

THE FUTURE

OF RAIL AND WATER

TRANSPORTATION

LETTER OF  
JAMES J. HILL

READ AT  
THE LAKES TO THE GULF  
DEEP WATERWAY ASSOCIATION  
CONVENTION

CHICAGO, ILLINOIS, OCTOBER 7<sup>TH</sup>-9<sup>TH</sup>, 1903

# THE FUTURE OF RAIL AND WATER TRANSPORTATION

LETTER OF

JAMES J. HILL

Read at

THE LAKES-TO-THE-GULF  
DEEP WATERWAY ASSOCIATION CONVENTION  
CHICAGO, ILLINOIS

OCTOBER 7-9, 1908

The wording of my subject suggests at the outset the correction of an error actively propagated by interested parties for many years, and by no means yet rooted out of the public mind. The assertion that the railroad interests of this country are, or have been, hostile to the development of its waterways, that they have feared this cheap competition and sought to stifle river improvement, is one of the many cheap slanders by which a political campaign against railroad interests has been promoted in the past. It is absurd upon its face. The phrase, "The Future of Rail and Water Transportation," indicates their close correlation. I am glad to emphasize right here the fact that their relation is one of harmony, of helpfulness and of cooperation.

There is no reason from the railway standpoint why it should be otherwise. The trunk lines between

Chicago and New York were built and have created their enormous traffic in face of the competition of the Erie canal. St. Louis, one of the important centers of railroad business on this continent, has the Mississippi at her service. On the Ohio is some of the cheapest water carnage in the country. Its cost in 1905 is reported as .76 of one mill per ton per mile to move freight by river from Pittsburg to Louisville, and .67 of one mill per ton per mile from Louisville to New Orleans. Rates much lower than these are made on barge tows during the season. This is a cheap and convenient route by which the coal of Pennsylvania and Ohio may be moved to the factories of St. Louis. Coal can be shipped profitably by water if anything can. What is the fact? Of a total of 8,743,047 tons of coal received at St. Louis in 1907, just 155,470 tons were carried by boat. A large part of this comes from local mines. Every pound of the 1,155,645 tons shipped out went by rail. And of all commodities received at and shipped from that city, amounting in 1907 to nearly 48,000,000 tons, just 368,075 tons, or less than .79 of one per cent., were brought in or sent out by water. The chairman of the freight committee of the New Orleans Board of Trade says, in the last report of that body: "It is a well-known fact that the steamboats plying out of this port find a number of prominent railroad competitive points on their route. It is also, we regret to say, a positive fact that our boats are accorded but little business shipping out of this city to said points. Practically the only out-bound freights

that are shipped on the boats are such as cannot be delivered by a railroad." Galveston, with no such waterway at her doors, exported 14,172,071 bushels of wheat in 1907, as against 5,496,935 for New Orleans. Up to this time the river has been unable to compete with the railroad, notwithstanding its lower charges, because of the rapidity and certainty with which the latter carries and delivers freight. In the year 1855-6 the domestic exports from New Orleans amounted to \$80,000,000, and were practically all carried by water. Not in recent times has the commerce of the lower river reached \$3,000,000, although the total imports and exports of New Orleans in 1907 were over \$200,000,000. These figures expose the absurdity of the theory that the railroads need feel either jealousy or fear of the waterway. I have shown the failures of certain waterways as competitors of rail lines. Equally interesting is their experience with a waterway which is a glorious success and already the most wonderful thoroughfare for steam craft in the world. On the Great Lakes 97,000,000 tons were carried last year. The volume of lake commerce is always growing. The registered tonnage of the "Soo" canal in 1907 was over 44,000,000 tons. Over 60,000,000 tons passed the Detroit river in 1906. The ore alone carried last year by the lake route amounted to over 900 pounds for every man, woman and child in the United States. The tonnage passing through the Suez canal in the same year was but 14,728,434. But while the phenomenal growth of lake business and reduction of the lake rate, which was

22.36 cents per bushel by lake and canal from Chicago to New York in 1867 and 6.64 cents in 1907, have taken place practically within the last twenty-five years, the railroads running west and northwest from Buffalo and Chicago have not suffered. On the contrary, in this territory traffic has increased with amazing rapidity; and the capacity of the railroads is taxed to handle business that cannot or will not use other routes.

Every intelligent railroad man knew this long ago. He dismissed fear of the waterway as a competitor; not because it is either unimportant or powerless, but because the two carriers are supplementary instead of mutually destructive. He foresaw the day, when under normal business conditions the railroads would be unequal to the work demanded of them; when the assistance of the waterway would be valuable, both as a carrier and as tending to relieve congestion by increasing the number and extending the geographical and necessary distribution of terminals. And he has worked to that end. You cannot find a man eminent in railroading in this country to-day who is not also an ardent advocate of waterway improvement. Let us start right by dismissing this bogey of envy and baseless opposition. Senator Knox has stated the case correctly in these terse words: "European experience has established the law that with waterways carrying the slow and heavy freights which most congest the railways and on which their return is most narrow, the growth of industry and population more than compensates them in the growth of their high-class freight, express, mail and passenger traffic."

Understanding, then, that railroads and waterway are to work together for the development of this country and the betterment of its people, how can each be aided most in discharging its vast and valuable functions in the national economy? I have already stated on different occasions the determining facts bearing upon the future of railroading in this country. The passage of time only intensifies the difficulties of the situation. Two years ago I pointed out that, in the ten years between 1895 and 1905, the railroad mileage of the country had increased but 21 per cent., while the passenger business had grown 95 per cent, and the freight business 118 per cent. The latest report of the Interstate Commerce Commission carries an even graver warning. By the decade ending in 1907, the increase of mileage as compared with 1897 had crept up to 24.7 per cent.; but in the same time the increase of passenger business had leaped to 126.1 per cent., and that of freight trade to 148.7 per cent.

The country was saved from a complete traffic breakdown only by increasing operating efficiency after it had already been raised apparently to the limit. Density of traffic might have been thought to have reached its maximum in 1906 when every railroad performed prodigies in order to do the work required of it. Yet the increase of density in 1907 on the entire railroad system of the country was 69,718 freight tons for every mile of line, or about 20 tons per mile for every day in the year. I have for years been urging that the building up of a transportation machine commensurate with the

growth of the country should not only be permitted but encouraged in the only two possible ways: First, by encouraging capital to invest in railroad construction; instead of scaring it away by hostile and unjust legislation; and, second, by a comprehensive and rational system of waterway improvement. There is no other way now, nor will there ever be, by which the business of the country can be done.

As to the first, the country has chosen another method. It has thought best to restrict still further, by state and national legislative action, the legitimate powers and profits of railroad enterprise. Not only has it effectually checked investment, but it has brought about a business reaction from which, though it has now endured a year, the country is still suffering. We cannot measure the amount of the damage until the returns for the fiscal year 1908, not yet complete, are in. But we do know that reports to the Interstate Commerce Commission between October, 1907, and January, 1908, showed a decrease in earnings per mile for the railroads of the country of 31 per cent., and a rise in the ratio of expenses to earnings from 67 to 76 per cent. We know that half a million railroad employes, directly or indirectly, lost their employment. We know that every line of business and every section of the country has suffered; that our foreign trade for the first six months of 1908 fell off over \$290,000,000 as compared with the first half of 1907; that for these six months the traffic on the Great Lakes in 1908 was only 42 per cent, of that in 1907: that a congestion of

traffic has been succeeded by thousands of miles of empty cars. System after system has reported losses in net earnings running into millions. Even in the good times of the year ending June 30, 1907, the increase of operating expenses was \$211,638,543, a growth of 13.7 per cent., while net earnings, or the return that capital had to divide, increased but \$51,701,868. This year's figures, as a result of a multitude of hostile laws, prescribing new and expensive methods of accounting, requiring more costly modes of operation, shortening the hours of employes and reducing rates, all of these increasing expenses and cutting down income, will make the worst showing seen since the years of national railroad disaster. If European charges had been applied to American traffic in 1907, instead of our own, it would have added \$1,400,000,000 to the American freight bill and to the railroads' income.

The average man, familiar only with what has been done in his own state, has little conception of the aggregate results of the last few years in frenzied railroad legislation. Within the last three years twenty-five states have enacted car-service laws: twenty-three have regulated train service and connections; twenty-two have fixed maximum passenger rates; nine have enacted maximum freight rates; thirty-six have regulated the general corporate affairs of common carriers. Yet in the twelve years before this only four statutes were added to the list of those prescribing maximum rates and fares. While, in these last five years, fifteen state railroad commissions have either been created or re-



ceived large extensions of power, it is in the held outside of this that legislative activity has been most pronounced and destructive. Within that short period thirty-three states have enacted a total of 334 laws regulating railroads within their jurisdiction, and nearly all of these laws have been enacted without investigation or knowledge of their effect.

It is perhaps needless for me to say that if this were to continue, the future of railroad transportation would end in the destruction of the business of the nation. Fortunately we have reason to believe that saner counsels will prevail. Already the touch of misfortune has convinced many of the suicidal folly of destroying the interest which, next after the cultivation of the soil, is most important in the whole country. This carnival of legislative wrecking has also demonstrated the necessity of substituting federal for local legislation. In practice, it is evident that the through rate can never be more than the sum of the locals; and that these added together will constitute the through rate, although the interstate Commerce Commission may have declared a higher rate reasonable and ordered it into effect. There can be but one authority over the railroads. No subject can serve two masters. The greater cannot yield to the less; nor the interstate traffic which constitutes from 65 to 97 per cent, of the total over large portions of the country accept directions from the comparatively trilling percentage of state business.

Regulative authority there must be. No railroad can object to that. But such supervision as the public

sees fit to exercise should be confided to one body; it must be consistent, as comprehensive in scope as the railroad system itself, and guided by the principle of justice and fair play to the shipper, the consumer and the railroad alike. Only thus can the more than \$14,000,000,000 invested in railroads in this country, the property of more than a million holders, be rescued from confiscation on the one hand and prevented from using improperly its vast power on the other. Only under safeguards against injustice inspired by demagogic attacks, and with assurance that the capital actually invested will be permitted to earn a reasonable return, is there any hope that railroad enterprise can secure even a portion of the five billion dollars or more required to build tracks and purchase terminals required for the traffic when business is not longer contracted or brought to a standstill by the fear of legislative aggression,

On the relation of water to railroad transportation, an excellent authority, Professor Emory R. Johnson, has stated the situation briefly in these words: "The services that inland waterways are to perform in the future will differ from those they have rendered in the past. Both the railroads and the waterways of the future are destined to be more effective transportation agents than they have been in the past. Although the railroad has reached a high degree of efficiency and has by no means reached the end of its technical development, the usefulness of inland waterways as a part of the general transportation system of the country will not cease to be important. Indeed, the value of inland

waterways will tend to increase with the advance of our country in population and industry. The development of facilities for public carriage has become increasingly important, and our industries will require both rail and water carriers for the adequate performance of the ever-enlarging work of transportation."

Here we strike the keynote. The future of the waterway is assured not so much as a competitor, but as a helper of the railroad. We have seen that, under ordinary circumstances, the river or shallow canal is not a competitor sufficiently powerful to wrest business from the railroad; that, on the contrary, it cannot hold its own. It has been assumed that there is some ulterior reason for this; and that when we shall have expended as much money as Germany, France and Belgium for the improvement of waterways, they will carry as large a tonnage. The fallacy of both arguments appears when railroad freight rates in the different countries are compared. In Europe these rates are nearly two to three times as high as those prevailing in the United States. The average charge per ton per mile on all the railroads of this country in 1906 was .748 of a cent. The average rate in Germany was 1.352, in France 1.428, in Austria 1.503 and in Great Britain and Ireland 2.160. The canal in Europe is an industrial necessity, relieving traffic from charges which it could not bear, and thus making commerce possible. The low rates of the United States render unnecessary the European system of shallow canals, and would make it unprofitable here. What this country now wants of

the waterway is assistance in carrying a volume of traffic grown too large, in times of national prosperity, for the railroads to handle with their present trackage and terminals. This presents a very different problem. Heavy freights along main lines of travel can profitably go by water.

The traffic of the country will need, as soon as normal conditions are restored by a return of confidence, all the assistance that waterways can give. It is fortunate that no public sentiment in their favor needs to be created. That educational work is done. The people favor the improvement of real rivers and harbors and the building of real canals. This body has done much to create and sustain such an opinion. The project of a deep channel from Chicago to the Gulf has enlisted national enthusiasm. More trade is calling for more terminals and ampler highways. The value of the waterway and the need of multiplied avenues of transportation are universally recognized. But the public is still at sea on the question of method. Where we are to begin the work, how prosecute it, how finance it, are questions on which doctors disagree. We need a plan of campaign; and this association should throw its influence on the side of a prosecution of the great undertaking according to scientific principles. We have appropriated \$200,000,000 since 1900 for rivers and harbors. All of this that has gone to the deepening of lake and ocean harbors valuable to commerce has been well spent. A definite end was aimed at and accomplished. Dr. Ramsdell has shown what this means in a recent

article in the Annals of the American Academy: "The larger the ship, the greater its carrying capacity and the cheaper its rates of freight. Vessels drawing twenty-eight to thirty-two feet and carrying 8,000 to 12,000 tons can and do carry freight very much cheaper than those drawing twenty-two to twenty-four feet and carrying 3,000 to 4,000 tons. The ocean rates to-day on the immense steamers plying at our great harbors, which have been deepened to thirty and more feet, are from one-third to one-fourth the rates of twenty-five years ago, when steamers drew only twenty-two to twenty-three feet; and this saving of 300 to 400 per cent, in transportation charges is directly due to the improvement of their harbors."

These results, however, have been obtained not by the mere spending of money, but by spending it in the right way. We must spend it in the right way on our navigable streams and our canals. It will be the deep waterway that helps business, just as it is the deep harbor that has built up trade and lowered rates by making it possible to run boats of greater tonnage. I said a year ago to the members of the National Rivers and Harbors Congress that they should work for a fifteen-foot channel in the Mississippi and that eighteen or twenty would be twice as good. If you have a waterway, you want it deep enough to do business. A barge that carries only 1,000 tons cannot compete with a box car. With a steamer carrying 10,000 tons you have beaten it. Twenty years ago the largest carriers on the lakes that could pass through the old "Soo" canal, with

its fourteen-foot lock, were about 3,000 tons. To-day an ordinary load is 10,000 or 12,000 tons. The canal has been deepened to twenty-one feet, and with what result? The commerce of the Great Lakes is one of the wonders of the world. Twenty years ago Duluth was a little town with a promising local trade only. To-day it is one of the great shipping ports of the world, with tin-limited possibilities of expansion. For 1905 the total tonnage of New York harbor, foreign and coastwise, was 30,314,062. For 1906 Chicago's tonnage was 15,638,051. That of Liverpool and Birkenhead in 1906 was 16,147,856, and London's in 1905 was 25,867,485. The government report for the year 1907 gives the tonnage of the Duluth-Superior harbor at 34,786,705, with a valuation of \$287,529,705. Deep harbors on the lakes, admitting the use of big freighters, have made such growth in all our lake cities possible. The first principle of river improvement, then, is that these shall be made deep waterways; real and not useless arteries for commerce.

What next? Our main mistakes for nearly a century are well stated in a recent article by John L. Matthews: "First, there being no large outlook on rivers and harbors, there is no connection between any two projects, and therefore no general benefit to the nation; second, there is no one whose business it is to enter into and carry out these projects, or who is certain of the money to do so." Study that concise presentation of the subject, and you will find your work cut out for you.

The practical starting point for the waterways of

the future is a working plan. The nation has wasted its resources and obtained little return, so far as our rivers are concerned, because its methods have been aimless. The amount and the assignment of appropriations have been, and still are, determined too much by political influence and local pull. A queer sentiment, akin to graft, makes the voters require of their representative that he obtain, to be expended in his district, a portion of each appropriation, regardless of the merits of the project to which it is to be applied. If he does not do this he is punished by political defeat. By this policy labor and resources are dissipated or thrown away. More than thirty years ago Congress adopted a plan for slack-water navigation on the Ohio River, and at the rate the work has proceeded it will be completed in 150 years. We have not a deep river channel in the United States, made such by improvement work, except where the jetties have scoured out passes to the sea. We must work on a different plan.

Waterways should be made as other great works are created. The first railroads did not begin in the heart of the country and end nowhere. They were lines between important centers and terminal points; and extensions, branches and feeders were added as needed. That is what waterway improvement needs. Locate your trunk lines first. Open a way to the sea by the biggest, freest outlet. Push the work as nature indicates, from the seacoast up the rivers. And this, of course, should be done with ample resources according to a general scheme which will include reservoirs on the

head waters of the main stream and as many of its tributaries as may be necessary to prevent floods and maintain a deep channel in the dry season; together with such canalization of the river, or canal construction parallel with its course, as will assure a sufficient and permanent channel for boats of the largest size during the season of navigation.

There would be general agreement, probably, that the lower Mississippi, from New Orleans to St. Louis, should first be opened to navigation; and that the deep-water connection with the lakes should come next. And it is as important that the order of these improvements be not reversed as it is that you do not set the water running in your bathroom before you have provided an escape pipe and a sewer connection. The Mississippi basin contains two-fifths of the area of the United States; more than half its population lives in States touching the navigable portions of the great river and its tributaries, and its products feed the world. We have really done nothing permanent yet to make it a navigable river. Protection of caving banks, revetment, dredging and snag-pulling are only temporary expedients. The river is not and cannot now be used as a carrier ought to be if it is to play a part in national transportation. In 1888 there were 3,323 boats and barges, carrying 597,955 tons of freight, besides lumber and logs, arriving at St. Louis. In 1907 there were 1,330, carrying 289,575 tons. The departures in 1888 numbered 2,076, with 510,115 tons; in 1907 they were 931, with 78,500 tons. There is small reason to wonder



at the decline when the government record of river stages shows the lowest gauge, which, of course, governs the whole steamboat business, to have been four feet and three-tenths in one month of 1907, and for six months to have been no higher than eight and one-tenth feet at St. Louis. Yet in the last forty years the government has spent \$250,000,000 on the Mississippi and its more important branches.

It is of no use to improve a river or its tributaries until there is a sure outlet. Mr. Raymond S. Spears, in the September number of the *Atlantic Monthly*, sets forth the facts about improvement of the lower Mississippi so clearly that I shall quote his statement here; 'Perhaps there is no fact regarding the attempts to make a tame and navigable channel of the Mississippi more interesting than the one that contractors and boomers demand that the river itself be controlled, at a least possible cost of \$200,000,000. Between New Orleans and Cape Girardeau there are hundreds of miles of caving banks and rolling waves of sand to be matted and jettied, in order to secure a permanent depth of fourteen feet throughout the channel course. A canal dug down the river lowlands would reduce the distance from over 1,000 miles to less than 600 miles. The cost of dredging a canal down the bottoms, putting in the twenty-five or thirty necessary locks and rights of way, would amount, all told, to less than \$75,000,000. The canal would, at one stroke, solve the question of draining the St. Francis and Tensas bottoms. It would reduce the cost of maintaining a navigable channel of

fourteen feet from \$10,000,000 a year to less than \$1,500,000, and it would cut the time required to secure a fourteen-foot channel from an uncertain number of years to two or three years."

By this means, and by completing a deep canal from Chicago to the Mississippi, we may establish a central north and south water line. For east and west business we have already the Great Lakes; which must be supplemented by a true deep waterway along the line of the Erie canal, instead of the commercially valueless shallow ditch into which the people of New York State are now dumping \$100,000,000 in addition to what they have already spent. The Erie canal has been a failure as a common carrier competing with the railroads. In June, 1908, New York City received 1,690,075 bushels of grain by the all rail route, 1,133,900 bushels by lake and rail and 725,400 bushels by canal. For the six months ending June 30, 1908, the all-rail route carried to New York 32,489,837 bushels of grain and flour, the lake and rail 8,069,466 bushels and the canal but 1,469,100 bushels. The Canadian canal system from Lake Erie to Montreal, although it has its outlet at an ocean port, is a failure, because it is only fourteen feet deep and it will not pass a craft of sufficient length to carry a modern cargo. The lake route can be made wholly effective as a carrier from the interior to the sea only when joined to the ocean by a canal twenty-one feet or more in depth.

Everywhere else, in Europe, even in South America, they are building their canals and dredging their rivers

for channels from twenty to thirty feet deep. Before many years Canada, which has always kept in advance of us in canal construction, and has learned a lesson from her disappointment with the Welland system, may have completed the Georgian Bay canal and made it twenty-one feet throughout. Then the Canadian shore of Lake Huron will be scarcely more than one hundred miles further from Liverpool than is New York, If by that time there is not an adequate waterway from the lakes to the ocean through American territory, Canada will capture the business and do our carrying for export as well as her own. I think that a mere glance at the map, joined to ordinary familiarity with traffic conditions, will determine where the first work should be done, the first money spent, until we have our main waterway trunk lines completed. Upon these all our resources should first be concentrated. Then let the others be arranged according to their relative importance, and river improvement proceed by the same ordered system until all the channels in the country that are able to carry traffic have been made fit for commerce.

The objection to many of the programmes submitted for national waterway improvement is that they aim to cover too much territory at once; cater to the greed of every section and almost every State by presenting a cobweb of nine-foot, six-foot and even four-foot channels, whose construction is supposed to go forward simultaneously and most of which would be valueless to commerce if they were finished and pre-

sented to the public free of cost. This shows the baneful influence of the old way of making up river and harbor bills by bribing a worthless improvement, to secure its support for a worthy one. It has made much of our internal improvement a farce. It not only squanders money but it destroys perspective, confuses values, and transforms a patriotic impulse into one scarcely respectable.

In no other undertaking of similar magnitude is such a method admitted. If a city wants a park system, it employs a landscape artist to plan one as a whole, acquires and improves first those tracts that will be of most immediate use, and establishes a park board to see that the people's money is spent with system and purchases results. When the government went into the irrigation business, taught, I am proud to say, by the railroads, which at their own cost initiated the work and educated the people in a knowledge of its importance, the reclamation service did not divide its resources into little pickles of money and spend them in laying a few stones of a dam in each one of all the localities where lands were to be irrigated. It arranged projects in the order of their importance, engaged its engineers and spent its funds upon a few of them at a time, and thus is achieving great practical results. It would never have been permitted to do this if the direction of details had remained in the hands of Congress. Its liberty of initiative is an example of what may and should be done in the kindred work of river improvement.

As there is no other system according to which pub-

lic money can be spent wisely and productively on our waterways, so is there little hope of the embodiment of this one in practice until we have a body of trained men to consider permanently the problem of waterway improvement, inland and seaboard, as a whole, and to arrange the order of its details. We have had waterway commissions, of one kind and another, from time to time. We have such bodies now for single streams. Some of these have done admirable work; but the time has come when we must have the work systematized and controlled by a central body, like the Interstate Commerce Commission in its office and scope, created by federal statute and authorized to plan, select, contract for and prosecute waterway improvements. It must be permitted to use annual appropriations according to its judgment, and transform our system into a scientific method before we can get real waterways, or escape from the vicious circle of log-rolling appropriations.

When we arrive at the subject of appropriations, at the question of how and to what extent money shall be provided for this vast undertaking, we have touched the vital nerve center of any large enterprise, and the danger point of this. Some of the more enthusiastic advocates of waterways have made the mistake of urging that the national credit be pledged to unheard-of amounts in order that we may complete the whole work at once. It is a reckless, foolish, and I may almost say, a criminal policy. One bill before Congress recently proposed to appropriate at once \$50,000,000 for the

work, and authorized the president, whenever the funds in hand fell below \$20,000,000, to sell bonds enough to raise them again to \$50,000,000 and repeat this process indefinitely. This would take the limit off altogether, and make waterway expenditure equal to the pleasure of the executive and the power of the nation to borrow. Others have proposed total appropriations ranging from \$500,000,000 to \$1,000,000,000, the money to be obtained by issues of bonds to that amount; claiming that the value of the work justifies borrowing and that it will repay expenditure many times over. Against such wild schemes for blood-letting of the public credit every good citizen should protest. The men who would borrow and spend lavishly may mean well, but the signboard where their road diverges is marked plainly, "disaster."

Let me recall to you the movement for the conservation of our national resources that has lately assumed large proportions. The federal power and the executive of every state have been enlisted, without a dissenting voice, for the adoption and enforcement of policies that will prevent in the future such waste of our forests, our coal, our iron and the wealth of our land resources as has shamed our past. Upon that the nation is now fairly agreed. Now one resource, among the mightiest of all, has not been included in the list because it is not material, but intangible. I refer to the national credit: that potent force to which we appeal in times of war or other great national crises, and which should be reserved for issues of national life and death. I need

not remind you that our public credit, though vast, is not inexhaustible. Many of us have seen the day when it was strained to the breaking point. None of us knows when we may need again to rely upon it, and when its strength or weakness will determine whether the nation is to live or die. Of all our resources, perhaps, this one should be guarded with most jealous care; first because of its relation to national existence, and second because we can never know in advance where exhaustion begins. The earth and its products tell us plainly about what we may expect of them in the future; but credit is apparently unlimited at one moment and in collapse at the next. The only safe rule is to place no burdens upon it that may be avoided; to save it for days of dire need.

Only as people give up their money for anything is their judgment of its worth and necessity to be trusted. Only then can economy and honesty in expenditure be expected. The states, counties and cities of this country are staggering under a colossal weight of debt. It is always on the increase. One hears much of making posterity pay its share for desired improvements; but nothing of our obligation for improvements of the past which we are enjoying, and toward which we stand in the relation of posterity ourselves. Much of the extravagance and corruption so often accompanying the construction of local public works springs from the carelessness incident to the spending of borrowed money. If the people had spent each year only what they provided by taxation, they would have had as many necessary improvements for a fraction of their cost in bonds.

And freedom from heavy interest charges would enable them now to spend at a largely increased rate. The unwise pledging of public credit works harm in both directions.

If we once embark on this policy in national affairs, where the connection between the appropriating power and the tax collector is so loose and little realized, we shall scarcely stop short of national bankruptcy. What has happened to our forests will befall our credit; and the nation be left stripped of her last defence against the day of possible extremity. We have made a beginning. The first proposition was to pay for the Panama canal as it was built, out of current revenue. But a bond issue is easier than an increase of taxation. Our ordinary national expenditure, prodigal as it is, admits one apology: the people actually furnish the money, and when they get tired they can stop it. Introduce the practice of meeting the cost of this popular undertaking by issuing promises to pay, and we should soon be spending several billions yearly. This is the inexorable law of public finance, as of private business. The friends of waterways should be the last to dig a trench which would engulf the nation in a sea of debt.

Look at it merely as a business proposition. The interest on \$1,000,000,000 at four per cent., if such a sum could be obtained by the issue of bonds at that rate or at any rate, is \$40,000,000 a year. The largest demand made by the waterway movement as a whole has been an annual appropriation of \$50,000,000; and this is all that can be spent profitably. There is thus



only the trifling difference of \$10,000,000 a year in cost between the policy of cash and that of credit; but by the latter the annual contribution must continue until the enormous principal of the debt is paid, while the former buys something, pays for it and enjoys it and has money in pocket from next year's labor to pay for another step forward. The country is perfectly able to provide each year all the funds that can be spent wisely on its waterways in that year and bring in value received. This is its only security against the waste of public resources common to all liberal drafts upon the public treasury. Turkey, one of the richest countries, inhabited by one of the bravest and most warlike peoples in the world, lives in domestic corruption unspeakable and maintains a show of national existence only through the scornful tolerance of wiser and stronger nations, because it owes more money than it can ever pay. Search history and see what has been the fate of every nation that abused its credit. It is the same, only more awful in its magnitude and its consequences, as that of the spendthrift individual. And it will profit us nothing to conserve what we have remaining of the great national resources that were the dower of this continent, unless we preserve the national credit as more precious than them all. When it shall be exhausted, the heart of the nation will cease to beat.

The future of the waterway as a factor in transportation cannot be injured except by folly. The essentials for developing its highest possibilities are few and simple. Let me, for clearness, repeat them. First, a

permanent commission, authorized to expend appropriations in its discretion upon national waterways in the order of their importance. Second, a comprehensive plan including the classification of rivers and canal routes in the order of their value, including also such reservoir and slackwater work as may be required for the working out of each project to success. This plan in its essentials to be adopted by the commission at the outset and adhered to without interference by Congress or any department. Third, insistence upon the development of trunk lines first, and upon a depth that will make these real carriers of commerce, able to aid the railroads in their staggering task and to transport bulky freight expeditiously and economically. Fourth, a liberal standing appropriation annually for the commission's work until its plans shall have been carried out over the whole country; and a refusal to ask the pledge of the nation's credit for a single dollar of this, which is properly our work.

To stand for this, though it may demand local self-sacrifice and the postponement of local desire, is the duty of all of us as good citizens and honest business men. So may railroad and waterway, needing each other and both needed by the people, work together for the good of the people. So may the transportation problem that grows and complicates with our growth and with every artificial restriction imposed upon it, be solved by statesmanship and intelligent enterprise. You and your association and your meetings have helped to enlighten the public and to create the

wholesome sentiment in favor of waterway improvement that now prevails. Lend your influence toward turning this to valuable practical ends, to the establishment of the wise standards that I have tried to indicate, to the correction of past mistakes, to the prevention of yet more threatening errors in future policy, and you will have done more than is given to most men to do for the benefit of humanity and the development in prosperity and happiness of our country of our hope and home.