

Mechanical and Engineering Section.

"A Wheel In the Middle of a Wheel."

Waterway Legislation.*

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In the May number of the *Journal*, attention was called to the comparatively undeveloped condition of the waterways of the United States and the efforts which were pending to so modify the National policy that they might be improved more systematically.

With no uncertain sound the President has laid stress upon the necessity for regulation and relief of the transportation system of the country, stating that "The rivers of no other civilized country are so poorly developed, so little used, or play so small a part in the industrial life of the nation as those of the United States." He has appointed the distinguished commission, which presented its preliminary report February 26th, 1908, to the "First Session, Sixtieth Congress (Senate Document No. 325)," which report was submitted with a view of urging early action by Congress looking to immediate relief. A bill was introduced in the House of Representatives to perpetuate this Inland Waterways Commission, by its Chairman, Hon. Theodore E. Burton, and appropriating \$20,000 for its expenses in pursuing investigations, which bill passed the House with only two negative votes, but failed of approval in the Senate. In commenting on this defeat of so necessary a measure the "Engineering News" of June 4th, says editorially: "Is it possible that the Senators prefer the present lack of system, with its barter and sale, its log-rolling and its many opportunities for political manipulation?"

The question is left to be answered by the people. It would seem, however, that notwithstanding the great popular movement which has been held during the present session and the all-but

* Read by title.

unanimous demand for \$50,000,000 annual appropriations for waterways, the attitude of Congress is uncertain and action is deferred on the ground that the "public sentiment" will not justify such expenditures.

This is the more remarkable in view of the action taken by the great and enthusiastic Waterways Congress held in Washington, December 4-6, 1907, which was presided over by the Honorable Jos. E. Ransdell, M.C., of Louisiana, when the following resolutions were reported, "representing the sentiments of thirty-seven State and Territorial representatives:"

Be it resolved; First, That we earnestly urge the adoption by the Federal Government of a wise, liberal and comprehensive waterway policy that will provide for the proper improvement, within the next ten years, of the rivers, waterways and harbors of our country, the improvement of which *is justified** by present and prospective benefits to commerce.

Second, That without presuming to prescribe the engineering or the financial details of this great undertaking, this Congress strongly urges upon the Congress of the United States the importance of the *immediate adoption of a comprehensive plan of waterway improvement,** of the carrying on of the work by an adequate number of engineers, and of such liberal appropriation annually as will insure the early completion of such objects as may be undertaken.

Third, That we cordially endorse the action of President Roosevelt in appointing a special Inland Waterways Commission, being confident that the report will prove a source of accurate and valuable information to the American people. We further recommend that Congress enact such laws as will make the Inland Waterways Commission permanent, and will provide it with necessary authority for its investigations and recommendations.

Fourth. That this Congress cordially thanks President Roosevelt for the support he has given to its purposes, by his speeches, and by his treatment of the subject in his recent message to Congress.

Fifth. That we ask Congress to view the river, waterway and harbor appropriations not as the appropriation of money for current expenses of government, but as an investment in perma-

*The italics are the writer's.

ment improvements, bound to pay increasing dividends from year to year. Viewing these appropriations in this light Congress is fully warranted in authorizing an annual expenditure, beginning at the present session, of not less than one-tenth of the amount of money required for all the various rivers, waterway and harbor improvements already planned and approved by the engineers in charge or hereafter planned and approved, in order that the work may be carried to speedy completion, such appropriation to be not less than \$50,000,000 annually, and Congress is further warranted in authorizing the expenditure of the money as needed, and in providing for the same, if in excess of funds available, by a bond issue similar in character to that for the building of the Panama Canal, whereby part of the cost of these vast improvements will be spread over a succession of years, and borne by all who share the benefits. Signed, J. Hampton Moore, Chairman Committee on Resolutions.

Nearly two thousand delegates were present, representing all classes of interests and industries from all parts of the Union, and the feeling was very pronounced as to the *necessity for immediate action*, yet within six months of that date Congress has adjourned without passing either a river and harbor appropriation bill or even providing for the support of the Commission to prepare a definite policy for these vitalizing improvements.

Is the partisan, political aspect more potent than the urgent request of the business interests of the nation at this critical juncture?

Many local organizations have taken similar action, but suffice it to refer to the action of the National Business League of America, which at its meeting held May 25th, also passed a series of resolutions covering the larger scope of our public utilities for the consideration of which the first conference of the Governors of the several States was held at the White House from the 13th to the 15th of May. They read: "*Resolved*, That * * * (we) recommend the forwarding of the following economic public measure, of grave importance, as involving the future welfare of the American people.

First. Systematic conservation and reproduction of the forest reserves, for the perpetuity of our water courses, water powers, agriculture, industries and commerce, and for the prevention of disastrous floods and erosion of the soil.

Second. Reclamation of arid lands by irrigation and of swamps and overflowed lands by drainage.

Third. Equitable distribution of arable lands in small farms, to home builders only.

Fourth. Husbanding of oil deposits; of coal, copper, iron, and other products of the mine.

Fifth. Construction of better common highways from the farms to the mills and markets of the country, and creation of a comprehensive system of navigable inland waterways by the Commonwealths and the Nation.

Sixth. Cöoperation of art with nature to enhance the beauty of the landscapes, the nooks and by-ways and to create more healthful conditions for the people.

Seventh. Enactment of national statutes to adequately cover the measures herein recommended and repeal of all laws in conflict therewith."

This last recommendation, being paramount to any progress, should be considered first, as it involves the entire question of authority, jurisdiction, means and method. As the determination of these details have so long hampered the normal progress of our country it is of prime importance that a few fundamental principles be established in the hope that they may point the means to the end.

It is indubitably desirable that the organized, constituent bodies of the States and Nation should devote as liberal a percentage of their revenues to the creation and conservation of public utilities, to be leased and operated if desired under corporate management for a term of years.

It is unwise to attempt to centralize these great and multifarious operations under one extrinsic authority, requiring approval of plans, details and organization, or of appropriations from the national treasury, in a country reaching more than half way around the globe.

Experience has demonstrated the futility of such attempts by the failure of many urgent projects because of the impracticability of meeting the demands from all sections, for ample appropriations or by the opposition of hostile vested interests, fearing competition. Thus, a State or Nation undertaking to direct all industries would be overwhelmed in a short time and its machinery would be paralyzed.

There must be a careful segregation of the duties and powers of government, which are supposed to rest with the people from whom they are derived, so that they may be intelligently and promptly applied to the needs and resources of any locality as they may exist at the time.

This spirit of Government has been concisely stated by John C. Calhoun in his address to the Memphis Conference many years ago, when the nation was young. He said: "*It was the Genius of our Government, and what was to him its beautiful feature, that what individual enterprise could effect alone, was to be left to individual enterprise; what a State and individuals could achieve together, was left to the joint action of States and individuals; but what neither of these, separately or conjoined were able to accomplish, that and that only, was the province of the Federal Government.*"*

The safety of this policy which was pursued up to the time of the Civil War, will be seen by reference to the legislation of those ante-bellum days when there were no dominant industrial interests to check development. They present a striking contrast with the present failure to pass any bills looking to the relief of commerce or the restoration of our merchant marine, yet about \$400,000,000 are applied at the session just closed to the devastating art of war and its sequence, pensions, which latter item has been increased about \$20,000,000 at the recent session.

This failure to provide for waterway improvements or for the continuation of the Commission to consider methods of relief for our domestic commerce, is significant of the helplessness of Congress, where the responsibility is divided, hence the words of Senator Knox will bear repetition in view of the sequel: "When the Government assumed charge of the navigable streams of the interior it entered into a practical contract with the States and communities bordering these streams that their waterways would be improved to their highest capacity. The States were thereby prevented from improving the streams themselves.

"Corporate enterprise was forbidden to undertake the canalization of important stretches and fix the cost of their works and franchises on the traffic. The Federal Government has made its formal and deliberate declaration that it will do this work. That

*The Manufacturers' Record, April 30, 1908.

necessarily involves that it will make the improvements adequate to modern needs and possibilities. To do any less would be a mockery and breach of good faith."

The question immediately arises as to whether the "*assumption*" of jurisdiction over water lying wholly within a State, and without her consent, constitutes a valid contract? It would seem that, regardless of such legislation by some former Congress, many of the States have definitely ignored such a construction of the Constitution, and are expending large sums upon their own internal improvements, in accord with the authority specifically reserved by them when they ratified the Constitution of the United States. Then it was stated, Amendments, Article X:

"The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively or to the people."

The powers thus delegated are stated in Article I, Section 8, where eighteen specific acts are enumerated, amongst which are "(3) to regulate commerce with foreign nations, and among the several States and with the Indian tribes." The rights of the people are still further guarded by the Ninth Amendment, which states that "The enumeration in the Constitution of certain rights shall not be construed to deny or disparage others retained by the people."

Yet, under what is characterized as the "law of expediency," the functions of a centralized, extrinsic control have been gradually extended over all waterways, improved or otherwise, to such an extent as to have paralyzed local efforts, under the delusion that some day and somehow the Nation may provide the long-desired relief, and the Nation replies: "Not so long as there is not sufficient tonnage to justify an appropriation."

In this connection it is well to note that it was to prevent "rate-cutting" between the several States that the constitution was adopted, but not to construct lines of internal communication under Government control or by Executive authority, and that this idea was so firmly impressed upon the early Presidents that Thos. Jefferson in his Message to Congress of December 2, 1806, recommended that authority be vested in the Government by an amendment providing for the use of the public funds in certain cases—in the building of roads, improvement of rivers and for public education and other improvements; while President Mon-

roe vetoed a bill making appropriations for rivers and canals on the ground of its unconstitutionality. As will be seen later, however, the policy of lending aid to the States and corporations under them extensively prevailed up to about the time of the civil war, when the Government extended its jurisdiction over internal improvements and transportation.

RETARDATION OF NATIONAL RESOURCES.

The proposition to further extend the powers of the Government to divert the revenues to be derived from the water-powers of the States into the National Treasury, is shown by the several bills which were introduced at the last session, of which it is said, "None of them gives the Government the right to make a reasonable charge for the valuable privileges so granted, in spite of the fact that these water-power privileges are equivalent to many thousands of acres of the best coal lands for the production of power."

In this comparison of relative values it should be observed that the use of the water in a mill or factory, merely for the dynamic energy which it gives out, is an indestructible property, which is not impaired in the using, nor is the quantity of the water diminished by its temporary diversion through the flume or penstock of the mill. It flows on forever to the sea and it returns by natural agencies to the place whence it came, that it may bless the nations of the earth. It is now proposed to tax this Divine benefaction, thus adding to the cost of the operation of the power plants and their products and compelling the manufacturer to collect from the people the revenues he must return to the Government for the opportunities he may wish to utilize in his business. Thus an obstacle is to be placed "*in restraint of trade*" by charging for a franchise which is now running to waste and which might be utilized without impairment, for the benefit of humanity and the peaceful employment of labor, or the distribution of power to remote localities.

With the coal fields the case is entirely different. Their energy once consumed, ends in smoke and cannot be returned. Timber, however, has an inherent power of reproduction, and by conservative management may be able to replace itself, if protected from wanton waste and fires. This is now being done

largely by the States and the Government, under its most efficient Chief Forester, while it is notable that efforts to secure the great Appalachian reserve by National legislation, have thus far failed.

The enormous advantages possessed by the great water-powers of the country have not been appreciated as they should have been, because of the large sums invested in coal and timber properties and in the transportation of those products, and a tax on water-powers means a heavy draught on the coal and lumber, but their rapid extinction will ultimately compel the utilization of the ascendant power as a cheap substitute for many of the industrial operations of mill and factory. Probably no one agency will have a more beneficial effect in retarding the destruction of our coal and timber resources than the more general use of water-powers for long distance transmission, whether by electric or compressed air conduits. To this end *liberal legislation should be encouraged, and no unnecessary restrictions should be placed upon the utilization of these powers, either by the National Government or by the States.* Even where dams are built for the purposes of navigation, the power thus generated could be freely given to encourage the establishment of industries, from which the Government or State would derive its returns in other forms of taxation as at present.

THE POLICY OF PUBLIC WORKS.

In a comprehensive review of the policy of the Nation in reference to its waterways, "Shipping Illustrated" of April 4, 1908, remarks that according to the President, "No single agency has been responsible under Congress for making the best use of our rivers, or for exercising forethought in their development. In the absence of a comprehensive plan, the only safe policy was one of repression and procrastination." Yet it may be noted that many Boards and Commissions have been appointed from time to time, and very large sums have been expended in tentative efforts to better the navigable channels with results which he has declared to be inferior to those of any other civilized country—"largely negative." The policy of repression and procrastination continues—and the consistent plans are not formulated but left "to the whims of politics and the vagaries of the steering committees at Washington"—of which Prof. F. J. Stimson, in his analysis of the "*American Constitution*" says: (p. 90.)

"I would now call attention to the fact that the phrase 'Commerce among the several States,' one of the only three phrases in all the powers given to Congress which are not purely political, under the interpretation proposed by President Roosevelt, would alter our Constitution more radically than almost any amendment could do. It will cease to be purely political, but will thrust its hand between every man and his neighbor, between every man and his own property. * * * The States will lose control of most of their business affairs, will *lose the power to tax their own enterprises*, will see their courts shorn of their jurisdiction."

"Hardly any business will be so small, so local, as to be left to the State power to control. We shall all be under the Government of Washington * * * quite as completely and much more hopelessly than the English of the twelfth century were under the power of the royal chief justice of the Norman kings."

And as to the alleged necessity for applying to Congress for the right to make waterway improvements under this clause of the Constitution Prof. Stinson very clearly states:—

"No powers can be delegated by the United States to the States, or still more to the people. It is the other way about. It is the people of the States who delegate powers to the United States. Again * * * to relegate a political power to the States, misstates the principle of the American Constitution. The Nation can relegate nothing to the State. It is the State or the people that delegates powers to the Nation."

So that, falling back on the *lex loci*, which is as old as the Constitution itself, it is found that the right to make improvements in the waterways of the land, of chartering corporations under State authority, for this purpose, of charging tolls thereon or of selling the powers generated thereby, have ever been the inherent property of the States and their citizens, and they have never been relegated to the Nation. Any trespass upon these rights would be in violation of the sovereignty of the States.* Numerous legal opinions might be cited in support of both the law and the policy of such local control and development. The following is pertinent:

The early demand for deeper water in the Ohio River, at all seasons, led to frequent propositions for its improvement, and

*See Shipping Illustrated, 116 Produce Ex., New York, April 4.

many conflicting opinions were advanced as to methods and cost. In these the officials of the Pennsylvania Railroad Company took an active part, and in 1855 a system of canalization by low dams and restraining reservoirs with chutes was proposed, but the interferences from political sources were so great that it was concluded that it were "better to let the Ohio remain forever unimproved than, if improved, to be managed and controlled by partisan agencies." We fully concur in the opinion expressed by the Hon. Jeremiah Black of the Supreme Court, that the improvement should be made and managed by a company, to be formed of citizens under a charter approved by all the States bordering on the Ohio. * * * The general Government can well afford to make a liberal appropriation in consideration of being forever released from the present annual expenditures. The States immediately interested should do something and be entitled to a representation in the direction, and individuals would do the rest. The rates of toll should be restricted to such an extent as to afford no greater revenue than will suffice to keep the work in proper condition, and pay the shareholders moderate dividends.

In further illustration of the well-established policy of Government aid to States and corporations, the following extracts are taken from the able compendium of Hon. B. F. Frovel, of Georgia, relative to the proposed Atlantic and Great Western Canal, across the Piedmont plateau, which is again being urged as a short cut from the Tennessee River to the Georgia Coast.

In this report, submitted January 18, 1873, to the House of Representatives of the Forty-second Congress, Third Session (Mis. Doc., No. 52), he says: "Believing, as I do, that Congress possesses the right to appropriate money for such a national object, *the jurisdiction remaining to the States through which the canal would pass*, I submit it to your consideration. (House Journal 1823-24, pp. 19 and 20)" * * * It appears from the journals of that date that this object did receive consideration, and that these deliberations resulted in the following Acts:

April 30, 1824. Appropriating \$30,000 for the survey of canals and roads.

May 26, 1824. Authorizing Indiana to open a canal through *public* lands connecting the Wabash and Miami Rivers.

March 3, 1826. Authorizing a survey of a route for a canal connecting the Atlantic and the Gulf of Mexico.

April 14, 1826. Authorizing Pennsylvania to construct a canal through the public ground near the city of Pittsburgh.

May 13, 1826. Subscribing \$100,000 to the Louisville and Portland Canal Co.

May 18, 1826. Subscribing \$60,000 to the Dismal Swamp Canal Co.

May 2, 1827. Granting land to Indiana for a canal to unite the Wabash River with Lake Erie.

May 24, 1828. Granting land to Ohio to extend the Miami Canal from Dayton to Lake Erie.

March 2, 1829. Subscribing \$75,000 to the stock of the Chesapeake and Delaware Canal Co. and \$20,000 additional to the Dismal Swamp Canal Co.

March 2, 1829. Subscribing \$135,000 additional to the stock of the Louisville and Portland Canal Co.

April 2, 1830. Granting lands to the State of Ohio to construct canals.

February 12, 1831. Authorizing Alabama to contract for and construct a canal around the Muscle Shoals (on public lands).

May 29, 1830. Granting lands to the State of Indiana for the Wabash and Erie Canal.

May 2, 1831. Authorizing Florida to open a canal through public lands.

July 4, 1832. Providing for a survey of a canal route from St. Andrew's Bay to the Chattahoochee and Pensacola Bay and along the northern coast of the Gulf of Mexico.

March 2, 1833. Granting lands to Illinois for a canal to connect the Illinois River with Lake Michigan.

February 27, 1841. Granting lands to Indiana for the Wabash and Erie Canal.

March 3, 1845. Granting additional lands for the same purpose.

June 30, 1834. Granting lands to Ohio for the Wabash and Erie Canal.

June 18, 1838. Granting lands to Illinois for the Illinois and Rock River Canal.

April 10, 1866. Granting lands to Wisconsin for the break-water and ship canal.

August 26, 1852. Granting lands to the St. Mary's Ship Canal, Michigan.

March 3, 1865. Granting lands to the Portage Lake and Lake Superior Ship Canal.

July 3, 1866. Additional grants for the same purpose.

July 3, 1866. Granting lands for a canal to connect Lake Superior with Lac La Belle.

"Since then the Des Moines Canal, the Fox River and Green Bay Canal, the canal around Sauk Rapids, the Illinois and Michigan Canal, and other works of similar character have received Federal aid, either directly by appropriations of money or by grants of land from the Treasury. As early as 1809, we find that an appropriation was made for the opening of a canal from Lake Pontchartrain to the Mississippi as a defensive means. These several Acts, extending through every administration from Madison down to the present time, would seem to show that it has always been the policy of the Government to aid and foster these enterprises, as not only necessary and contributing to the National defense, but essential to our commercial prosperity."

The enormous land subsidies made to private corporations to encourage the construction of the overland railways serve to enforce this National policy, under which the rail transportation interest has been so carefully fostered that it has become the greatest in the world, but unfortunately the child has become the father of the man and has so far throttled his benefactor, the waterway, as to have almost destroyed his development, by centralizing the control of his growth and denied him the necessary alimentation from the National crib. To-day the policy seems to be reversed and to require a preliminary contribution from the localities desiring improvement before consent may be obtained in some instances even for the requisite surveys. The astounding result has been that under the old régime about 5000 miles of canals and improved waterways were constructed and in operation at a cost to the Government of less than \$15,000,000; while under the new it has expended more than \$550,000,000 on its rivers and harbors, while the interior canals and slackwater improvements have decreased in mileage about fifty per cent.

PROPOSED LEGISLATION.

The late congestion of the overland traffic, resulting in serious delays, has called for relief by water, and to this end numerous bills have been presented looking to a complete reorganization of

the system of conducting these works and the placing of their control on a more permanent basis under the National Government, but still subject to frequent changes of personnel and the distribution of an enormous patronage by the Executive Departments, without whose consent first being secured no such works may as a rule be undertaken.

A fair idea of the scope and power to be conferred upon the Executive by the Legislative Department and the manner in which the latter may be subordinate to the former, or the reverse, according to whether the issue may be an approval of plans, or of securing appropriations of sufficient amounts to be effective, may be seen from a brief digest of one of the bills to create a Department of Public Works, to which shall be transferred a number of the Bureaus from other departments, and to empower its Secretary, a Cabinet officer, to make investigations and reports, and "*only in so far as may be authorized by Congress, to carry out such plans and to construct and maintain the necessary works.*"

"That the skill and ability acquired by the energies of the Army shall not be lost to the Government, and that their services may be rendered the more valuable in time of war, provision is made whereby the President may detail officers of the Army, as well as employees and officials of other Executive departments, to duty in this one * * * that the officers of the Army shall not only have opportunity for the planning and erection of hydraulic works, but shall also have opportunity for actual work upon those branches of engineering which will most fit them for their duties as military engineers, namely, upon topographic surveys, the construction of embankments of earth and works of masonry, the construction of highways and the investigation of railway and transportation problems, as would be possible under this bill by assignment to the duties (of the civilians) in the Bureau of Waterways, Geological Survey, Reclamation of Coast and Geodetic Survey, of Mining Technology and of Transportation."

This would indeed be a fine school of practice for the training of experts in military engineering, but it might seem pertinent to inquire what is to become of the many duties pertaining to that Bureau, *ad interim*, when "it is stated by a prominent officer of the Engineer Corps that to properly carry on all the important work now assigned to that corps * * * the personnel should

be increased by at least one hundred officers at once, and this estimate is believed to be too small."

Among the existing bureaus or works proposed to be transferred to this department are the following: The office of the Supervising Architect of the Treasury; the Geological Survey; the Reclamation Service of the Interior Department; the Coast and Geodetic Survey of the Department of Commerce and Labor; the Bureau of Standards; the Superintendence and Care of the Capitol Grounds and Buildings; the powers and duties of the General Land Office in respect to surveys of public lands. There is to be created in addition a Bureau of Mining Technology, to test materials and investigate waste in mining operations; also a Bureau of Transportation, to investigate all matters relating to railway and waterway transfer facilities and the regulation thereof as to sites and location of tracks, grades, bridges, &c., and to exercise oversight as to the terminal facilities of ports; also the office of Public Roads from the Department of Agriculture, to coordinate the highways of the country with other transportation routes; also the duties now vested in the Inter-state Commerce Commission so far as it has to do with statistics, but leaving all of its judicial functions to another department; also a Bureau of Coordination to classify, tabulate, compile and publish all data relating to the operation and investigation of the various bureaus and offices of the department and to coordinate the works of the various bureaus with kindred works in other executive departments, especially with those relating to Irrigation, Swamp Lands, Reclamation, Water-powers, Prevention of Soil Waste and Erosion, Preservation of Forests, &c. It is also proposed that this bureau shall conduct investigations and oversee cooperative arrangements between the Federal Government and States, municipalities, corporations, &c., which may arise pertaining to the irrigation or drainage of lands, the investigation of mining industries, the oversight of terminal, trackage and wharfage facilities, erection of public buildings, &c. Provision is also made for an Assistant Attorney General and an Auditor for said department.

Such, in brief, is the proposed new element of an already complex Government, having within this department an independent bureau to regulate all related functions, with fiscal and judicial officers, executive and administrative chiefs, and yet unable to execute plans or works unless approved by the chief of the bureau,

the President of the United States and the Congress. To exercise civil power, largely under military control, yet not subordinate to the War Department directly, which powers have not been conferred upon the National Government by the States nor the citizens thereof.

It remains to be noted that this bill places the responsibility of appointing this small army of employees and officials upon the President, and the salaries range from \$12,000 per annum for the Secretary, down to that of the lowest employee. The several chiefs of bureaus may have "legal, clerical and special assistants, and such chiefs of divisions, senior clerks, clerks, junior clerks, under clerks, sub-clerical employees, professional and special employees, experts, &c., as may be authorized by law."

The governor of this complicated mechanism is to be the "Commissioner of Cöordination," with a salary of \$6000, and an "Assistant Director," appointed by the President, with a salary of \$4000, who will be the wheel in the middle of the wheel.

"GOVERNMENT BY COMMISSIONS."

Another measure, far less pretentious, was introduced to vest in the President the authority to appoint an Inland Waterways Commission "to bring into cöordination therewith the Corps of Engineers of the Army, the Bureau of Soils, the Forest Service, the Bureau of Corporations, the Reclamation Service, and other branches of public service related to waterways, and to appoint such experts and other persons and create such board or boards in connection therewith as the work may require, and to fix the salaries of all commissioners, experts and other persons employed under this Act until the same has been fixed by Congress." Such commission shall make examinations and reports, and "if after such examinations, survey and estimate such commission shall determine that any project for the improvement or construction of a waterway is practicable or desirable, it may, with the approval of the President and through the appropriate service construct or execute, or cause to be let, contracts for the construction of the same, &c.," *Provided*, that the necessary moneys therefor are available in the inland waterway fund. This fund is to be supplemented by contributions from States, municipalities, corporations,

&c., and from the sale of reclamation rights, water-powers and other available assets.

Thus all sections of the country desiring improvements of this class would be compelled to besiege the Commission first for examinations, surveys and reports, followed by appropriations, if endorsed, provided there were sufficient funds available for completion. How many years would elapse before a work of any magnitude would be installed can only be determined from past experience, which has demonstrated that from five to fifty years may roll away, and even then the work may not have been begun, because of the superior demand from other and more potent agencies, while projects of no public utility have been approved for political patronage.

The failure of all legislation affecting increased water facilities at the session just closed is evidence of the delays which beset the efforts to conduct such improvements from a single, central source with so many conflicting interests at stake. If the country is to keep pace with the demands for transportation due to its great output of industrial and agricultural products, it is imperative that some radical and liberal legislation should be speedily enacted to stimulate local initiative, as in the pristine days of the Republic.

WOOD PRESERVATION AND THE PROCESS OF PRODUCING CREOSOTE OIL.

One of the significant signs of the times is the awakening of the American people to the dangerous destruction of their forest wealth, and the necessity of a wise use of what remains of it. Undoubtedly, in the future the nation must utilize its forest crop less wastefully, both in the woods and in the mill, and must make provision for future crops; but that is not the only way to prolong the timber supply. If the service of the wood which is used can be lengthened, it will largely decrease the amount of timber which must be cut. And this can be done, by treating the wood with chemicals which will poison the low forms of plant life which attack it and cause it to decay. The growth of timber is slow, and when the dearth of it becomes pressing, a new crop cannot be grown quickly enough to prevent a time of severe shortage. Preservative treatment of timber has the advantage, as a remedy, that it can be applied immediately. Its importance is therefore attracting increasing attention.

Many chemicals have been used for the preservation of timber, among them being blue vitriol, corrosive sublimate and chloride of zinc. The