

Construction of "persons" as "dam" shall.

at the word "persons" as plural, as the case demands, and shall tions, companies, and associations. Th used in this Act shall be construed to singular and the plural, as the case dem

Approved, June 23, 1910.

June 24, 1910. CHAP. 379.—An Act To require apparatus and operators for radio-communication on certain ocean steamers.

[S. 7021.]
[Public, No. 262.]

Radio-com-
munication.
Required on
ocean-going
steamers.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That from and after the first day of July, nineteen hundred and eleven, it shall be unlawful for any ocean-going steamer of the United States, or of any foreign country, carrying passengers and carrying fifty or more persons, including passengers and crew, to leave or attempt to leave any port of the United States unless such steamer shall be equipped with an efficient apparatus for radio-communication, in good working order, in charge of a person skilled in the use of such apparatus, which apparatus shall be capable of transmitting and receiving messages over a distance of at least one hundred miles, night or day: *Provided*, That the provisions of this Act shall not apply to steamers plying only between ports less than two hundred miles apart.

Exchange
with other
stations.

Proviso.
Exception.

Penalty for
violation.

Sec. 2. That for the purpose of this Act apparatus for radio-communication shall not be deemed to be efficient unless the company installing it shall contract in writing to exchange, and shall, in fact, exchange, as far as may be physically practicable, to be determined by the master of the vessel, messages with shore or ship stations using other systems of radio-communication.

Liabel upon
vessel.

Sec. 3. That the master or other person being in charge of any such vessel which leaves or attempts to leave any port of the United States in violation of any of the provisions of this Act shall, upon conviction, be fined in a sum not more than five thousand dollars, and any such fine shall be a lien upon such vessel, and such vessel may be libeled therefor in any district court of the United States within the jurisdiction of which such vessel shall arrive or depart, and the leaving or attempting to leave each and every port of the United States shall constitute a separate offense.

Regulations.

Sec. 4. That the Secretary of Commerce and Labor shall make such regulations as may be necessary to secure the proper execution of this Act by collectors of customs and other officers of the Government.

Approved, June 24, 1910.

6/25/10
25, 1910

CHAP. 382. An Act Making appropriations for the construction, repair, and preservation of certain public works on rivers and harbors, and for other purposes.

[H. R. 20686.]
[Public, No. 264.]

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the following sums of money be, and are hereby, appropriated, to be paid out of any money in the Treasury not otherwise appropriated, to be immediately available, and to be expended under the direction of the Secretary of War and the supervision of the Chief of Engineers, for the construction, completion, repair, and preservation of the public works hereinafter named:

Breakwater from Mount Desert to Porcupine Island, <sup>Bar Har-
bor, Me.</sup> twenty-five thousand dollars.

Improving harbor at Camden, ^{Camden, Me.} Maine: Completing improvement in accordance with the report submitted in House Document Numbered Eleven hundred and seven-
teen, Sixtieth Congress, second session, twenty thousand dollars.

Improving harbor at East Boothbay, <sup>East Booth-
bay, Me.</sup> Maine: Completing improvement in accordance with the reports submitted in House Documents Numbered Nine hundred and forty-four, Sixtieth Congress, first session, and Six hundred and eighty-four, Sixty-first Congress, second session, six thousand five hundred dollars.

Improving harbor at Matineus, <sup>Matineus,
Me.</sup> Maine: Completing improvement in accordance with the report submitted in House Document Numbered Six hundred and fifty-three, Sixtieth Congress, first session, thirteen thousand dollars.

Improving Pepperells Cove, <sup>Pepperells
Cove, Me.</sup> Maine, in accordance with the report submitted in House Document Numbered Ten hundred and eighty-one, Sixtieth Congress, second session, sixty thousand dollars.

Improving harbor at Rockport, <sup>Rockport,
Me.</sup> Maine: Completing improvement in accordance with the report submitted in House Document Numbered Nine hundred and sixty-three, Sixtieth Congress, first session, thirty-two thousand dollars.

Improving Stockton Harbor, ^{Stockton, Me.} Maine: Completing improvement in accordance with the report submitted in House Document Numbered Eleven hundred and sixty-six, Sixtieth Congress, second session, thirty-eight thousand dollars.

Improving Saco River, <sup>Saco River,
Me.</sup> Maine, in accordance with the report submitted in House Document Numbered Seven hundred and fifty-two, Sixty-first Congress, second session, thirty thousand dollars.

Improving Saint Croix River, <sup>Saint Croix
River, Me.</sup> Maine, in accordance with the report submitted in House Document Numbered Seven hundred and forty-eight, Sixty-first Congress, second session, seventy-five thousand dollars: *Provided*, That the Secretary of State be, and he is hereby, authorized and directed to negotiate with the Government of

*Proviso.
with Great
Britain.*

necessary, is hereby made available for dredging in Lake Depue and entrance thereto.

Improving Mississippi River, from Head of Passes to the mouth of the Ohio River, including salaries, clerical, office, traveling, and miscellaneous expenses of the Mississippi River Commission: Continuing improvement with a view to securing a permanent channel depth of nine feet and to the completion of said improvement within a period of twenty years, two million dollars, which sum shall be expended under the direction of the Secretary of War in accordance with the plans, specifications, and recommendations of the Mississippi River Commission, as approved by the Chief of Engineers, for the general improvement of the river, for the building of levees between the Head of Passes and Cape Girardeau, Missouri, and for surveys, including the survey from the Head of Passes to the headwaters of the river, in such manner as in their opinion shall best improve navigation and promote the interests of commerce at all stages of the river: *Provided*, That from and after the date of the approval of this Act the member of said commission appointed from the Coast and Geodetic Survey shall receive the same annual compensation as other civilian members of said commission, and the excess of said compensation over and above the compensation he receives from the Coast and Geodetic Survey shall be paid from the funds of said commission: *Provided further*, That of the money hereby appropriated so much as may be necessary shall be expended in the construction of suitable and necessary dredge boats and other devices and appliances and in the maintenance and operation of the same: *Provided further*, That the water courses connected with said river, and the harbors upon it, now under the control of the Mississippi River Commission and under improvement, may, in the discretion of said commission, upon approval by the Chief of Engineers, receive allotments for improvements now underway or hereafter to be undertaken to be paid for from the amounts herein appropriated: *And provided further*, That of the amount herein appropriated so much thereof as may be necessary shall be used in making an examination and report upon the necessity, urgency, and practicability of permanently separating the waters of the Red and Atchafalaya rivers from those of the Mississippi River, together with an estimate of the cost of such work. The said commission shall prepare a statement as to the localities and quantities of revetment required for the complete treatment of the said river below Cairo and an estimate of the cost thereof, and report the same to Congress. The said commission shall also prepare and report to Congress a statement of the amounts expended by the United States Government in the construction of levees as well as a statement of the amounts expended

Mississippi River Commission. Mississippi River. From Head of Passes to the Ohio. Securing 9-foot channel.

Levees. Surveys. *Provided*. Pay of member from Coast Survey.

Dredging ap- pances and in the maintenance and operation of the same: *Provided further*, That the water courses connected with said river, and the harbors upon it, now under the control of the Mississippi River Commission and under improvement, may, in the discretion of said commission, upon approval by the Chief of Engineers, receive allotments for improvements now underway or hereafter to be undertaken to be paid for from the amounts herein appropriated: *And provided further*, That of the amount herein appropriated so much thereof as may be necessary shall be used in making an examination and report upon the necessity, urgency, and practicability of permanently separating the waters of the Red and Atchafalaya rivers from those of the Mississippi River, together with an estimate of the cost of such work. The said commission shall prepare a statement as to the localities and quantities of revetment required for the complete treatment of the said river below Cairo and an estimate of the cost thereof, and report the same to Congress. The said commission shall also prepare and report to Congress a statement of the amounts expended by the United States Government in the construction of levees as well as a statement of the amounts expended

Connecting water courses.

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Estimate of work. Amount spent for levees, etc.

Amount spent for levees, etc.

by States, levee districts, and communities interested. The said commission shall also report to Congress a statement of the quantity of land which will be reclaimed or protected by revetment or other work done by the United States exclusively. Land to be protected, etc.

The Chief of Engineers, under the direction of the Secretary of War, is hereby, authorized to design and construct two experimental towboats of modern but different types, with a complement of suitable barges and necessary loading and unloading facilities for towing and delivering supplies along the Mississippi River and its tributaries, and in making designs for such boats the said Chief of Engineers shall investigate and consider types of boats in use for similar purposes on nontidal rivers in this and other countries, and for the purposes of such investigation, designs, and construction there is hereby appropriated the sum of five hundred thousand dollars. Experimental towboats authorized.

Improving Mississippi River from the mouth of the Ohio River to and including the mouth of the Missouri River: Continuing improvement in accordance with the plan adopted in eighteen hundred and eighty-one, which has for its object to eventually obtain by regularization works and by dredging a minimum depth of eight feet from the mouth of the Ohio River to Saint Louis, and of six feet from Saint Louis to the mouth of the Missouri River, and with a view to the completion of said improvement within a period of twelve years, five hundred thousand dollars. Depth to be obtained.

Improving Mississippi River from the mouth of the Missouri River to Minneapolis, Minnesota: Continuing improvement in accordance with the report submitted in House Document Numbered Three hundred and forty-one, Fifty-ninth Congress, second session, for the purpose of ultimately securing and maintaining a depth of channel of six feet and with a view of completing said improvement within a period of twelve years, five hundred thousand dollars: *Provided*, That of this amount so much as may be necessary, not to exceed seventy-five thousand dollars, may, in the discretion of the Secretary of War, be expended for the repair and maintenance of existing levees constructed by the United States and for dredging for the benefit of through navigation in harbors and at landing places, giving preference to localities in which the communities interested shall hereafter maintain such dredging without cost to the United States. From the Missouri to Minneapolis.

Improving Mississippi River, from Saint Paul to Minneapolis: The modified project recommended by the Chief of Engineers in his report dated March third, nineteen hundred and ten, printed in House Document Numbered Seven hundred and forty-one, Sixty-first Congress, second session, is hereby adopted, and all future work on said improvement shall be prosecuted in accordance therewith: *Provided*, That in the making of leases for water power a reasonable compensation shall be secured to the power. Saint Paul to Minneapolis project. Water-power.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING,

In compliance with law, a progress report of the Mississippi River Commission, dated November 25, 1881.

DECEMBER 15, 1881.—Ordered to lie on the table and be printed.

WAR DEPARTMENT,
Washington City, December 14, 1881.

SIR: As required by the act of Congress approved June 28, 1879, providing for the appointment of the Mississippi River Commission, I have the honor to transmit herewith a progress report of said Commission, dated November 25, 1881, and to respectfully recommend that the same be printed.

Very respectfully, your obedient servant,
ROBERT T. LINCOLN,
Secretary of War.

The PRESIDENT *pro tempore*
of the United States Senate.

OFFICE OF THE MISSISSIPPI RIVER COMMISSION,
Saint Louis, Mo., November 25, 1881.

SIR: The Mississippi River Commission have the honor to submit the following report, embracing the subjects and subdivisions specified below, to wit:

1. Progress of surveys and examinations since January 8, 1881; operations of a similar character contemplated under the existing appropriation, and estimate of funds for continuing this work during the next fiscal year.
2. Works of improvement contemplated under existing appropriation; preparations for executing the same, and estimate of funds for next fiscal year.
3. Remarks on the subjects of levees and outlets.
4. Discussion of the Red and Atchafalaya rivers.
5. A discussion of the flood on the Missouri River in April and May, 1881.
6. Remarks on the borings made at sundry points, and deductions therefrom.

7. Upon the mutual relations of river sections under varying conditions of discharge and curvature.

8. Remarks on Vicksburg Harbor and Bonnet Carré crevasse.

9. Works of improvement now in progress, under the Engineer Department, on that part of the river between the mouth of the Missouri River and Cairo.

10. Necessity of certain proposed legislation in the general interest of river improvement.

PROGRESS OF SURVEYS AND EXAMINATIONS.

The third section of the law organizing the Commission required it to—

Direct and complete such surveys of said river between the Head of the Passes, near its mouth, to its headwaters as may now be in progress, and to make such additional surveys, examinations, and investigations, topographical, hydrographical, and hydro-metrical, of said river and its tributaries as may be deemed necessary by said Commission to carry out the objects of this act.

The Commission, on January 8, 1881, reported the progress it had made in carrying out this provision of the law, and now reports the further progress made up to October 10, 1881.

In this period the triangulation of the river has been completed from Arkansas City, Ark., to Greenville, Miss., 38 miles distant, where it joins the Coast Survey triangulation, now complete from that point to the Gulf of Mexico. It has been completed between Thebes, Mo., and Cairo, a distance of 22 miles, and between Grafton, Ill., and Keokuk, Iowa, a distance of 166 miles; this latter chain depending on bases measured with a secondary base apparatus at Grafton, La., and Keokuk. Azimuth determinations were also made at these last points. The triangulation is accordingly now completed from Keokuk, Iowa, to the Gulf of Mexico.

The precise levels have closed a gap of six miles above Greenville, Miss. They have been completed from Neeley's Landing, Mo., to Cairo, a distance of 50 miles, and from Grafton to Keokuk, a distance of 150 miles.

The Coast and Geodetic Survey has made its line of precise levels continuous from Greenville to New Orleans; so that the precise levels are now complete between Keokuk, Iowa, and New Orleans.

A tide gauge has been established in the Gulf of Mexico, at Biloxi, and the Superintendent of the Coast and Geodetic Survey has kindly offered to connect his line of precise levels along the Mississippi River with this tide-gauge; so that within a year or two it is hoped to refer with precision all the levels along the Mississippi River to the mean level of the Gulf of Mexico as an origin.

The preliminary topography and the soundings have been carried from Walnut Bend, Ark., to Sunflower Landing, Miss., a distance of 70 miles, and a survey of Vicksburg Harbor has been completed.

The plotting of the topography and hydrography has been continued, twenty-six additional sheets having been plotted to a scale of $\frac{1}{100,000}$.

The preparation of a preliminary chart of the river on a scale of $\frac{1}{33,333}$, or one inch to a mile, has been begun, and four sheets, reaching from Cairo to Cottonwood Point, are completed.

The observation parties which were placed on the Upper Mississippi last fall at Prescott, Winona, Clayton, Hannibal, Grafton, and Saint Louis, have been maintained during the year, and were withdrawn about October 25. Aside from the information gained as to changes in the

to accomplish, and during the last two years it is reported that there has been no additional fill in the harbor proper. This being the case, the officer in charge now proposes to carry out the third part of the original project, viz, to dredge out a basin of sufficient size in the harbor, and also a canal to connect this basin with the main river. The amount of dredging now needed is greatly in excess of what was originally deemed necessary, as the unobstructed access of the river deposits has filled up the lower end of the harbor to such an extent that it now goes dry at a stage of 20 feet above low-water. The upper end of the harbor is still open, but so much loss of time is involved in taking this circuitous channel, that at low-water the wharf boats are moved down below the bar, and nearly 2 miles from the old landing. The amount of dredging required is estimated to cost \$336,000, while the completion of the Delta Point revetment will require \$100,000 more, a total of \$436,000, of which \$250,000 can be profitably expended in one year.

With regard to this plan the Commission have to state that while other methods could doubtless be devised for a more complete restoration of the harbor of Vicksburg, yet all such plans would necessarily involve changing the direction and location of the present channel, and the works would require to be extended over many miles of the river in order to get it fairly under control. While such methods can certainly not be pronounced impracticable, yet they would in this neighborhood be very costly. On the other hand, the present plan commends itself by its comparative economy, and its adaptation to the situation of affairs which actually exists, and the Commission therefore recommend that the necessary appropriations be made to enable the work to be carried to completion. The question of the diversion of the Yazoo is not here considered. It could only be supplemental in its effects to the works now proposed, and its necessity or otherwise can only be fairly determined when these works are completed.

BONNET CARRÉ CREVASSE.

At the request of Hon. C. E. Hooker, M. C., referred to the Commission by the Secretary of War, a survey is being made to afford information relative to the cost and best manner of closing Bonnet Carré crevasse, Louisiana.

The benefit of this work would extend to the interests and industries on the shores of Lakes Ponchartrain and Borgne and of Mississippi Sound. When the survey is completed a report will be made thereon.

ON THE IMPROVEMENT OF THE MISSISSIPPI RIVER BETWEEN THE MISSOURI AND THE OHIO.

The Commission, in their reports of March 6, 1880, and of January 8, 1881, have expressed their views as to the methods to be followed in improving the navigation of the Mississippi River between Cairo and New Orleans, and between Saint Paul and the mouth of the Missouri River.

They have not heretofore discussed the part of the river lying between the Missouri and the Ohio, and having a length of 203 miles. This portion of the river flows in an alluvial valley bounded by rock bluffs usually between 3 and 6 miles apart. At two places, however, namely, near Grand Tower and above Commerce, the river runs between rock bluffs only about a mile apart, but at these places there are alluvial valleys at about the level of the river in flood, behind one of the bluffs forming the present bank of the river. Through these valleys the river

may once have flowed. At Commerce, 34 miles above Cairo, the valley widens into the great alluvial basin of the Lower Mississippi.

For much of the distance between the Missouri and the Ohio rivers the Mississippi flows in contact with the rock bluffs on one side or the other, and when it leaves them it wanders at will through the alluvial valley whose general height is that of ordinary floods. In such places the same phenomena of caving banks and changing positions of the river are found as in the lower river, limited here, however, by the much smaller width of the alluvial bottom.

Above the Missouri the Mississippi is relatively a clear river, carrying little sediment in suspension save at the time of floods. Its character is greatly modified by the introduction of the Missouri River, whose sediment in suspension during the year 1879, at Saint Charles, reached the very large amount by weight of $\frac{1}{25}$ part of the total river-discharge, and on July 4, 1879, was by weight $\frac{1}{37}$ part of the river-discharge on that day. (See report of Major Suter of February 2, 1881, to Chief of Engineers.) If the average discharge of the Missouri be taken as one-half that of the Mississippi above their junction $\frac{1}{56}$ would result for the average sediment ratio for the combined rivers on the supposition that no sediment whatever was derived from the Upper Mississippi.

The effect of this large amount of sediment is felt in the Mississippi far below their junction. Humphreys and Abbot give for the mean ratio by weight of sediment to water for two years at Carrollton $\frac{1}{100}$, and for nine months at Columbus (March to November) $\frac{1}{132}$. This indicates that the mean ratio of sediment in the Mississippi diminishes rapidly from the mouth of the Missouri to Columbus, and that below Columbus it undergoes no great change.

The low-water discharge at Saint Louis is about 47,000 cubic feet per second; the high-water discharge is fifteen or twenty times that amount. At Saint Louis the range in stage is 37 feet and at Cairo 51.

The low-water slope is about 0.56 feet per mile from Saint Louis to Gray's Point, 140 miles below.

Between Saint Louis and Cairo there are many places where at low-water the depth becomes too small for navigation. These points are not all bad in every year, but sometimes one and sometimes another gives trouble. In the fall of 1879 the shoalest places between Saint Louis and Cairo were at Widow Beard's Island, 16 miles below Saint Louis, where the depth fell to 4 feet 4 inches, and at Kaskaskia Bend, 63 miles below Saint Louis, where it fell to 4 feet.

Wherever the river in straight reaches at low-water largely exceeds 2,500 feet in width it is liable to give bad navigation.

The commerce on the river between Saint Louis and Cairo is of similar character, needs the same facilities, and makes the same demands as below Cairo, and as it is proposed ultimately to attain a least depth of 10 feet below Cairo, this depth should also ultimately be obtained between Cairo and Saint Louis. In obtaining this depth, the problem is the same as on the lower river, save at Grand Chain, where it may be advisable to remove some bowlders and perhaps to cut off some points of rocks, which at low-water hamper navigation.

Elsewhere the system to be pursued is that of contraction, thus compelling the river to scour out its bed; this process being aided, if necessary, by dredging. Wherever the river is causing any serious caving of its banks, the improvement will not be permanent until the bank has been protected and the caving has been stopped.

The methods of protecting caving banks, and of producing contraction where the river is now too wide, are of the same general character as

those needed for the lower river. For bank protection below low-water, mattresses must be used, between low-water and a medium stage, the banks must be covered with stone until some cheaper protection which will be permanent has been found, while above high medium stages some woody or vegetable growth that can resist the action of water during the season of floods, may be effectual.

Contraction must be obtained by structures on the sites where shoaling is desired, which, while strong enough to resist the current, are yet permeable enough to diminish the velocity of the water through them to the proper degree for causing a prompt deposition of sediment, thus leading the river to build up a new bank which shall give a less width and a greater depth to the river.

These principles are being followed by Capt. O. H. Ernst, who has charge of the improvement of the river between the Illinois and the Ohio, and the success which he has already obtained at Horsetail Bar, below Saint Louis, gives strong hopes that similar results may follow elsewhere the application of similar methods.

The general method followed at Horsetail has been to erect along the site of the desired new bank a permeable screen, having a general parallelism with the shore, and then to connect this screen with the shore by transverse permeable screens about 400 feet apart, thus cutting up the area on which deposit is wished into sections 400 feet in width.

These screens have been of various forms, the later construction being of hurdle work kept in place by piling. Their object is to diminish the velocity of the water while passing through the various sections of the area covered by them, enough and only enough to cause free deposit. In bank protection Captain Ernst proposes to use mattresses or hurdle work for the portion below low-water, stone from that line to 16 feet above low-water, and willow plantations for all greater heights.

The high-water width aimed at is 2,500 feet, and it is expected that this width will give at least 8 feet at low-water where there is now less.

Further experience may doubtless suggest modifications and improvements in details, and will show whether a somewhat greater contraction is needed to secure 10 feet of water.

The success of Captain Ernst's works thus far justifies, in our opinion, the methods he has employed and we are of opinion that it should be pushed toward completion under liberal appropriations.

LEGISLATION.

The Commission renew the recommendation contained in a former report, that provision be made by law for the appropriation of land or material, when needed in the improvement of the river and not otherwise obtainable, and for the assessment and payment of damages to the owners of property so appropriated. Of some kinds of material which will be needed in the prosecution of the contemplated improvements the amounts required will be very large, and to be compelled to submit to such terms as owners should see fit to impose in the purchase of it might subject the work to unreasonable expense or great delay.

It is recommended that authority be given to the Commission, or any person in charge of any work under authority of the Commission, to apply in the name of the United States in the district court of the United States for the district in which the land or material to be appropriated is situated, for an assessment of damages in favor of the owner; that some simple mode of procedure be provided, comprising such regulations as to petition, notice, assessment, appeal, and payment as shall fully protect the rights both of the government and the citizen; that the