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UME 1 NUMBER 3

t. Lawrence River Ship Canal

JULIA E. JOHNSEN, Compiler

Briefs, references and reprints of selected articles on both sides of the question.

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St. Lawrence River Ship Canal

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INTRODUCTION

On January 16, 1922, President Harding forwarded to Congress the Report and Recommendations of the International Joint Commission, endorsing the proposal that the United States and Canada enter into a treaty to arrange for improving the St. Lawrence River between Lake Ontario and Montreal for navigation and power. The issuing of this report concluded one important stage in the effort of a mid-continent to reach out to the sea.

The vision of a St. Lawrence deep channel to the Atlantic has attracted capable minds for a century or more. In the last two years, however, agitation and discussion by its friends and opponents has been warm. Public opinion is being organized and educated rapidly to regard it as the foremost waterway scheme before the country, and as a factor in the economic welfare of the nation that merits careful examination.

The development of internal waterways had its first advocate in General George Washington. For a time, they were important arteries of communication and commerce; the rise of the railroads, interfered with their later development, a circumstance which operated to make us notably backward in our national policy of improving and using waterways. Nothwithstanding

their decline, numerous projects have been supported under what has been termed the "pork barrel" bills, but it is coming more and more to be recognized that a unified policy must be inaugurated for undertakings most conducive to the national good. During President Roosevelt's administration development of the Mississippi and its tributaries, with a channel from the lakes to the gulf, had its enthusiastic adherents. The plan was never successfully consummated. It appears to be accepted now that an eastern outlet is of most immediate concern to the great interior states.

The present movement for deepening the St. Lawrence goes back to the Cleveland meeting of the International Deep Waterways Association, in September, 1895, which was followed in 1897 by the appointment of a deep waterways commission. At a public hearing before the International Joint Commission in the summer of 1918, the Canadian Solicitor General urged, in behalf of his government, the desirability of the two countries uniting in a cooperative scheme to develop navigation and power. Shortly after, two members of the Canadian Cabinet went to Washington to suggest similar action. In 1919 the whole problem was referred to the International Joint Commission for further study, culminating in the report heretofore mentioned. In the same year, the Great Lakes-St. Lawrence Tidewater Association was formed, an association of states for the support of this waterway. The recurring congestion in transportation is the pivotal point on which the demand is based.

The development of water power in connection with navigation was first mentioned publicly by A. T. Vogelsang, the Assistant Secretary of the Interior. It is generally conceded to be subordinate to the problem of navigation. The improvement of the channel by private interests would make it of primary importance.

With the publication of the report of the International Joint Commission, advocates claim that certain essential physical facts are established. Mr. Charles P. Craig, Executive Director of the Great Lakes-St. Lawrence Tidewater Association, quotes the conclusions of the commission in regard to the following points: 1. That the channels and improvements suggested would accommodate most of the ocean craft. 2. That the loss of time in passage would not be a serious obstacle. 3. That ocean vessels could and would use the route if cargo is available. 4. It is the

best of alternative routes. 5. Out- and in-bound traffic now exists that might reasonably be expected to seek the route and justify the expense. 6. Present transportation is inadequate. The fundamental difficulty is in the expansion of the west. 7. Every practicable means of communication should be utilized. Mr. Craig holds that further debate upon these lines would be unprofitable, that the question now becomes one of political expediency "What shall the two countries do about it?"

Opponents do not rest content with the findings of the commission, but quote the conservative words of the commission and of the investigating engineers to assert the superficial nature of the report and to advise further investigation and delay. The Merchant's Association of New York filed with the House Committee on Interstate and Foreign Commerce, a vigorous protest against action by Congress before the association should have time to analyze and review critically the findings of the International Joint Commission.

The trend of current discussion and the arguments still put forth publicly by opponents, whether sincerely or in an attempt to further confuse the issue, would seem to point out what can safely be accepted as settled and what is further to be confirmed in order to bring public opinion into active support or rejection of the project, so magnificently conceived, of an ocean highway from the heart of the country to the ocean.

JULIA E. JOHNSEN

November, 1922.

BRIEF

RESOLVED: *That the United States and Canada should jointly improve the St. Lawrence River between Lake Ontario and Montreal for navigation and power, in accordance with the recommendation of the International Joint Commission.*

AFFIRMATIVE

I. There is great need of the proposed waterway.
   A. The immediate need of the west is for better transportation.
      1. It is under an economic handicap.
      2. Its growth is retarded.
   B. Waterway development is desirable for transportation relief.
      1. It would relieve car shortage.
      2. Would regulate rates.
      3. Every transportation facility is needed.
   C. The proposed waterway is the best route.
      1. It is already a practicable traffic route.
      2. The proposed development would be feasible.
      3. It would give the maximum of efficiency in use.
      4. It is the shortest route to European ports.
   D. It has strong support.

II. The proposed waterway is desirable for other reasons.
   A. It would bring the seaboard to the interior.
      1. Make inland seaports.
      2. Bring the markets of the world within reach.
      3. Promote commerce.
   B. It would aid the agricultural and industrial development of the west.
      1. Encourage production.
      2. Would balance the benefit given the rest of the country by the opening of the Panama Canal.

C. Power development would be beneficial.
   1. It would help the industries of New York and New England.
   2. Would conserve coal.

D. It would be sound national policy.
   1. Would promote national pride and progress.
   2. Would be a link in a waterway to the Gulf of Mexico.
   3. The unused facilities of this important route should be placed at the disposal of the people.

E. It will not injure existing routes.
   1. It would cooperate with the railroads.
   2. The Barge Canal would be needed for local traffic.
   3. The port of New York would continue to be taxed to the utmost.

F. There are no valid objections.
   1. Physical obstacles do not warrant serious consideration.
   2. Existing shipping will not be injured.
   3. We will gain equal advantage with Canada.
   4. The fear of its being a menace in case of war is unwarranted.

III. The proposed waterway would be sound economic policy.
A. The cost would not be prohibitive.
   1. The proposed development would cost $250,000,000.
   2. Canada would share the cost in proportion to benefits received.
   3. The sale of waterpower would pay for it.

B. The benefits received would be commensurate with the cost.
   1. The cost would be more than saved in economic returns to the country.
   2. Money is wasted in lesser projects under the "pork barrel" system.

NEGATIVE

I. Reasonable need of the proposed waterways is not shown.
A. Inadequacy of transportation can be overcome.
   1. By bringing railroads up to standard.

2. By enlarging terminals and building grain elevators.
3. By rerouting.

B. Present facilities are not now used to the utmost.
1. Barge Canal.
2. Montreal route—fourteen foot channel.

C. A water route is not advisable.
1. Railroads are preferable.
2. Our waterways are little used.

D. The probable benefits are exaggerated.
1. Freight saving is overestimated.
2. Economic practicability depends on railroads at completion and on new traffic.
3. Completion within the present generation is unlikely.

E. The demand is sectional.

II. It would be injurious.
A. Commerce would be disarranged.
1. The basic cargoes would be withdrawn from Atlantic and Gulf of Mexico ports.

B. It would injure national interests.
1. Impair regularity of railroad service.
2. Injure port and elevator interests.
3. Injure lake craft.

C. Canada would benefit at our expense.
1. Montreal would be the chief port benefitted.
2. Her resources would be developed and compete with ours.
3. Canada would import goods from abroad rather than from us.

D. It would be subject to foreign control.
1. The British Empire would control it.
2. In case of war it would be a menace.
3. We should avoid a binding partnership with another country in any project.

E. It would delay other projects.
1. Port and harbor development.
2. Internal waterways.
3. Lakes to the Gulf waterway.

III. It would not be sound policy.
  A. The cost would be enormous.
    1. Full utilization would require additional expenditures for deeper harbors, channels and improved terminals.
    2. The costs of operation would be great.
    3. It would cost one-fifth of the total amount spent for rivers and harbors in the history of the country.
  B. The cost would be burdensome.
    1. Taxes are already heavy.
    2. Tolls are out of question.
    3. It would be unjust to New York to repay the cost through the sale of power.
  C. The expenditure is not justified.
    1. It is poor economic policy to parallel existing routes.
    2. Adequate markets are not available for the proposed power.
    3. Private interests are ready to develop power and navigation.
    4. The project is more essential to Canada and a proper charge upon her.
    5. The money would better be spent in internal projects and on railroads.
  D. The project should be subject to closer scrutiny.
    1. We should not commit ourselves to it before its feasibility, cost and benefits have been shown more conclusively.

BIBLIOGRAPHY

General References

American Bankers Association Journal. 14: 489-91. Ja. '22. Will it lower the cost of living? William McCarroll.

Optimistic as to the possibilities of the New York State Barge Canal.

American Industries. 22: 33. Jl. '22. Final St. Lawrence report.

Annals of the American Academy. 59: 259-82. My. '15. Waterways and commercial evolution. Ralph H. Hess.

Canadian Engineer. 39: 435-6. O. 14, '20. Water power worth ninety million tons of coal per annum.

Testimony before International Joint Commission.

Canadian Engineer. 39: 536-8. N. 18, '20. Some engineering features of the St. Lawrence canalization project. John C. H. Lee.

Excerpts from address before the Western Society of Engineers.

Canadian Engineer. 39: 601-2. D. 9, '20. International joint commission. Lawrence J. Burpee.

Its origin, purpose and relation to the St. Lawrence ship canal and power project.

Canadian Engineer. 42: 173. Ja. 24, '22. International joint commission recommendations.

Canadian Engineer. 42: 189-91. Ja. 31, '22. Solving the problem of St. Lawrence navigation. Charles P. Loveland.

Canadian Magazine. 34: 465-73. Mr. '10. Fight for commercial supremacy. Ernest Cawcroft.

New York's endeavor to monopolize commerce.

Century. 85: 386-96. Ja. '13. American waterways and the pork barrel. Hubert Bruce Fuller.

Congressional Digest. 1: 5-16. S. '22. Shall the United States open the St. Lawrence seaway?

Cooper, Hugh L. & Co. Report to International joint commission (U. S. and Canada) on navigation and power in the St. Lawrence River. 33p. 101 Park Ave., New York. 1920.

Current Opinion. 72: 265-7. F. '22. St. Lawrence river canal is both denounced and championed.

Current Opinion. 72: 689-91. My '22. Hostility to New York revealed in St. Lawrence canal project.

Electrical World. 77: 312-14. F. 5, '21. 5,000,000 Hp. available from St. Lawrence.

Electrical World. 79: 150. Ja. 21, '22. International joint commission reports on St. Lawrence developments.

Engineer. 133: 259-61. Mr. 10, '22. Proposed Great Lakes-Atlantic canal.

Engineering News-Record. 84: 19-28, 85-9, 137-44, 184-91, 234-42. Ja. 1-29. '20. What is the future of inland water transportation? Charles Whiting Baker.

Engineering News-Record. 84: 763-70. Ap. 15, '20. Experiences and prospects of inland water transportation.

Engineering News-Record. 85: 786-8. O. 21, '20. Engineering features of the St. Lawrence waterway. John O. H. Lee.

Engineering News-Record. 85: 1259. D. 30, '20. What about the St. Lawrence waterway?

Engineering News-Record. 87: 402-6. S. 8, '21. Government engineers report on St. Lawrence waterway. Harrison G. Roby.

*Harding, Warren G. President Harding's words to Agricultural Conference. 2p. Great Lakes-St. Lawrence Tidewater Association. January 23, 1922.

*Illinois Deep Waterway Commission. Official report to Honorable Len Small, Governor of Illinois. 6p. Springfield. July 28, 1922.

Illustrated World. 34: 629-31. D. '20. Practicability of inland water routes.

Independent. 104: 165. O. 30, '20. Making seaports of the middle west. Katherine Louise Smith.

Journal of Geography. 10: 119-22. D. '11. World's great rivers —the St. Lawrence. V. C. Finch.

Journal of Geography. 15: 73-8, 112-16. N.-D. '16. Economic aspects of inland water transportation. H. G. Moulton.

Journal of Geography. 16: 201-10. F. '18. Comparison of transportation on the Mississippi basin rivers and the Great Lakes. A. E. Parkins.

Journal of Geography. 18: 18-24. Ja. '19. Great Lakes waterway as a civic and national asset. Eugene Van Cleef.

Literary Digest. 64: 112. Mr. 20, '20. St. Lawrence route seaward.

Literary Digest. 67: 19-20. N. 13, '20. Ocean ports for inland cities.

Marine Review. 52: 80-1. F. '22. Traffic on Great Lakes in 1921.

Mathews, Emory R. Elements of transportation. Appleton. New York. 1909.

Ocean ship canals. p. 224-8; Traffic on our waterways. p. 329-36; Improvement and extension of inland waterways. p. 347-54.

*National Rivers and Harbors Congress. Joint debate on the St. Lawrence ship canal. 38p. 25c. S. A. Thompson, sec., 824 Colorado Building, Washington, D.C. March 1, 1922.

Affirmative: H. H. Merrick and Henry J. Allen; negative: Nathan L. Miller. Governor Miller's speech and digests of the two affirmative speeches also printed in Greater New York. 11: 1-11. Mr. 13, '22. Governor Allen's speech published separately by Great Lakes-St. Lawrence Tidewater Association.

Queen's Quarterly. 27: 379-95. Ap. '20. Upper St. Lawrence. Francis King.

Railway Review. 70: 790-3. Je. 3, '22. Joint debate on the St. Lawrence ship canal: Governor Henry J. Allen and Governor N. L. Miller.

Digest of debate at Illinois Manufacturers Association, May 3, 1922.

Review. 2: 235-7. Mr. 6, '20. Unlocking the Great Lakes. L. J. B.

Review of Reviews. 62: 93-4. Jl. '20. Upper St. Lawrence.

St. Lawrence route a national undertaking. 16p. National Rivers and Harbors Congress. Washington, D.C. December 10, 1919.

Saturday Evening Post. 193: 53-4. Ag. 14, '20. Inland waterway transport. Henry A. Meyer.

Reply to article in June 5, 1920 number. Defends waterways and especially the New York barge canal.

Science. n.s. 27: 417-21. Mr. 13, '08. Inland waterways. Theodore Roosevelt.

Scientific American. 122: 670. Je. 19, '20. Duluth to Liverpool in one bottom. Robert G. Skerrett.

Proposed ship canal. Editorial. p. 668.

Technical World. 19: 755-7. Jl. '13. Straightening out the Great Lakes. Aubrey Fullerton.

Georgian Bay-Ottawa route.

United States. House of Representatives. St. Lawrence River-Lake Ontario to the Canadian border. 65th Congress, 3d session. House doc. 1591. 28p. December 1918.

Report of Col. J. G. Warren, Corps of Engineers, on a preliminary examination of the St. Lawrence River.

United States. Library of Congress. List of works relating to deep waterways from the Great Lakes to the Atlantic Ocean. 59p. Government Printing Office. 1908.

*United States. Senate. St. Lawrence waterway: report of the International Joint Commission. 67th Congress, 2nd session. Senate doc. no. 114. 184p. Government Printing Office. Washington, D. C. 1922.

Western Society of Engineers Journal. 24: 359-74. Je. '19. Inland water transportation.

Western Society of Engineers Journal. 27: 26-32. Ja. '22. Nature's preparations for deep water harbors on the Great Lakes. John Millis.

World's Work. 19: 12779-91. Ap. '10. Future of our waterways. James J. Hill.

Same. Highways of Progress. p. 308-33. Doubleday. 1910.

World's Work. 41: 238-9. Ja. '21. Nation and the waterways. Casper S. Yost.

World's Work. 44: 356-8. Ag. '22. Will the Atlantic seaboard be moved into the Mississippi valley?

Affirmative References

*Allen, Henry J. Tragedy of transportation. 15p. Great Lakes-St. Lawrence Tidewater Association. 1922.

American Institute of Electrical Engineers Journal. 41: 379-82. My. '22. St. Lawrence seaway. W. L. Saunders.

Condensed. Canadian Engineer. 43: 128-30. Jl. 11, '22.

Associated Industries of Massachusetts, 18 Tremont St., Boston.

Barnes, Mortimer G. Inland waterways and transportation costs. 58p. Illinois Department of Public Works, Division of Waterways. Springfield. 1920.

Deals mainly with Mississippi. A reply to Baker articles in the Engineering News-Record.

Book of facts. 32p. Great Lakes-St. Lawrence Tidewater Association. Duluth, Minn. September, 1922.

Boston Society of Civil Engineers. Journal. 8: 43-9. Ja. '21. St. Lawrence River project. Henry I. Harriman.

Abstracts. Electrical World. 77: 114-15. Ja. 8, '21; Engineering and Contracting. 55: 235. Mr. 9, '21.

Canadian Engineer. 39: 385-8. S. 30, '20. American view of the St. Lawrence project. Horace C. Gardner.

Canadian Engineer. 39: 496-8. N. 4, '20. St. Lawrence canalization and power project.

Canadian Engineer. 42: 257-8. F. 21, '22. U. S. Senate issues report approving St. Lawrence waterway.

Canadian Society of Civil Engineering. Transactions. 1911: 302-13. Upper St. Lawrence River; its international history, development of navigation, and future possibilities. Henry Holgate.

Congressional Record. 62: 5-9. D. 5, '21. (Current). Great Lakes-St. Lawrence deep waterway. Wm. W. Chalmers.

*Congressional Record. 62: 12-22. D. 5, '21. (Current). Reply to objections raised by opponents of the Great Lakes-St. Lawrence ship channel. A. P. Nelson.
Also published as a separate. Apply to Congressman.

Congressional Record. 62: 5508-12. Ap. 5, '22. (Current). Great Lakes-St. Lawrence River improvement. Atlee Pomerene.
Also published as a separate. 14p. Apply to Congressman.

*Congressional Record. 62: 5680-3. Ap. 7, '22. (Current). Carrying the ocean to the Great Lakes. Joseph E. Ransdell.
Also published separately. Apply to Congressman.

Country Gentleman. 86: 1-2, 22. Ap. 16, '21. Rerouting via the St. Lawrence: the future of the middle west depends on cheaper outlets to market. Hugh J. Hughes.

Current Affairs. (Boston). 11: 7+, 8+. Ja. 24, 31, '21. St. Lawrence project and New England. Henry I. Harriman.

Current Affairs. (Boston). 12: 18, 29. Ap. 3, '22. Great Lakes-St. Lawrence tidewater project. Charles R. Gow.

Current Affairs. (Boston). 12: 5-6. My. 1, '22. St. Lawrence waterway project. W. W. Chalmers.

Electrical Review. 76: 348-50. F. 28, '20. Power development of the St. Lawrence River. Alexander T. Vogelsang.
Condensed. Power. 51: 397-8. Mr. 9, '20.

Electrical World. 79: 150. Ja. 21, '22. International joint commission reports on St. Lawrence developments.
Holds demand would take care of all the water power that might be developed.

Engineering News-Record. 84: 405. F. 26, '20. Coming battle over St. Lawrence route to the sea.

Engineering News-Record. 88: 200-1. F. 2, '22. Why the International joint commission favors the St. Lawrence waterway.

*Gardner, H. C. Proposed St. Lawrence seaway and its relation to interior water transportation routes. 8p. Great Lakes-St. Lawrence Tidewater Association. June 23, 1922.

Great Lakes-St. Lawrence Tidewater Association, Duluth, Minn.

Greater New York. 11: 2-3. Ja. 23, '22. St. Lawrence project endorsed by commission.

Abstract of report of International Joint Commission (United States and Canada).

Independent. 101: 336-7. F. 28, '20. All the way by water. Julius H. Barnes.

Independent. 108: 299-300. Mr. 25, '22. St. Lawrence waterway project. B. L. Johnstone.

Based on report of International Joint Commission.

Industry. 9: 1-5. Mr. 18, '22. Executive committee of Associated industries of Massachusetts declares for Great Lakes-St. Lawrence waterway and power project.

Lenroot, I. L. American conception. 8p. Great Lakes-St. Lawrence Tidewater Association. July 22, 1920.

MacElwee, R. S. Bringing ocean ships to the heart of America. 23p. Great Lakes-St. Lawrence Tidewater Association. October, 1920.

MacElwee, Roy S. and Ritter, Alfred H. Economic aspects of the Great Lakes-St. Lawrence ship channel. 291p. Ronald. New York. 1921.

Marine Review. 52: 327-9. Ag. '22. St. Lawrence waterway is needed. Anders F. Lindblad.

Mechanical Engineering. 42: 509-12+. S. '20. St. Lawrence river project. Horace C. Gardner.

Same. Canadian Engineer. 39: 385-8. S. 30, '20; Discussion. C. W. Baker. Mechanical Engineering. 42: 592. O. '20; Same. Engineering and Contracting. 54: 478. N. 10 '20.

Mechanical Engineering. 42: 592. O. '20. Extending ocean navigation to the Great Lakes. Charles Whiting Baker.

Abstract. Engineering and Contracting. 54: 478 N. 10, '20.

Milwaukee. 1: 13+. Ag. '21. Milwaukee to the sea! J. J. Blommer.

Mining and Metallurgy. 179: 11-13. N. '21. Trade route for the world ports to the midland of North America. W. L. Saunders.

Also issued as a separate. 3p. Great Lakes-St. Lawrence Tidewater Association. Duluth, Minn.

Minnesota Municipalities. 7: 73-80. Je. '22. Great Lakes-St. Lawrence waterway project. J. E. Cummings.

Municipal and County Engineering. 59: 56-8. Ag. '20. Advantages of the Great Lakes-St. Lawrence waterway. Edmund T. Perkins.

National Magazine. 51 : 239-40. O. '22. From the Great Lakes to the sea. John Stone Pardee.

Nation's Business. 8: 26+, 30. Ap. '20. White coal for black. Alexander T. Vogelsang; Nature's highway to the sea. Julius H. Barnes.

Nation's Business. 10: 21-2. Mr. '22. It can and must be done. Henry J. Allen.

New Republic. 22: 285. Ap. 28, '20. Dog-in-the-manger. F. W. Fitzpatrick.

Northern New York Development League, Ralph S. Baker, sec., Watertown, N.Y.

Outlook. 127: 340-2. Mr. 2, '21. St. Lawrence outlet to the sea. Katherine Louise Smith.

Power. 51: 397-8. Mr. 9, '20. St. Lawrence power. Alexander T. Vogelsang.

Power Plant Engineering. 24: 697-9. Jl. 15, '20. Linking the Great Lakes to the Atlantic.

Redfield, Wm. C. and others. Lakes-to-ocean route. Statements before the International Joint Commission. 8p. Great Lakes-St. Lawrence Tidewater Association. October 20, 1921.

Review of Reviews. 50: 217-18. Ag. '14. Mid-continental ocean ports. Julius H. Barnes.

Review of Reviews. 61: 630-1. Je. '20. St. Lawrence cut-off. Hugh J. Hughes.

Review of Reviews. 66: 181-5. Ag. '22. Great Lakes seaway. Julius H. Barnes.

Saturday Evening Post. 192: 40-8. Je. 26, '20. From the Great Lakes to the Atlantic. Charles P. Craig.

Scientific American. 123: 442. O. 30, '20. New York and the proposed St. Lawrence waterway.

Incidental power developed would be of even greater advantage than water route.

Successful Farming. 20: 10, 80. Ja. '21. Seaports in the interior United States. Alson Secor.

Transportation—a continental system. Review of hearings before International Joint Commission in respect to the improvement of the St. Lawrence. 93p. Great Lakes-St. Lawrence Tidewater Association. November, 1921.

West, C. C. Feasibility. 11p. Great Lakes-St. Lawrence Tidewater Association. September, 1920.

Wisconsin. University Extension Division. Department of Debating and Public Discussion. Wisconsin and the Great Lakes-St. Lawrence deep water route to the sea. Bulletin. serial no. 1136. 44p. Madison. October, 1921.

Negative References

Clinton, George. Ship canals from the Great Lakes to the ocean. 30p. January 12, 1920.

Address before National Rivers and Harbors Congress. Dec. 9, 1919.

Commercial and Financial Chronicle. 112: 332-3. Ja. 22, '21. State engineer condemns St. Lawrence project.

Abstract of annual report submitted to state legislature by Frank M. Williams.

Current Affairs. (Boston). 11: 3-4, 3-4. Mr. 28, Ap. 4, '21. Why New England opposes the St. Lawrence project. William H. Chandler.

Current Affairs. (Boston). 12: 19, 24. Ap. 3, '22. Great Lakes-St. Lawrence tidewater project. Henry F. Merrill.

Current Affairs. (Boston). 12: 7, 11. My. 1, '22. St. Lawrence waterways project. Leonard H. Gibbs.

Gleason, Gordon P. Making the public canal minded. 8p. Great Lakes, Hudson and Atlantic Waterways Association, Inc. New York. 1921.

Reprint from National Marine, April, 1921.

Great Lakes, Hudson and Atlantic Waterways Assoication, Inc., 268 Pearl Street, New York.

Official attitude is neutral save in answer to attacks on New York State Barge Canal.

Greater New York. 8: 14. F. 24, '19. International St. Lawrence ship canal improved.

Greater New York. 11: 9-11. Ja. 2, '22. Why the St. Lawrence canal should not be built. Frank M. Williams.

Greater New York. 11: 1-7. F. 6, '22. Why the St. Lawrence canal is impracticable.

Memorandum filed by the New York State Commission with the International Joint Commission.

Greater New York. 11: 1-7. Mr. 20, '22. Why the St. Lawrence canal is impracticable. George Clinton.

Institute of American Business. Bulletins, nos. 1-8. Mr. 11-My. 8, '22. Fallacies of the St. Lawrence waterway scheme. 1 Madison Ave., New York.

*Journal of Geography. 21: 57-65. F. '22. Proposed Great Lakes-St. Lawrence deep waterways. Florence Whitbeck.

Journal of Political Economy. 22: 239-52. Mr. '14. Some aspects of the waterways question. H. G. Moulton.
Advantages of railways.

Journal of Political Economy. 23: 641-62. Jl. '15. Waterways: their place in our transportation system. Walter L. Fisher.
Stresses the predominant importance of railroads.

Literary Digest. 68: 42. Ja. 1, '21. Transportation by water.

Literary Digest. 72: 16-18. Mr. 18, '22. To make our Great Lakes ocean ports.

Merchant's Association. Woolworth Building, New York.

Moulton, Harold G. Waterways versus railways. 468p. Houghton. Boston. 1912.

*Nation's Business. 10: 22-3. Mr. '22. Doubtful and unwise project. Charles L. Cadle.

*New Republic. 29: 298-300. F. 8, '22. St. Lawrence project.

New York City. Merchant's Association. Memorandum with regard to the St. Lawrence ship canal. 7p. typewritten. February 3, 1922.

New York State. Commission to represent the state of New York at hearings before the International Joint Commission on Boundary Waters. Preliminary report. 32p. Albany. January 25, 1921.

New York State Waterways Association. St. Lawrence ship canal proposition. Papers read before meeting of Association at Buffalo Nov. 11-12, 1920. 94p. The Association, 1012 Prudential Building, Buffalo, N.Y.
*Report of Committee of Merchants' Association of New York. p. 93-4. Papers are also published in Association's 11th Annual Report. 1921.

New York State Waterways Association. Twelfth Annual Report. p. 13-14, 73-6, 82-4. Albany Chamber of Commerce. 1921.

New York State Waterways Association, 1012 Prudential Building, Buffalo, N.Y.

New York State Waterways Conference Committee, 50 Madison Ave, New York.

Saturday Evening Post. 192: 35-8. Je. 5, '20. Inland water transport. Floyd W. Parsons.
Minimizes the importance and practicability of waterways.

Scientific American Supplement. 76: 150-1. S. 6, '13. Some aspects of the subject of transportation: inland waterways. J. Kuhn.

Scribner's Magazine. 47: 750-8. Je. '10. Proposed development of inland waterways. Samuel O. Dunn.

Shipping. 10: 17-19, 67. Mr. 3, '20. Ship canals from the Great Lakes to the ocean. George Clinton.

Some facts about the ship canal scheme. 31p. typewritten. Great Lakes, Hudson and Atlantic Waterways Association, Inc., 268 Pearl St., New York.

Walsh, Edward S. Address before the National Rivers and Harbors Congress convention. Dec. 10, 1919. 8p. State Supt. of Public Works, Albany, N.Y. January, 1920.

REPRINTS

ST. LAWRENCE PROJECT [1]

Sea hunger has gripped the west. It will hack its way through to the Atlantic Ocean or know the reason why. There is something primal about the impulse. When it grips a man or a nation, it has the force of an instinct. No use reasoning at such times. There are some things so self-evident and imperative that they are above reason. Such are the visions shown us when the sea calls. The agricultural bloc has heard. It is said to have gathered enough votes to put the St. Lawrence project through Congress. It is just about as ready to reason about its rights to the sea as Jugoslavia is to reason about Fiume, or Poland about Danzig.

The project calls for the United States to share with Canada an initial expense of $250,000,000 for deepening the St. Lawrence and enlarging the canals around its rapids to a depth of twenty-five feet. This—when the Canadians have finished the new Welland Canal around Niagara Falls—will enable ocean going vessels to proceed to the head of the lakes. The cost of the present rail haul to the seaboard is to be eliminated. That will, constructively speaking, move the grain fields to the seaboard and enhance the value of each bushel of wheat on the farm by the amount of saving in transportation cost.

It would be impossible not to have sympathy with the motive behind this project. The farmer has been hard hit. In the years when agricultural prices were high, he suffered from car shortages that prevented or delayed the movement of his products. Last season he raised crops that hardly paid him the cost of production. Whatever slim margin he had, has disappeared into the higher transportation charges laid on him by the 35 to 40 per cent rate advance of 1920. No wonder he has turned to a form of relief that promises him immunity from car

[1] From New Republic. 29 : 298-300. February 8, 1922.

shortages and independence from rate advances, at least so far as the vital export movement is concerned.

The port interests in New York, the elevator owners in Buffalo, the New York state authorities with their barge canal, the transportation manager of the Boston Chamber of Commerce, have all turned rather fiercely upon the new St. Lawrence route, rather too fiercely to avoid the charge of sectionalism which the west makes against them. The danger is that Congress will vote upon sectional lines. Yet there has not for years been a measure that more urgently required dispassionate examination of the facts. If this new route is the way, and the only way, to give our farmers the transportation relief they deserve, the expenditure should be made, and the selfish interests of existing ports or inland routes should not prevail against it. Congress and the country need the facts, now being hidden like grains of wheat in the heaping chaff of propaganda, recrimination and starry-eyed prophecy.

WAY TO THE SEA[1]

No country is so dependent upon railroad transportation as is the United States. The irregular coast lines of Europe, its numerous indenting arms of the sea, as well as its great river system, afford that continent exceptional water transportation. The vast continental area of the United States is quite differently situated, its greater dependence upon railroad transportation being attested by its possession of near one-half the railroad mileage of the world, and even this is not adequate. The inevitable expansion of population will enormously increase the burden upon our transportation facilities, and proper forethought must dictate the present adoption of wise and far-seeing policies in dealing with transportation.

If broad-visioned statesmanship shall establish fundamentally sound policies toward transportation, the present crisis will one day be regarded as a piece of good fortune to the nation. To this time railroad construction, financing and operation have been unscientific and devoid of proper consideration for the wider concerns of the community. To say this is simply to admit a

[1] Address of President Harding to Agricultural Conference, Washington. January 23, 1922.

fact which applies to practically every railroad system in the world. It is as true regarding the railroads of Canada and Great Britain as it is in reference to those of the United States. It is equally applicable to the railways of continental Europe, in whose development considerations of political and military availability have too far outweighed economic usefulness.

In America we have too long neglected our waterways. We need a practical development of water resources for both transportation and power. A large share of railway tonnage is coal for railroad fuel. The experience of railway electrification demonstrates the possibility of reducing this waste and increasing efficiency. We may well begin very soon to consider plans to electrify our railroads.

If such a suggestion seems to involve inordinate demands upon our financial and industrial power, it may be replied that three generations ago the suggestion of building two hundred and sixty thousand miles of railways in this country would have been scouted as a financial and industrial impossibility. Waterway improvement represents not only the possibility of expanding our transportation system, but also of producing hydro-electric power for its operation and for the activities of widely diffused industry.

I have spoken of the advantage which Europe enjoys because of its access to the sea, the cheapest and surest transportation facility. In our own country is presented one of the world's most attractive opportunities for extension of the seaways many hundred miles inland. The heart of the continent, with its vast resources in both agriculture and industry, would be brought in communication with all the ocean routes by the execution of the St. Lawrence waterway project. To enable ocean-going vessels to have access to all the ports of the Great Lakes would have a most stimulating effect upon the industrial life of the continent's interior.

The feasibility of the project is unquestioned, and its cost, compared with some other great engineering works, would be small.

Disorganized and prostrate, the nations of Central Europe are even now setting their hands to the development of a great continental waterway, which, connecting the Rhine and Danube, will bring water transportation from the Black to the North Sea, from Mediterranean to Baltic. If nationalist prejudices and

economic difficulties can be overcome by Europe, they certainly should not be formidable obstacles to an achievement less expensive and giving promise of yet greater advantages to the peoples of North America. Not only would the cost of transportation be greatly reduced, but a vast population would be brought overnight in immediate touch with the markets of the entire world.

GREAT LAKES-ST. LAWRENCE DEEP WATERWAY [1]

Mr. Bowden[2] stated substantially that the investigation made by the engineers and contained in their report was neither casual or superficial, but was most thorough, scientific and conclusive. That the Canadian Government for many years had conducted scientific engineering investigations, covering every phase necessary to gain the knowledge on which the report of the engineers was based, all of which was available to them. He stated that no body of water on the American Continent was so thoroughly and scientifically known as to all of its engineering features as the St. Lawrence River and that the sub-surface and sub-strata covering the entire route of the proposed St. Lawrence project was absolutely known. He further said that a survey made anywhere in the St. Lawrence River today would be found to be practically the same twenty-five years hence. He said such conditions do not obtain to as large an extent in other rivers, most of which are subject to constant changes and variations—notably the Mississippi River. The data is on hand covering every engineering problem that would be involved in carrying out the St. Lawrence project and is so well understood and so thoroughly conclusive that the engineers are ready to commence their work without delay at any time.

This should set at rest for all time the doubt or contention of those who are disposed, for one reason or another, to profess their belief that the Great Lakes-St. Lawrence Deep Waterway is not practical or feasible from an engineering standpoint.

[1] From Illinois Deep Waterway Commission, official report to Honorable Len Small, Governor of Illinois.

[2] Mr. W. A. Bowden is Chief Engineer of the Division of Railways and Canals of Canada.

The report filed in July, 1921, is the unanimous recommendation of these engineers. It has borne the scrutiny of engineering bodies and of engineers approaching the St. Lawrence problem from other points of view. No criticism directed against the plan finds any fault in it. Other engineers having other purposes would prefer modifications, but they do not point out any fault in the plans. No engineer has discovered any flaw in the calculations. The estimates of quantity have not been called in question at any point. The engineers were proceeding upon certain knowledge of the conditions with which they dealt. The estimates of cost have not been called in question as to their sufficiency. They are liberal estimates. Where $12 a yard was adopted by the engineers as the unit price for concrete, contracts have since been let for concrete work on the new Welland Canal, under similar conditions, at $9.50 a yard.

The two principal barriers to the St. Lawrence Deep Waterway are the rapids of the St. Lawrence, lying between Montreal and Lake Ontario and the Niagara Falls, separating Lake Ontario and Lake Erie. The Niagara Falls impediment is overcome by the present Welland Canal, which is being supplanted by the new Welland Canal now being constructed by the Canadian Government at an expense estimated at $75,000,000. The old Welland Canal has become inadequate because of its limited draft of only fourteen feet.

The new Welland Canal is the fourth one built by Canada since 1833. The Canal will be twenty-five miles long and all lifting will be done within a distance of seven miles west of Lake Ontario. Within the seven miles there will be seven locks in which ships will be lifted three hundred and twenty-six feet. The locks are being carved out of solid rock, in some parts eighty feet deep. The dimensions will be eight hundred and sixty feet long and eighty feet wide, with thirty feet over the miter sills. The seven new locks will take the place of the twenty-six locks in the present Welland Canal, and where it now takes sixteen hours for a fourteen foot boat to go around Niagara Falls, it will take but eight hours for a ship drawing twenty to twenty-three feet to navigate the new canal.

The new Welland Canal is an integral part of the lakes-to-the sea undertaking. The Canadian Government has already expended $25,000,000 on the new canal and this vast expenditure

is practically an assurance that Canada will go through with its part of the comprehensive project.

The St. Lawrence River flows from Lake Ontario a thousand miles to the Atlantic, but of this distance less than three hundred and fifty miles is river. The gulf of the St. Lawrence extends as an open sea nearly to Quebec. Of the remaining distance the river is improved for deep-sea navigation as far as Montreal, leaving one hundred and eighty-two miles between Lake Ontario and Montreal as the portion to be covered by the deep waterway.

The river is eighty miles wide at its mouth. The width of its entire length is measured in miles. It is a tidal river for more than five hundred miles.

The river above Montreal is broken by three groups of rapids between which lie two lakes—Lake St. Louis, sixteen miles long, and Lake St. Francis, thirty miles long. The aggregated fall of all these rapids is two hundred and twenty feet and they aggregate a length of approximately forty-three miles, not all of which, however, can be classed as rapids in the sense of being impassable.

For many years Canada has had in operation canals for passing these rapids, but they are now entirely indequate for the traffic of modern ocean-going ships because they are limited to a fourteen foot draft and two hundred and sixty foot length.

The work to be accomplished in order to provide the deep waterway to connect the Great Lakes with the Atlantic Ocean actually covers only thirty-three miles of canal with seven locks, lying between Lake Ontario and the ocean. In the distance of one hundred and eighty-two miles between Lake Ontario and Montreal, one hundred and forty-nine miles is open and practically unrestricted navigation. In the thirty-three miles of canal, vessels which normally make ten miles an hour in open water, which is about the speed of the most economical freight carriers, would be restricted to about five miles an hour. The retardation of the canal passage would amount to between five and six hours. The delay for lockage will be perhaps three hours more. Experience at Panama and at the Soo Canal shows that one-half hour per lock is ample allowance. The total retardation in the passage of the St. Lawrence River between Lake Ontario and the ocean, due to restricted and confined channels, would therefore amount to no more than, say, nine hours, so that between

the upper lakes and the ocean, two thousand miles of lake and river and gulf, a ten-knot ship would be held back by locks and canals not more than fifteen hours.

In the international section of the river the head of water created by the dam will develop 1,464,000 horsepower. The plans are so drawn that the crest of the dam may be raised later, giving a substantial increase in the power development. The engineers recommend that this power be developed by the installation of fifty-nine hydro-electric units of an aggregate capacity of 1,940,000 horsepower. The estimate of 1,464,000 horsepower is the minimum net continuous energy that can be generated, transformed, and put on the switchboard. The engineers were directed to consider the various schemes for improving the river. They found no workable plan for developing navigation in this section of the river in any better or more economical way than by this lock-and-dam method, so that this enormous power development can be made literally as an incident to the improvement of the river for navigation.

In the second division the potential power development offers a minimum net of 1,560,000 horsepower. In the last section there is a potential power of about 1,000,000 horsepower. The estimates made by the official engineers are that this work can be carried out from Lake Ontario to Montreal with minimum channel depths of twenty-five feet, with thirty-foot depths in all permanent construction, and with ample width of artificial channels for $252,728,200, including installation of turbines and apparatus for delivery of electric power at the switchboard for distribution.

Whenever it is desirable to establish channels with minimum depths of thirty feet, the necessary deepening of channels can be accomplished for $17,986,180.

The power development is capable of reduction to more precise terms. The potential energy of the St. Lawrence River, to be developed as soon as the market is ready to absorb it, will be 4,100,000 horsepower. This may be translated into an annual output of 26,000,000,000 kilowatt hours at the bus bar, and more than 24,000,000,000 kilowatt hours after transmission to the point of application. This is equal to the energy which can be produced from 24,000,000 tons of coal burned in the most modern steam plant, or 36,000,000 tons burned under the boilers of an average mill. It represents the continuous effort in handling of over 100,000 human beings in mining and in transportation.

CONCLUSIONS AND RECOMMENDATIONS [1]

To sum up as briefly as possible its conclusions in the matter of the proposed improvement of the St. Lawrence River between Lake Ontario and Montreal, the commission finds nothing in the evidence to warrant the belief that ocean-going vessels of suitable draft could not safely navigate the waters in question as well as the entire waterway from the Gulf of St. Lawrence to the head of the Great Lakes, or that such vessels would hesitate to do so if cargoes were available.

It finds that of the various alternative routes mentioned from the interior to the seaboard, none offers advantages comparable with those of the natural route by way of the St. Lawrence.

As to the economic practicability of the waterway, the commission finds that, without considering the probability of new traffic created by the opening of a water route to the seaboard, there exists today, between the region economically tributary to the Great Lakes and overseas points as well as between the same region and the Atlantic and Pacific seaboards, a volume of outbound and inbound trade that might reasonably be expected to seek this route sufficient to justify the expense involved in its improvement.

It finds that, as between the American and Canadian sides of the tributary area, the former contributes very much the larger share of this foreign and coastwise trade, and in all probability will continue to do so for many years to come. The benefits to be derived from the opening of a water route to the sea will therefore accrue in much larger measure to American than to Canadian interests, though it is reasonable to assume that eventually the advantages may be more evenly distributed.

It finds that the existing means of transportation between the tributary area in the United States and the seaboard are altogether inadequate, that the railroads have not kept pace with the needs of the country, but that this does not apply to the Canadian side of the area, where railway development is still in advance of population and production.

While the commission is conscious of the fact that war conditions had something to do with the dislocation of railway traffic

[1] From report of the International Joint Commission concerning the improvement of the St. Lawrence River. United States. 67th congress. 2nd session, Senate document No. 114. January 16, 1922.

on the United States side of the boundary, and that various other factors must be taken into account, such as the congestion of traffic at certain critical points between the west and the Atlantic seaboard commonly referred to as "bottle-necks," and the abnormal demand for cars at certain times of the year to carry the peak load of the harvest, it is convinced that the fundamental difficulty lies rather in the phenomenal growth of population and industry throughout the middle western and western states, a growth which the railroads have failed to keep pace with.

The solution of the problem, in the opinion of the commission, lies in the utilization of every practicable means of communication, and particularly of the wonderful natural waterway extending from the Atlantic into the very heart of the continent, together with the development of such a system of cooperation between railways and waterways as would at one and the same time bring the load the railways have to carry within practicable limits, and give the west an additional route for its foreign and coastwise trade.

Experience has demonstrated not only the tremendous importance of water communication to the foreign commerce of any country but also the manifest advantages of linking up rail and water routes. It is beyond question that the phenomenal industrial development of Great Britain in modern times has been due very largely to her ready access to the sea. Great Britain has no resources of iron, yet she has built up gigantic steel industries; she grows no cotton, yet she supplies half the world with cotton goods; she produces very little wool, yet her woolen mills have developed into an enormous industry. Her merchant marine sail the seven seas, bringing to her shores the raw materials she needs for her industries, and carrying back the finished products. The sea, that most efficient, most adaptable, most far-reaching, most economical of thoroughfares, possessing practically all the advantages of land transportation with few of its disadvantages, has made Great Britain prosperous.

And what water transportation has done for Great Britain it has done in greater or less degree for other nations in other times. Access to the sea gave the diminutive Republic of Venice preeminence in the Mediterranean. It transformed little Holland from a comparatively obscure province into a great maritime

nation. It gave to Spain her period of greatness. It brought Germany before the war within almost measurable distance of supremacy in the foreign trade of the world.

The conclusion is obvious that, if countries that had for the most part to import their raw materials from abroad were able to build up a great foreign trade because of their ready access to the sea, the region economically tributary to the Great Lakes, with its limitless resources, its raw materials within easy reach, its facilities for industrial expansion, can hardly fail to become an even greater factor in the world's markets than it is today, if given a practicable and efficient water route to the sea.

Of scarcely less importance is the linking up of land and water routes. Here also the experience of Europe is illuminating. Belgium and England are the most densely populated portions of Europe, and both are preeminently industrial nations. Each posseses a network of railways reaching into every corner of the country, yet each is today, despite its very short rail haul to tidewater, finding it necessary, in order to give adequate service to congested areas, to link up the railways and the highways with the inland waterways. Despite the difference in area between these countries and the region tributary to the Great Lakes, transportation conditions are not altogether dissimilar, particularly in the more congested areas of the middle west. One finds in such a district as that around the south shore of Lake Michigan much the same conditions of a rapidly increasing concentration of population and industry, with a corresponding concentration of rail lines, that is so noticeable in England and Belgium. And similar conditions are quite evidently developing in the territory immediately tributary to Detroit, Cleveland, and other middle-western cities. When these cities and their tributary territory are given access to the sea, they will find it necessary, in order to secure the maximum benefits from the new route, to coordinate their railways and highways with the great waterway that will be common to them all. The advantages of cooperation will be found as real in this case as in Europe, although the remedy may be somewhat different in character.

An example on this continent of the effective coordination of rail and water services is found in the Canadian Pacific Railway, which, in conjunction with its rail system extending from ocean to ocean, maintains lines of steamers not only on the

Atlantic and the Pacific but also on the Great Lakes and the inland waters of British Columbia.

The whole question of the distribution of cost has given the commission some concern. If the area to be benefited were all in one country the problem of financing the improvement would be a comparatively simple one, but as the matter stands the situation is complicated not merely by the fact that two neighboring countries are joining in the project, but that these countries are unequal in population, unequal in wealth, unequal in their ability to make effective use of the waterway. That is the situation today, but it does not necessarily follow that it will always be the situation. As the years go by the relative position of the two countries will doubtless change, and the disproportion between their population, wealth, and commerce may gradually diminish. In the meantime the fair and reasonable plan appears to be to divide the cost in proportion to the benefits each receives.

Objection may be made that the proposed principle of dividing the cost in proportion to the benefits each country derives from the improvement could hardly be put into effect until the works had been completed and in operation for a sufficient period to secure reliable data on the subject. For the intervening period, however, the commission believes that there are already available authoritative statistics on which to base a tentative decision as to the interest each country is likely to have in the waterway.

Another factor in the situation that should not be lost sight of is the peculiar relationship to the proposed improvement of the new Welland Ship Canal, a portion of which is now under construction. As pointed out in an earlier part of this report, the completion of the Welland Ship Canal and the adoption and completion of the St. Lawrence improvement would remove the only barrier to the creation of a deep-water route from the head of the lakes to the sea. This would give at least twenty-five foot navigation from the sea up to the Detroit River, with a present minimum of about twenty feet above Lake Erie. Although entirely outside the strict terms of the reference submitted to it by the two governments, the commission has been impressed by the fact that the new Welland Ship Canal is such an integral part of the waterway, and is so inseparably interwoven with the project under immediate consideration, that it should properly be considered as a part of the whole scheme and the expense of its construction should be apportioned between the two

governments upon the same basis as the works recommended for the upper St. Lawrence.

In other words, each country should be debited with its share of the entire cost of all works necessary for navigation, including the cost of the Welland Ship Canal, based upon the proportion the cargo tonnage carried to and from its own ports by way of the St. Lawrence bears to the entire tonnage by the same route. The ratio to be charged to each obviously would require to be readjusted periodically.

In regard to the water power side of the question, by the language of the treaty as well as the obvious intention of the reference, water power must be regarded as subsidiary to navigation. Statements were repeatedly made during the hearings to the effect that while the movement for improving the St. Lawrence was nominally in the interests of navigation, it was really being engineered by water power interests to serve their own ends. The commission is confident that there is no justification whatever for these assertions. As a matter of fact, as already stated, very little testimony of any kind was offered at the hearings upon the power side of the question, public attention being apparently centered on the economic practicability of the undertaking as a navigation route.

For the purposes of the conclusions, recommendations, and answers to questions, "navigation works" shall be deemed to mean and include all works of every kind and description required for the proposed improvement of the St. Lawrence between Montreal and Lake Ontario other than and except superstructures, machinery, plant, and equipment for the development and utilization of power in connection with such improvement; and "power works" shall be deemed to mean and include all superstructures and all machinery, plant, and equipment required for the development and utilization of power in connection with the said improvement.

In apportioning between the two countries the water power capable of development in the international section of the St. Lawrence, each country should be charged with such quantities of power as are set apart to meet the requirements of existing plants.

In regard to the distribution between the two countries of the cost of "power works," the commission is of the opinion that as each country will be entitled to half the available power in

the international section of the river, the cost of the works necessary solely for the development of that power should be borne equally by each country. It is further of the opinion that the cost of "navigation works" required for the combined use of navigation and power over and above the cost of works necessary for navigation alone should be apportioned equally between the two countries.

As elsewhere noted, it was repeatedly stated by those who appeared before the commission that the water power developed on the St. Lawrence would be sufficiently valuable to carry a considerable proportion, if not the whole, of the cost of the undertaking both for navigation and power. The commission desires to emphasize the point that if this prediction should prove well founded, nothing in the commission's conclusions and recommendations as embodied in this report need conflict with the charging to water power by either country of any proportion of its share of the entire cost that may eventually be found desirable.

In regard to the method of control, the commission is conscious of the fact that the peculiar character of the St. Lawrence, partly international and partly national, creates an unusual situation, and it believes that, in order to combine the fullest possible liberty of action on the part of each country in its own territory, with the efficient coordination of the several parts of the completed improvement, all "navigation works" lying wholly within one country and capable of economic and efficient administration as complete and independent units, should be maintained and operated by the country in which they are located; that "navigation works" not lying wholly within one country and not capable of economic and efficient administration as complete and independent units, should be maintained and operated by a international board on which each country would have equal representation; and that this board should also have the right of inspection of "navigation works" lying wholly within one country, for the purpose of insuring economy and efficiency. The commission is further of the opinion that all "power works" should be built, maintained, and operated by the country in which they are located.

An important result of the proposed improvement, if carried out, will be the extent of damage resulting from flowage due to the higher levels maintained in the St. Lawrence. This

damage is estimated by the engineering board at about $6,000,000. The commission is of the opinion that there should be an exhaustive investigation of the extent and character of the damage as soon as the plan of development has been finally accepted.

Finally, the commission is strongly of the opinion that the subject matter of this investigation is one of such extraordinary importance to the people of the two countries, and involves engineering problems of such magnitude and diversity, that no effort should be spared to secure a plan which will beyond all reasonable doubt obtain from the upper St. Lawrence its maximum efficiency in navigation and power. To this end the commission believes that, before any particular scheme is finally adopted, all the available engineering data, including the report and plans of the engineering board and all comments thereon or alternative plans, should be referred to a special technical board for careful consideration and report.

Recommendations

In harmony with its conclusions as outlined in the foregoing report the commission recommends:

1. That the governments of the United States and Canada enter into an arrangement by way of treaty for a scheme of improvement of the St. Lawrence River between Montreal and Lake Ontario.

2. That the new Welland Ship Canal be embodied in said scheme and treated as a part thereof.

3. That the proposed works between Montreal and Lake Ontario be based upon the report of the engineering board accompanying this report, but that before any final decision is reached the report of the board, together with such comments, criticisms, and alternative plans as have been filed with the commission be referred back to the board enlarged by other leading members of the engineering profession, to the end that the whole question be given that further and complete study that its magnitude and importance demand, and that after completion the administrative features of the improvement be carried out as set forth in recommendations 7 and 8 hereof.

4. That there shall be an exhaustive investigation of the extent and character of the damage through flowage involved in the plan of development finally adopted.

5. That, assuming the adoption of the plans of the engineering board, or of other plans also involving a readjustment of the international boundary, in order to bring each of the power houses on its own side of the boundary, appropriate steps be taken to transfer to one country or the other, as the case may be, the slight acreage of submerged land involved.

6. That Canada proceed with the works necessary for the completion of said new Welland Ship Canal in accordance with the plans already decided upon by that country.

7. That such "navigation works" as do not lie wholly within one country or are not capable of economic and efficient construction, maintenance, and operation within one country as complete and independent units, be maintained and operated by a board hereinafter called "the International Board," on which each country shall have equal representation.

8. That such "navigation works" as lie wholly within one country and are capable of economic and efficient construction, maintenance, and operation as complete and independent units be maintained and operated by the country in which they are located with the right of inspection by the said International Board to insure economy and efficiency.

9. That "power works" be built, installed, and operated by and at the expense of the country in which they are located.

10. That, except as set forth in recommendation 11, the cost of all "navigation works" be apportioned between the two countries on the basis of the benefits each will receive from the new waterway: *Provided,* That during the period ending five years after completion of the works—and to be known as the construction period—the ratio fixing the amount chargeable to each country shall be determined upon certain known factors, such as the developed resources and foreign and coastwise trade of each country within the territory economically tributary to the proposed waterway, and that that ratio shall be adjusted every five years thereafter and based upon the freight tonnage of each country actually using the waterway during the previous five-year period.

11. That the cost of "navigation works" for the combined use of navigation and power over and above the cost of works necessary for navigation alone should be apportioned equally between the two countries.

THE TRAGEDY OF TRANSPORTATION [1]

Forty-three million people live in the territory served by the Great Lakes. Half of them are farmers.

Agricultural prosperity, which is the fundamental basis of all prosperity, is measured by the difference between farming cost and the price of farm products.

It is generally a thin margin. For the five-year period ending with 1917, the average profit on corn was 11 cents, on wheat 7 cents in states like Minnesota, Iowa, Dakota and Montana. Similar figures are doubtless correct for the other agricultural states. Nothing has struck the farm profits a blow so paralyzing as the increased cost of transportation. The farmer in central Iowa, shipping oats to the Atlantic seaboard, gets paid for one bushel in three. The cost of transportation takes the other two bushels. The farm price is the market price with transportation deducted and the export market, where the surplus is sold, sets the price for the whole crop.

Wheat in Kansas and Nebraska is further from the New York market than wheat on the Argentine farm. You can move Argentine wheat by its short rail haul to the port, ship it to New York, carry it inland to a mill and ship it back to New York as flour before the transportation charge equals the freight on what from the west to the Atlantic seaboard. Wheat from Nebraska, in export movement, goes to the nearest lake port, by water to the foot of Lake Erie, thence to New York for shipment abroad. At the foot of Lake Erie it is as near to Northern Europe as it will be when it gets to New York. The cost of transfer at Buffalo and the rail or canal freight to New York and the handling in the New York harbor are all lost motion.

During the last season the rail rate on export, Buffalo to New York, was 9 6/10 cents a bushel, the standard canal rate 9 cents a bushel. The prevailing rate, Buffalo to Montreal, was 7 cents. When the lakes are open to ocean going commerce and the lost motion is eliminated, the saving in freight will add from 5 to 7 cents on the market value of every bushel of grain produced in the midwestern fields. Widen the farmer's margin by that legitimate saving and you multiply his productivity,

[1] From address by Honorable Henry J. Allen before Illinois Manufacturers Association, Chicago, May 23, 1922.

increase the prosperity of this region; you work a revolution in production and population. You increase the buying power not only of the farm family, but the prosperity and buying power of the village family and of the city trade.

These figures are not imaginative any more than our past difficulties with transportation have been imaginative. With a deep water highway already half way to the sea and the completion of the other half of the journey dependent only upon the canalization of thirty-three miles of the St. Lawrence River, surely we should not be called visionary and fanatical people for desiring to remove this obstacle of thirty-three miles in order to gain two thousand miles of ready access to the markets of the world in ships loaded at inland ports.

A project as great as this, appealing to forty-three million people, who have developed their great region under transportational difficulties, is too big a thing to be called sectional. It is national in the highest sense. Before the contemplation of it, petty objections and selfish fears, however humanly natural they may be, cannot be seriously considered. This project relates to the development of an empire. It is the most potential American consideration that has challenged the courage and the genius of this continent for fifty years. While we speak of it in terms of wheat and corn and livestock and manufactured commodities, we know that the motive which inspires this great middle western section is the right it gives us to grow, the freedom it bestows upon us to develop the potentialities of our region.

The eighteen states which are asking for this improvement constitute the surplus food producing area of the United States Together they produce practically 70 per cent of all the wheat grown in the United States; 66 per cent of the corn; 80 per cent of the oats; 77 per cent of the barley; 83 per cent of the rye. These figures are from the year book of the Department of Agriculture for 1920.

It is from this great production that the surplus grain products go out for export and it is the price of the surplus that fixes the market price of the entire crop. Twenty-seven per cent of the wheat crop of the United States is exported.

No one has attempted to deny the estimates of Julius Barnes that the ability to send our grain products in ocean vessels from the lake ports would mean an increased profit of at least 5 cents a bushel to the grain producers of the middle west. To this

profit, which, in the aggregate, amounts to a colossal sum, would be added the saving on the livestock and other products of the middle west. The most startling truth in reference to this great project is that the value it would add to the grain alone of the farmers of the middle west would amount to more than enough every year to pay the entire cost of the project.

One who is not familiar with the transportation problems of the middle west cannot realize the difficulties under which this section of the country rests when meeting the problems of its export market. While the Mississippi valley section of the United States is the most fertile producing region of the world, it must send its products on a longer rail radius than any other section which contributes to the world's supply of food stuffs.

Using Kansas, which produces over 17 per cent of the wheat grown in the United States, as a basis, the distance to the Gulf of Mexico, our nearest port, is seven hundred and fifty miles from the heart of the grain growing region. To the Atlantic seaboard it is fourteen hundred miles. To Chicago it would be less than six hundred miles. At the present freight rates, it costs over 36 cents a bushel to get this wheat to New York. This is an amount equal to over 40 per cent of the price received for a bushel of wheat at the home elevator. It costs us 23 cents to get this bushel of wheat to Chicago. It costs us 29 4/10 cents to get it to Galveston.. With the improvement of the St. Lawrence River so that ships could load at Chicago, the water rate to Liverpool would at least be no greater than the same from Galveston. On that basis, the Kansas farmers would receive a benefit of at least 5 cents a bushel on their grain. It would mean to them and to the other wheat producers of the eighteen states an added profit under all conditions of $290,000,000 a year. It would enable the farmers of the middle west, who now struggle with the longest rail haul in the world, to meet in better fashion competition from the great producing areas of Australia and Argentine and Russia, where the maximum rail haul is two hundred and fifty miles.

In addition to the value of this enterprise to the grain producing farmer, there is a value growing constantly in importance to the livestock interests and the other food producing concerns of this area.

Here are some figures that illustrate the reach of this project. The possibilities they visualize ought to inspire every

man of every region in America with a desire that the mighty force now unutilized should be made obedient to the uses of those who produce as well as those who consume.

I have selected a list of commodities exported during the year 1921 that could have moved by way of the Great Lakes. These figures show the number of tons, rate and freight charges accruing from Chicago to New York, or the Atlantic seaboard. The export figures were taken from the December issue of the Monthly Summary of Foreign Commerce issued by the United States Department of Commerce. They relate to 12,994,250 tons, mostly of grain and food products. The railroad freight charges necessary to carry these exports from Chicago to New York were $73,563,275.50. The freight rate on the 12,944,250 tons has averaged $5.68 per ton. The rate to Montreal by way of water would not be over $1 per ton. The saving represented to the shippers of these commodities would amount to $60,579,090 in that part of the haul performed in the St. Lawrence waterway.

We have not included any exports to Canada, Mexico, Cuba, South America, Porto Rico, etc. The list represents fairly the movement that could have been made from Chicago through the Great Lakes of export products from the middle west.

As an indication of the relative cost of water and rail haul, the provisions rate from Chicago to New York by rail is 63 cents per one hundred pounds, a distance less than a thousand miles. The rate on provisions by steamer from New York to Hamburg, a distance of more than three thousand miles, is 35 cents per one hundred pounds.

Some one has recently sent me a remarkable address delivered in the United States Senate by Senator Calder, of New York. The senator sets out as the latest objections three main contentions against the St. Lawrence project.

1st. That the inadequacy of railroad transportation has been overstated for the purpose of emphasizing a fictitious need for this waterway.

2nd. That the middle west would prefer its route through the New York port "if equal facilities for transportation" were given.

3rd. That we should never build any canal or transportation project that is not wholly within the confines of the United States.

He tells us that it is dangerous to go into partnership with

Canada in this project and solemnly reminds us that in time of trouble "whoever controls the mouth of the river controls the river."

Senator Calder's contention that the shortages of railway facilities have been over-stated and that the tragedy of transportation in the middle west did not rise out of lack of railroad equipment exhibits a startling shortage of information upon this subject. Senator Calder evidently belongs to a school of opinion which constantly wonders what will happen to the railroads if this country ever makes sensible use of its exceptional water opportunities in the inland and in the St. Lawrence. He ignores the testimony of the best railroad minds in America.

Mr. McRea, the vice president of the great Pennsylvania System, tells us that the burden upon railroad transportation doubles every ten years. This has been the history of America. The records of official hearings in Washington are full of the testimony as to the shortage of railway equipment and one railroad manager has given as his belief that the expenditure necessary to bring the railroads of this country up to the possibility of caring properly for the present traffic is expressed not in millions, but in billions.

Walker D. Hines, former director general of railways, says "The railroad situation is more difficult to appraise today than ever before in history. The roads have had no opportunity to build up their reserves. They entered the period of readjustment quite unprepared. It will be a long road to recovery."

They all agree that if the increase in the United States in the next ten years equals the increase of the last ten, the railroads will be utterly unable to cope with the situation.

In Kansas the lack of box cars has been so grave during the moments of our peak loads that at times twenty million bushels of wheat have been piled upon the ground waiting for transportation facilities. Conference after conference upon the box car situation always disclosed the fact that the box cars were tied up at the ports waiting for ships or for storage facilities and while the wheat of the middle west thus waited for transportation Europe bought her grain from the surplus products of the other countries that had water transportation. When our transportation finally arrived, the market had broken and there was no longer any temptation to move the wheat.

Every transportation expert in this country who has spoken

upon the subject is not worried through fear that the use of water transportation will put the railroads out of business. They all realize that this added facility of transportation will help the railroads to keep pace with the growing demands and needs.

C. H. Markham, president of the Illinois Central Railroad, says:

> There is no comparison between the cost of moving the tonnage on the Great Lakes and on any other waterway. Competition with other nations in the world trade is going to make it necessary for the people of this nation to take advantage of every opportunity to increased efficiency in all things affecting producing and manufacturing cost. Since transportation lies at the very foundation of commerce, what we ought to do is to make use of whatever instrumentalities of transportation are the most efficient and economical.

A recent expression from the literature of the New York Central railroad said:

> Railroads today are the bottle neck of the industrial world. Once they were beyond the demands upon them. Now industry is retarded because they cannot meet the demands.

Six years ago James J. Hill said that it would require a billion dollars a year of expenditure for additions to keep the American railroads abreast of their demands.

Senator Calder's second contention that the middle west would prefer to send its products through the New York port if "equal facilities" were given is somewhat futile. There is no possibility of equal facilities for export when you compare the New York route with the St. Lawrence. When a western cargo reaches Buffalo it is nearer to Liverpool than when it gets to New York. How can one talk of equal facilities when the New York haul requires us to go four hundred and ninety-six miles out of the way, through a barge canal, including two loadings, two unloadings and other terminal charges, as compared with a direct route in an ocean ship without transfer or incidental burden?

Senator Calder's third contention that it would be dangerous to invest in a waterway not wholly within the confines of the United States is not up to the American standard of common sense. When he tells us that in time of trouble "whoever controls the mouth of the river controls the river," he is in sad ignorance of the rules of modern trouble. In these times

whoever controls the largest armament controls the mouth of the river and everything else. Nothing is more boyish than this species of objection to the St. Lawrence waterway.

PROPOSED ST. LAWRENCE SEAWAY [1]

Montreal and New York are on a parity, so far as rates go, to European ports, but Montreal has the advantage in distance, to say Liverpool, of three hundred and fifty-three statute miles, not because Montreal is farther east, but farther north and all the great ports of northern Europe lie not only to the east, but much to the north. And the farther north we go the less becomes the circuit of the earth, so that where they can, ships always in the northern hemisphere, keep to the north of their true compass course.

Some comparisons of latitude may be illuminative.

The mouth of the Mississippi river is at 29° N. latitude, Cairo, Ill., at 37°, St. Louis 38° 36′, Chicago 42° and the northern boundary of Illinois 42° 30′.

On the other side of the Atlantic we have the English channel, which must be traversed to reach London, Hamburg, Antwerp and Rotterdam at 50° N. and Liverpool 53° 20′. The northerly point of the Orkney Isles, north of which lies the channel necessarily traversed in reaching all the Scandinavian and Baltic ports, is at 59° north. Even Gibraltar, which we commonly think of as much to the southward, is at 36° north or only a degree south of Cairo, Ill., and part of the coast of northern Africa is due east of southern Illinois.

Because of the conditions referred to, distances to the northern European ports from our interior points are less via the St. Lawrence route than via any of our Atlantic ports. In round terms, any of our Lake Erie ports are four hundred and fifty miles nearer Liverpool via St. Lawrence route than via New York. Chicago is, of course, handicapped somewhat by the necessity to go by the Straits of Mackinac, but even with this handicap is about forty miles nearer by the St. Lawrence route.

[1] From address by H. C. Gardner, Chairman Committee on Waterways, Chicago Association of Commerce, President Great Lakes-St. Lawrence Tidewater Association, before the Illinois Bankers Association at St. Louis, June 23, 1922.

One of the objections raised by our opponents and insisted upon by Governor Miller is that to make the use of ships profitable there must be inbound as well as outbound freight, and they say, "Where is the return cargo?" The International Joint Commission had this phase of the problem before them and they express confidence there will be incoming cargo. But the case is not so easily proven because the statistics as kept credit the imports to the ports of entry. Mr. H. C. Barlow, of cherished memory, traffic director of Chicago Association of Commerce, in 1920 undertook a study of this problem so far as Chicago was concerned, and found over a thousand of their seven thousand membership were engaged directly in foreign commerce, and from all the figures obtainable reached the conclusion that Chicago importers brought into the country in 1920 over a billion dollars' worth of goods, not including grain from Canada. Nineteen hundred and twenty was a year of inflated values and the war stimulus was still on, so we must use caution in contemplating the figures, but we do import goods, many millions of dollars' worth. Some of you know probably that much the largest house in the United States in the importation of general merchandise is a Chicago house.

To my mind, however, statistics of imports are unnecessary to prove that we will have inbound tonnage for the St. Lawrence route. Over forty million of us live within the economic transportation radius of the Great Lakes, and we are just average Americans, eating, wearing apparel, and otherwise living just as do the rest of our people. Is it logical to argue that because we do not live within sight of the sea we do not use imported things? Being a mid-westerner and knowing our people as I do, I have but one conclusion—we are over 40 per cent of the people of the country and we must use—we do use—over 40 per cent of the country's imports. Given the physical facilities, will we not land these goods as nearly at our doors as practicable? Are our merchants weaklings and our banks unfamiliar with and not equipped to do foreign business directly and without the intervention of seaboard merchants and bankers?

And it is a fallacy to say there must be a balance of inbound and outbound tonnage. No port on earth has it, and the cheapest carriage anywhere known is on our Great Lakes, largely a one-way business.

ST. LAWRENCE RIVER SHIP CANAL [1]

We do think that my distinguished colleague called attention to one thing that ought to be taken under consideration. I think that we ought to know, when Governor Miller is through, this one definite thing—whether he is opposing the St. Lawrence seaway because he thinks it won't work or because he thinks it will work. It is manifestly improper for him to use both arguments.

I want to offer one objection to what Governor Miller said not long ago at Buffalo—he said whatever the cost, New York pays 30 per cent. I dissent. New York does not pay 30 per cent of the taxes of this country. New York City is at the seat of customs and catches them coming and going and, in addition to this great revenue she collects, there have moved from Kansas and Iowa and Illinois and Nebraska and Missouri, from all these other eighteen states, some able men who still retain their productive operations in these states, but they pay their taxes upon those fortunes in their New York offices. I am not seeking to reflect upon New York, wonderful Empire State, but her ten million people are not more productive or more important than the ten million people of any other section of the country. And when New York calls our attention to the fact that she takes in more money, that is merely her quaint way of explaining that she gets more than anybody else.

I think that I could do better in the very brief time that remains to me by calling attention to some of these objections to the St. Lawrence seaway project. I know they will seem to you superficial, but these are the only objections there are. That is why I am calling attention to them. First, one of the protestants has objected to this and has submitted the barge canal of New York as the only remedy. Let me say now that we have no fight upon the barge canal of New York. The most enthusiastic of its supporters tell us that it is capable of taking care of ten million tons each way. The demand for transportation of these eighteen states is two hundred million tons and you cannot speak of competition with comparisons like that.

But, said one of the opponents, the objection to the St. Lawrence proposition is that, while the barge canal extends

[1] From speech of Governor Henry J. Allen, of Kansas, in joint debate with Governor Nathan L. Miller of New York, before the National Rivers and Harbors Congress, March 1, 1922.

to a port that is open all the year round, the St. Lawrence project winds up at a port that is closed all but seven months in the year. We all know that is a superficial objection, because the New York barge canal is closed during exactly the same months as Montreal harbor. The fact that New York harbor is open the year round does not protect the short season on the New York barge canal, but I am proud of the courage with which New York has builded the barge canal, and with all my heart I wish it well, but there is nothing in the barge canal that competes with our project.

The Buffalo papers have been screaming at us in the middle west and saying, "Come on here; here you have it now." Well, we are not bound for Buffalo. We are bound for Liverpool.

They speak of the fogs and ice. Well, there are always fogs and ice, and you do not avoid the fogs and ice merely because you leave the harbor of New York. The fogs and the ice are still in the Atlantic Ocean and the answer to the short-term theory is, of course, that the St. Lawrence is open during the period of the year which demands peak loads and those are the periods of the year in which, as a food producing area, we are deeply concerned, because it is the price we get for our surplus that makes the price of the market. Our surplus must lie in the field of its production while waiting for transportation facilities and then come only into the possibility of distribution when the world has bought its surplus elsewhere. We have fallen far behind in the race of development because we have not solved our transportation problem.

Then they speak of the tortuous channels. Now I think there is less restricted channel in the St. Lawrence route than in the Suez. It is a far-fetched objection that has no—well, of course, an objection, to be influential, ought to have behind it the facts. As my colleague stated, on the authority of an insurance expert called by the opposition, the difference between the rates out of New York and out of Montreal on the same class of risks is negligible. We have looked that up. I mentioned that because that is one of the objections.

It says here, one of these objections is, that no other boat can compete with the bulk lake carrier. Well, why, I wonder? The bulk carrier on the lakes does not engage in the business that is already developed in the ports of Chicago, Duluth or Toledo, the ports that take our export food products across.

We have no competition with lake boats that do a local business between lake ports, or for the purpose of breaking bulk at Buffalo.

Then it speaks of the cost, the relative cost of an ocean-going boat and a lake boat, and builds up as one of the impossibilities of the situation that you cannot afford to build ocean-going boats —and the figures show that now the relation in the cost between a lake boat and an ocean-going boat is as one twenty to one forty. There are twenty of these and I don't know whether I am going to get all through them or not.

It says the present lake traffic is 90 per cent ore and coal. That is no argument. That is all right, but we are seeking to cover these great lakes, these great inland seas, with a charter of transportation that will help the whole country, because it will give to the middle west the opportunity to use the cheap transportation that God Almighty meant we should have when he gave us water. We are not expecting to live upon the present transportation that is upon the lakes. What we are going to do is to have an addition to the present transportation upon the lakes. That is all. We are becoming a water-minded country.

"The movement of foodstuffs is ceasing." An official of Canada—I wish to offer no word of disrespect to him; that would be sectional—came out with the statement the other day that we had better not build this canal, because he had learned, from some source that he thought was accurate, that in ten years the United States would be eating all the wheat she produced, and with this about to overtake us, he said, "Why expend $250,000,000 for the purpose of creating export transportation when in ten years we will not have anything to export?" You know it really seems too bad to take time to answer an argument of that sort. This was not the sort of Canadian who discovered the possibilities of the great wheat country around Calgary and Winnipeg. Why, Canada stands today with the potential possibility of fifty million prosperous people.

Who shall say when we have reached the possibilities of production? Why, the day may even come when, under the pressure of need, our agriculture may reclaim the abandoned farms of New York State and bring them back into production. In Kansas, in ten years, we have seen the evolution of western Kansas from a livestock country to a farming country. We have merely scratched the surface of the possibilities of production, and in this great land possessing one hundred million people,

every man who knows the situation and studies it with an eye to history, taking advantage of the experience of the world, knows that in the United States, there is room for four hundred million prosperous people. For a man to sit back and say, "We have finished raising wheat; we won't need the export," he is as blind as the figure sitting on the coin looking ever backward.

Then the statement has been made that no authority on navigation has declared this project to be feasible. Oh, I say that that is going rather strong. Would not you? I do not know of any authority, any engineering authority in navigation, who has not declared it to be feasible upon his experience and giving his judgment as an authority upon navigation. Mr. Goethals—and I mention his name with due reverence to his great ability and his great service to this country in the building of the Panama Canal—gave it as his opinion, offhand, in Chicago not long ago, gave what we out west call a curbstone opinion, that this was not a practical project. He said, speaking as a resident of New York—now, there is the rub—and he spoke as something more than a resident of New York, he spoke as an official of New York, as the consulting engineer of the Port Commission of New York and New Jersey, and so, speaking as that, he said: "While I have not read the report or studied the decision, I am sure it is impractical."

Now, he is a great man, but the opinion of a great engineer who modifies it by saying, "I haven't studied it, I don't know anything about it," is of no more value than the opinion of any other citizen. I would prize his opinion if he had studied it as these other great engineers have studied it; as Colonel Wooton has studied it; as Mr. Saunders has studied it, and all these men who compose the established engineering societies of this country. But, taking that word from a man, however great he may be, who declares he hasn't studied it, and placing against that word the report of the International Commission—the report upon which the President of the United States stood yesterday when he declared for the accomplishment of the St. Lawrence project—I would say, in view of all this, the contribution of General Goethals to the subject is unimportant.

"Montreal will be the chief gainer." Montreal is very indifferent to this project. Montreal knows that Chicago and the other lake ports will be the chief gainers of this enterprise. Montreal knows that the great productive areas of these eighteen mid-western states are going to be the chief gainers of

the enterprise. Montreal knows that we are not seeking to build this canal just for the pleasure of sailing by Montreal with our cargo loaded at the home ports.

Some suggestion has been made that, bound up in this, somewhere, someway, there is a power concern that is seeking graft. Well, if this is created under the safeguarding influences of both governments and the added safeguard of the government of New York, which will distribute the power which belongs to New York, under all of this, isn't it rather weak to stand before a mighty project like this and say we do not dare to create all that water power for fear something crooked will be done in the way of distribution? Now, friends, that is bosh. We are not that much afraid of anything in New York or the United States and, thank God, they are not afraid of graft in Canada.

This is a government enterprise, to be guaranteed by the governments of Canada and the United States, to be builded with economy and the power created to be distributed according to the ownership of the two nations. And there is not a single thing in the argument that if you create this thing you will create graft. Create this power, my friends, and sell New York her hydro-electric power at the rate that will be made possible by the creation of this enterprise, and you can save to New York $90,000,000 a year in her fuel bill. And I am not afraid that any nation, that any government concerned with it, would take advantage of the situation.

REPLY TO OBJECTIONS [1]

The people of the west are in full accord with the principles enunciated by the governor of New York with respect to Federal improvement of navigation throughout the entire land; but we will go a step further and say that our interest should not be confined to making appropriations for improvement of rivers and harbors, but that other and more drastic remedies should be applied to effect a better distribution of commerce through the ports of the country, to the end that we may be freed, in part at least, from the tremendous burdens that have been placed upon our commerce by permitting the continuance of conditions

[1] From speech of Honorable A. P. Nelson of Wisconsin in the House of Representatives, December 5, 1921.

which have forced the foreign business of the country largely through the "archaic" port of New York. We now have a large merchant marine and we must establish conditions which will enable the vessels of our commercial fleet to operate profitably not only at the port of New York but at every port of the country which constitutes a logical outlet for traffic. The great port of Norfolk, whose natural advantages are unsurpassed, has been a victim of our lack of a transportation policy devised in the interests of the country as a whole. Likewise the great ports of Boston, Charleston, Savannah, and Mobile, have been unable to take their true places as outlets for the territory logically tributary to them because of our remissness in permitting the powerful trunk lines centering at New York to control the situation. We have committed a monumental folly in permitting the assembling at one port of the shipping resources of a nation, and for this folly we are now bearing a burden amounting to hundreds of millions of dollars annually. Freight which should logically be shipped from Portland, Boston, Norfolk, Wilmington, Charleston, Savannah, Jacksonville, Tampa, and Mobile directly to foreign destination now proceeds by rail to New York, at great cost, because it cannot obtain a ship to destination from the port which should receive the traffic. Are we to content ourselves with this situation or are we to begin now to unravel the tangles of our transportation situation and lay the foundation on which all of our important ports on the Atlantic, Gulf, and Pacific coasts and on the Great Lakes may hope to perform their proper functions in the interests of the whole country?

Only in this way can we reduce the excessive rail hauls that now burden our traffic and handicap us in foreign trade, and only in this way can we bring about conditions which will enable our large merchant fleet to operate successfully.

Governor Miller states that "every report heretofore by every army engineer who has studied that or similar projects for a ship canal from the lakes to the sea has been adverse." What are the facts? In 1900 the Board of Engineers on Deep Waterways made complete surveys of various all-American routes between the Great Lakes and the Atlantic Ocean and reported in favor of a ship canal. The president of the board was Col. C. W. Raymond, Corps of Engineers, United States Army, and no other survey for this purpose has since been made by army engineers with the exception of the new survey recently made

by the engineers representing the United States and Canada with a view to the provision of a ship channel in the St. Lawrence River between Lake Ontario and Montreal. In 1918 what is known as a preliminary examination was made of the St. Lawrence River from Lake Ontario to the boundary line, and the report was adverse for the very sensible reason that the proposed channel would be useless unless extended to Montreal, and there was no authority for the consideration of such an extension.

The governor, in referring to the project for the St. Lawrence improvement, further makes the astonishing statement that "No such work was ever carried on within the estimates, either preliminary or detailed," this statement being intended to prove that the work will cost very much more than the estimate made by the engineers. It is true that in the past the actual cost of many of our river and harbor improvements exceeded the estimates. Particularly has this been the case where appropriations have been made in small installments covering a long period of years. In these cases the increased cost has been due to increased prices of labor and material and to inefficient prosecution of the work due to the failure to supply funds as needed. For many years there has been a gradual increase in the cost of labor and material. Estimates based upon unit prices at the time of the survey obviously must be increased if, due to failure to provide funds to complete the work promptly, the unit prices have advanced. On what basis can it be contended that an estimate made at a time of abnormally high prices, due to the war, will have to be increased? Rather may we expect a saving in the cost as a logical result of the inevitable readjustment of price levels to more normal bases.

CARRYING THE OCEAN TO THE GREAT LAKES [1]

The New England States, with the exception of Maine, which has a fair supply of timber, have practically no raw materials of any kind, but they are very rich in brains and energy. No section of the Union is inhabited by more industrious, frugal,

[1] From speech of Senator Joseph E. Ransdell, of Louisiana, delivered before the Massachusetts Chamber of Commerce, at Boston, Mass., April 5, 1922. Congressional Record. April 7, 1922.

hard-working, sensible men than New England. If dependent upon the resources of their own section, however, they would soon starve. They draw raw material from every part of the Union, and from every country on earth, and convert it in their innumerable factories into every imaginable article for the use and comfort of mankind. Most of these factories are operated by steam-electric power created by coal from Pennsylvania and West Virginia, the cost of which is increasing rapidly. At this moment the greatest coal strike ever known grips our country, and no one can foretell its effect upon the price and supply of this essential article. Moreover, scientists tell us that the supply of coal in the Pennsylvania and West Virginia fields, the only mines in the Union near the Atlantic seaboard, is rapidly being consumed, with the prospect that the seams which can be mined cheaply will be exhausted within two or three generations.

Cheap motive power is becoming more and more important to New England. As an illustration, cotton factories, which for a long time constituted a great percentage of their business, are rapidly being moved to the south, where raw cotton is grown in close proximity to the mills, and abundance of water power is available at much lower cost than the New Englander pays for his power generated by coal.

What happened to cotton may be expected by New England in other things unless she can find cheap motive power. The future is bound to bring greater competition in production and distribution of manufactured products. Sections which have abundant supplies of water power or coal will be able to manufacture so much cheaper than communities where motive power is very high that inevitably factories will be compelled to move where there is cheap power. As incentive genius marches onward, always requiring more work from machinery and less from man, the proportion of motive power to man power increases, and the relative importance of the cost of fuel becomes greater.

New England has been obliged to pay very high rates for coal during the past three years, and has suffered much anxiety from strikes, traffic congestion, and other untoward conditions. Surely none but the most confirmed optimist can look forward to a cheapening of coal, especially when we consider that our large population and our big exports of this commodity are rapidly diminishing the supply along the Atlantic seaboard. It

is, therefore, imperative for New England to look out for other and cheaper motive power.

Water-power plants, once constructed of solid concrete, will last forever with very slight change in the supply or the price of the motive agent. Coal mines become exhausted after a few generations; the price of coal fluctuates greatly, with a constant rising tendency, and the coal miners frequently strike, with a resultant increase of price and diminution of supply.

Experts differ in opinion as to the relative costs of hydro-electric as compared with steam power, but all admit that hydro-electric is much cheaper. I visited last week a big steam electric power plant at Gorgas, in north Alabama, which is located at a coal mine, where coal delivered into the furnaces costs only $2 per ton. The managers told me that the cost of this steam electric power was much greater than that of the hydro-electric power generated by the same company, even though there was no transportation charge whatsoever on the coal. I was told by the vice-president of the Alabama Power Co. that in 1907, when the hydro-electric plants of his company were first developed, the cost of horsepower to the consumer in Alabama was $72 per annum, and in 1917 only $21 per annum. In the state of Mississippi, which has no hydro-electric plants, the cost of horsepower was $96 per annum in 1907, and $93 per annum in 1917.

It is necessary in acting upon questions of this character to take into consideration the greater good of the greater number, rather than look to selfish interests of the smaller number. I cannot conceive how any part of the United States would be seriously injured by the proposed waterway. The state of New York with its great industrial canal system, on which it has expended out of its own funds about $175,000,000, seems to be more opposed to the project than any other section, but I feel that New York would get as much, if not more, benefit from it than any other state, though a portion of the grain which now seeks an outlet through New York City would find direct passage to the ocean through the St. Lawrence, and to some extent there would be a reduction of New York's grain movement. New York is now, and always will be the metropolis of America, the center of population and of wealth, and whatever benefits in such a big, broad way the vast interior of the nation adjacent to the Great Lakes, thereby adding enormously to the

national wealth, is bound to benefit the leading city of the nation.

Another very important consideration in connection with New York is that the 1,460,000 horsepower developed at Cornwall will be in closer proximity to the heart of the Empire State, and especially to such cities as Albany, Schenectady, Syracuse, and Rochester, than to any other big centers of population. These cities lie on the banks of the Erie Canal and are served by two great railroad systems, with six parallel lines. There is no better transportation system anywhere in America than along the Erie Canal with its six railroads. This region is ideally situated to become the greatest manufacturing center in America, because of its cheap and efficient transportation for all raw materials brought to its factories and for distribution of their finished products. When to these advantages is added the cheap electricity generated by the great plant at Cornwall, the interior section of New York would have wonderful superiority over any other section. Moreover, this cheap electricity can be carried not alone to these cities but also to Buffalo and to New York City itself. Buffalo is about two hundred and fifty miles distant from the plant and New York City about three hundred miles, which is within feasible transmission distance.

The lower Mississippi Valley need have no fear that this canal will injure it. The same general arguments apply to that section, and surely if there be a vast increase of population, manufacture, wealth, and all that goes to make a great nation in the regions adjacent to the Great Lakes, the lower Mississippi is bound to derive great benefits therefrom.

The Mississippi River and its sixteen thousand miles of navigable streams will soon be connected by a nine foot canal with the Great Lakes at Chicago. This wonderful system, when improved, as it should and must be in the near future, will permit the carriage of freight by two thousand-ton barges from the Mississippi, Ohio, and Missouri River sections to the Great Lakes, thence through the Erie Canal, and the improved St. Lawrence to the Atlantic, and vice versa, to the Gulf, thereby giving the valley an outlet to the sea at both ends.

The people of the Mississippi Valley should, and I believe will, join hands with those of our northern border in giving to that section a perfect system of improved and connected waterways, and the statesmen of that region will assist in pushing to

rapid completion the projects for improving the great rivers of the valley, which have already been too long delayed.

In the immediate future the United States will derive a great deal more benefit from this project than the Dominion of Canada, but the great statesmen of that wonderful Commonwealth, foreseeing its rapid growth, seem to be willing to pay one-half of the enterprise. This indicates statesmanship of the highest order, and should be a lesson to all. The people of Canada and the United States have lived together as brethren for more than a hundred years with not a single fortress or soldier along the whole four thousand miles of their boundary from the Atlantic to the Pacific. Canada has heavy investments in this country, and we should reciprocate by like investments in her borders. The proposed project would increase, if that be possible, the present friendship and cordiality between the two nations, and bind them in ties of mutual interest, with their people working side by side for the common good of all. Our relations should become more intimate with Canada for many business reasons. This waterway will be a strong additional link in the long chain of friendship which now unites the two nations, and which I hope and believe will last until the end of time.

ST. LAWRENCE RIVER SHIP CANAL [1]

Governor Allen wants to know whether we are opposed to this because we think it will not work or because we fear it will. Now, I do not wish him to remain longer in doubt as to the attitude of the state from which I come, although I am not here to speak for that state. If there is any reasonable assurance that this tragedy which the Governor says has been resting upon the middle west can be removed; if there is any reasonable assurance that the Atlantic Ocean can be extended two thousand miles into the interior of this country, then the state of New York will heartily support this project.

There are two explanations why the middle west has so aroused public opinion there as to become insistent for this

[1] From speech of Governor Nathan L. Miller of New York, in his joint debate with Mr. H. H. Merrick of Chicago and Governor Henry J. Allen of Kansas, before the National Rivers and Harbors Congress, March 1, 1922.

project and so insistent that they do not brook any opposition whatever. One of them is the tragedy the Governor has referred to. We sympathize with the middle west and, if there is any way to cure that tragedy—and I am going to suggest one before I am through, and it won't be the barge canal either—then we are in favor of curing it. Those of us who have read what happened during the years succeeding the war when the grain growers of the west saw their grain waiting, when there was a market ready to take it at good prices, and had to lose that market because they could not get transportation, we can understand why the people of the west feel as they do.

Now, there is one other reason which explains it, and that is the tremendous appeal to the imagination which this project of extending the Atlantic Ocean two thousand miles inland makes. Somebody was kind enough to send me just before coming here this clipping from the St. Louis Post Dispatch of January 29. There you see painted what will happen when this new Mediterranean Sea is created. It is headed, "Bringing the Atlantic Ocean into the Middle West."

Those two things, the tragedy, coupled with this appeal to the imagination, account for the feeling in the middle west which causes this word "sectionalism" to be used. Reference has been made to the President's message yesterday to Congress. That is a kind of a broadened vision which he said had caused the demonstration of the middle west in favor of this project—a vision of something which you know is impossible. Now, I believe in visions. Great things are accomplished by men of vision. We have been suffering, however, for some time in this country from the policies of men who thought they were men of vision, but who, in fact, were visionaries.

Now, let us get down to facts. And what is the first fact? How is this proposition to be financed? They dress it up in alluring colors. They say that this gigantic project can be undertaken without involving the slightest expense to the Federal Treasury and so it would not interfere with the development of the Mississippi and its tributaries and it would not interfere with expenditure of money on other river and harbor improvements. Now, I say at the outset that the question of financing this project in the manner suggested has not been considered in any way that entitles the name consideration to be given to it.

They say the water power will take care of it—and I was

glad to hear the admission from Governor Allen that the state of New York owns that water power, so far as it is within the state of New York. Well, that is the law. It is settled by the decision of the Court of Appeals of New York, as well as of the Supreme Court of the United States in the so-called Long Sault Case, that the state of New York owns in trust for its people the bed of the St. Lawrence River on the American side; and that carries with it, under the law of riparian right which prevails in the east, that carries with it the right to the use of the water and the development of the water for power purposes. They say that they propose to take that water power, not merely to finance the part of the project that has to do with the development of power, but to finance the entire project. Well, now, let us consider that for just a moment.

I grant that the right of New York is subordinate to the power of Congress to improve navigation. I grant that if Congress, in the improvement of navigation, develops water power as a mere incident, Congress may say how that water power shall be disposed of, even though it thus does take rights belonging to a state. But when you make the water power not the incident, but so far the main project as to saddle it with the entire burden of cost, then you can no longer say that the power is a mere incident. Now, I shall not discuss the legal question as to the legal right to do that thing. I want, however, to discuss the moral question.

The assertion has been made—I do not think it was made here today, but it is one of the stock arguments—that the opening of this ship canal will add 10 cents a bushel, at least 5 cents, to the value of every bushel of grain produced in this country, and they interpret that to mean $350,000,000 to the people of the middle west. That is a vision. But assuming it to be sound, I want to ask Governor Allen if he thinks that it is a fair thing to make the power users of New York and New England pay the entire cost, assuming that that is feasible, of both the power project and the navigation project?

Now, I admit that power ought to bear the cost of the power part of it, but I say that at least one of two courses should be followed with reference to the expense for navigation. Either it should be collected from the tolls—and I do not believe in tolls. The state of New York does not exact any tolls for passage through the barge canal. I hope the time will come,

and come as speedily as possible, when we will not exact any tolls for passage through the Panama Canal. I say that one of two propositions is fair, either this $350,000,000 a year, that Brother Allen is persuaded will be saved for his people, should bear the cost of the navigation project, or else it should be paid out of the Federal Treasury of the United States.

Now, there is another thing they have not thought of when they propose to saddle the entire cost on water power, and that is that this power would be distributed, as Governor Allen has suggested, under the jurisdiction of the Utilities Commissions of the states in which it is distributed. That is the provision now in the Federal water power bill. I do not suppose that Congress could be induced to take the water power of a state out of the control of its Water Power Commission, but I am quite certain that the Public Service Commissions of the state of New York and of the New England states would insist that the capital charge to be distributed to water power should be limited to the capital cost attributable to development of power.

Now, where does that lead us? That leads you to the report of the engineers, and I am now coming to that. Roughly, on the basis of a twenty-five-foot canal, the cost would be apportioned probably in about the ratio of $150,000,000 to water power and $100,000,000 to navigation. If you deepen it for ten feet, according to the report of the engineers, the cost that would be charged to navigation would go up something like eighteen or twenty million of dollars. Now, so much for that.

They say, therefore, without having even studied that side of the question, they say they would commit the government to this project. The resolution is now in Congress providing for the issuance of bonds to be guaranteed by the two nations. They do not say how the bonds are to be financed. They do not say how the interest is to be provided or how they are to be amortized. But our friends say, without having considered the difficulties in their way, "Oh, it will be paid from the water power, and so," they say, "we are not committing the Treasury of the United States to anything, and, therefore, those who fear their other local improvements may be jeopardized may lay their fears aside."

Now, what is the next proposition? Governor Allen says that the report of the engineers is that this project is feasible. The engineers have not reported on that subject at all. They

were not required to report upon that subject at all. They say in their report that they have not considered that subject. They were required to report upon the engineering aspects of it. They say that this canal can be constructed and that there is no doubt but that it can be constructed. They say that for two hundred and fifty million dollars, or two hundred and twenty-five million, a twenty-five-foot canal can be provided and 1,400,000 horse power—I am using, of course, round figures—can be developed. That is what they say and all they say.

We have heard from Mr. Merrick how the directors of a corporation manage its affairs. I am sure that he does not allow any corporation of which he is a director, or officer, to act upon a project so important without having the complete advice before instead of afterward. But that is not all. These estimates of two hundred and fifty million dollars—I am not charging bad faith—but I say that at least they invite careful scrutiny; and a systematic and persistent attempt is being made to belittle those things that are seriously against the project and to magnify those things that are thought to make in its favor.

I do not know how much this would cost. The figures that I used at Buffalo, to which he has referred, were figures of a distinguished hydraulic engineer, Hugh Cooper, and the people of the Mississippi Valley know something about his engineering ability because one of his monumental engineering works is there.

Now, in the first place, it appears upon the face of this very report of the engineers that we have made no allowance whatever for interest during the period of construction, or until the time our rivers will be self-supporting. Think of an engineer omitting such an item! Ten years is the period that the International Joint Commission says will be required. We thought we could construct the barge canal in ten years, and it took twenty. But in ten years interest charges mount up, and when the ten years are past and the thing is complete it is not going to pay at once. It is going to take some years before you get the line of which the Mauretania is a part to change her sailing to go to Chicago.

Water power! There is no market, or practically no market, whatever at the place where this power will be developed; and there are many engineering features yet to be studied before it is determined where that market is going to be and how much it is going to cost to get the electricity to that market. At any rate, it is going to take years—how many, I do not know—during

which fresh charges are going to pile up. But they give it out over the country that this thing can be done for $250,000,000, a mere bagatelle, less than they will save in one year on wheat! And then they want to commit the government and the Federal Treasury to the assumption that, in some way not designated, not even studied, water power is going to pay for it. Now, I say that an engineering report which omits to make an account of an item of cost of such large proportion, is impeached upon its face.

But that is not all. Mr. Cooper says in addition that, if the works are constructed in the way these engineers have planned, they will automatically close down every winter from the effects of ice. No engineers are controverting this statement, and that is not all. They propose to develop a million four hundred thousand horsepower. He says that if the dam, the first dam, the only one that is now to be constructed to develop power, the dam in the fourth section, if that is placed where it ought to be placed and is constructed as it ought to be constructed, it will develop not simply a million four hundred thousand horsepower but an additional horsepower of two hundred and forty thousand, computed on a load factor of seventy.

The other two hundred and fifty or three hundred gross might help a little to solve this financial problem that they have got, in case they are going to be unfair enough to ask the water power users of New York, if they exist in sufficient quantity to use this electric power, to ask them to bear the entire burden. I say—and I now speak for the people of the state of New York because there I have a duty to perform—we are interested in the development of hydro-electric energy. We are not afraid, as Governor Allen says, and we are not intending to let it go to waste for fear of graft. We intend to have it developed and, of course, it must be developed in cooperation with the Federal Government and with Canada, because an international boundary stream is involved. But we say that two hundred and forty thousand, or three hundred thousand gross horsepower belonging to us ought not to be sacrificed for a navigation project, at least unless it is first proven that it is necessary to make that sacrifice and unless it is next proven that that navigation project is feasible. I submit that I have said enough already to show that upon the engineering features the surface has not been scratched. There are two great projects here, one a water power, one a navigation project. Neither, if both are

feasible, should be sacrificed for the other. Both should be developed to the very maximum of efficiency and each, so far as may be, should contribute to the other, but I say that before we commit ourselves to that project let us first have what these gentlemen are asking for—facts. Now, so much for that.

They have not even considered in a scientific way how they are going to market this power, which, they say, is going to finance this project. There have been no surveys made to determine where the lines are to be constructed or how, and they would have to go a long way around, at least until we can amend our state constitution—and I am trying to have it amended, Governor Allen, not only to help transmission from the St. Lawrence but transmission of power from other places. Our constitution prohibits the construction of a transmission line through our Adirondack preserve, and it would be necessary to build transmission lines around that preserve. Nobody has figured at all, so far as the proof discloses, what it would cost to develop those great high tension, at least two hundred and fifty thousand voltage, wires to their market. Nobody has yet said where their market would be. They have done this: They have taken the use of power; they have said New England uses so much power, steam and hydro-electric; New York so much; and they have taken it for granted that there won't be any trouble in marketing this particular power.

They refer also in their report to the report of the Super Power Zone Commission. I don't know whether you know what that is or not. I have not time to discuss it. It is simply a general survey. It is a project that appeals powerfully to the imagination and I hope some day may be realized. That day is long in the future. If it should be realized, it involves electrification of these broken down railroads that have not got enough money to buy the box cars that Brother Merrick says they need. It involves the scrapping of all the present steam plants and the building of new steam plants in the most economical location with reference to the mines. It involves the utilization of hydro-electric power and it contemplates, finally, that all the power produced in that zone, both steam and hydro-electric, will, so to speak, go into one common reservoir, so that by the turning of a button you can send it here, there, anywhere within that great zone and thus secure the utilization of the maximum amount of power with the least cost.

In that computation they make their figures on an 80 per cent load factor. But the maximum load factor that any hydro-electric concern would figure on would be 50 per cent and in New England, where they say they are going to send this power they cannot count on more than 35 per cent. But even at 50 per cent this power, that is going to be used to finance this project, is at once cut from a million four hundred thousand to seven hundred thousand usable power, or only three hundred and fifty thousand in the United States. Now, before they launch the credit of the government in support of this project, on the theory that water power is going to pay for it, I say it is necessary to have some further study. So much for that.

But that is not all. They have only scratched the surface of the cost of this thing and I am not going to impugn their motives. Governor Allen says he is bound for Liverpool. Well, you have a very uncertain voyage if you undertake to sail on any barge that will navigate the Great Lakes with their limiting channels of twenty feet, as now exist. They say it is unnecessary to consider the cost of deepening those channels and harbors. The International Joint Commission recommends that the cost of the Welland Canal improvement shall be borne by the two governments. There has not much been said about that. Canada thought it was going to cost $50,000,000. It is probably going to cost at least $75,000,000 and because—I take it, it is because of that; I make or cast no reflections upon our neighbor to the north—I take it because of her financial condition, the work on the Welland Canal is almost suspended.

The project calls for twenty-five feet. In order to deepen it to thirty feet—and I say that is the minimum that any man in his senses would think of if he is going to give Governor Allen the voyage that he has been longing for so long—nobody has estimated how much it will cost to extend that five feet more, but what else? I said the limiting depth of channels in the Great Lakes is twenty feet; they vary—twenty, twenty-one, twenty-two. Now, for some reason, they have tried to keep away from that. They have said you have not got to consider that. This International Joint Commission, which is said to have said the last word, says it is necessary now to consider it. They say that probably those channels will be deepened anyway, sometime—would have to be.

Every Board of Engineers—now, I don't want to make a

statement that is not true; I think every Board of Engineers, and many have been requested by Congress to report on the cost of deepening those channels—every board, at least, whose report has come to my notice, up to date, has said that the great cost of deepening those channels would be way out of proportion to any benefit that could be derived. When a fourteen-thousand-ton lake freighter, with its flat bottom, without the necessity of providing the space for coal which an ocean liner has to provide, when a fourteen-thousand-ton lake freighter can navigate those channels, it is quite obvious that there is no pressing need of having them deepened for the lake business.

But the other side, in their desperation, have undertaken to prove that it is not necessary to deepen those channels. They want to take Governor Allen to Liverpool and they say they can do it on ships that will sail a twenty-foot channel. And this is the way they say, or this is the way they figure: They have taken the tonnage of the ships as shown by Lloyd's Register. They talk about this; this great International Joint Commission say that they are tremendously impressed by this fact. They say that a certain percentage, I think 70, of the ships built during 1918 and 1919 had a draft of less than twenty-five feet and a certain other percentage a draft of less than thirty and they figure that a twenty-foot channel will be enough. Well, I happen to have the report of Lloyd's Register of shipping and a note, right on the first page, says that these figures take into account only merchant vessels of one hundred tons gross and upwards. Every barge and scow that has been built, capable of carrying one hundred tons, is taken into account, and so they get this average of 70 per cent being under twenty-five foot draft Now, I am sure that Governor Allen does not want to take that voyage to Liverpool in a scow.

They say that a census shows that a large proportion of the shipping that went through the Panama Canal could be accommodated, not on a twenty-foot draft, but on a twenty-five foot draft. That shipping is not analyzed. It is not shown what the character of those ships was, or for what trade they were intended, and the fact is—lest I forget it, I want to mention it now, as showing the utter worthlessness of this report of the International Joint Commission. What did they do? They went over the country hearing the exaggerated statements of the proponents of this scheme on the one hand and of the opponents

of it on the other—and I am willing to concede that the opponents went fifty-fifty with the proponents in the matter of exaggeration. Then they reached their conclusions without any independent investigation of their own, because they said in their report that they employed statistical experts to collect the figures. These are problems to be dealt with, not by statisticians who know nothing but distances and averages, but by experts in their several fields—and there are many fields that I want to come to before I get through.

Now, this that I am talking about is a fair indication of the character of the evidence that moved this International Commission, this evidence of averages taken from Lloyds' Register; this evidence of averages from ships passing through a given point. They did not have to take averages. They had some evidence right before them which would have told them the kind of freight steamers that would use it. They even mention tramps. I am astonished that, with the vivid imagination of the middle west which has been aroused by the dream of the Mauretania and the Leviathan and those great ocean liners, Brother Merrick is willing to get his project down to tramps. He says it is going to accommodate the tramp steamers, of which there are many.

Yes, but the figures will show that the tramps, prior to the war, were gradually disappearing from the seas. We are engaged in a project that will take ten years to complete. The forces, the economic forces, that were operating to drive the tramp from the seas will again be brought into action and if not ten years from now, my vision, at least—and I hope that I can be credited with having some vision as well as my friends on the other side—sees the time when regular lines of steamships and not tramps will be required; and let me tell them, too, that this great expenditure will never be justified if only tramps enter the lakes. Their sailings are too uncertain. They can only accommodate a certain class of merchandise, and Governor Allen says that they are looking for an outlet to the sea for two hundred millions of tons. That shows something about his imagination. I call to your attention the fact that the total export and import tonnage of the United States in the year 1920, a banner year, was only fifty-four million tons. And I suppose that Brother Allen will be willing to admit that, even after this new Mediterranean has been created, the Pacific, the Gulf and the Atlantic ports will carry some of that tonnage.

The Commission had before them the evidence of the character of vessels that would navigate these lakes, if any. Where would you go? Would you go to Panama, or would you go to Montreal? If they are going to extend the sailings of the ships up into the lakes, the first ships whose sailings will be extended will be those which now go to Montreal, won't they? Now, when the commission sat in Montreal, they received testimony of the draft of the vessels that had loaded and departed from that port the month before, and I want to give it to you; the Banton, twenty-three feet nine inches. Now, that vessel could creep along through a channel of twenty-five feet, and this reminds me of another inconsistency of our friends.

In order to put the camouflage upon this enterprise that it was not going to cost anything, they have gone to great efforts to prove that the present lake channels are ample—twenty feet. But, when it comes to computing the cost of transportation, they testify, all of them, that these ocean freighters will go sailing through these restricted channels with practically undiminished speed. Their estimates are biased. The report of the International Commission shows that they found that these ocean freighters would go through these restricted channels without any appreciable lessening of speed, at from eight to ten miles an hour, and yet, in every canal that is known, the Panama, the Suez, the Kiel, in all these great canals, the speed is limited. They are not permitted to go more than six miles, and, in many of them, not over four miles an hour. But, while in one breath they say the restricted channels are going to mean no harm, in the next they say they can get along with the present twenty-foot channels in the lakes.

I say that the very fact that these people are trying to rush this proposition through upon the assertion that it only involves $250,000,000; upon the superficial examination that they have made; upon the assertion that it is not necessary to consider the deeping of the channels of the Great Lakes, that fact indicts their good faith. It shows that they are not willing to have the facts examined. It shows that they are trying to commit this government to something that neither they nor anybody else has computed.

Now, then, I assert that a thirty-foot channel is the very minimum that anybody would suggest. What does that mean? It means deepening the lake channels and harbors to thirty feet,

Why didn't they make a study of that? Governor Allen may say I made a statement that that subject had not been investigated and he caught me up in a speech that he made afterwards and called my attention to the fact that army engineers, I think in 1905, did make an estimate. They did. In 1905 or 1906 they made an estimate that it would cost $25,000,000 to deepen the channels of the Great Lakes to twenty-five feet. They didn't say how much it would cost to deepen the harbors correspondingly and the approaches to the harbors. They said that it would cost many millions more, but that the project was so indefensible —that is not their word—that they did not make the estimates. How much would it cost to deepen these channels and harbors to thirty feet? I do not know. Governor Allen does not know. Nobody knows, because it has not been investigated, but, if it would have cost $25,000,000 in 1905 to get twenty-five feet, it would undoubtedly cost a hundred millions more to get the thirty feet. But that is not all.

If Governor Allen is to have his dream realized, you have got to do something else besides deepen the channels. Your terminals are provided for the particular class of business that they handle. Your terminal, your freight-handling machinery, provided for that particular kind of tonnage, coal and ore and what packet business there is, has been built up along little rivers in your harbors which would be wholly inadequate for ocean commerce. If the Governor's dream is to be realized, you have got to build at your lake harbors great outer works, great breakwaters, and do a great amount of dredging. How much it would cost nobody knows, but you have got to construct these great outer harbors to provide for ocean shipping.

Now, I wanted to mention one other subject of investigation which has been entirely overlooked, and which is probably the controlling factor on the question of feasibility. I said that transportation costs and distances do not determine routes of trade. I had read Congressman Nelson's complaint that commerce still goes through the Port of New York, although, as you know, there is a differential, a railroad rate differential, in favor of the other Atlantic ports. Congressman Nelson thought freight goes to New York because the railroads go there. But you know that the railroads go to the other ports as well. That is not the reason. Now, let me tell you very briefly what this problem is—and it has never been considered by these gentlemen.

There are only four great ports of world trade—New York, London, Liverpool and Hamburg. How does it happen that there are only four? Because of transportation cost? No, it is because the great machinery of commerce, the great trade agencies, have their centers in those four places, from which they radiate to all the other ports of the world. This two hundred million tons that Governor Allen talked about is not made up of the bulky freight. It is made up of package freight, of small parcels that are assembled from various places. And, do you know that merchandise will go thousands of miles out of its way in order to reach a center of distribution like Hamburg or London or Liverpool or New York, and from there will be assorted and redistributed and sent again over the arteries of trade that center there? It takes years; it takes money, and immense sums of money, to build up the trade organizations which control routes of commerce. The fact is, that merchandise, at this very day, is shipped from Venezuela to New York City and then redistributed and shipped by rail right to the gulf ports, when they could have a water route directly from Venezuela to those ports.

Governor Allen complains because somebody has said that there was a route of a thousand miles. I suppose that somebody was talking about the route for the entire distance, either to Duluth or to Chicago from Montreal, but is he quite fair when he says that the narrow channels would be only thirty-five miles? Thirty-five or fifty miles—which was it? I have not computed all the channels, but the channel between Lake Erie and Lake Huron and Lake Superior and the channels of the St. Lawrence would run into hundreds of miles and not thirty-five miles. No doubt the Governor made that statement without intending to, but that is a bagatelle. The question is, assuming all of these other things, is there any reason to suppose that the machinery of business would be centered in these lake ports which has not yet been centered in other ocean ports? That is a matter for expert opinion of men who understand this problem. I do not pretend to understand it. Why does the Port of New York retain its commerce? Because the centers of distribution are there. Because these great trade agencies have been built up, with their connections in all parts of the world. New York retains her shipping against a great differential in favor of these other Atlantic ports, Norfolk and Baltimore and

Philadelphia and Boston. Why? It is because these centers of trade that I speak of have been built up there. Is there any reason to believe that the gulf ports would be able to establish—I mean the lake ports—would be able to establish such centers of trade if these Atlantic ports now are unable to do so?

But that is not all. Assuming for the moment—and I have had to assume—assume that, in a matter of transportation costs, these ocean steamers would enter the Great Lakes; assume that we have spent, on Governor Allen's admission, not two hundred and fifty but five hundred millions on this project; assume, in addition, that the lake cities had spent anywhere from one to two hundred millions apiece to improve their terminals; assume that the railroads could be induced to spend the millions necessary to coordinate the terminal rail facilities with the water facilities; assuming all that, what reason is there to suppose that the lake ports—and there are some narrow channels—could build up these great trade agencies? I say that that must be made the subject of expert study.

DOUBTFUL AND UNWISE PROJECT [1]

New York is against the St. Lawrence project because it regards the scheme as economically unsound, commercially futile, and, in an international sense, politically unwise. It believes that the improvement of the inland waterways of the United States should be fully accomplished before embarking on a venture in a foreign country.

If the people of the Dominion are desirous of securing a greater highway for commerce through their own territory than now exists, they should be permitted to proceed with the task without opposition or aid from this side of the border. They should display the same independence and enterprise that was manifested by the state of New York on a similar occasion.

The enterprise is unsound from an economical standpoint.

The vessels commonly in use on the Great Lakes are of special type. They are unsuitable for general ocean use and could not secure ocean classification. They are inadequate to make the voyage across the seas. The dream, therefore, can be fulfilled only by ocean steamers plying the lakes.

[1] From article by Charles L. Cadle, New York State Superintendent of Public Works. Nation's Business. 10 : 22-3. March, 1922.

The cost of such operation would be prohibitive. Assuming that a large ocean steamer could make the long passage through the restricted inland channel without danger to itself, its rate of speed must necessarily be limited. The length of time consumed in such passage would materially reduce the profits of the trip. As to the cost of operation, it must be realized that the crew of an ordinary Great Lakes steamer consists of thirty men, while that of the ocean vessel is fifty men.

The lake boat carries her full cargo on an ordinary Great Lakes draft of nineteen feet. The ocean vessel can be operated only to two-thirds of her capacity on such draft, thus nullifying one-third of her efficiency. As part of the overhead and operating expense, the insurance rate is no mean factor. The average cost of a lake freighter of ten thousand tons capacity is $400,000; that of an ocean steamer of the same tonnage, built during the war, is about $1,500,000. To protect the owner of the lake steamer against loss, an insurance premium of $15,000 would be ample; on an ocean steamer the premium would run from $45,000 to $50,000. It will thus be seen that, even with a clear passage provided, the earnings would need to be enormous to attract ocean steamers to the Great Lakes trade.

We see no indications of large earnings. Assuming that cargoes for export were available from the western ports, the higl cost of operation would militate against the low freight rates even on the eastbound cargoes, and unless westbound freight could be secured in equally large quantities the result would be a ridiculously high transportation cost or the withdrawal of the ocean ships from the trade. They would need to depend almost entirely on imports, and import business in sufficient volume does not exist, nor is it indicated for the future. Cargoes from intermediate ports could not be secured by the westbound ocean steamers for the reason that the lake vessels would still be in commission and, since their operating cost is low in comparison their competition could not be met. An abundance of one-way traffic could not support the operations.

Attempts in the past to design a "jack of all trades" steamer have failed. Conditions of ocean navigation differ vitally from those of the lakes. Any labor expended to produce a craft for effective operation on all waters will result in a nondescript vessel efficient nowhere.

The most direct and convenient route, plainly marked by

nature from the Great Lakes to the sea, lies through New York and the engineering and construction ability of the Empire State has made it a splendid avenue for commerce. From Duluth the distance to Montreal is thirteen hundred and fifty-four miles, and to Liverpool forty-four hundred and six miles. From the head of Lake Superior to the straits of Belle Isle on the Gulf of the St. Lawrence is over twenty-five hundred miles, and from the straits of Belle Isle to Liverpool over twenty-two hundred miles. This mileage is tremendous for an ocean steamer to accomplish carrying but two-thirds of her cargo capacity one way and little or nothing the other way. We therefore regard the scheme as economically unsound.

We contend that commercially there is no necessity for the proposed new waterway. We believe the existing channels are sufficient for all purposes. By means of the barge canal system of New York State, vessels of a capacity of twenty-eight hundred tons may pass from Lakes Erie and Ontario to the ocean. A craft of different type desiring to reach seaboard by the northern route may make use of the present channels to Montreal.

The demand for a ship canal cannot be based on the present necessities of commerce. The New York Canal alone is physically capable of transporting twenty million tons of freight annually and this should accommodate all of the grain the west has for shipment. During the season of 1921, large motor ships have plied the canal waters carrying cargoes from Duluth to New York without breaking bulk. The canal has a minimum depth of channel of twelve feet.

Large grain elevators are being built at the ports of New York and Oswego. It is the policy of the state to continue the elevator construction until all needed facilities are available. This construction will be in addition to floating elevators already in use in New York harbor. Every inducement is being offered for the flow of commerce from the west, and until these facilities are used to the full there is no logical basis for a demand for a different or larger waterway.

It is certainly not good business sense to discard one transportation instrumentality by the building of another until the inability of the existing route has been fully demonstrated. If the commercial development of the future should actually prove the inadequacy of the present inland channels between the Great

Lakes and the sea, and experimentation with a ship canal was desired, routes through the state of New York, or to the Gulf of Mexico by way of the Mississippi River, should be considered before the passage to the Gulf of St. Lawrence is decided upon.

It must be remembered that the climatic conditions affecting the Canadian region are severe. The winters are long and the navigation seasons too short to warrant the tremendous expenditure. During 1921, navigation on the present St. Lawrence River channel was closed in the latter part of November, while boats moved through the New York State canals as late as December 23.

The proposition that the people of the United States contribute to the building of a waterway outside its borders is a bold one. It seems to be the more audacious from the fact that, to enjoy the benefits which the proponents of the scheme promise to the American cities on the Great Lakes, hundreds of millions of dollars in addition to the nation's share in the project would have to be expended in improving the city harbors to make them available for the ocean steamers pictured in the dream.

Then, too, it is a decided innovation in international affairs It is probably the first time in history that one nation has been asked to take part in a movement which has for its purpose the diverting of commerce through another country to the detriment of its own ports. The idea is altruistic in the extreme. From the dawn of civilization, the rivalry between the nations of the world has sprung from business competition and wars have been fought to settle controversies growing out of the questions involved. And yet, in the matter at issue, the people of the United States are seriously urged to meet at least 50 per cent of the cost of creating in a foreign country what is predicted will become an enormous commercial asset.

In an international sense the project is politically unwise. War has not yet been abolished, and this country's trust and confidence in the future must indeed be perfect to warrant its taking part in a work which would throw open a path for the warships of a possible adversary direct to its vulnerable interior. It is a military adage that the nation which controls the mouth of the river controls the whole stream.

The arguments offered as to immense water-power development possibilities have no bearing when a commercial highway

is the subject of consideration. And, when it is realized that 70 per cent of the route will be entirely in Canadian territory and 30 per cent on the international border, it will be seen that the share of the American people in the water-power development will not exceed 15 per cent of the total. The location of such 15 per cent is such as to minimize its importance to the industrial regions of the United States.

PROPOSED GREAT LAKES-ST LAWRENCE DEEP WATERWAYS [1]

United States' Experience With Waterways

Before embarking upon another expensive waterway project, it may be well to look into the history of the waterways of the United States for the last fifty years. The United States Government has expended around $100,000,000 on the Mississippi, and aside from the traffic now carried at a loss by government barges, river boats have all but disappeared from this great waterway. The government is bringing to a close a $100,000,000 experiment on the Ohio River, with very discouraging prospects. New York State has expended about $140,000,000 on a barge canal which is doing only a fraction of the business that its advocates predicted. After years of agitation the United States Government was persuaded to build the Hennepin Canal in Illinois. The same extravagant predictions which always attend campaigns for the expenditure of public money for waterways were made regarding the service that this canal would perform, but none of the predictions have materialized and the canal has scarcely any use. In every instance, the advocates of these great public expenditures convinced themselves and others that the waterway would give cheaper transportation, and perform great public service. With the sole exception of the Great Lakes, the traffic on all of our inland waters has diminished to a mere fraction of its former volume, and this in spite of enormous expenditures of public money. Moreover, with the exception of the traffic in three commodities, the freight carried on the Great Lakes is small in amount and is declining. Those three commodities are iron ore, coal, and grain, all bulk commodities

[1] From article by Florence Whitbeck, Madison, Wisconsin. Journal of Geography. 21 : 57-65. February, 1922.

carried in cargo lots for long distances and loaded and unloaded by specially designed and highly efficient machinery. Iron ore and coal form 95 per cent of the Great Lakes traffic. These bulk commodities are shipped by water because the service by water for such traffic is superior to the service by rail, and the rates are exceedingly low. But the rates on miscellaneous freight are not enough lower than rail rates to attract any large amount of business.

The effect of the waterway on the development of the west, the reduction of distance, and the effect of the waterway on the relief of railway congestion are entirely dependent on the answer to one all important question: Can and will the St. Lawrence Deep Waterway actually be used by ocean vessels in foreign and coastwise trade, and will it be used enough to justify the cost?

The following slogan has been formulated by those interested in the deep waterway: "Make every lake port an ocean port." This is a catch phrase to arouse the interest of the lake ports. Experience in America, in Great Britain, and in all maritime countries shows that the carrying out of such a scheme is impracticable. Of our many good Atlantic ports, New York has more foreign commerce than all the rest of the ports put together. In England, two ports, London and Liverpool, each carries on more foreign trade than all the others combined. The tendency the world over is to concentrate the foreign trade of each country at a few ports. By such concentration, far better service, cheaper rates, more frequent sailings, and greater availibility of cargo are obtained. Therefore, at best, only one or two of the lake ports could expect to attract ocean vessels to an extent that would give to shippers the prompt and reliable steamship service without which no port is attractive to shippers. Every important port on the lakes would, however, clamor for government appropriations for the enlarging of its particular harbor. At present none of the harbors is deep enough to admit the large ocean vessels which will be able to use the improved St. Lawrence. Twenty-seven harbors on the lakes are improved for vessels drawing from nineteen to twenty-two feet at ordinary stages. About forty-five harbors of less importance are improved to a depth between fourteen and nineteen feet. Practically all the harbors admit boats drawing fourteen feet. The Federal Government alone has spent on the seven largest lake ports from $2,500,000 to over $8,000,000 each. Added to

this are sums spent by state, municipality, or corporations ranging from $200,000 to over $8,000,000 each. Buffalo, for example, has expended up to date $15,000,000 on the improvement of its harbor.

It is needless to say that most of the smaller lake cities can never attract enough ocean traffic to justify the perfecting of their ports and terminal facilities.

This leads to the fact that the St. Lawrence waterway is closed for nearly five months of the year. The Welland Canal limits the open season to about two hundred and thirty-eight days, or 7.4 months. It is doubtful whether an ocean line ship can afford to carry on lake to ocean traffic seven and one-half months of the year, then break off and establish new routes, new schedules, and generally rearrange plans for four and one-half months, and later again resume the lake-ocean route. In the case of the tramp ship as a lake-ocean carrier, the limited season would probably have a less serious effect.

The heavy fogs and ice are a source of danger to vessels sailing from Montreal. A comparison of ocean insurance rates and Great Lakes-St. Lawrence rates shows that these dangers are a real factor. Shipments from Boston and New York to Europe have a rate of about 12½ cents to 15 cents per hundred, which covers for a year. For shipments from Montreal the rate ranges from 22½ cents in the summer months to 50 cents or higher in the fall months. Rates on the Great Lakes, including the St. Lawrence River, to Montreal vary on different commodities, and perhaps, in comparison with the above rates, one might figure them in the summer at 25 cents increasing to at least 50 cents in the fall. *The geographical location of this waterway so far north is a condition seriously handicapping its usefulness.* This it seems has not been sufficiently realized. It must also be taken into account that the outlet and inlet of this waterway is not in our own country or under our sovereignty, but is in a foreign country.

It is quite customary for persons interested in some new project to attach to it, as an added inducement, some allied project. This is the case with the proposed St. Lawrence waterway. The waterpower project might be called a rider to the waterway, and too much hope should not be put in the waterpower. It is granted that there seems to be a future market in New York and Ontario for a certain amount of hydro-electric power,

provided the price is low. The competition with steam generated power makes a low price necessary.

There has been a tendency to exaggerate the quantities of waterpower capable of development in the St. Lawrence River. The ice menace in the case of the St. Lawrence is of fundamental importance. A report of the British Government gives the low-waterpower of the international section of the St. Lawrence River as eight hundred thousand horsepower, of which Canada and the United States is each entitled to four hundred thousand horsepower. In a Great Lakes-St. Lawrence Tidewater Association publication, the amount of power available is given as 1,764,000 horsepower on the international portion of the river. This estimate is over twice that of the British Government report. The Tidewater Association anticipates a transmission of this power for a radius of three hundred and fifty miles. A special government committee on waterpower development states that hydro-electric power is "now available in convenient form within a radius in some instances of up to two hundred miles." It is not a physical impossibility to transmit electric power greater distances, but the competition of local steam generators limits the practical distance of transmission.

These figures of the British and United States governments show that the estimates published by the advocates of the waterway are too high as to the distance of practical transmission, and also for the total amount of power available in the international section of the St. Lawrence.

The amount of waterpower available for the United States on the international section is four hundred thousand horsepower, and according to the value per horsepower given by the advocates of the project would yield $6,000,000 annually. This represents, at the present interest rate of 5½ per cent on government bonds, an investment of $110,000,000. The estimate for the United States' share in the waterway is $130,000,000. Thus the annual income from the hydro-electric plants, provided all the power were sold, would not be sufficient to pay even the interest on the original investment, much less to pay for the maintenance of the waterway or for the original cost. Moreover, it would be many years before there grew up a demand for all the power. Not until the present year has even the developed power of Niagara been harnessed to its full capacity as stipulated in the treaty between the United States and Canada.

Thus the waterpower argument which at first seems a strong argument for the waterway is not convincing, and for several reasons: (1) The waterpower development is a rider to the main project. (2) With an immediate market for the total amount of waterpower available the annual income would not pay even the interest on the cost of the waterpower. (3) There is not an immediate market for the total available waterpower, and will not be for a long time to come.

It is not at all clear that the combined benefits derived from the limited use of the deep waterway as a waterway and as a source of waterpower would be commensurate with the necessarily large expenditure, and these projects nearly always cost much more than the highest preliminary estimates. Nothing in our waterway history justifies full faith in the success of this proposed, very expensive project.

SHOULD FIRST LOOK AT HOME[1]

While the physical conditions adjoining the boundary line between Canada and the United States are identical, the economic conditions are as different as the bases of the two governments are fundamentally different. Political and financial control vary in each country. Recognizing as we do the comity of joint action between the two nations in this matter, so far as that is practicable, nevertheless the United States must, as Canada itself is doing, conserve its own industrial development. It follows, then, that in the determination of this problem it must first consider the possibilities within its own confines before embarking upon outside developments.

Disregarding for the moment the enormous obstacles imposed by nature to this scheme, there are administrative features that must be considered. For example: Suppose that Great Britain and her Doninions are at war with Germany and Russia and we are not. Formerly when wars were waged largely by professional armies there was not much strictly contraband of war. Our experience of the past four years has shown that now almost everything is contraband of war when war is waged by populations. Suppose that we seek to send grain or iron in any form

[1] From Report of Committee of the Merchants' Association of New York on the St. Lawrence Ship Canal Project. In New York State Waterways Association. Papers. p. 93-4. November 11-12, 1920.

to the nation with which Great Britain is at war. Is it likely for a moment that Canada would suffer us to move grain or metal through that portion of the proposed waterway which lies wholly within Canadian territory? The answer must be clearly, No. On the other hand, suppose that we are at war with an Asiatic nation, whereas Great Britain still maintained peaceful relations with it. Again, is it likely that Canada would suffer us to move any sort of contraband material or bodies of men through that portion of the proposed waterway lying wholly within Canadian territory? Again the answer is obviously, No.

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