Canada have been maintained without a fort or a gun or any other evidence of military precaution. The governments of the two nations, in conformance with the wishes of their people, have freely interchanged the privileges of navigation on all of the common and connecting waters between them. While Canadians have invested millions of dollars in extending their railroad lines into the territory of the United States, American railroads, crossing and recrossing the international boundary throughout its entire extent, have developed important additions to their own systems on Canadian soil. Why not be consistent and take American railroads out of Canada, requiring all railroad lines of the United States to be "All-American" routes? American investments in Canada at pre-depression values were estimated at greatly in excess of three billion dollars. Why not require "All-American" investments or why not restrict Americans desiring to visit Canada to "All-American" trips!

On the other hand, to complete the St. Lawrence Waterway to the Sea with the generous coöperation of our great and friendly neighbor is consistent with the proudest boast of two nations whose three thousand mile frontier is the longest international boundary in the history of the world, and is

consistent with the determination to make this boundary line between Canada and the United States, without fortifications, without warships and without cannon a perpetual monument to confidence and good will.