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THE AUSTIN-TOPOLOVAMPO
PACIFIC RAILROAD ROUTE.

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OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., April 19, 1875.

SIR: Concerning the papers upon the proposed Topolovampo Railroad route returned to this Office, with the indorsement of the Honorable the Secretary of War of the 27th ultimo, respecting the printing the same, I would respectfully suggest that 1,000 copies of the papers in the case which have been brought before the Department, be printed at the Government Printing-Office.

A list of the papers is appended hereto.

Very respectfully, your obedient servant,

A. A. HUMPHREYS,
Brigadier-General and Chief of Engineers.

Hon. WM. W. BELKNAP,
Secretary of War.

Approved:

By order of the Secretary of War.

H. T. CROSBY,
Chief Clerk.

WAR DEPARTMENT, *April 22, 1875.*

LIST OF ACCOMPANYING PAPERS.

1. Letter of Secretary of War Senate Committee on Railroads, February 25.
2. Letter Chief of Engineers to Secretary of War, transmitting report and accompanying papers, February 24.
3. Letter from Senate Committee on Railroads to the Chief of Engineers, February 9.
4. Senate bill No. 1199.
5. Letter Chief of Engineers to Lieutenant-Colonel Wright, February 18.
6. Special Orders No. 21, Headquarters Corps of Engineers, February 18.
7. Letter of Lieutenant-Colonel Wright, transmitting report of board and accompanying papers, February 22.
8. Report of Board of Engineers.
9. Letter of Major Warren to Chief of Engineers, March 8, 1875.

The following papers are copies of the manuscript and printed documents furnished by Mr. A. K. Owen, C. E.

10. Owen's argument before House Committee on Railroads. (Printed.)
11. Owen's supplementary argument before House Committee on Railroads. (Printed.)
12. Owen's letter to Senate Committee on Railroads, February 22, 1875.
13. Owen's argument, "Great Southern Trans-oceanic and International Air-Line, Asia to Europe."
14. Letter from H. A. P. Carter, special commissioner from Sandwich Islands, to Owen, sending statistics.
15. Statistics of trade in the Pacific.
16. Owen's letter to Dr. Carman.
17. Carman's letter to Owen, August 17, 1872.
18. Report on coal-fields of Rio Yaqui. (Scott.)
19. Report on harbor of Topolovampo. (Truxton.)
20. Journal and survey of Topolovampo Harbor. (Truxton.)
21. Commerce of Sonora—report by Consul Garrison.
22. ~~New~~ Mexico, Lower California, and Gulf of Cortez—report by Colonel Fitch.
23. Hydrographic notice, harbor of Topolovampo.
24. Map of United States and Mexico.
25. Map of Topolovampo Harbor.

Northwestern

[1.]

The Secretary of War has the honor to transmit to the chairman of the Committee on Railroads of the United States Senate, in response to request of the 9th instant, copy of report of board of engineers, convened by Special Orders No. 21, Headquarters Corps of Engineers, February 18, 1875, to consider the feasibility of a railroad route from Austin, Tex., to Topolovampo, Mexico, in connection with Senate bill 1199.

Papers accompanying report of the board, and maps, are herewith transmitted.

WM. W. BELKNAP,
Secretary of War.

WAR DEPARTMENT, *February 25, 1875.*

[2.]

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., February 24, 1875.

SIR: I have the honor to send herewith copy of a report (with accompanying papers) of a board of engineers convened by Special Orders No. 21, dated Headquarters Corps of Engineers, Washington, February 18, 1875, for the purpose of considering the probable feasibility and utility of a proposed railroad route from Austin, Tex., to Topolovampo, on the west coast of Mexico, in connection with Senate bill 1199, which had been referred to this Office by the Senate Committee on Railways, and which proposed to appropriate twenty thousand dollars for the survey of said route.

Very respectfully, your obedient servant,

A. A. HUMPHREYS,
Brigadier-General and Chief of Engineers.

Hon. WM. M. BELKNAP,
Secretary of War.

[3.]

UNITED STATES SENATE CHAMBER,
Washington, February 9, 1875.

SIR: I am directed by the Committee on Railroads (of the Senate) to refer to you the inclosed bill, (S. 1199,) and request that you will send to the committee any information in your possession, or make any recommendations which you may deem proper, relative to the purposes of the bill.

Yours, very respectfully,

J. E. COLBURN,
Clerk of Committee.

Gen. A. A. HUMPHREYS,
Chief of Engineers.

[S. 1199. 43d Congress, 2d session.]

IN THE SENATE OF THE UNITED STATES.

JANUARY 26, 1875.

Mr HITCHCOCK asked and, by unanimous consent, obtained leave to bring in the following bill; which was read twice, referred to the Committee on Railroads, and ordered to be printed:

A BILL to survey the Austin-Topolovampo Pacific route.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of War be directed to cause a survey to be made of the most practicable route for a national rail-highway from Austin, Tex., to Fort Seaton, on the Rio Grande, and to extend said survey, after application to and the granting permission by the Government of Mexico, to the harbor of Topolovampo, on the Gulf of California, and to report to Congress the most feasible route of railway-communication between Austin, Tex., and said harbor of Topolovampo; and for the purposes of such survey, there is hereby appropriated, out of any money not otherwise appropriated, the sum of twenty thousand dollars, or so much thereof as may be necessary.

[5.]

OFFICE OF THE CHIEF OF ENGINEERS,

Washington, D. C., February 18, 1875.

SIR: Please find herewith an order* for a board of engineers, to consist of yourself and Majors Warren and Abbot, to meet at your office on Saturday next, to consider the merits of a bill which has been referred to this Office by the railway committee of the Senate, and which proposes to appropriate twenty thousand dollars for the survey of a railroad route from Austin, Tex., to Topolovampo, on the west coast of Mexico, and about midway between Mazatlan and Guaymas.

The following papers are sent to you herewith as relating to the case. They have been furnished by Mr. Owen, a civil engineer, who will wait in person on the board and explain the project which he laid before the Senate Committee on Railways, and which has been referred, as previously stated, to this Department for report:

1. Pamphlet. The Great Southern Transoceanic and International Air-Line, Asia to Europe.

2. Argument of A. K. Owen, C. E., in behalf of the Great Southern International Rail-highway.

3. Supplementary remarks of A. K. Owen, C. E.

4. Copy of letter from Senate Committee on Railroads, inclosing Senate bill 1199.

5. Senate bill 1199. Survey of the Austin-Topolovampo Pacific route.

By command of Brigadier-General Humphreys.

Very respectfully, your obedient servant,

GEORGE H. ELLIOT,
Major of Engineers.

Lieut. Col. H. G. WRIGHT,

Corps of Engineers, Army Building, New York City.

*A telegram was sent you this date. The order will be sent to-morrow.

[6.]

SPECIAL ORDERS) HEADQUARTERS CORPS OF ENGINEERS,
 No. 21.) Washington, D. C., February 18, 1875.

A board of officers of the Corps of Engineers, to consist of Lieut. Col. H. G. Wright, Maj. G. K. Warren, Maj. H. L. Abbot, will assemble at the Army Building, New York City, at 12 m. on Saturday, the 20th inst., or as soon thereafter as practicable, to consider and report upon the probable feasibility and utility of a proposed railroad route from Austin, Tex., to Topolovampo, on the west coast of Mexico, and for the survey of which there has been introduced into Congress a bill, which has been referred to this Office for report, and which proposes an appropriation of twenty thousand dollars.

By command of Brigadier-General Humphreys.

THOS. LINCOLN CASEY,
Lieutenant-Colonel of Engineers

[7.]

ARMY BUILDING,
 New York, February 22, 1875.

GENERAL: I have the honor to send herewith the report of the board convened by Special Orders No. 21, dated "Headquarters Corps of Engineers, Washington, February 18, 1875;" also the papers which were referred to the board with your letter of instructions of the 18th instant.

There is also sent by express a roll containing the following maps, referred to in the report:

1. Map of the United States.
2. Sketch of the harbor of Topolovampo, Mexico, by Lieut. Com. Allen V. Reed, U. S. N.
3. Tracing of sketch of same harbor, by Commander Geo. Dewey, U. S. N.
4. Tracing of the map of same harbor, by F. G. Fitch, C. E.

In the same roll are two manuscript-maps belonging to Mr. A. K. Owen, C. E., left by him with the board, and which he is to call for at your Office.

Very respectfully, your most obedient,

H. G. WRIGHT,
Lieutenant-Colonel of Engineers, Brevet Major-General.

Brig. Gen. A. A. HUMPHREYS,
Chief of Engineers, U. S. A., Washington, D. C.

[8.]

ARMY BUILDING,
 New York, February 22, 1875.

GENERAL: The undersigned members of the board of engineers, directed, by orders from your headquarters, to assemble here on the 20th instant "to consider and report upon the probable feasibility and utility of a proposed railroad route from Austin, Tex., to Topolovampo, on the west coast of Mexico," and also to consider the merits of the bill that has been referred from the United States Senate Railway Committee, which proposes to appropriate \$20,000 for making a survey of the route, met here at the time appointed, and submit the following report:

Mr. A. K. Owen, civil engineer, who is the advocate of this route, submitted all the maps and information from various sources in his

possession, and besides giving us their substance as far as related to the matter before us in conversation, answered such interrogatories as were made. We had before us three pamphlets of his on this subject, and its proximate and general relations. The title-page of the first in order of publication is as follows :

“Confidential. The Great Southern Trans-oceanic and International Air-Line. Asia to Europe, via Mexico and the Southern States. Philadelphia: Rowley and Crew, steam-power printers, 723 Chestnut street. 1873.”

This pamphlet appears to show conclusively that a railroad built over the proposed route would be of great utility. In this view the board concurs.

The following appears in a printed slip pasted to the back of the title-page of this pamphlet, (and it was also stated in conversation.) The slip states: “Early in 1872 the undersigned, (Mr. Owen,) in company with others, crossed from Colorado, via the Mesilla Valley, into Mexico, on a railroad reconnoissance. The expedition proving favorable to the construction of the Mexican section of the Denver and Rio Grande Railway, the undersigned was commissioned to examine the Pacific coast and the passes of the Sierra Madre of Northwestern Mexico. It was while prosecuting these explorations that his attention was attracted to the Smuggler’s Retreat, (same as Topolovampo.) After three days spent on its waters and picturesque shores in examination of its harbor fitness, and furthermore assuring himself of the existence of a feasible route over the Sierra Madre, via the valleys of the Rio Fuerte, this ocean-to-ocean line was projected.”

In our conversation with Mr. Owen he told us he had not gone over or examined the route of the Rio Fuerte across the Sierra Madre, between Topolovampo and Chihuahua. His belief in its practicability was based upon information he obtained from the inhabitants, and from the fact that “Major Gregg, in 1853, proposed to construct a wagon-road” along this route on the strength of a report of Dr. Charles C. Johnson, “the recognized authority of Northwestern Mexico,” but revolution stopped the movement. This report of Dr. Johnson none of the members of the board have ever seen, nor any other giving an account of this route across the Sierra Madre.

It also appeared from conversation with Mr. Owen that he had not passed over or examined any portion of the proposed route himself. He had examined its western terminus and had crossed it on his journey south from Colorado in the neighborhood of Chihuahua.

The route proposed by Mr. Owen crosses the Rio Grande near the mouth of the Rio Conchos, and going westward from that point, gains the elevation of the plateau of Chihuahua by the valley of that river; but none of the members of the board have any information as to the difficulties or facilities of this part of the route.

From the crossing of the Rio Grande to Austin part of the proposed route is known to be difficult. The difficulty can be seen by consulting pp. 110, 111, Vol. I, P. R. R. Along the proposed line between the Pecos River and the Rio Grande at Presidio del Norte, opposite the mouth of the Rio Conchos, of Mexico, the country is believed to be very unfavorable to railroad construction. Still, nothing can be considered as positively determined in this respect until actual trial by railroad engineers fails to find a practicable location at reasonable expense.

There were two other pamphlets by Mr. Owen submitted to us, one being an “argument” on the general subject, “read before the House Subcommittee on Pacific Railroads, January 19, 1875, and hur-

riedly explained with maps and string before the Senate Committee on Railroads, January 20, 1875," and the other "supplementary remarks read before the House Subcommittee on Pacific Railroads, January 19, 1875." Neither of these pamphlets contains any data upon the feasibility of the route.

The time allowed does not permit of our making any search for authorities to obtain information not immediately before us. The facts as we have them seem to indicate that from Austin westward to the east base of the central mountain region between the Pecos River and the Rio Grande, there is no apprehension of unusual difficulty to railroad construction. Continuing west we shall then have to cross a difficult mountainous elevation at a level about 5,800 feet above the sea. Among these mountains we may expect abrupt surfaces, steep cañons, and sharp turns, all tending to cause great expense, in avoiding heavy grades and sharp curvatures.

In crossing the Rio Grande we must descend to the elevation 2,500 feet above the ocean. From this level we must ascend to the plateau of Chihuahua—elevation not known—and it is not improbable that a railroad line would have to cross a summit more elevated than the plateau before reaching it. We next have to pass the Sierra Madre and descend to the harbor on the west shore of Mexico, by a route to us unknown.

The board conclude a survey along the proposed route is necessary to determine its feasibility.

A great deal of importance attaches to the proposed line, from the discovery of the harbor of Topolovampo. Mr. Owen gave us a copy of the map made by Commander Wm. T. Truxton, United States Navy, which shows that there is a depth of 21 feet over the bar at the entrance at low water. The rise of the tide here is about 7 feet. Mr. Owen also gave us a copy of a more recent official map, which gives the same depths. There seems to be good reason to conclude that vessels of large draught can safely enter this harbor.

Mr. Owen also gave us map to copy, made from a survey of the harbor of Topolovampo by Mr. F. G. Fitch, civil engineer, in July, 1873. This shows the harbor to have sufficient capacity for the purposes of a commercial city.

The length of the route to be surveyed measured in direct lines from Austin to Presidio del Norte, thence to Chihuahua, thence to Topolovampo, is about 825 miles, of which probably 400 miles will be in mountainous regions or other difficult locations. It is proposed not only to survey the direct line, but to examine one north and one south of it. To make this examination and survey perfect will, in the opinion of this board, require more than the \$20,000 which the bill proposes to appropriate, but still a great deal of important information can be gained with this amount.

In brief, the conclusions of the board are as follows :

First. That a railroad built on the proposed route would be of great utility.

Second. That the feasibility of it remains to be determined by a survey.

Third. That the amount of money, \$20,000, proposed by the bill, will not be sufficient to thoroughly provide for the necessary surveys, but

that a great deal of useful information concerning the feasibility of the route can be gained by this amount of money.

Respectfully submitted.

H. G. WRIGHT,
Lieutenant Colonel of Engineers, Bvt. Maj. Gen.

G. K. WARREN,
Major of Engineers, Bvt. Maj. Gen., U. S. A.

HENRY L. ABBOT,
Major of Engineers, Bvt. Brig. Gen.

Brig. Gen. A. A. HUMPHREYS,
Chief of Engineers, U. S. A., Washington, D. C.

[9.]

ENGINEER OFFICE, U. S. ARMY,
Newport, R. I., March 8, 1875.

GENERAL: When making up for the board the report on the proposed Pacific Railroad route from Austin, Tex., via Chihuahua, to Topolovampo, I was unable to consult with any authorities about the part through Mexico. Our board was directed to meet at noon Saturday, and make an immediate report. At the Army building there was no copy of Emory's report on the Mexican boundary. The next day was Sunday, and Monday was Washington's birthday. Consequently, I was unable to hunt up anything.

There is a great deal in Major Emory's report to indicate that this direct route is very difficult. He speaks of "the remarkable depression" of the plateau on the line of the 32d parallel, and states that, through information he gave the State Department, after his reconnoissance in 1846, our minister was instructed to not accept a boundary north of the 32d parallel in forming the treaty of Guadalupe-Hidalgo. He adds, (p. 41:) "Passing to the south of this parallel, in about that of 31°, we find the plateau rising rapidly to the table-lands of Mexico, * * * and the plateau gives evidence of having been disturbed by tremendous plutonic forces, and the mountains assume a loftier and more rugged and diversified appearance." Again, p. 44: "The San Luis Mountains * * rise abruptly from the plains about three leagues north of the parallel of 31° 30', and, as they run south, assume by far the most formidable appearance of any range on that parallel west of the Rio Grande. They are called in Sonora and part of Chihuahua the Sierra Madre Mountains, yet they do not fulfill entirely the conditions implied by that term, *i. e.*, dividing ridge, for I am credibly informed that the waters flowing from their base toward the Pacific coast often take their rise to the east of these mountains, and flow through chasms impassable for men, and fall down the western slope in rapid descent, producing sublime and picturesque cascades." P. 45: "It was not in my power to explore this range to the south, but I was informed by persons worthy of confidence that throughout its whole extent, as far south as the parallel of Mazatlan, it was utterly impassable for wagons, and there was no possibility of finding south of 31° 20' a line for a railway. The report of its impracticability for wagons was confirmed by the fact that the camino real, (highway,) established by the Spaniards to connect Chihuahua and Guaymas, makes a great circuit, and passes to the north of 31° 20', and within what is now the territory of the United States.

"This stupendous range of mountains, which drops so abruptly a few miles north of the boundary, as if to make room for the highway which is to connect the Pacific and Atlantic States, no doubt re-appears to the

north; but our information is not yet sufficient to establish the connection."

I cannot find any description of the valley of the Rio Conchos, after a careful search through the Mexican boundary report. The roads represented on the map all avoid the valley and keep to the north and south of it, apparently to head the ravines or side cañons, giving the indication that the valley itself is unfavorable to road-location. I have a book on Mexico, containing many extracts from Humboldt's New Spain; but that has nothing about the Rio Conchos. It must flow in part, at least, in cañons.

* * * * *

Very respectfully,

G. K. WARREN,
Major of Engineers.

Brig. Gen. A. A. HUMPHREYS,
Chief of Engineers, U. S. Army.

The following papers are copies of the manuscript and printed documents furnished by Mr. A. K. Owen, C. E.

. [10.]

Argument of A. K. Owen, C. E., in behalf of the Great Southern International Rail-Highway.

Read before the House Subcommittee on Pacific Railroads, January 19, 1875, and explained with maps and strings before the Senate Committee on Railroads, January 20, 1875.

MR. CHAIRMAN AND GENTLEMEN OF THE COMMITTEE: This proposed rail-highway, which I am permitted to submit, is designed to connect Chesapeake Bay with the Gulf of California. From Norfolk, Va., to Austin, Tex., there is a distance of 1,489 miles. This section will unite the James River—the Atlantic terminus of the great central water-line of Virginia—with Gunter's Landing, on the Tennessee, the beginning of the Coosa Canal in the Great Mississippi Basin. It will pass through the inexhaustibly rich iron and coal areas of Asheville, N. C.; of Chattanooga, Tenn.; of Birmingham, Ala. It will pass, also, through the great long-leaf pine districts of Jasper and Tuscaloosa, where is found, perhaps, the finest ship-timber in the world; thence, likewise, it will pass through the manufacturing interest of Columbus, and across Mississippi, Louisiana, and Texas, over their rice, sugar, cotton, cereal, and cattle belts.

From Austin, Tex., the line passes 800 miles to the Pacific, to wit: 75 miles to the German agricultural center of Fredericksburgh—the pioneer town of Central Texas—thence across the Texas plateaus, on or near the 30th parallel of north latitude, 300 miles, to Fort Leaton, on the Rio Grande, opposite to Presidio del Norte; from this point it enters Spanish America, and, via the alluvial bottoms of the Rio Conchos, 125 miles, reaches Chihuahua City, the capital of the great state of the same name, a city formerly of 70,000 inhabitants, and still the great distributive center for Northwestern Mexico. From Chihuahua City, via the passes of Rio Fuerte, it runs through the richest metal, mineral, coal, and timber regions of the Pacific slope 300 miles to Topolovampo. In a pamphlet descriptive of this proposed line, a copy of which is herewith presented, is found data relative to the harbor

of Topolovampo—here for the first time introduced to the world—as well as the present and prospective commerce naturally appertaining to this projected highway.

Permit me now to invite your attention to the map, that I may the more intelligibly make a few illustrations. As Austin, Tex., is already connected with the great net-work of railways, post-roads, and water-channels of North America, it is to the western section of 800 miles, between Austin and Topolovampo, which separates the Pacific from the Atlantic, that we need at present turn our inquiry; and it is to urge that this section be surveyed and reported that the proposition is before your committee.

The international rail-highway under consideration is claimed to be the most national and the least sectional of any possible line from the Atlantic to the Pacific Ocean; and the more it is examined the greater, it is believed, will be the conviction of the superiority of this route over all others. In the said pamphlet it will be seen that the ports on the Atlantic from Halifax, Nova Scotia, to the Rio Grande, are each and all nearer to Topolovampo than they are to Olympia, San Francisco, or San Diego. By means of the equidistant lines, which are here drawn, it is readily comprehended that Topolovampo is the apex of the great commercial V on the Pacific, for not only the United States but for Canada and Nova Scotia—the said harbor offering readier facilities to the metropolitan and industrial centers of these three countries than those offered by any other port on the Pacific. It is seen, also, that the equidistant line between Olympia and Topolovampo cuts Halifax; but from Halifax to San Francisco and San Diego the distances are largely increased. Saint Paul, Minn., is equidistant between San Francisco and Topolovampo; but Omaha is nearer to the latter. Chicago is 221, and Saint Louis is 316 miles nearer to Topolovampo than to San Francisco; and so, likewise, to the extent of many miles, is every great, populous, and manufacturing center east of the Rocky Mountains, as is here seen geometrically demonstrated. If the eye is now turned along the San Diego-Topolovampo equidistant line, it will be observed the advantages in regard to distance are still astonishingly in favor of Topolovampo. Again, let Chicago, Saint Louis, or Detroit be the pivotal center from which a string is stretched to Olympia and then moved south; the distance between said center and the Pacific coast, it will be observed, grows less as the string travels down, and is found to be the least when it reaches Topolovampo; and from this harbor, as the string moves south, the distance increases.

Distances, however, are not the main arguments favorable to this proposed rail-highway. It is only after comparing the territories through which the radii would run from the Atlantic ports and the commercial, industrial, and distributive centers of North America to Topolovampo, with these other territories through which these radii would run to Olympia, San Francisco, and San Diego, that we are able to judge the great superiority Topolovampo sustains over every other harbor on the Pacific. For instance, Halifax is equidistant between Olympia and Topolovampo. In illustration, stretch a string from Halifax to Olympia; it runs north of the Great Lakes, across the frozen wilds of British America, not meeting two thousand human beings other than Indians after leaving the valley of the Saint Lawrence. Now, let the string be traced from Halifax to Topolovampo, and it will be seen it cuts through the greatest cities and industries of the forty millions of people east of the Rocky Mountains, and after crossing the Texas plateau, of but three hundred miles, reaches the nine millions of republicans in Mexico.

If any of the great cities be selected, such as Quebec and Montreal, in Canada, Detroit, in Michigan, Pittsburgh, in Pennsylvania, Indianapolis, in Indiana, or Washington, in this District, as a point, and radii be drawn from each to San Francisco, San Diego, and Topolovampo, respectively, it will be found the comparisons, in reference to resources, industries, and population, are largely in favor of Topolovampo.

It is from these facts, which are thus susceptible of demonstration, that the proposed Norfolk-Topolovampo rail-highway is claimed as offering greater facilities to the inhabitants of the United States, Canada, New Brunswick, and Nova Scotia, for their communication with the Pacific; also, as offering a greater impetus to animate southern enterprise; also, as offering a greater opening to develop the vast resources of Northern Mexico, than any other route heretofore suggested, or, from the topographical circumstances of our continent, than can hereafter be projected.

Moreover, it is equally proven by calculations, in the said pamphlet, that the European may reach Asia and Australia via Norfolk, Topolovampo, and Hawaii at less sacrifice of time, money, and comfort, than via any other proposed route.

The North American continent trends southwestwardly on the Atlantic coast, and southeastwardly on the Pacific coast, thus forming a wedge of continent which renders the distance across it less as the degrees of latitude are reduced; but while this land-distance is shortened, that across the Atlantic, between Europe and the United States, is increased as the latitude is reduced, rendering the distance from Liverpool to Galveston—5,060 miles—double that from Liverpool to Halifax—2,580 miles. On the Pacific, likewise, the direct distances to Asia from ports in British America are less than those on the coasts of the United States and Mexico, Topolovampo being 609 miles further from Hawaii, the most advantageous center for all parts of the Pacific Ocean, than San Francisco is. The quickest time from Europe to Asia, all routes being equally free from obstacles, would be on that route having the shortest water and the longest land distances. In the economy of expenditure, however, the reverse would be the fact. The Norfolk-Topolovampo line is the longest uninterrupted land-route across our continent, and the passage from Liverpool to Norfolk is the shortest in regard to time, being in summer free from icebergs and in winter comparatively free from fogs, which are consequent and dangerous to the more northern sea-routes. As may be seen in the said pamphlet, these advantages more than overcome the 609 miles Pacific distance to the Sandwich Islands.

Norfolk will be recognized as the port the farthest north unembarrassed by ice and snow in the winter, and the farthest south free from tropical epidemics in the summer; consequently, as the harbor through which at all seasons passengers and freights may be forwarded to the great basin of the Mississippi and to the Pacific, which is a peculiar advantage this port maintains above every other on the Atlantic seaboard. Norfolk occupies the same superior relations to the back country on the Atlantic that Topolovampo monopolizes on the Pacific. Topolovampo, likewise, is the harbor farthest south free from the malaria prevalent in the *tierras calientes* of Mexico, being in fact in that happy zone of perpetual summer where it is too cool for the banana, and yet sufficiently warm for the luxuriant palm. As partial as these statements may seem, for the correctness of which, however, free examination is invited, the said pamphlet is offered for further information in reference to this latitude.

Again, it may be advanced as a feature in the argument of this Norfolk-Topolovampo rail-highway, that Halifax is 480 miles nearer to Liverpool than New York is, and the distance from New York to San Francisco is but 150 miles less than the distance from Halifax to Topolovampo; hence quicker time may be made from Liverpool to China and Australia via Halifax, Topolovampo, and Hawaii, than via New York, San Francisco, and Hawaii.

When the California Southern, now building, reaches Topolovampo, quicker time may be made from Norfolk to San Francisco via Topolovampo than from New York to San Francisco via Omaha. Therefore, in the purposes for which it is desirable to shorten a rail-highway—to the achievement of certain ends in the quickest time and with the greatest economy of transportation—it is believed the international line from Norfolk to Topolovampo is the superior, and the more its claims are inquired into the more will its merits be developed in vindication of the truthfulness of the statements which are here presented to your committee.

[11.]

Supplementary Remarks of A. K. Owen, C. E.

Read before the House Sub-Committee on Pacific Railroads, January 19, 1875.

MR. CHAIRMAN AND GENTLEMEN OF THE COMMITTEE: Such is an outline of the grand scheme which is submitted for your approval. In my judgment it is not only the most economical of all plans yet devised to cross our continent, but in its contemplated utility it is believed to be equally without a rival. In thus uniting the Chesapeake Bay with the Gulf of California, more than sectional interests are concerned. Our Southern States and those of Northern Mexico furnish a well-defined line for a highway intermediate between Europe and Asia. By the topographical and the geographical claims of the route, nature would seem to have determined the line from Norfolk to Topolovampo for the great highway across our continent, as surely as the same almighty laws have established the Mississippi River as the great water-channel from the Northwest to the Southeast. The adoption of this line will diminish the distance, shorten the time, lessen the expense, and subject the merchant and tourist to fewer interruptions and discomforts than any other route from Liverpool to Hong-Kong and Sydney; and, consequently, it must prove a great boon to four continents—Europe, America, Asia, and Australia.

The beneficial results of this proposed highway to the Southern States and Mexico are of very great importance, and promise to be invaluable to them. Over and above all financial considerations, however, will be the blessing of its influence in promoting order and security among the people—in furnishing them the stimulus to a settled life, and the thrift and comforts of its pursuits. The sympathy and aid of every section of our confederation should be extended to the project, as the promised means of starting vigor to their industries, and of opening up Mexico and the South to a commercial, industrial, social, and political status commensurate with their greater physical resources and superior geographical advantages.

Civilization was never more dependent upon one thing than it now is upon the facilities of communication. In the Roman era the construction of roads was considered no less important than the building of fortresses; and a nation's strength may be judged by the number and

the direction of its highways. The rail-car and the steamboat of our century are so great an advance over the locomotion of previous ages, that they are not merely a necessity for the civilization that exists, but are themselves the greatest of all civilizers. They are not a dependent force, but an originating, aggressive, and ever-increasing creator. The powers of by-gone times could but subdue countries already inhabited. They never attained to that greatest of conquests, the converting of the aspect of boundless, sterile regions into fertile, populated, civilized countries. Yet this is what the steam-engine has done, and is now doing, for the vast continents of America and Australia; and this it is that is now rapidly changing the very conditions of the peoples and countries of India and Russia. All nations are yielding their acknowledgments to the great and enduring achievements of mechanical science. It is the steam-whistle of the locomotive, boat, and factory, which is sounding the knell of every social and political disorder. The Pacific Railroad solved the Indian and Mormon difficulties, and brought the border outlaws under the authority of our civil code. The Intercolonial Railway will render a similar service to Canada. The Mamoré and Beni narrow gauge of Brazil and Bolivia is making the same decided advance in South America; and the Khedive of Egypt is extending the benign influence into the center of Abyssinia. India is secured to the iron grasp of her possessor by railways, which annihilate space and multiply force. By her railroads Russia is uniting and fertilizing heretofore inaccessible districts. Peru and Chili by railroads are rendering their untrodden lands available to the surplus population of crowded nations; in fact, railway enterprise is a cure for the social and political problems of modern life. Poverty, revolution, brigandage, religious persecution, and social singularities disappear before this all-powerful agent. Where armies and legislation are powerless, the locomotive-engine does not fail of success. Railways will remove the difficulties of Italy, Greece, Spain, Turkey, Mexico, the Territories of the United States, as their respective governments comprehend their uses, and construct them in the interest of the people, and not in the monopoly of a privileged class. Facilities of communication—which mean regular, rapid, comfortable, and cheap carriage—the interchange of ideas, and the development of diversified industries, are the pioneers of prosperity; and the highways are an index of a nation's intelligence, culture, and influence.

It has been the South's misfortune in this utilitarian age to have had her talents and energies directed to pursuits agricultural, prohibitory of other interests. In a new country, agriculture necessarily absorbs the occupation of the colonists. Then trades, mechanical arts, manufactures, and commerce must follow, to insure either individual or national prosperity. A people cannot be highly prosperous without diversified industries. Agriculture alone will not sustain a great section. Strange as it may appear, agricultural people are the only nations which perish of famine. India, Persia, Mongolia, Ireland are instances. The true policy of every community, therefore, is to cultivate the earth, manufacture its products, and send the surplus abroad in exchange for those necessities and luxuries which their own country and industries cannot so readily furnish. The South's dependence on Europe and the Northern States for a market for selling raw products, as well as for buying her essentials in scientific husbandry, mechanical arts, and skilled labor, has drained her of her wealth. The secret of national and sectional success is the encouragement of diversified industries. In the North, East, and West, the highest talents have been diversified in promoting trades, in developing the resources of the country, in making inventions, in facili-

tating intercourse and exchange with the interior and foreign countries, and in educating the people in the culture of skill, science, and the arts.

There is no section of the world which has more natural facilities and resources, or a more desirable climate, than the cotton, tar, turpentine, tobacco, rice, sugar, timber, iron, coal, and pastoral States of the South. Their physical and geographical advantages are pre-eminent. The present and prospective industries of the South depend upon the Kanawha and Coosa Canals, and on the Chesapeake-California Gulf Grand Trunk Railway. When these are built, the basis for her wealth and influence is established. A transcontinental line through the Southern States is not only essential to the progress of the Southern States and Mexico, but is necessary for their existence as a commercial and manufacturing people. It is a necessity for not only the prospective commerce east of the Rocky Mountains, but it will secure across the continent a regular, rapid, comfortable, and cheap intercourse between Europe and Asia. The Chesapeake-California Gulf Overland should claim the first attention of the Government, for the reason that its construction would give the earliest and greatest stimulus to immigration, capital, commerce, and diversified industries in the South with less expenditure of labor; and it could be completed in less time than any project of like import in the power of the American people. It is the foundation for the realization of every wish the Southern people may have in the direction of enterprise and progress. Its construction is essential to the digging of the canals from the Mississippi to the Atlantic, and must precede them. The friends of the one should be the advocates of the other. They are co-operative of a grand system of internal national highways. The Kanawha Canal is calculated to be a labor of several years, and of \$60,000,000. The Coosa is approximated at \$39,000,000. The Austin-Topolovampo section of the road under consideration, I figure, will cost \$24,000,000. This allows \$25,000 per mile for 650 miles, most of which is plateau, and \$58,333.33 $\frac{1}{3}$ for 150 miles, which, it is thought, will cover the mountain work. The figures will not be deemed small when it is considered that labor in Mexico is but 37 $\frac{1}{2}$ cents per day; that there is no frost or snow to contend with; that the streams are not difficult to cross; that abundance of material is found *en route*; that the topography is comparatively easy in the greater section of the distance; that the bases for supplies are convenient, and that the utensils, materials, and rolling-stock for the Mexican division may be taken into that country free from duties and taxes. The calculation is for the ordinary gauge of 4 feet 8 $\frac{1}{2}$ inches, and in every respect for a first-class road. Never was there a project which promised so much to be achieved with so little expenditure of money and time; and let me impress my convictions, that in giving assistance to the Great Southern Overland, the Government takes the most feasible, and certainly the most expedient, step for the completion of the Kanawha, Coosa, and the other canals which are so essential to the commerce of the Northwest and Southeast.

The increase of our population annually averages one million, of which 450,000 are immigrants, in those years of our protected industries, and of these latter 400,000 settle along the western lines of rail. When the Chesapeake-California Gulf line is assured, immigrants will flock to the South, many of them as skilled laborers, artisans, and mechanics; trades will start; capitalists will center in the great cotton, tobacco, rice, sugar, and grain El Dorados of the South; our rivers and wild waterfalls, which now murmur and flow in solitude, will propel thousands of

water-wheels and millions of shuttles and spindles; the raw cotton now exported for want of home industries, will be manufactured into cloth and exported, but which, instead of bringing into the South one hundred and seventy-one millions of money annually, as it now does, will then be worth \$855,000,000, or five times the price of the raw article; and the \$400,000,000 which the South has been paying each year into the coffers of the North for the common necessaries of every-day life, will be retained in the South to foster home industries. The South could well afford to pledge her credit to build this road, for it would pay for itself in one year, indirectly, by the general confidence it would diffuse along its entire route. This, however, is but its utility in developing the resources of the South.

Beyond its consideration in behalf of the Southern States, it will bring the great southwestern portion of Texas and all of Mexico, with her intertropical plateaus and her tropical tierras calientes of the coast, at our doors. The nine million of generous and well-disposed people in Mexico are begging to have a highway opened to them, that they may cultivate commercial and social intercourse with the forty millions of this country. In the world there is not another land so rich as Mexico. It is one vast mass of mineral, metal, pastoral, and agricultural wealth. California was always considered the worst section of the Mexican territories; yet, behold the enormous wealth and influence it has attained inside of twenty years. In 1850, the demand for the Union Pacific came from twenty millions of people seeking an outlet on the Pacific; and there were none to answer it beyond the Rocky Mountains. Again, in 1860, the cry for an outlet to the Pacific was urged by thirty millions on the Atlantic slope, to whom now five hundred thousand voices from the Pacific coast respond. The Union Pacific Company was not incorporated, however, till July, 1862, but the road was finished, in spite of disunion and war, May, 1869. Behold the advance of the entire continent since; but especially note that barren, mountainous, Indian-horded California, raising \$25,000,000 worth of wheat last year. The barley crop was valued even at a greater sum. She raised twenty-five million pounds of wool, valued at \$7,000,000. Seven million dollars worth of cattle were sold in her markets; and three million gallons of wine, valued at \$5,000,000, were made in her vineyards. Observe her great manufactures of wool, paper, and ice; her silk culture and industry; her gardens, orchards, and fruiteries; her immense mining enterprises and commercial interests; her handsome cities; her prosperous, cultivated people. Her kindred, but more genial territory, still under Mexican control, is even more favored in mineral, metal, pastoral, agricultural, and climatic resources. Her mines are fabulously rich, are comparatively little worked, and, in hundreds of instances, unclaimed. Read the "Mines of Mexico," by Ward, and be assured that the metal and mineral deposits in Chihuahua, Sonora, and Sinaloa are the richest in the known world. There are tin, cinnabar, copper, lead, magnetic-iron, bismuth, silver, and gold, in inexhaustible quantities. There is not a mineral known which is not found in Mexico. Many handsome and rare varieties of marbles, jaspers, agates, porphyries; also jet, alabaster, plumbago, kaolin, saltpeter, soda, sulphur, salt, ochre, lime, gypsum, guano, and rich fertilizing marls, which would be invaluable for the exhausted lands of the Southern States. Cotton, copper, indigo, rice, tobacco, maguey fiber, grapes, sap of the rubber tree, cereals, esculents, tropical fruits, spices, medicinal gums, barks, and roots, cochineal, ornamental and dye woods, timber, flax, wool, orchilla, hides, pearls, shells, oysters, and fish, all enter into the articles of export as raw ma-

terials. The manufactured goods, at present, are saddlery, and other works in leather, manta, clay ware, porcelain china, hats, blankets, paper, hair ropes, cordage, bagging made from the maguey fiber, matting, woolen carpets and cloth, cocoa, coquito and olive oils, molasses, rum, tequila, sugar, cigars, works in gold, silver, and feathers; and if the silk-culture is to become important on this continent, Mexico is its fitted field.

This, however, is but a portion of the trade. Look at the great ranges for stock, sheep, and goats in Mexico and Texas. Contrast the desert wastes of Australia, with the grassy plateaus and the cheerful valleys of Texas and Mexico; and then contemplate the vast developed resources of the former, and what might be attained in the latter. The wool-crop alone of Australia is worth \$150,000,000 annually, and when manufactured it is valued at \$500,000,000. Mexico and Texas are the most favored regions for raising sheep and stock in the world. The export of cattle from Texas in 1871 was 600,000 head. This would have required the carrying capacity of five trains per day for the entire year. In the Carrisal and Encinallas Valleys of Mexico there were a few years ago 250,000 head of stock. These great stock districts are in our proposed line. The best bituminous coal found on the Pacific slope—and the only veins yet discovered south of Mount Diablo, California—as well as the only anthracite, except that near Santa Fé, New Mexico, which has yet been found outside of Pennsylvania, is in those regions in Mexico crossed by this great overland highway to the Pacific. If it were but to reach these fields of coal, and to get to the great larch, oak, and pine forest, 300 miles long by 80 miles wide, which lies west of Chihuahua City, it would be ample inducement to build this line of rail.

The exports from the United States to Mexico would be, for the present, all classes of mechanical implements and combinations, all agricultural and labor-saving machines, all articles of convenience, luxury, and comfort. At what may be estimated the value of this commerce, when it is considered that to the greater portion of the people neither axes nor wheelbarrows, Yankee patents nor quack medicines, are accessible? Mexico, it is repeated, is the richest field for railroad, commercial, manufacturing, mining, and agricultural enterprise on the earth's surface. Its streams are capable of great water-power, and its climate is the most invigorating and pleasing on this continent. Mexico is as thickly populated as the United States, and yet has but 300 miles of railroad. Had Mexico as many miles of rail in proportion to population as Colorado, which is upon the same plateau, and one-half of which in 1846 was a part of the same country, it would have 90,000 miles. The circulation of money, per capita, in Mexico, is equal to that in the United States—\$14; but her money is silver and gold, and consequently her industries are subsidized to Europe even to a greater extent than ours are.

Mexico contains cotton-factories, perhaps the nearest complete, in machinery, in their appointments, and in ornamented grounds, on this continent. There are, also, her paper and woolen mills, and iron founderies, the manufactured articles of which are valued at \$100,000,000 annually. Her interior trade is estimated at \$400,000,000, and is conducted, almost exclusively, on the backs of mules and men, over mountains and across rivers, where roads and bridges are little known. But one-eighth of the arable country is cultivated, and even that but poorly, yet the cereals and esculents are valued at \$260,000,000. The annual production of silver and gold is from \$30,000,000 to \$50,000,000, or twice that of California. The coinage is \$28,000,000. In 1872 the bullion ex-

ported equalled \$18,000,000. It must be considered, also, that the few mines in operation are worked in the same primitive manner as they were by the Indians 300 years ago. The United States imported from Mexico, last year, articles to the value of \$18,500,000, and exported in return \$6,500,000, and this too under the above-mentioned difficulties of Mexican transportation.

Mexico and her untold wealth are within a day's ride of the Mississippi River. Wonderful it is that the United States has had an India at her side, with a coterminous boundary of 1,800 miles, for a hundred years, and yet has not made an effort to develop a market with her nine millions of people! What would England have done under similar conditions? What may be said of Yankee diplomacy here? Inquire how many thousands of millions England has spent in getting control of India, Australia, and Canada, simply to create a market for her goods. Look at France with her Algiers, Spain with her Cuba, the Dutch with their Java, and Russia with her Khiva. Here, too, let it be contrasted that in 1860 the Union Pacific, of 1,774 miles, was urged by thirty millions on the Atlantic slope, with but five hundred thousand in response from the Pacific shore; while the Austin-Topolovampo section of the Great Southern—but 800 miles long—is advocated in the interests of forty millions on the Atlantic shore, and in the response of nine million republicans in Mexico. Look at the perseverance of the Canadians. Hugh Allan is to force his road across the continent on or near the 52d parallel of north latitude, through an uninhabited region, by a route not yet determined, to some place in the wilds of the Northern Pacific coast not yet designated, embracing a distance of 2,685 miles, and at a cost of \$103,000,000, and when completed may be operated, perhaps, six months in the year. Think of Jay Cooke, and his enthusiasm in advancing from an unknown spot on Lake Superior to an unsettled locality on Puget Sound, depending upon carrying his settlements with the road, and after overcoming these embarrassments might, in favorable seasons, run his trains from ocean to ocean, probably nine months out of the twelve. The Kansas Pacific was built from the Missouri River—639 miles—to Denver, to meet a direct population of but five thousand miners, and that, too, over a country so destitute of water, timber, and mineral resources as to have continued almost useless to man and beast. The Texas Pacific is projected to cross the plateaus 1,600 miles to San Diego, one thousand miles of which will be through an alkali desert, which must subject the road to a dependence, for years, mainly upon the through traffic. But the greatest example of railroad enterprise is seen in Egypt, where the Khedive is running a line of 600 miles, across the Nubian Desert, into the center of Abyssinia, to a people primitive and barbarous in the extreme; and yet the project gives assurance of success and profit to the projectors. Has our country an argument why her railroads should not be pushed to the Pacific across Mexico?

If ever Mexico is to be redeemed from anarchy and misrule, it must be effected through the influences of the locomotive-engine. The conviction is fastening itself upon the public mind that at an early day we shall be compelled to exercise a controlling influence in that country; and when it is comprehended that this can be achieved quickly and substantially through the instrumentality of the Austin-Topolovampo line—what satisfaction that the contemplated means may be peaceful in the interest of an elevated humanity, and in no way humiliating to Mexico. Commerce, when wisely controlled, makes friends of nations. For our manufactures we would, at first, be paid in wool, hides, animals, minerals,

&c.; but when Mexican labor began to be protected and intelligently directed, we should receive the more valuable products of her tropical growths.

Avoiding the malarious belt, which stretches along the entire coast of Mexico south of the twenty-fourth parallel of north latitude, we reach the Pacific by a route eminently salubrious. The through trade of this line must necessarily be great; but it is the local business, as with other Pacific roads, which must develop its usefulness; and in this comparison with the other overland lines, the proposed international will claim very great superiority. Trains conveying passengers and merchandise from Saint Louis and Chicago, will reach Mexico in five or six days, and pass *en route* for the interior and the western coast. This interior and coast, where coffee, cochineal, coquito oil, and all tropical fruits, spices, log-wood, &c., are found in abundance, may be reached with less interruptions than San Francisco; and a valuable commerce with these tropical and intertropical sections may be thus established, even by Saint Louis and Chicago.

One of our great problems is cheap and quick transportation. The diversified resources, the topographical and climatic advantages of the Chesapeake Bay and California Gulf route, offer its solution. It is here predicted that every facility and comfort known to modern travel may be given to passengers for one cent per mile, and security and quick transit to freight, averaged goods, for one cent per ton per mile, from ocean to ocean, instead of the exorbitant prices charged by the lines now running. If twenty transcontinental lines are built, and run in the interest of privileged corporations, the bringing of the nations on the Pacific into social and business relations with those on the Atlantic will be but partially accomplished, for the journeying and the sending will be beyond the means of the masses, and the country, therefore, as large and as sectionalized and as impolitic as ever. The distance from New York to San Francisco via the Union Pacific is 3,303 miles, against 2,289 miles from Norfolk to Topolovampo—a direct gain of 1,014 miles for the latter; and as it has been shown in the said pamphlet that the curvatures and gradients must be largely in favor of the Norfolk-Topolovampo route, and as these control, in a great measure, the working expenses, it is hoped the tariff per person from ocean to ocean may be reduced from \$138 to \$23, besides a saving in time of about two and a half days. Thus the Pacific and Atlantic are brought as near together, on the latitudes of Norfolk and Topolovampo, as between Panama and Aspinwall. For distances of 200 miles and less, two cents per person per mile will, it is believed, prove remunerative; and from 200 to 500 miles, 1½ cents per person per mile. Coupon-tickets may be sold for much less. The inducement such reduction would offer to travel, and the distributed population and varied resources through which the line would pass, must fill the trains both ways—and a railroad thrives in the proportion that one section of its line lacks that which another has facility for supplying.

Would it not be an advance in our system of self-government, were the Government to control not only the carriage of our letters and moneys and packages, as it now does, but likewise our rail-highways, which transfer our persons and properties; our telegraphs, which exchange our thoughts; our canals and water-ways; and our ways and means of payment? When the people allow privileged parties to monopolize these, they confer the power which subsidizes their own industries and embarrasses their own movements. In duty to its own citizens, and in friendship toward Mexico, therefore, the Government should push this

national highway from Austin to Topolovampo. Individual efforts should not be compelled to do works of international importance. The locomotive must precede the plow and the town the farm, where the rivers are not navigable. No citizen should be forced to settle upon the Texas plateau or to pay taxes in advance of the steam-engine.

Gentlemen, the people agree with Congress that the Government must practice economy, or all is disaster, war, and revolution. There can be no economy, it is suggested, and no national prosperity, while the national labor is unoccupied. When our inexhaustible resources and unlimited advantages are contemplated in conjunction with our wealth-producing masses, and the stagnant condition of the one is contrasted with the destitute condition of the other, is it not suggestive of the remedy? The masses need the factories and the furnaces to be put in operation, and the nation needs the product of these to augment her markets and multiply her commerce. During this masterly inactivity the nation is subjected to this vast expenditure of wasted labor. Let the Government, therefore, institute a system of economy at the cost of whatever is required to encourage every arm and brain to healthful action. This is economy—comprehensive, national economy—and every attempt to economize which fails to employ the nation's labor, must be a national failure in economy.

If the Government has metallic money to build works of national and international necessity—such as will give work to the masses, and restore her commerce upon the seas—and the people will accept it in payment for their services and wares, then let it be paid out in exchange for those services and wares; but if the Government has not the metallic money, and the people will accept legal-tender Treasury notes in payment for their services and wares, and not ask that these notes be redeemed otherwise than with their own exchanges and for dues to the Government, in the name of the nation, why not issue Treasury notes in the encouragement of labor, until there is no longer a stagnant product or an unemployed arm?

The nation needs that our half-made roads to the Pacific and the canals from the Mississippi to the Atlantic be completed. Money paid out in exchange for a railroad and canal goes into general circulation, and is not immediately consumed as bread issued to an army. A three-cent piece, paid to a laborer on a railroad or canal, will probably change hands ten times a day, effecting a circulation in the year to the extent of \$100; or, if it is estimated on both sides of the exchanges, to that of \$200. Therefore, a three-cent piece paid for constructing a national highway is of more value to the people than all the gold and silver in the world would be piled up unused in the Treasury at Washington.

The Union Pacific roads earn \$11,000 per mile. Allowing the earnings of the Austin-Topolovampo line to be the same, or, for facility of calculation, but \$10,000 per mile: fifty per cent. for net receipts $= \$5,000 \times 800 = \$4,000,000$. This cancels the \$24,000,000 expenditure in six years, and the highway belongs to the people.

There is no company or organization associated with this proposed road. It is a project of my own conception; and I am its sole representative, as I am here in its advocacy not only unsupported, but, like the project, unknown.

The Government has made the surveys of all Pacific routes so far proposed, and it is hoped the importance of the Austin-Topolovampo section will not be thought unworthy of the same examination.

A preliminary survey, report, and map may be completed in four months, with an appropriation of \$20,000. Should the Government

accept the suggestions contained in your petitioner's memorial, it is possible to offer the traveling and transporting facilities of the said Austin-Topolovampo section to the accommodation of the world at the period of the American centennial celebration. Therefore, in consideration of these views, let it be

Resolved, That a transcontinental rail-highway through the Southern States of the Federal Union and the Northern States of the republic of Mexico is a necessity for the present and prospective commerce of the two republics and the world.

Resolved, That the said road should constitute, in conjunction with the canals of the Mississippi Basin and other highways, a system of national internal improvements.

Resolved, That the great national rail-highway should cross the Mississippi River below its great tributaries.

Resolved, That it should be on a line the least sectional and the most national.

Resolved, That in locating the said line, it should be rendered subservient to interoceanic demands and to the development of American commerce.

Resolved, That the route should be free from winter interruptions and summer epidemics, and should be selected in reference to the facilities and geographical prominence of its termini.

Resolved, That the claims of the Chesapeake Bay and California Gulf route meet the approval of this committee.

Resolved, That this committee recommend that the Government order a survey, report, and map of the Austin-Topolovampo section of the proposed rail-highway, and ask permission of the Mexican government that the said survey, report, and map may be extended across her territory to the Pacific.

[12.]

WASHINGTON, D. C.,
February 22, a. m., 1875.

DEAR SIR: It is desired to call the attention of the committee still further to the importance of recommending a survey of the Austin-Topolovampo Pacific route.

The continent of North America is in shape like a wedge. The Atlantic coast trends southwestwardly; the Pacific, southeastwardly. The great sterile region, which extends from ocean to ocean in Russian and British America, grows less as the latitude decreases, until it emerges into the cotton-lands on the Gulf of Mexico. Moreover, it will be seen, by referring to the map of the United States and Mexico, just published by O. D. Case & Co., on which topography is made a specialty, that from the 50th to the 25th parallel the Rocky Mountains are likewise wedged-shaped.

Admitting the above facts, which accord with the most close investigation, it must, also, be granted that the Austin-Topolovampo Pacific route crosses the north continent on that parallel where the plateaus and mountains are least wide, and on a route where the gradients are likely to be light and the tangents long, and in consequence upon a line which will secure rapid travel in conjunction with reduced expenditures.

On a map showing the explorations and surveys from the Mississippi to the Pacific, made by Edward Freyhold in 1868, by order of the War Department, a copy of which hangs in the room of the committee, there are fifty surveys recorded. These, together with as many more, partic-

ularly the surveys of the Ohio and Chesapeake, James and Kanawha, Coosa, Fort Saint Philip, and the numerous surveys of the Tehuantepec, Nicaragua, Panama, and Darien Canal and Rail routes, have been made under the direction of the War and Navy Departments, at the suggestion of some one or more individuals, to the end that information relative to their claims be officially reported to Congress and the people, and this, too, long before any organization was formed to construct the work.

The railroad-routes to the Pacific were inaugurated in 1853, at the suggestion of Jefferson Davis, then Secretary of War. Since then Congress has ordered survey after survey to be made on the routes known as the 32nd, 35th, 38th, 41st, 47th, 48th, and 49th, parallels; and these surveys were made in advance of their respective railroad organizations.

The survey of the 30th-parallel route from Austin, Tex., to the Rio Grande, and thence across Mexico, as petitioned in Senate bill No. 1199, is a line heretofore unsuggested, and yet it is proven that it will give every port on the Atlantic coast, and every great center of industry and population in the United States and Canada, east of the Rocky Mountains, the nearest and least interrupted route to the Pacific Ocean.

The printed information before the committee, relative to this route, claims for it great national and international importance, and therefore, as Pacific routes are under consideration by Congress, and are urged by the people, it is prayed that the committee recommend the Austin-Topolovampo survey, to the end that its advantages be officially reported, and an organization encouraged to build the highway.

Earnestly and respectfully,

A. K. OWEN.

Hon. WILLIAM M. STEWART,
Chairman Senate Committee on Railroads.

[13.]

This pamphlet invites attention to Hampton Roads and Topolovampo, as the fit termini of an international railroad. To connect these two havens and give the system of highways of North America an outlet to the Pacific Ocean, requires but eight hundred miles of track from Austin, via Chihuahua and Sinaloa, to this Pacific harbor.

Early in 1872 the undersigned, in company with others, crossed from Colorado, via the Mesilla Valley, into Mexico on a railroad reconnoissance. The expedition proving favorable to the construction of the Mexican section of the Denver and Rio Grande Railway, the undersigned was commissioned to examine the Pacific coast and the passes of the Sierra Madre of Northwestern Mexico. It was while prosecuting these explorations that his attention was attracted to the "Smuggler's Retreat." After three days spent on its waters and picturesque shores, in examination of its harbor fitness, and furthermore assuring himself of the existence of a feasible route over the Sierra Madre via the valleys of the Rio Fuerte, this ocean-to-ocean line was projected.

The great southern overland, Europe to Asia, across North America, via the Southern States and Mexico, uniting the Chesapeake with the Pacific, by the construction of eight hundred miles of rail from Austin, via Chihuahua City, to Topolovampo. A harbor of the first magnitude now for the first time disclosed to the world.

All Europe is moved with the "Eastern Question," Turkey and the transit for the commerce of Asia between the Mediterranean and the Persian Gulf.

All America should not be less concerned with the "Western Question," Mexico and the transit of the United States for the commerce of the Orient between the Atlantic and Pacific Oceans.

Had there not been a continent for Columbus to discover, there would have been from China to Europe one vast unbroken waste of waters covering more than two hundred degrees of longitude. America divides this water expanse—the United States and Mexico interpose between Europe and Asia.

Lesseps, with his canal, tried to secure the great highway of nations to the interest of France; Turkey is advocating the merits of the Euphrates and the Persian Gulf; Colonel Church, in behalf of the Bolivian and Argentine authorities, is extending the facilities of the Madiera and Mamore Rivers; the American-Asiatic Society is working for the greater claims of the Central America Isthmian routes; Jay Cooke, esq., is pushing his Northern Pacific; the Union Pacific is struggling with the snows of the Sierra Nevada; the Atlantic Pacific is contending with the topographical difficulties of the 35th parallel; Colonel Scott proposes to cross the deserts of the Gila and Colorado; the followers of General Angel Trias proclaim the advantages of the Guadalupe Pass and Guaymas Harbor; J. Sanford Barnes, esq., has in prospectus a terminus at Mazatlan for the Texas International; and Generals Palmer and Rosecrans are laboring for a line from Tampico to Banderas Bay. All these have in view the control of the European and Asiatic exchange.

It is after a study of these different routes that attention is asked to this new railroad scheme, which has for its object the connection of the Atlantic and Pacific Oceans; the opening of the mineral, metal, timber, pastoral and agricultural wealth of Mexico; the development of the Southern States, and the securing of the Asiatic and European commerce. It is assumed from personal reconnaissance and from the travels and writings of others, that this proposed route has superiority over all the transcontinental lines; and that it is a movement presenting the greatest facilities for the commercial intercourse of the United States, with Mexico, Europe, and Asia, which the physical circumstances of our continent can offer to the enterprise of the American people. The route in prospectus designs to unite Hampton Roads with the great and almost unknown harbor of Topolovampo, on the Gulf of California, latitude 25° 32' N., by crossing Mexico, via Chihuahua City, to Austin, Tex.; thence by the existing roads between the latter and the Chesapeake.

The late Com. M. F. Maury describes the claims of Norfolk or its vicinage as the Atlantic port, and shows that it is the "Apex of the great commercial V" of not only the Mississippi Basin and the United States, but of all Europe, the West Indies, Brazil, and other South and Central American ports. In short, the natural advantages of Norfolk as the Atlantic port are admitted. And although Topolovampo is unknown to commerce and the world, yet for its harbor-accommodations it is not inferior to that of New York. Col. Frederick G. Fitch, C. E., and commander of Capt. Charles P. Stone's survey of the California Gulf, reports the resources, populations and climates of Lower California and Northwestern Mexico, and describes also the Gulf of Cortez and Topolovampo Bay. Dr. B. R. Carman, ex-consul at Mazatlan, writes concerning the "Smuggler's Retreat," which the Mayo Indians call "Topolovampo," and which we translate "Hidden Bay," or "Secret Water." The testimony of these two authorities concerning Topolovampo as the great Pacific port, corresponds with the information of the undersigned, after a thorough examination of its waters and shores. Not only thus, but the water survey and map of Topolovampo by Com. Wm. T. Truxton, com-

manding U. S. S. Jamestown, reported to Rear-Admiral Thos. T. Craven, commanding North Pacific Squadron, together with extracts from his journal, will be found conclusive as to the merits of Topolovampo for a great commercial depot.

Furthermore, in the design of uniting these two harbors, will be the report of Dr. Charles C. Johnson, the recognized amateur authority of Northwestern Mexico, to Major Gregg, in reference to the Rio Fuerte Pass, which runs between Chihuahua City and the Pacific. Major Gregg, in 1853, proposed to construct a wagon-road from the Santa Eulalia Mines to the Gulf of California, but revolution stopped the movement.

The climates, populations, industries, intersecting streams, &c., bearing upon this proposed line, are to be found in the physical surveys of our continent. "Lloyd's great map," showing the railroad and steamship routes over the United States, and to and from the ports of both oceans, consolidates the importance of a southern overland route. Its assistance to the southern lines, and to those leading into all sections of the Mississippi Basin, would be recognized, as well as the impetus it would give to Matagorda Bay, Galveston, New Orleans, Mobile, Savannah, Charleston, Wilmington, and other seaboard ports of the Atlantic; it would even increase the opportunities of Baltimore, Philadelphia, New York, Boston, Halifax, and Quebec, by giving them a shorter and more reliable connection with the Pacific, and the longitudinal lines in prospect on the western and eastern slopes of the Rocky Mountains. So impressive are the geographical relations of this new outlet, that the examination of it, it is believed, will lead to the conviction of its claims.

But the facilities of Topolovampo Harbor, and the advantages of the Topolovampo route, will be appreciated commercially only by comparison with the facilities and advantages of other harbors and other transcontinental routes. By the map, then, it may be seen the distance from New York to Topolovampo, via Austin and Chihuahua, is equal to that from New York to Mazatlan, via Austin and Laredo. In a pamphlet issued by the Texas International this distance is estimated 2,559 miles, which is 381 miles shorter than the New York-San Diego line; 744 miles shorter than the New York-San Francisco line; and 987 miles shorter than the New York-Olympia line. The superiority of the Topolovampo route, however, is not alone in miles. In looking at the relative natural merits of these Pacific routes, it may be learned that the delineation to Mazatlan is made in advance of examination of the Mexican territory; nor is the contemplated port a harbor—it is simply an open roadstead, dangerous to all classes of shipping, and dreaded by all nautical men. For information on this point see Commodore Stockton's Survey, 1847, "Bartlett's Journal;" and report of the undersigned to General Palmer. Again, in glancing over the claims of the Texas Pacific, the Staked Plains become a prominent feature, while the sands of the Gila and Colorado must drift before one with their 1,000 miles of barren waste. The substantial argument for it is its security from snow; but even this in a measure is canceled by its excessive heat and alkaline dust; and besides the absence of population, it is highly probable the soil along the line can offer but little inducements to a population. The Atlantic Pacific is embarrassed with topographical difficulties, and the restrictions of the Indian Territory, and whether it is free from snow in the mountain region north of the Rio Gila is a question. The Union Pacific is a failure as regards winter travel. The Northern Pacific is less impeded with snows in its coast-range sections, perhaps, but no one acquainted with the ice-locked lakes and the arctic winters of our Northern States will give it his confidence. The Union Pacific is the only line completed.

The others must require years of toil, as they are far in advance of settlements. The Northern Pacific is running about 500 miles, and has yet 1,700 miles to construct.* The Atlantic Pacific is operating 364 miles, and has some 1,600 miles to survey and build. It is not destined, perhaps, to reach farther than the Canadian River for many years. The Texas Pacific was started this winter, and has 1,600 miles to locate. The Texas International is hoping to reach Austin; and the Mexican Interoceanic, from the Gulf of Mexico to Banderas Bay, is still a question before the Mexican Congress.

The above embarrassments are not applicable to the Topolovampo route; and therefore it is claimed that between New York and the Pacific, Topolovampo has but San Francisco her great rival—with time, economy, and reliability all largely in favor of Topolovampo. But even this is not the great object.

From Hampton Roads to Austin City there are rail-connections. The consolidated interests of these would leave a space of 769 miles between Austin and the Pacific; but via Chihuahua 800 miles. To unite the Chesapeake with Topolovampo, therefore, and complete the most promising ocean-to-ocean route in America, would require less by 900 miles than to complete the Northern Pacific; less by 800 miles than to complete the Atlantic Pacific; and less by 800 miles than to complete the Texas Pacific. That while the race from New York to the Pacific is favorable to Topolovampo, it is the line from Norfolk to Topolovampo which offers the great transcontinental inducements, and in comparison with its rivals stands pre-eminent, to wit:

It is believed the calculation demonstrates that, between New York and San Francisco, there are 2,593 statute miles, as the crow flies; while between Norfolk and Topolovampo there are 2,089 statute miles—a gain of 504 miles in favor of the latter; but, by referring to the shortest rail connections between the former ports, there is found an increase of 710 miles over the direct line, making the actual rail-distance between New York and San Francisco 3,303 miles; and if it is further considered that a rise of fifty-three feet in grade is equal to operating an extra mile of level road, it would add much to the length of track in the calculation of its daily workings. This proposed route, on the contrary, discloses no obstacles to force detours, save 150 miles in the Sierra Madre. If a straight-edge is placed on the map it will be seen that Norfolk, Austin, and Topolovampo are in almost a bee-line; and that this line from Norfolk to Austin passes through Morgantown, Carolina; Dalton, Ga.; strikes the Tennessee at Gunter's Landing—the beginning of the Coosa Canal; and crosses the Mississippi at Providence—points which eventually will govern the route. For detours, however, let there be added 200 miles, making 2,289 from 3,303, leaves 1,014 miles in favor of the "Great Southern" over the Union Pacific. So that, when the equated lengths of the two lines are compared, it is believed the former should lessen the time and expense one-half their present rates in the practical distance from ocean to ocean.

In regard to constructing and operating the proposed line, the gradients and curvatures are comparatively easy—no snows or frosts to contend with; abundance of water and material *en route*. The average cost of road and equipment in the Southern States is \$30,000 per mile, while the average for the Middle States is \$55,000 per mile. Through Texas and Mexico, most of the line will cross plateaus, where the cost is estimated not to exceed \$20,000 per mile. Labor at the South is cheaper

* Secretary Wilkeson states the Northern Pacific is 2,200 miles.

than at the North or West; and in Mexico, there are six million strong, active laborers anxious for employment at thirty-seven and a half cents per diem. The delays, accidents, injuries to road-bed, bridges, rolling-stock, &c., consequent to the northern winters, cost about one-half more than the regular summer expenses. These will not be met on the Norfolk-Topolovampo route; while the line itself is the shortest interoceanic link—being 1,014 miles less than from New York to San Francisco, via Union Pacific; 1,457 miles less than from New York to Puget Sound, via Northern Pacific; 651 miles less than from New York to San Diego, via Texas Pacific; and 270 miles less than from New York to Mazatlan, via Texas International.

Not alone in relations with our own continent does Topolovampo claim consideration, but attention is invited to the dispatch and economical transit with which exchanges may be made from Europe to China, Japan, Borneo, Manila, Australia, Japan, via Norfolk, Topolovampo, and the Sandwich Islands. San Francisco, in regard to direct distance to Canton and Australia, is the superior port on the Pacific; but the practical sailing-route is via Sandwich Islands—as well for their trade, as being the only coaling-station *en route*. Colton, in his Cabinet Atlas, says: “The Hawaiian Islands, with comparative slight deviation, are situated in the track of many important sea-routes, besides being themselves the principal depot for whalers in the North Pacific. From San Francisco to China, and from Honolulu to Australia, the deviation is very small, and again Honolulu is directly in the proposed route of steamers from Panama to Shanghai. In view of these facts, their advantageous position indicates a future greatness for the group, not possessed by any other point in Polynesia, and if only regarded as a depot for the whale-fisheries—one on the equator, another near Japan, and a third toward Behring’s Sea—their importance is not materially diminished, and they would still serve for a common center of commerce of no mean amount.” Therefore, the Sandwich Islands must claim consideration in the route, and it remains but to add a few figures to show that quicker and cheaper transit may be made from the English Channel to China, Australia, &c., via Norfolk, Topolovampo, and Hawaiian Islands, than between the same points via New York, San Francisco and the Hawaiian group. From the “Lizard”—the point geographic of the English Channel—to Honolulu, via Norfolk and Topolovampo, the actual sailing-distance is 5,878 sea-miles; while between the same points, via New York and San Francisco, it is 5,038 sea-miles; but in the route across the continent the “Great Southern” has 2,289 against the 3,303 miles of the Union Pacific; thus adding 1,014 miles of the land and expensive travel to New York-San Francisco, against the addition of 840 miles of the sea and cheap travel to Norfolk-Topolovampo, being the sum of 231 miles Atlantic difference, and 609 Pacific difference.

Professor M. F. Maury, who is the acknowledged authority on the ocean—its currents and phenomena—says that the average time between the Lizard and New York, and that between the Lizard and Norfolk, are equal—that the delays consequent to the dangers of the icebergs, fogs, and storms of the former route are equivalent to the time necessary to overcome the extra 231 miles of the latter. This leaves but the 609 miles sea-difference, against 1,014 miles land-difference between New York and San Francisco. The schedule time of the Union Pacific is 18 miles per hour, equal to 56 hours to overcome the extra 1,014 miles. The 13 knots per hour for ocean-steamers would require 46 hours to overcome the extra 609 miles between Topolovampo and Honolulu, thus

showing, all other things being equal, 10 hours in favor of Norfolk and Topolovampo. But as the "Great Southern" will operate on light grades and curves, and will be urged to meet the demands of a population along the whole route, the time saved will be even much greater than thus represented. Consequently this "Great Southern Overland" is suggested for dispatch, cheapness, uninterrupted, and comfort beyond competition by any other through route from Europe to Asia.

In turning to our interior relations, it may be seen that Saint Louis is 316 miles nearer Topolovampo than to San Francisco, in an air-line, and that Chicago is 221 miles nearer the former than the latter. To move a ton of wheat 100 miles over an average railroad, costs as much as to ship it 2,300 miles on the ocean; hence a ton of wheat could be sent from Saint Louis to Topolovampo and 7,268 statute miles over the ocean, or from Chicago to Topolovampo, and 5,083 statute miles by sea, for the same freightage that would put it on the quays at San Francisco.

Again, on the authority of Com. M. F. Maury—Physical Survey of Virginia—the compared distances from Saint Louis and Cincinnati to all prominent cities in Europe, via New York and Hamburg, with the same, via Norfolk and Flushing, are in favor of the latter; and in the later edition by the same author, relating to Virginia's geographical position, commercial advantages, and national importance, it will be seen that Omaha, Kansas City, Chicago, Saint Louis, &c., are all nearer Norfolk than to New York; and that "Norfolk, with its deep waters, spacious harbors, and free outlet between the capes of Virginia to the sea, occupies geographically what the early discoverers thought would be, and what physical geography claims is, the most commanding commercial position along the whole Atlantic seaboard of the United States."

The Physical Surveys of Virginia were written to demonstrate the importance of the Kanawha, Coosa, and Holston Canals, not alone to the Southern States, but to the entire Union; and it was designed to supplement them with a trunk-line to the Pacific coast—to San Francisco, because Topolovampo was not known, and the Sierra Madre was thought to be an insurmountable barrier to railroad enterprise.

In his inaugural, the President announces his desires toward the restoration of good feeling between sections; toward the construction of cheap routes of transit over the land; toward friendly intercourse with our neighbors and distant nations; and toward the establishment of our commerce and carrying trade on the ocean. It is suggested that the building of the "Great Southern" would be a more auspicious step toward the fulfillment of the President's wishes than any other project in the power of the American people. The railroad will assist the canals; the one supplements the others. The capital, immigration, and business invited to Virginia and the Southern States by the impetus of this great interoceanic line, would add materially to the early completion of the Kanawha and Coosa Canals; the friends of the one should be equally the advocates of the other.

At present, every business and industry in the South is stagnant. The railroads, which are an index of the people's prosperity, move sluggishly over the country. Most of the lines are in debt, and not one in ten, perhaps, is paying remunerative dividends. What could so well revolutionize the industry and prosperity of the South as to give its rail network a short, uninterrupted outlet to the Pacific, which would invite the trade of both oceans, and eventually build the Kanawha Canal from the Mississippi Basin to Chesapeake Bay, and the Coosa Canal from the Tennessee River to the Gulf of Mexico.

Saint Louis, not satisfied with the winter interruption of the Union

Pacific, has undertaken almost alone the many difficulties of the 35th parallel. She already has 364 miles in running order. Why should not these enterprising western capitalists join the "Great Southern," at Austin? The Texas International, as before stated, has in prospect a terminus at Mazatlan. There is not a harbor at Mazatlan, and the Durango Pass has serious difficulties. Why should President Barnes not unite his interests with Topolovampo, which has harbor facilities equal to New York, and the geographical advantages of Mazatlan?

It is evident to the financial mind that there is not capital in the United States to build all the roads under consideration, although it is equally evident that the North, the South, and the East are all panting for a speedy outlet to the western ocean. Why should not that route presenting the greatest facilities to the greatest number be chosen?

The Allan Line receives and dispatches steamships between Norfolk and Europe semi-monthly, and so well are they encouraged that weekly steamers are proposed. This company, doubtless, would be glad to run ocean ferries from Topolovampo to San Francisco, the Sandwich Islands and the other ocean worlds of the Pacific, as well as to different points on the continent of Asia.

The Chesapeake and Ohio is completed to Richmond; and Scribner's Monthly for December, 1872, gives a graphic description of the energy, capital, and business which are springing up on the shores of Hampton Roads. This organization would necessarily encourage our project. The same argument would anticipate aid from the merchants of Holland, Belgium, and Rhenish Germany. The united influence of the Southern States should be a certain support. Texas may be relied on for a charter and a subsidy of \$10,000 per mile. For rights of way, privileges, and inducements, see pamphlet of Texas International. Mexico may be calculated on for a charter and a subsidy of \$16,000 per mile, and in the mountain-sections of the Sierra Madre, a larger one, doubtless, will be allowed. In the decree of the Mexican Congress, granting subsidies and franchises to General Rosecrans, it may be seen, in article 5, that all rolling-stock, iron, utensils, and materials for building, repairing, and operating the road and telegraph, will be free from duties and taxes for twenty years; in article 6, that the company is privileged to use timber and other materials found *en route*; in article 9, that all minerals and metals opened and denounced by the company are to be considered as in cases of private individuals; and in article 13, that passengers, correspondence, and merchandise are permitted to pass through the republic free from all duties and taxes for fifty years.

Besides this the company is at liberty to purchase all the lands through which it is desired to run the line, at the rate of a few cents per acre, and even this money need not be paid for five or ten years, and for an inconsiderable sum possess itself of the lands adjacent to Topolovampo; denounce and hold the hematite-mountain near Sinaloa City; the extensive coal-fields on the headwaters of the Rio Fuerte and Rio Yaqui; and the gold-mines, silver, copper, tin, lead, cinnabar, and mineral veins along the entire Mexican line. Probably, too, the company could secure the city site on Hampton Roads. Is not all this of sufficient importance to obtain respectful consideration?

Mexico awaits development. Every influential and moneyed man there will give his assistance and his protection to the organization that comes among them to work. The Mexican people wish to see and assist some practical effort in their behalf. President Lerdo is desirous to encourage, aid, and protect those who will assist him and his people in developing the great treasures of Mexico. Never was there a time in

the history of Spanish America when the friends of that republic so anxiously look for the prosperity and elevation of their country.

All Christendom is looking on Mexico ; and her people are not insensible to the position they occupy in the world's thoughts. They trust, with the present prospect of peace and reciprocal intercourse with their sister republic, to lay the foundation which, in a few years, will bring their country into respectable rank among the nations of the earth. Railroads and their auxiliaries will give unity and security to the country ; immigration and capital will seek her mines as they did the El Dorado of the Pacific in 1849 ; and agricultural industry will yield cereals, esculents, and fruits from her valleys and river-bottoms all the year round.

Abbe Domenech, in behalf of France, writes : " Behind the Mexican expedition there was more than an empire to found, a nation to save, markets to create, thousands of millions to develop ; there was a world tributary to France, happy to submit to our sympathetic influence, to receive their supplies from us and to ascribe to us their resurrection to the political and social life of a civilized people." What France failed to accomplish by war remains for the United States to achieve by the resources of peace.

In conclusion, it is claimed that if " a railroad thrives in the proportion that one portion of its line lacks that which another has a great facility for supplying," then the " Great Southern Overland" has the advantage over all others of the transcontinental lines.

That it will have the demands of a larger number of people to meet than any other overland route.

That the proposed city site on Topolovampo is level and well drained ; has abundant supplies of fresh water and building materials ; and that it is picturesque and in every way desirable, with a meridian temperature ranging from 52° to 86° Fahrenheit.

That it is the " apex commercial" of Northern Mexico ; that the distance which separates it from San Francisco, via Cape San Lucas, is the same as that which separates Mazatlan from San Francisco ; and that it is a better harbor and some 176 miles nearer the ocean than the celebrated port of Guaymas.

That Mexico is the richest mining country known ; has every variety of climate ; and is capable of producing from her own soil all which commerce collects from the other parts of the globe.

That the coast country of Northwestern Mexico alone is equal in area to Cuba ; possesses a fertility and productiveness similar to that island ; and is as capable of exporting a hundred million dollars' worth of tropical groceries, spices, fruits, medicines, and ornamental woods, as the Spanish island.

That the rivers Yaqui, Mayo, Fuerte, Sinaloa, Culiacan, Piastla, Alota, Quemada, Mazatlan, Rosario, Acaponeta, San Pedro and Santiago, are the largest in Mexico ; and that their products will naturally flow to the " Great Southern."

That the forest of Mexico and of Southwestern America is in the secondary valleys of the Sierra Madre, west of Chihuahua City ; that it is 80 miles wide, and extends from near Bavispe almost to the latitude of Mazatlan.

That the " Great Southern " will strike the largest and best veins of coal—bituminous and anthracite—known in Mexico, and perhaps the only deposit found on the Pacific south of Mount Diablo, California.

That the mineral resources of the Sierra Madre, of Sinaloa and Chihuahua, are the richest in the world. (See " Mines of Mexico," by

Ward; "Northwestern Mexico," by Chipman; and "Commerce of the Prairies," by Josiah Gregg.

That the "Conception Valley" is 90 miles long, and is one of the largest wheat and potato districts in Mexico; that the state and city of Chihuahua do the largest trade in Northern Mexico; and that the Santa Eulalia mine is the most noted silver deposit in the world, excepting the great Potosi mine in South America.

That the States of Chihuahua, Sonora, Sinaloa, Durango, and Coahuila contain, according to the last census, 735,928 inhabitants; and the eleven Southern States directly associated with this line contained, in 1870, nine and a half millions; that these people necessarily will be dependent upon the "Great Southern;" and that the latter will be the international line between the thirty-eight million citizens of the United States east of the Rocky Mountains, and the nine million citizens of the Republic of Mexico.

That the entire products of the Conchos Valley, one of the most fertile in the republic, will be tributary to the "Great Southern;" as will be also the products of the great valleys of Encenillos and Carrisal; and that the trade of the Rio Grande Valley will be shared with the other parallel lines. (See report of General Palmer, in behalf of the 35th parallel; and of Captain John Pope and others, in behalf of the 32d; and for the resources and traffic of Mexico, the government, people, industries, and topography, see pamphlet compiled from the reconnaissances of the undersigned and companions.

That Norfolk is the port par excellence on the Atlantic seaboard; that it is the apex of the "great commercial V," and the "grand point geographic" of the United States.

That the two consorted ports—the one Atlantic and the other Pacific—are less exposed to excesses of heat and cold; that no line can secure for its laborers greater exemption from climatic extremes; and that the tourist in the winter may travel by his open window, and in the summer experience less oppression than on the parallels of New York and Philadelphia.

That the "Great Southern" will pass through the tar, cotton, tobacco, sugar, rice, timber, and cattle States of the Union; that it will be to the Southern States as the Northern Pacific is to the Lake States, and as the Union Pacific is to the Middle States.

Railroads and telegraphs are the veins and arteries of a country. Ships ply from continent to continent, and, as shuttles, weave nations into the common woof of mankind.

The "Great Southern Overland" will link the United States with Mexico, and will invite Europe and Asia to exchange compliments across America.

A. K. OWEN, C. E.

CHESTER, PA., 1—1873.

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Prospectus No. 2.

It has been shown that the distance from New York City to Topolovampo, via Austin and Chihuahua Cities, is 1,187 miles less than that from New York to Puget Sound via Northern Pacific; 744 miles less than that from New York to San Francisco via Union Pacific; and 381 miles less than that from New York to San Diego via Texas Pacific.

It was shown likewise that the Norfolk-Topolovampo route is 1,457 miles less than the New-York-Puget-Sound route; 1,014 miles less than

the New-York-San-Francisco route; 651 miles less than the New-York-San-Diego route; 270 miles less than the New-York-Mazatlan route; and that it is at least 1,200 miles less than any intercolonial ocean-to-ocean route of British America.

Attention is now directed to the superior geographic bearing of Topolovampo, as the Pacific outlet for the commercial centers of the interior of North America; and particularly to present the greater inducements which Topolovampo offers over Puget Sound, or San Francisco, or San Diego, in point of dispatch and reliability, for the different harbors on the Atlantic seaboard of Canada, New Brunswick, Nova Scotia, New England, and the Middle, Southern, and Gulf States, to wit:

If one takes a map of North America, and makes a point on the Pacific coast midway between Olympia and Topolovampo, lat. $25^{\circ} 32'$ N., it will strike near the town of Santa Barbara, California; and if a corresponding point be noted on the Atlantic coast equi-distant from Olympia and Topolovampo, it will strike the city of Halifax, Nova Scotia. A line drawn from Santa Barbara to Halifax, consequently, will be an equi-distant line between Olympia and Topolovampo, rendering all the country north of this line contiguous to Olympia, and all south of it contiguous to Topolovampo. A glance at Topolovampo, with its natural relations, with the vast territory south of this division line, will illustrate the geographical superiority of its locality over any other port on the Pacific coast for the interior and western coast trade of our continent.

San Diego comes the nearest to Topolovampo in its claims to the back-country resources, yet it may be seen that the equi-distant line between these ports would pass from Cape Bablo, on the coast of Lower California, to the Mississippi River at the mouth of the Platte, thence to the Lake district, a little north of the Straits of Mackinaw, leaving all Mexico, all the trade entrepôts of Canada, New Brunswick, and Nova Scotia, all the United States east of the Rocky Mountains, including the great distributive centers of Dubuque, Chicago, Saint Louis, Atchison, Topeka, and El Paso, south of this line, and consequently nearer Topolovampo, and naturally tributary to it.

A careful calculation of the air-line distances between Chicago and San Francisco, and between Chicago and Topolovampo, gives 221 miles in favor of the latter; and the computed distances between Saint Louis and these two ports, respectively, show a difference of 316 miles in favor of Topolovampo. If the same attention is extended to the relative distances from these Pacific ports to Chicago, Saint Louis, Cincinnati, Kansas City, Pittsburgh, Louisville, Montreal, Detroit, Quebec, Bangor, New Haven, Washington, Richmond, Atlanta, and the other southern cities, it will be equally demonstrated that they all lie nearer Topolovampo than to San Diego or to San Francisco, or, with the exception of Montreal and Quebec, to Olympia. Even Omaha is nearer Topolovampo than to San Francisco or Olympia. Again:

The advantages which the harbor of Topolovampo, with its trade on the Pacific, presents to the Atlantic ports of North America are equally susceptible of demonstration. For all practical purposes it is only required to take a map and with a string measure off the relative distances. The following are believed to be the correct results of a few string measurements.

The air-line distances between Halifax and Topolovampo and between Halifax and Olympia are equal, but from Halifax to San Francisco there is an increase of 225 miles, and from Halifax to San Diego there is an

increase of 125 miles over the distance between Halifax and Topolovampo. A bird starting each time from a given port on the Atlantic to visit the different ports on the Pacific would find the respective distances as follows: From—

Eastport to Topolovampo.	X	to San Diego,	X+120;	to San Francisco,	X+220;	to Olympia,	X+ 20 miles.
Boston	X	"	X+150;	"	X+280;	"	X+ 110 "
New York	X	"	X+200;	"	X+340;	"	X+ 250 "
Philadelphia	X	"	X+180;	"	X+350;	"	X+ 225 "
Washington	X	"	X+210;	"	X+380;	"	X+ 290 "
Norfolk	X	"	X+250;	"	X+445;	"	X+ 380 "
Wilmington	X	"	X+310;	"	X+530;	"	X+ 515 "
Charleston	X	"	X+340;	"	X+580;	"	X+ 610 "
Jacksonville	X	"	X+390;	"	X+670;	"	X+ 750 "
New Orleans	X	"	X+410;	"	X+730;	"	X+ 880 "
Galveston	X	"	X+440;	"	X+785;	"	X+1000 "
Brownsville	X	"	X+560;	"	X+950;	"	X+1280 "

As great as these figures geographically are in favor of Topolovampo, they are small in comparison with the business of the industrious population and improved country, gained on the radii of Topolovampo over the radii respectively of Olympia, San Francisco, and San Diego. In illustration, stretch a string from Halifax to Olympia, and another from Halifax to Topolovampo. The distances it has been seen are equal; but admitting the former line to be practicable during half the year, still it would run north of the great lakes, across an unknown wilderness, where it would not meet two hundred human beings other than Indians between the Saint Lawrence and the Pacific. Now turn to the string from Halifax to Topolovampo, and observe its course through the Metropolitan and manufacturing centers of New England, Middle, Southern, and Gulf States: thence its entrance into the well-settled, the rich mineral, metal, pastoral, agricultural, and formerly manufacturing States of Northern Mexico, where there already exists a tributary population of over 700,000 industrious, hard-working people. Would not a railroad on this line be the natural thoroughfare from ocean to ocean for the 3,000,000 of Canada, the 500,000 of New Brunswick and Nova Scotia, the 38,000,000 of the United States, east of the Rocky Mountains, and the 9,000,000 of Mexico?

The following memorandum shows the distances from the sea and the low-water depths of entrance to some of our notable harbors, to wit:

Hampton Roads,	distance from the sea,	15 miles;	depth of water,	30 feet.
New York,	"	30 "	"	23 "
Philadelphia,	"	100 "	"	18½ "
Boston,	"	100 "	"	21 "
Baltimore,	"	160 "	"	16 "
Savannah,	"	30 "	"	11 "
Jacksonville,	"	20 "	"	23 "
New Orleans,	"	115 "	"	19 "
Galveston,	"	...	"	12 "
Charleston,	"	...	"	11 "
Rio Grande,	"	...	"	4 "
San Diego,	"	6 "	"	27 "
San Francisco,	"	6 "	"	33 "
Olympia,	"	190 "	"	11 "
Topolovampo,	"	6 "	"	30* "

In reference to Philadelphia, Baltimore, and Olympia, there is a tedious bay navigation; but New York, Hampton Roads, Topolovampo, and San Francisco are situated on well-sheltered harbors, which open directly to the sea, with beautiful offings—Hampton Roads and Topolovampo sur-

passing the others, perhaps, in all the requirements of navigation, with desirable city sites and salubrious climates.

New York has rushed into importance since 1830, and San Francisco since 1856. The advantages of their respective geographical localities and organized systems of internal improvements have rendered the one the commercial emporium of the Atlantic; the other the mistress of the Pacific. But the accommodations pertaining to New York and San Francisco no longer satisfy the traveling demands of the people, or the necessities of commerce.

The Southern States have 19,800 miles of railroads, but they are out of repair, run sluggishly, and not one line in ten pays interest on the invested capital, because the South is agricultural and not industrial. Illinois, Ohio, Indiana, Missouri, and Iowa have gone far ahead of their Southern sisters in population and commerce, and Chicago, Saint Louis, and Cincinnati promise by their present ratio of increase to outrank New York, Philadelphia, and Baltimore in population, diversity of industry, and wealth. This is because the Northwest has given its energy to the building of railroads, removing obstructions from its natural water-channels, creating new lines of water communication, building telegraph lines, and in face of climate, topographical obstructions, and sparseness of population, they have developed outlets to both oceans. Their great system of rail and water highways depended at first upon the transportation of passengers and produce; but these enterprising pioneers saw that agriculture could not sustain a great people or maintain extensive rail and water communications, and they turned their attention to mining, manufacturing, and trading, making the Northwest wonderfully industrial. Every steamer from the Eastern hemisphere pours a tide of emigrants into her towns and hamlets, and every soul is calculated to be worth an average of \$800 to the State in which it locates. These little iotas of immigration alone swell the wealth of the West to some \$320,000,000 each year. The directors of the Northern Pacific go so far as to value each emigrant at \$1,250; and furthermore state that the emigrant brings in his pocket \$175 in hard cash. In this appreciation of the emigrant the Northwest demonstrates its practical reasoning, by which even the Eastern and Middle States might profit.

The conservatism of the South is criminal. Her great resources, her climate, soil, geographical and hydrographical advantages, are permitted to remain useless to herself and unknown to the world. Dead and inactive to her own interests, the South stands a barrier to the industry, commerce, and advancement of every people around her. The Northwest, particularly those lying in the Great Mississippi Basin, have for years urged the Southeast to assist in opening a water-route to the South Atlantic seaboard; but there has not been organized enterprise in the South sufficient to secure the benefits of the Kanawha or Coosa Canals, although nature has marked out these great water-channels and fulfilled her share toward completing them.

The East has clamored for an uninterrupted highway to Mexico and the Gulf of California since 1858; and the Mexicans have echoed their enthusiasm and offered their co-operation, but the South has stood between them—a barrier to the achievement. The East and the Northwest, therefore, aided by the Government, pushed across the deserts of Nebraska, Wyoming, and Utah, and ascended the snows of the Sierra Nevada, in preference to contending with southern conservatism. But our increasing growth in population and business requires increased

accommodations; and the Norfolk-Topolovampo route is thus suggested, not only in response to the requirements of the growing travel and trade, but as the line of unequalled facilities and resources.

Will the South profit by the teachings which developed the other sections of the country, and assist in awakening her railroads from their present lethargy, by giving them a reliable communication to the Pacific, through a Mexican territory of unsurpassed wealth? The South, useful to herself in utilizing her resources, will multiply a reciprocal commerce throughout the continent. Immigration will then be diverted from its ceaseless flow to the Northwest, and will crowd the cotton, sugar, tobacco, tar, rice, and cattle-lands of the Southern and Gulf States; capitalists will take advantage of the new order of things; trades, arts, industries, mining and manufacturing will be inaugurated; and who shall question the prediction that in a few years the South will have emerged from her conservatism, to that proud position which nature claims for her?

It is suggested that this outlet to the Pacific is the essential basis of southern enterprise—essential to southern railroad life—essential to organized energy to complete her canals.

A rail-line connecting Hampton Roads with Topolovampo, would be the transcontinento-international route par excellence of our continent. It would give an unembarrassed line between Europe and Asia, via America, passing through a belt of country unsurpassed in fertility of soil and in mineral wealth; and so free from topographical barriers and climatic extremes as to secure a ready communication at all seasons, with more speed and less danger, with more comfort and less expense, than any other route the continent has to offer.

In Mexico we have an India at our doors. Indeed, within a day's ride of the Mississippi Basin, there is a vast country, whose history and wealth are marvelous. The republic of Mexico embraces an area of 862,460 square miles—equal in extent to the twenty-five States east of the Mississippi. It is a territory ten times the size of Great Britain, and nearly equal to that of France, Spain, Austria, Lombardy, and the British Isles combined.

The population of Mexico, according to the official report, is over 9,000,000. Its foreign trade in 1870 is officially stated as follows:

Importations	\$23,174,729
Exports.....	24,000,000
	<hr/>
	47,174,729

This makes its commerce equal to a fraction over five dollars per capita. It is safe to say that five years of peace and encouragement to enterprise would increase this to twenty dollars per capita=\$200,000,000.

In 1872, the United States imported from Cuba, products to the value of \$66,000,000. The Mexicans claim that if they had rail-connection they could supply at least \$40,000,000 of this trade. Our last year's importation of sugar and molasses was \$90,000,000. The "panocha" or cake sugar of Northern Mexico, the white-loaf of Tepic, and the molasses of Southern Mexico, have no superiors in any market in the world. Our importation of coffee, principally from Brazil, amounted in 1872 to \$42,000,000. The coffee of Mexico, particularly that of Orizaba, Guerrero, Colima, and Tepic, are excellent—that of Colima being classed with "Mocha." Carefully prepared articles on the coffee-trade, and recently published in the Philadelphia North American, speak of the soil

of Mexico as being especially adapted to the cultivation of a superior coffee; and with transportation facilities she will be enabled to compete with other coffee-growing countries, with the advantages in her favor. Our importation of tropical fruits amounts to \$10,500,000. The Mexican fruits in some cases are peculiar, in many cases they are superior. Our cigar and tobacco importation is valued at \$9,000,000. The Mexican brands of Orizaba and Compostilla, wherever known, are well considered, and those of Tepic are reputed not inferior to the best "Habanna." Our India-rubber importation reaches \$9,000,000. The forests of Northwestern and Southern Mexico abound in the rubber-tree, as they do in the coquito-oil tree, logwood, rose, cedra, ebony, mahogany, primavera, satin, mesquite, and many varieties of hard and ornamental woods which are peculiar to the country. Our hide and leather importation last year was \$28,000,000. This great want can to a large amount be supplied by Mexico. During our civil struggle, the South was supplied with leather and shoes by the merchants of San Luis Potosi. Her extensive cattle and sheep ranges are well known and universally admitted to be equal to those of Texas and South America. Single "rancheros" are frequently put down as owning from 40,000 to 50,000 head of stock. Indigo, flax, and cotton are indigenous to Mexico. There is scarcely a district where some of these are not growing wild. The magney or agave plant is found everywhere in Mexico; and for the manifold uses of its sap and fiber, it is without a peer in the vegetable kingdom. The great necessity which our paper-manufacturers feel for want of material, may be supplied by this plant.

The most important of the resources of Mexico, however, are her wonderful mines—iron, lead, copper, tin, gold, silver, cinnabar, arsenic, bismuth, cobalt, sulphur, saltpeter, soda, coal, marbles, jaspers, porphyries—nearly all minerals and metals known, are found in Mexico, many of them in untold abundance. The richest silver, gold, and coal deposits are in Chihuahua, Sinaloa, and Sonora. The annual production of silver and gold reaches from \$30,000,000 to \$50,000,000, or twice that of California. The coinage is \$28,000,000. The exportation of bullion in 1872 was \$18,000,000. It must be considered, also, that the few mines in operation are worked in the primitive manner they were by the Indians 300 years ago. The Santa Eulalia mine, situated 15 miles east of Chihuahua City, yielded \$62,700,000 in silver from 1717 to 1789. It has not been worked for years, and is almost unclaimed, although its wealth apparently is as inexhaustible as ever. The most handsome cathedral on our continent stands the central ornament of Chihuahua City. It was built from a small tax on the silver from this mine.

Humboldt, writing in 1803, calculates that up to that date Mexico had yielded gold and silver to the amount of \$6,241,703,125, and was then producing "two-thirds of what was annually extracted from the whole world."

There is no tin found on our continent, in paying quantities, outside of Mexico; and the ore there, though to all appearance abundant, has never been worked, being too far from market-facilities. Our importation of tin in 1872 reached \$17,000,000.

General Palmer, after matured calculation from the official statistics and from the reconnoissances of the undersigned and companions, states that "the existing movements of persons and freights over the country are sufficient to remunerate 5,000 miles of track in the republic." Again, he says: "Mexico's present population and known resources would warrant 15,000 miles of railway as soon as they could be constructed;" and calculates that a route from the Mexican Gulf to the Pacific, a distance

of some 800 miles, would pay \$14,000 per mile the first year after completion.

The above is in reference to the local business of Mexico. The imports from the United States would be all classes of mechanical implements and manufacturing combinations, all agricultural utensils and necessaries for every-day convenience. At what shall one estimate this trade, when he is assured that there are 9,000,000 republicans in Mexico, to whom axes, spades, and wheelbarrows are unfurnished, and Yankee patents and quack medicines are unknown?

The claims of the Norfolk-Topolovampo route for through passengers and freights, on the ground of a better combination of dispatch and economy, have already been alluded to. It may readily be seen that it presents the longest direct uninterrupted land-line of any practicable route across our continent—being the fartherest north free from ice and snows, and the fartherest south free from epidemics and quarantines. The practical distance, it may be repeated, from Norfolk to Topolovampo, is 2,289, against 3,303 miles via Union Pacific. By the easy grades and curvatures of the former, 25 miles per hour should be estimated for express, making the time from ocean to ocean 3 days and 19 hours, against 7 days via Union Pacific. The distance from Topolovampo to Honolulu—the pivotal center for the Pacific commerce—is 609 miles greater than from San Francisco to Honolulu. This would be a 2 days' passage, at a speed of only $12\frac{1}{2}$ knots per hour, but the Pacific steamers now building at Chester, Pa., are calculated to run 15 knots per hour, which would reduce it to 1 day and 14 hours. Assuming, however, the distance from Honolulu to be 2 days longer to Topolovampo than to San Francisco, still it leaves—all things being even equal—the time 1 day and 5 hours shorter from Europe to Asia, Australia, and the island worlds of the Pacific, via Norfolk, Topolovampo, and the Sandwich Islands, than via New York, San Francisco, and the Sandwich Islands. But it must be considered there are three months of the year during which the Union Pacific is subject to the embarrassments of winter; and the communication confided in between the Atlantic and Pacific is then only by the dreaded voyage of 22 days via Panama.

Asia, Australia, and the "Twelve Thousand Isles" are nearer the United States via Topolovampo than to Europe. Oceanica alone contains a population of 30,000,000, and does a business of \$500,000,000 annually. Then there is waiting a trade of the untold ores of Lower California, there is the commerce of the Gulf of Cortez, the coast trade of the western shore of Mexico and of Central and South America, all of which Topolovampo claims as her from geographical position. Moreover, may not this line fall heir to a respectable share of the traffic between New York and California? From New York to Topolovampo, 2,559 miles, at 25 miles per hour = $4\frac{1}{4}$ days; from Topolovampo to San Francisco, via La Paz, 1,327 miles, at 13 knots per hour = $4\frac{1}{4}$ days = $8\frac{1}{2}$ days. Again, would not many tourists and business men, who go out by the northern and isthmian routes, naturally prefer to return by this more agreeable line, via Mexico? Would not many be drawn this way to see the novelties of a foreign country full of historical interests—to see a people whose origin is lost in antiquity; whose traditions, customs, and fabrics are more strange and entertaining than anything in Europe; and whose picturesque towns, with their fountains and plazas, are pleasing in themselves and rendered attractive by the hospitality of their people; in fine, to traverse a country whose delightful climate invigorates the body and animates the spirits, and whose grand mountain

scenery, hot and mineral springs, furnish more inducements to pleasure and health than anything California or Havana has to offer.

The great question of the day is cheap transportation. It is not only laudable enterprise to unite continents, islands, and sections by quick and safe communications, but it is our interest to put these privileges and comforts in the power of every one. If New York and San Francisco are connected with daily lines of Pullman palace-cars, it is not saying that everything has been done to establish free intercourse between the Atlantic and Pacific. Far from it; for the prices are so high, that such facilities are in the power only of the favored few. It must be evident to every observer that the Union Pacific, as well as most of our lines of rail, are doing but one-half the work of their contemplated design. It is not the intention to enter upon this question here; the subject, however, has been ably figured by Major Walter McFarland, U. S. E., in regard to freights, and read before the gubernatorial convention at Atlanta, May, 1873. Railroad companies say they cannot charge less; but we know they do lower their rates during excursion-seasons, and make increased profits by the pleasures they extend to the working classes. It is trusted the directors of the Norfolk-Topolovampo route will be induced to run "excursion-trains" all the year round.

Accustomed as we are in the West, to build railroads with pecuniary success in advance of population, relying on the latter as the road is established, if the resources of the country are good, we may especially congratulate ourselves, not only on the resources whose richness and varied character are unquestionable, but on the present population both in the Southern States and in Mexico through which the line passes, as well as on the existing traffic quite sufficient to pay handsome dividends as its sections respectively are put in operation; while the subsequent development of the reserved wealth should remove all questions of its feasibility and profits.

In a word, so great are the manifold advantages promised by this Great Southern route, that it is claimed it will put Norfolk, practically, as near Topolovampo as Aspinwall is to Panama.

The Centennial with its travel and trade is one year and a half in the future. One and a half years is ample time to complete the desired section if it is wished.

A. K. OWEN, *C. E.*

CHESTER, PA., 9—1873.

REVISED, WASHINGTON, D. C., 2—1875.

"In reply to inquiries from members of the committee, Mr. Scott stated that there was a very large mineral belt north of the 33d parallel that would be undoubtedly developed by lateral lines from the Texas and Pacific road, running up close to the 35th parallel, and bringing the traffic of that country down to the proposed lines, so that a large portion of the lands to be restored to the United States would be very greatly enhanced in value by the construction of these roads.

"The line of the Texas and Pacific is located about 400 miles south of the Union and Central Pacific—the one being on the 32d and the other north of the 38th. It will come very near the borders of Old Mexico at El Paso, and then run from 30 to 80 miles from the border States, which have a population of about two and a half millions, and a mineral wealth, as is well known, that is not exceeded by any country to-day. These people simply want an outlet; the only one they have at present is by ox-teams to some ports on the Gulf of Mexico, or else across to Kansas. But the trade is, of course, so much crippled, owing to the limited trans-

portation, that not one-fortieth part of the business is done that will be when the railway is constructed."

See argument of Judge Baker before Senate committee, January 13, 1875.

[14.]

THE ARLINGTON, *March* 19, 1875.

DEAR SIR: I regret to say I was unable to find my memoranda of distances from Honolulu to the several points as requested by you. I hand herewith the trade statistics of which we spoke. I shall regard with great interest any new developments in the grand scheme you have so ably presented in the papers you were good enough to send me, and trust it may yet become a success.

Very truly yours,

H. A. P. CARTER.

A. K. OWEN, Esq., *C. E., City.*

[15.]

Trade of countries in the Pacific with the United States, 1873.

HAWAIIAN ISLANDS.

Exported to United States	\$1, 139, 725
Imports from United States	836, 000
Imports over 75 %.	

BRITISH EAST INDIES.

Exported to United States	\$16, 855, 747
Imports from United States	165, 270
Imports less than 1 %.	

SPANISH POSSESSIONS.

Exported to United States	\$6, 171, 635
Imports from United States	17, 570
Imports less than $\frac{1}{3}$ of 1 %.	

DUTCH EAST INDIES.

Exported to United States	\$7, 556, 954
Imports from United States	255, 134
Imports less than 4 %.	

CHINA.

Exported to United States	\$26, 353, 291
Imports from United States	1, 931, 732
Imports about $7\frac{1}{2}$ %.	

The Hawaiian Islands, owing to their American associations, are the best customers in proportion to volume of trade.

[16.]

SINALOA CITY, STATE OF SINALOA, MEXICO,
Saturday, 9-28-4 p. m., 1872.

DEAR DOCTOR: Topolovampo Harbor is everything and even more than you represented it, excepting, however, the area and advantages of the proposed site of Carman City. In respect to that section you have been misinformed. It is just the place certainly for the terminus of our road, Denver and Rio Grande, or any other great trunk line across our continent. There is ample room on the shores of the straits for quays, wharves, store-houses, offices, depots, and all other require-

ments of a great and important port. Much expense will be necessary, as was expected, to level the higher portions and to fill in the lower parts to a practical height suited for loading and unloading ships, cars, &c. It will be found average rock-work, but every stone removed will have a demand, consequently a value, as the material is necessary for improvement purposes. In consideration of this fact, and being well assured that the large mail-steamers might, with all safety, come sufficiently near to the natural quays to land passengers and freight by means of an ordinary gang-plank, leads me to state that Topolovampo Harbor may be made superior to any port that I have visited either in America, Europe, Asia, or Africa, and all this with little expense. The site to begin the location of Carman City is at Mapan, which fronts directly on the San Carlos Sea. This is a level stretch of sandy loam, which extends most likely to the river Fuerte. The land is fertile, drainable, and in every way desirable for the site of a great cosmopolitan metropolis. As it now stands, it presents, for a mile, a bold sea-front of sand and decomposed shell which is ten feet above the beach, but is flanked with low playas to the right and left, which make inland for short distances. These flats may be reclaimed with but little expense, by the mere building of stone quays along the sea-front, which necessarily have to come, as it is there that the fashionable paseos and alamedes will naturally be located. The depth of water from the beach to a distance of a mile out is but five to six feet, but at this line the channel begins and carries a depth of thirty-six to fifty feet. Dikes and wharves may readily be thrown out, as the bottom is universally clean, compact sand, and in fact the entire area of shoal in front of the city may be filled in and not amount to one-half the work which was executed to add to the many natural advantages of the San Francisco Harbor. To commence with there is a turtle-shaped island about half a mile long, almost opposite to Mapan, and about one and a quarter miles distant, which fronts boldly on the channel, and which will give every convenience for all early commercial requirements. It is needed but to level it and with the material thus obtained to surround it with quays and to connect it with the main land by a wide dike. The railroad will have one of its branches to this island, and the other will go across the country two and a half miles to the quays on Topolovampo Straits. This is a convenient distance to have the noise and dirt consequent to a seaport, but I am too well acquainted with the hasty advance of a city in every direction when once started at the terminus of a great transcontinental rail-line to husband an idea that this quiet will be enjoyed for any length of time, although the houses will naturally at first stretch inland toward Asinagua, on the already drained and desirable land; all the stone for building and other purposes will come from the ridges on the line of the railroad to the quays on the streets. Granite and porphyry are in abundance, in fact in such quantities that a metropolis equal to London might be built of this material without going farther than six miles from Mapan. There is an excellent brick clay found at Asinagua. Wood and timber will be supplied from the mountains, say one hundred miles to the eastward. It will be floated down the rivers Fuerte and Sinaloa to points most convenient for the erection of mills, (these streams both furnish superior water-power advantages,) then cut into lumber, and thence brought by water to Topolovampo; *i. e.*, this must be the way until the railroad reaches the timber districts. Lumber in Carman City should not cost, at the start, over \$45 per thousand. You must compare this price with the early prices paid for material in San Francisco, to appreciate the merits of

the statement. For water, artesian wells and a canal for the Fuerte River must be relied on. Both of these are certain, and in every way practicable. Every indication declares the feasibility of artesian wells. The perpendicular upheaval of slate, the existence of surface clay, the excellent water found near the surface in the white sand along the gulf, the high and near range of mountains, and other certain proofs that this is a great basin, lead us to expect that artesian wells would be a perfect success at a distance of not over one hundred yards. As for the *canal*, one was calculated on as early as 1853, which was to connect the Straits of Topolovampo with the Rio Fuerte. It was approximated to have a length of twenty-two miles, and to be sufficiently wide and deep to float flat-bottomed steam-barges all the year round. The fall was thought to be twenty to thirty feet, and the expense of canal and for removing obstructions in the Rio Fuerte as far as the city of Fuerte, was judged to be \$200,000, but the price of labor was calculated at 25 cents per man per day. But my time is too limited to add further on this subject.

The Croton aqueduct, which deluges New York with sixty million gallons of water per day, which is equal to three times the quantity supplied to London, cost thirteen millions of dollars. A canal to supply Carman City, and to irrigate all the adjacent lands lying along its entire length, will not cost, with proper management, over three hundred thousand dollars. When I recall that Venice was built on piles driven in the mud of seventy-two water-covered islands; that London is, in localities, eight to ten feet below tide-water; that the business part of San Francisco is mostly built on made land; that Chicago was located in a marsh, repulsive, unhealthy, and which was thought to be undrainable, until connection was actually made with the Mississippi River; that New Orleans was sited in a low, quaggy savanna, &c., I can safely congratulate you, doctor, in having a great tract of high, drainable, and in every way convenient and desirable land on the borders of a deep bay, the geographical position of which is such that at an early day a cosmopolitan city will be started, and, in less time than it took San Francisco, become equal in importance, wealth, and influence. I may only add that the only ocean pests found are mosquitoes, and these only are troublesome during the early evening when the air is quite still. The climate is perpetual summer of a temperature never over 86° (I judged from notes taken at Sinaloa) and always cool in the shade. The air is pure, and there are not any unpleasant smells which generally arise on sea-shore from the decomposition of animal and vegetable matter. From this I judge the location to be a healthy one. The scenery is picturesque and entertaining. Fish and turtle are abundant, but oysters and their species are few, as the water-bottoms are composed of clean, sweet sand and small stone. Colonel Fitch will add further.

So well am I pleased that I shall return to the bay of Topolovampo, examine further points which have since suggested themselves, and afterward go from Mapan to Mochicahui and assure myself further as to the intermediate country to Fuerte City, &c., and so on to Guaymas.

The quays on Topolovampo Straits I request may be called in due respect to General William F. Palmer, whom I here represent. The two large islands in San Carlos Sea we named the "Brother" and "Sister," as a gentle compliment to your children. My regards to Mrs. Carman, and my love to the brother and sister.

I remember each and all with many pleasant meetings.

In haste but in earnest, &c.,

A. K. OWEN.

Dr. B. R. CARMAN,
Mazatlan, State of Sinaloa, Mexico.

MAZATLAN, August 17, 1872.

DEAR SIR: Your communication of this date has been received, and contents carefully noted; and as it involves matters of great interest to me, I will at once reply, and as fully as it is in my power.

As I represented to you in our conversation yesterday, my object in interesting myself in developing the existence and true merits of the harbor in question was to secure and hold its desirable lands, with a view to future operations. This I have accomplished.

I stated to you that I looked upon its location as most advantageous for a railroad terminus, and for a future city that shall be second only to San Francisco on this coast, and have thought so because I was aware that there did not exist a known harbor, good and safe, between San Francisco and Acapulco, except one at Magdalena Bay, which is worthless from its geographical position; and that of Guaymas, which is too far up the Gulf of California; and navigation is difficult above Point San Ygnacio on account of irregular currents.

But it is not for me to speak of the merits of the harbor I claim to have brought to light, for I am the interested party, and what is known of it speaks for itself. Hence I will at once go to the business part of your letter, and next endeavor to answer all your inquiries. * * *

In regard to your request to furnish you copies of surveys and reports, I can only do so with those made by Commander W. T. Truxton, of the United States sloop Jamestown. The map I will have traced for you to remit, with his report to Admiral Craven, and the one furnished me by him from his private log. I will also have a photographic copy taken of the view of the entrance to the harbor, given me also by Commander Truxton.

This gentleman, in conversation, told me "that as he entered the straits in his steam-yacht and first beheld the grand view before him of the inner bay he arose upon his feet and lifted his hat to God, and felt, he thinks, as Columbus did when he first discovered land."

Having lost, through Mr. Fowler's misfortune, the original chart of survey made by Mr. C. E. Norton, civil engineer, as well as other papers of importance, I refer you, for further information, to copy of a letter I addressed to a friend in San Francisco in July, 1869.

Two different parties I have sent to explore the country around about this harbor assure me there is a lake of fresh water from four to six hundred yards in length, some six feet deep in the middle, fed by springs, and called by them "Spring Lake," and is bordering, or partly inclosed within my lines, and not more than three miles from the water-front of the city site.

Commander Truxton went to this harbor only to survey *its entrance and channel*, as that was all I asked our Government to do—all I cared to have done by them; for if they pronounced this a good harbor, easy of entrance, and with plenty of deep water, the rest was of minor importance. Commander Truxton stated to me that he did not give the land any attention, as he had no time.

I really believe that there are no beautiful lands sloping from the sea and just adapted to build a city upon, with shady groves and garden-plats; but it is true, so report says, that the land is rough, stony in some places, barren everywhere, sandy here, covered with cactus there, with maguey in others, small hills and swamps, estuaries, or sloughs running into some other places of this land, but generally level; but I contend that it is more favorable by far than San Francisco was. This

place I saw in May, 1849, and it was indeed barren—nothing but heaps of sand and towering hills. The place I offer I have not seen, but all reports assure me that we have plenty of level ground, few, if any hills, unless on the opposite shore, where the hills go up one thousand feet.

In the selection of a site to build a city you need, in my opinion, other things besides fertile fields; and we know there are plenty of such in all that neighborhood. What we want is a proper geographical position, a rich country around, a good safe harbor into which ships of any tonnage may enter at all seasons, and next, money and enterprise.

These constitute all the necessary elements to build a city. I have deemed this location possessed all these requisites, except the two latter, and those I am seeking.

I have spared no effort to develop and secure what I as an individual could accomplish, and hope soon, through others, to reap the benefit of my foresight.

Having been a victim to rheumatism the past sixteen years, I have been unable to visit this place in person; hence I can only speak of it from my reports.

Mr. Fitch, of whom you speak in your communication, is far more competent to furnish you information of this entire coast—of the towns and nature of the country and its resources. Mr. Fitch is a civil engineer, and has for years resided in this part of Mexico, and has surveyed a large portion of the States bordering on the Gulf. He can tell you of the sections of country that would naturally carry their products to this port. For instance, we have the rich valleys of the Fuerte River, which is some nine leagues above us; also, the valleys of Sinaloa River, Ahome, Mayo, and other streams near by, all which form the richest lands of western North America, besides the mineral districts, that are historical, in its vicinity; also, of the accessibility of routes leading toward that direction when compared with other localities on the Gulf. * * * * *

I have the honor to be your obedient servant,

B. R. CARMAN.

A. K. OWEN, C. E.

[18.]

UNITED STATES STEAMER SARANAC, *May 10, 1866.*

* * Set out to San Antonio, on the Yaqui River, in the vicinity of which there is a coal-mine, evidently the one referred to in the letter from the Navy Department, dated December 4, 1865, desiring information as to the quality, quantity, probable cost of mining and getting it to Guaymas, and the means of transportation.

The route which we pursued, and in fact the only one which we could have taken in order to provide our horses with water, passed through the village of San Marcial, which lies seventy-five miles, measured on the wagon-road, to the northward and eastward of Guaymas. Coal being reported at this place, we immediately started for it, and after going two and a half miles to the northward and westward of the village we turned to the left along a ravine, and after pursuing this for a half mile we came to what was called the mine. The outcroppings of the coal from the low hill on the left-hand side were plainly visible. As the mine had not been worked at all we were obliged to take what we could pick up from the surface. The coal in the box marked No. 1 is a specimen from this mine. It is of an inferior quality, containing too much foreign matter to make it of any use as fuel for war-steamers. The

vein is from fifteen to eighteen inches in thickness. It is possible that by going deeper into the mine coal may be found of good quality and more of it, but appearances are against it. Dr. Laight, an American resident of this place, and a gentleman who has resided a long time in this country, and paid much attention to mining, pronounces it "stone coal." From the position on the map this mine appears to be situated on a river, but at this time of the year there is not water enough to fill a 2 foot by 2 ditch. It is rather the bed of a river with some water in it during the rainy season. It is about fifty miles from this place to the Yaqui River, so that transportation by that means is out of the question. Transportation by wagon to Guaymas from San Marcia, over a first-rate road, would cost about \$8 per ton.

Los Bronces being but a short distance out of our direct route, we visited that.

There are three coal-mines claimed in the vicinity of this place, all containing about the same quality of coal. The one we visited lies about one mile to the westward of Bronces, on the left-hand side of the cañon; the shaft was filled with water. The coal is a fair quality of anthracite, and the specimen marked 2, which we obtained from this place, has been exposed to the sun and weather for over a year. Some of it had been used at the Bronces Mill for a portion of one day and gave satisfaction.

The transportation by wagon from this place to Guaymas would cost over \$30 per ton, the distance being 123 miles. The first 12 or 15 miles of the road seemed too rugged and mountainous for horses alone, and it is hard to conceive how wagons can get along. The remaining part of the road, in the direction of Guaymas, is very good. The distance to the Yaqui River is 15 miles over an almost impassable road. The elevation of the coal-mine, or the valley containing it, is 4,300 feet above the level of the sea.

From Los Bronces we went to San Antonio, situated on the Yaqui River, 15 miles from Bronces and 135 miles, by the wagon-road, north-east of Guaymas.

Five miles from this place, in a northward and westward direction, and about the same distance from the river, we found coal of fair quality and in great abundance. The mine which we visited is claimed by I. Echert, a German workman in the La Blanca Mill. We saw coal, however, in other places in the vicinity. This particular mine was worked about three years ago, and furnished the Mexican authorities with coal to cast some guns at Hermosillo. The shaft sunk at that time has since been filled with dirt and rubbish. Not having the means of getting coal from any depth, we were obliged to content ourselves with specimens taken from within 3 or 4 feet of the surface of the outcroppings, and which had been exposed for a long time—about a year. The vein is about 6 feet in thickness; has a pitch of nearly 2 feet, and runs from one mountain in under the cañon through, in the other from southeast to northwest. The cañon in the rainy season has perhaps 3 feet of water. To all appearances, there is very good anthracite coal in this mine, and it looks as though it might be inexhaustible. No. 3 is a specimen from this place.

Cost of mining: as near as we could ascertain it, would not cost over \$1 per ton to take the coal out. Labor is cheap. Men can be hired for 50 cents per day, and generally plenty of them. At this time there may be some difficulty on account of the revolution.

Transportation by wagons, as the roads are at present, is impossible. Within 15 miles of San Antonio, on the Guaymas road, the only means employed of bringing anything in or out is by pack-mules. The cost of

transporting by pack-mules the first 15 miles, and the remaining distance by wagons, would foot up over \$30 per ton. During the dry season there is some difficulty in getting water along the road. For some portions one can travel 30 miles without seeing a drop of water, either in stream or well.

A railroad from Guaymas to San Antonio would, for the first 120 miles, be over a level plain, and the grading would not exceed \$2,000 per mile, but the remaining 12 or 15 miles over the mountains would require an immense sum. However, a road might be found, following, it may be, the bends of the rivers, thus obviating the necessity of the tunnel or the mountain-road.

[19.]

Extract of report made by Commander Wm. T. Truxton, commanding United States sloop-of-war Jamestown, to Rear-Admiral Thomas T. Craven, commanding North Pacific Squadron, in relation to the (bay) survey of Topolovampo and vicinity.

On the 23d hoisted out the steam-launch, and went in person to make an examination of the anchorage, stopping only in Topolovampo Harbor (where Lieutenant-Commander Reed and party were at work) to communicate. I went on to Bahia San Carlos. Passing through Topolovampo Straits, this magnificent sheet of water burst suddenly upon the view. So great is its extent, that I was unable to define the eastern limits, though I devoted a portion of two days to its examination. I was disappointed in finding the water too shoal in every direction I attempted to advance; the soundings were all taken on a rapidly-falling tide. Its western shore is composed of hills of scoria, varying from five to twelve hundred feet in height, and thinly covered with a growth of chaparral and cactus. Its north and eastern shores, as far as seen, are low and sandy, with rank salt-water grasses, and from a distance look as if they may be subject to overflow from the river Ajome. The flats extending from them prevented a closer examination. In the eastern distance high hills and mountains could be seen.

I think there is no doubt that this bay connects with the gulf by Navachiste, a passage said to exist on the south side of the island of San Ygnacio, and possibly also by the river Sinaloa.

You will see by the soundings marked on the tracing, there is anchorage for ships of the heaviest draught.

I could see no signs of fresh water, or wood, or arable land. At Topolovampo good fresh water can be obtained by sinking wells in the sands of Conchal Point, but no fire-wood, except a very limited supply of chaparral. The waters of the bay abound in turtle and fish.

It is quite probable that, on a careful examination, channels of moderate depth will be found through this inland sea. Certain it is, that in the hands of an enterprising people its smooth and land-locked waters would be of great value.

At the point marked H on the tracing, in Topolovampo Straits, stands a dilapidated and uninhabited native hut of unusually large dimensions, surrounded by marks of trade, such as boxes, bottles, paper, &c., and from which leads a wide and well-beaten mule-track. I have no doubt it is a smuggling-station. The pilot admitted he had frequently seen ships in here; and one of the best evidences, to my mind, of the fact that the port is resorted to, was found in the mysterious appearance of two Indians, in less than an hour after we went into camp on our first

night, who at once, and boldly, offered to provide for the gratification of the vices sailors are supposed to be addicted to. These were the only inhabitants or evidences of the existence of human beings we met with; all else looks as desolate and accursed as the shores of the Dead Sea.

Having satisfied myself that three and a half fathoms can be safely carried into Topolovampo, and that with the assistance of a few of the ordinary aids to navigation, in the way of buoys and lights, the entrance can be made perfectly simple, and that depths varying from 7 to 15 fathoms can be carried through that bay and straits into the waters of San Carlos, and feeling assured that the magnitude of the work far exceeded the limited time and resources at my command, and in consideration of the fact that the small-pox and varioloid still continued among us, (there being nine cases on the sick-list,) I broke up the surveying parties at 2 a. m. on the 25th, and at 2 p. m. same date sailed for Mazatlan.

[20.]

Extract from journal kept by Commander W. T. Truxton, commanding the United States sloop-of-war Jamestown.

“ OFF TOPOLOVAMPO, MEXICO,
“ *March, 1869.*

“ On the 21st, was informed by a native that the ship was off Lechuguia, the mouth of river Ajome; shifted our anchorage to lat. $25^{\circ} 33'$ north longitude, (chro.,) $109^{\circ} 21' 27''$ west, in ten fathoms water, hard gray sand.

“ The entrance to this harbor, and the inland sea of San Carlos, is in latitude $25^{\circ} 33'$ north, longitude $109^{\circ} 14' 25''$ west, between two sand-banks, covered at high tide and a wash at low water, and through which three and one-half fathoms can be safely carried at low water. The land of Topolovampo and the island of San Ygnacio (between which are the straits of Topolovampo and entrance to the bay of San Carlos) is high and easily distinguishable.

“ With the Farallone, San Ygnacio, (in latitude $25^{\circ} 27'$ north, longitude $109^{\circ} 27'$ west,) bearing S. W. by S., (mag.,) you have a fair view of Topolovampo Straits. With the Farallone, San Ygnacio, bearing S. $54\frac{1}{2}^{\circ}$ W., (mag.,) the entrance between the sand-banks bears N. $54\frac{1}{2}^{\circ}$ E., (mag.) You can then stand in on that course (N. $54\frac{1}{2}^{\circ}$ E.) with safety till you see the breakers on either side of the smooth water of the channel; the soundings decrease regularly and gradually; bottom smooth, hard sand, free of all dangers.

“ When on this line, the straits of Topolovampo will be shut in, and you must be careful not to be misled by an apparent opening a little to the northward of the N. $54\frac{1}{2}^{\circ}$ E. and S. $54\frac{1}{2}^{\circ}$ W. line, given above.

“ For the present, and until a more thorough examination of the approaches is made, it will be well to keep about half-way between the Farallone and the main land, and between the W. and S. S. W. points of the compass, before standing in too close to the land. The set of the tides on and outside the sand-banks is not determined; they are quite strong; apparent rise and fall about seven feet.

“ The high lands of Topolovampo are faced with (but separated by a narrow strip of water from) a bright yellow sand-beach, which stretches away to the northward and westward, and is lost in the distance. It makes a good mark for the north side of the entrance as you approach

from the westward, and in the afternoon shows well. We carried four fathoms to within 300 feet of the beach.

The water in Topolovampo Harbor and Straits varies from six to fifteen fathoms, till well in San Carlos Bay, when it gradually shoals.

Further investigation, however, may develop good channels through this magnificent inland sea.

In Topolovampo, fair drinking-water may be obtained by sinking wells in the sand on Conchal Point. Wood is not to be had, except the thin growth of chaparral that covers the horrible hills of the vicinity. No signs of fresh water in San Carlos Bay; no wood, no arable lands, and no desirable place to locate a city could be seen during the brief time given to its investigation. The anchorage outside is perfectly safe, as a ship could always lie off shore with a southeast wind, should it begin to blow. Inside Topolovampo, vessels are entirely protected from the sea, while only southwest and northwest winds would be felt. In San Carlos, vessels would be entirely land-locked. In fact, for safety, no more secure anchorage is to be found; while, with the aid of two or three buoys, access to it could be made perfectly simple, more so than to most of the harbors on the coast of the United States south of Boston.

There are many rivers emptying into the Gulf of California not laid down on the charts. I am satisfied also that other good harbors will be found, when this country, which for hundreds of years has suffered from the curse of misrule, shall pass under the control of an enterprising people.

Imray's chart, probably the best at present published, is exceedingly incorrect; in fact, the geography of the Northwest Passage is better known than that of this eastern shore of the Gulf of California.

[21.]

Copy annual report, 30th September, 1872, of A. F. Garrison, vice-consul United States, Guaymas, Mexico.

GUAYMAS, MEXICO,
September 30, 1872.

I have the honor to submit, in conformity to instructions, my first annual report, and regret that this résumé of the condition of the navigation, commerce, trade, and industrial interests in this consular district is not more satisfactory. The same stagnation and general deterioration of preceding years is observed. But little has occurred to render this report particularly interesting, or any change in any way affecting American interests in this district, since the able and exhausting annual report, last year, of Mr. A. Willard, consul; and I find it unnecessary to amplify the subject, but as all statistics are deemed of vital importance, I will go over the ground and make the additional information as may be necessary, with such alterations as the season and change of circumstances demand, omitting some of the minor details as superfluous. Inclosed you will please find tabular statements A, B, and C. The difficulty is very great in Sonora, of obtaining any correct statistical information respecting the various departments of commerce, navigation, trade, agriculture, mining, capital, &c., as there are no published reports to be relied upon.

IMPORTS—A.

Total value of imports from Europe and United States in the year.....	\$1, 279, 000
Total value of duties estimated in the year.....	620, 000
	<hr/>
Total invoice-value and estimated duties.....	1, 899, 000

This statement shows about five times more imported this year than last year's report, which was only \$276,852; imported value and duties \$131,172. Evidently a great error in the collector who furnished the information. In March last the State authorities of Sonora took forcible possession of the custom-house at Guaymas, and the ousted Federal collector took the custom-house book away with him when he left, so that the records of the custom-house, at present, are only for the last six months. I have, with great labor and care, collected information of the imports from various sources, viz:

1. From the consignees of the four foreign vessels which brought merchandise from Europe, who personally reported to me that their several imports amounted to \$715,000; duties, \$330,000.

2. Amounts taken from the entries by A. W. Willard, for 1, 9, 3, by myself, from the consular daily register made at the time of arrivals from the United States, of the United States vessels and goods, which shows \$373,000; estimated duties, \$198,000.

3. Information from merchants in Guaymas, of merchandise brought from the United States in vessels under Mexican flag, \$191,000; estimated duties, \$92,000; total invoice value, and estimated duties and imports, \$1,899,000.

I could not collect any very definite statement, as to the different items of merchandise and the separate quantities. I therefore made the best estimate I could, and I believe that my reported imports fall short of the real value, which I believe would amount to over one and a half million dollars. There is much foreign merchandise that comes to this port, in an indirect way by the coasting station vessels, from Mazatlan, &c., of which I have no account.

EXPORTS—B.

10,806 beef-hides, amount with charges.....	\$29,240	93
Gold and silver coined bullion from Guaymas, duties....	919,450	00
Ores, hogskins, pepper, and gum.....	2,355	19
	<hr/>	
Total shipped from ports of Guaymas.....	951,046	12
Estimated amount coin shipped to Mazatlan, Alamos mostly	478,900	00
	<hr/>	
As estimated, total exports.....	1,429,946	12

The above report of gold and silver coin and bullion exported was furnished by Wells, Fargo & Co.'s express, by whom all is shipped abroad. The amount sent to Mazatlan by water and land is variously estimated from \$400,000 to \$600,000.

NAVIGATION—C.

Vessels entered port of Guaymas during the year are—

From United States, steamers, 10; sailing-vessels,	12;	tonnage, 10,814.
“ England,	“ “ 1	“ 269.
“ Denmark,	“ “ 1	“ 171.
“ Germany,	“ “ 2	“ 536.
“ Mexico,	“ “ (small) 136	“ 4,784.
	<hr/>	
Total vessels entered, total tonnage	152	16,572.

Vessels under the Mexican flag are mostly small coasting craft, generally carrying native produce from this port to the States south, Jalisco

and Sinaloa. Some of the larger go to San Francisco. Vessels arriving from San Francisco mostly leave in ballast. The packet steamer on its way takes a return-cargo of salt from Carmen Island, 120 miles south in the Gulf which is owned by the Packet Co. Sailing-vessels frequently get return-cargoes of lumber, and Brazil or logwood for dyeing from the States south, and Lower California. The N. P. T. Co. (only packet) makes a trip about every thirty-five days from San Francisco to this and intermediate ports. But one United States ship of war, the Saranac, has visited the port of Guaymas this year, remaining only six days, in this connection I would beg leave to respectfully suggest the propriety of United States ships of war more frequently visiting this port, in the present disturbed condition of the country. Guaymas has been captured, and contributions levied three times in the last few months by raiders, and they are growing more audacious. Our Navy is the only check or power we can present here against lawlessness. The republic of Mexico has no navy upon this coast, and her ports and commerce are left at the mercy of the buccaneers who infest these waters.

PORT CHARGES

Remain the same as last year, except the light-house dues and pilotage are abolished.

ILLEGAL INTRODUCTION OF GOODS—IMPORTS.

It is a universally acknowledged fact, to which I would beg leave to call your particular attention, that foreign merchandise brought to the Pacific coast on foreign vessels direct from Europe are admitted at many ports upon this coast by arrangements between the importers and custom-house officials at greatly reduced rates or duties, and thence distributed through the country, which enables foreigners to control the principal trade and commerce on this coast. Merchandise brought by American merchants in packets and schooners from the United States and paying full duties, cannot successfully compete with this fraudulent system of introducing goods into the country under such arrangements at greatly reduced duties, amounting to large percentage, thus driving the American merchants from the market. I do not know of an American house of any magnitude upon the Mexican coast, (Pacific.) The wholesale trade upon this coast is a German and English monopoly.

TARIFF DUTIES.

The new Mexican tariff or arancel went into effect on the 1st of July last. Importations of mining and agricultural implements, &c., and machinery are admitted free, and dues on light-house and pilotage abolished. There is an increase of about from 5 to 10 per cent. on the invoice-value of goods imported over the old tariff of 1856. The duty upon a general assortment of merchandise is of from 60 to 80 per cent. There is a slight modification upon silver exported—now 5 per cent. instead of 8; gold at $\frac{1}{2}$ per cent. in place of $1\frac{1}{2}$; silver bullion, formerly prohibited, is now allowed to be exported at about 9.41 per cent. on assay-value. Ores of all kinds are still allowed exportation from any part, under any flag, free of duty.

RAILROADS.

A concession was granted to an American citizen by the last legislature of the State of Sonora for a railroad from the port of Guaymas, Mexico, to the Arizona line, United States, with a subsidy of five square leagues to the mile, &c., which has gone forward for approval to the National Congress of Mexico. This railroad is designed to intersect the Great Southern Transcontinental Railroad, which is now being built from San Diego, on the Pacific, to strike the waters of the Atlantic at Shreveport, on Red River, and which is the best line for a railroad across the continent unobstructed by snow, and through a healthy parallel of latitude, (32°,) and runs entirely within the United States. Said railroad, from Guaymas to the point of intersection with 32d parallel, or Texas Pacific Railroad, is about 350 miles of cheap and easy construction, and will be an important feeder, and running through the heart of Sonora, when built will speedily be the means of developing her vast mineral resources and bring to market her immense tracts of fertile lands hitherto out of the reach of rapid and cheap communication, and bring capital to the country and stimulate industry and enterprise, and extend civilization. Guaymas has the best harbor upon this coast, of deep and secure entrance, land-locked on every side, and is a geographical point of great importance. This contemplated railroad will put her in direct communication, by *rail*, with all North America. Her sanitary qualities are excellent; no epidemics; and it is believed this railroad will secure the East India trade, which is designed for the southern and western United States, as it will be the cheapest, and several hundred miles the shortest route.

Guaymas will then possess the elements of prosperity, and business conducted by foreigners will expand and build up a city second only in importance upon the North Pacific coast to San Francisco.

TRANSIT OF UNITED STATES MERCHANDISE THROUGH MEXICAN TERRITORY.

The National Congress of Mexico has passed a law allowing to United States citizens the privilege of transit of private merchandise through Sonora, from Guaymas to Arizona, United States, for goods in packages direct from the United States, with only a nominal duty of 2½ per cent. upon the schedule duty of importation. The merchants of Tucson have availed themselves of the privilege, and five trains have passed successfully. Heretofore, this privilege was allowed only to United States supplies. The arrangement will much redound to the interest of both countries.

MAIL AND POSTAL SERVICE.

There is a tri-weekly mail in coaches leaves Guaymas for Hermosillo and Ures, and a semi-weekly mail on horseback for Alamos, which is continued to the city of Mexico. There are also some weekly mails from Hermosillo to Tucson, in the United States, connecting with Guaymas mails. The internal postage in Mexico is over eight times as much as in the United States.

EDUCATION—COMMON SCHOOLS—NEWSPAPERS.

There is a free school for boys and girls in every town and city of any importance in the State, numbering seventy to eighty schools, attended

by twenty-five hundred to three thousand scholars. Instruction, reading, writing, arithmetic, geography, and grammar, and the girls, in addition, mostly taught needlework, embroidery, and drawing. There are also private teachers, patronized by the more wealthy citizens and some of the municipalities. At Ures, the capital of State, there is a college for boys, (one hundred and seventy scholars,) where the higher branches of education are taught. At Hermosillo a private school for girls, taught in English and American, by a French lady, (thirty scholars.) At Guaymas, an English college for both sexes, by Charles T. Gomperty and lady, (thirty-four scholars;) instruction, similar to the grammar-schools in the United States. There are three newspapers published in the State in the interest of the authorities, containing but very little general news or valuable information, with a circulation of from two thousand to three thousand. The official paper is published at Ures, and one at Hermosillo and one at Guaymas.

MINES AND MINING.

There have been no important changes in mining interest since last year's report. There is about the same number of mines worked and capital employed. Some of the old Spanish mines that have come under the management of foreigners are reported unexpectedly rich, and there is a pretty well authenticated report that exceedingly rich silver-mines have been lately discovered in the north of the State, along the line. All told, great and small, I suppose, there are worked from one hundred and forty to one hundred and fifty mines, mostly silver, besides many Gambucinos, Yaqui Indians, who work all about, mostly in abandoned mines, or where they can find any ore. The yield is about the same as last year. There is a large American company and one large English company, and some two or three tolerable-sized German companies, with many smaller companies, and individual adventurers—American, English, German, French, and Italian—and innumerable small Mexican mines, some three or four of considerable size, all mostly engaged in silver-quartz mining. The report of coinage and bullion shipped will give about the amount produced, viz, \$———. Some silver and copper ore is shipped to United States and Europe. Of the capital employed I have no reliable data; estimated, about, American, \$300,000 to \$400,000; English, \$200,000 to \$300,000; other foreigners, \$100,000; and native Mexican, from \$100,000 to \$300,000. Machinery and steam is used in all large mines.

Sonora is undoubtedly one of the most valuable mineral States of Mexico, rich in mineral wealth. Immense stores of silver, gold, copper, lead, and iron yet remain buried in her mountains all over the State. There have been denounced in this State over seven hundred gold and silver mines, which have mostly been worked to some extent. Also tin, coal, &c., and gold and silver placers, and a mountain of plumbago and two of white marble, saltpeter, soda, potash, &c., but which will never be developed under the present government and people, which, under favorable circumstances, would be extremely profitable worked. Capitalists decline investing under the present system of oppressive taxation, and without any adequate protection or security for life or property, being constantly in dread of spoliation from revolutionists, and a general lack of confidence in the protection from the government. For these reasons many mines, after a great expense being incurred, have been abandoned, and some of the best mines cannot be worked, owing to the presence and hostility of the Apache Indians. There are many

mines known to exist not even denounced. All told probably amount to one thousand. No scientific or systematic explorations of the State have ever been made.

SOIL, TIMBER, RIVERS, CLIMATE, HEALTH, &C.

The general configuration of this State is mountainous, broken, and rolling, with extensive arid plains, covered with scrub-timber; not cultivated for want of water, but is supposed could be reclaimed by artesian wells. The valleys are extensive and fertile, particularly upon the Yaqui and Mayo Rivers south; and where sufficient water can be obtained for irrigation, will yield in abundance most of the productions of the temperate and torrid zones, yielding from the same ground two crops in the year. But little timber found fit for lumber, but amply sufficient for firewood, and many other purposes. All of the good lumber for building is brought from Oregon, United States.

Climate is mild, thermometer ranging from 50° to 80°, and occasionally to 100° in the south. Sanitary condition good; no epidemics. The great disadvantage under which this State labors is want of rivers for irrigating purposes. There are no navigable rivers in the State, and only two that run into the Gulf, the Yaqui and Mayo Rivers. The other various small streams in the north and middle of the State sink in the sand before reaching the Gulf.

In the north the climate is very agreeable, and is particularly adapted to pastoral purposes. The most nutritious grasses are found in great abundance upon the plains, hills, and valleys, and stock can be raised without feeding, making excellent beef, and with scarcely any expenses; but which country, however, has been abandoned by stock-farmers on account of the depredations of the Apache Indians.

In the south of the State, upon the Yaqui and Mayo rivers, there are extensive rich cotton-lands, some 2,500,000 to 3,500,000 acres, which by climate and soil are peculiarly adapted to the raising of cotton and cane, but are cultivated only to a very limited extent by the Yaqui Indians, who inhabit and claim the land, and will suffer no white settlements.

AGRICULTURE—FRUITS—PRODUCTS.

No advance has been made in developing agriculture in this country but little labor is bestowed upon the preparation of the soil, they still use the grub-plow, which only stirs the surface of the soil, and cultivate alone with the hoe. If the ground was properly prepared and crop worked as in the United States, the yield would be much heavier. To raise good crops irrigation is usually required. Two crops are raised from the same ground in the year, say one of wheat, followed by corn, or one of wheat, then beans, &c. We have arable soil enough in this State to raise breadstuffs sufficient for twenty times over present population. The products are of considerable variety, the climate partaking of the temperate and tropical. Cereals mostly grow as well here as in the United States. Light crops are expected this year, owing to the drought.

REVIEW, QUANTITY, PRICES, &C.

Wheat is the leading staple, and of superior quality; yields heavily from twenty-five to thirty-five bushels to the acre, the annual yield about 800,000 to 1,000,000 bushels, which furnishes a surplus of sixty to

ninety thousand pounds of flour, which is shipped to the Coast States south. Owing to the drought this year, not much surplus; we have only about two-thirds of a crop estimated; and figures are ruling high for flour, from \$3.50 to \$4.50 for one hundred pounds, usually \$2.50 to \$3. There is a large number of flour-mills, seven of which use steam; all turn out good flour. In the north much of the flour goes overland to United States. Transportation to the coast, and thence by sea, is so high as to leave but little margin for any kind of produce.

Corn yields well, not, however, equal to United States, and is all consumed in the country. Average price \$2 to \$2.50 a fanega, (about three bushels,) but owing to partial anticipated failure of the crop, worth from \$4 to \$5 a fanega; yearly crop, 300,000 to 400,000 bushels.

Barley and *oats* are but little cultivated, but grow well. Prices from \$2 to \$3 a fanega; the annual crop only some 20,000 to 30,000 fanegas.

Beans enter largely into the home consumption of all classes; in fact may be called the national dish; cultivated extensively, and yield bountifully; products, yearly, from 150,000 to 200,000 bushels; usual price, \$6 a fanega, at present from \$10 to \$11 a fanega.

Sugar-cane I consider one of the best agricultural investments in the State. The cane once started only requires to be replanted once in three to five years, and but little care necessary after the first year. I have no means of ascertaining the quantity raised, but is about sufficient for home consumption; none is exported. The cane is ground in mills, and the juice boiled and molded into pound-cakes, called *panocha*. Market-price, \$25 per cargo, (three hundred pounds.) There is no American capital engaged in the business. The lands upon the Yaqui and Mayo Rivers are extensive, and admirably adapted to its culture, and where it is never injured by frost, and raised even without irrigation. There is no sugar-refinery in the State of Sonora.

Cotton is cultivated with but indifferent success; complaints are, damage by worm, &c., but I fear its character is but little understood or attended to. There are no Americans engaged in its culture. There is a cotton-mill of sixty-four looms at San Miguel, in the interior of the State, (the only manufacturing company of any kind in the State,) which consumes the crop; made into coarse manta. Company pays twenty to twenty-five cents for the cotton, running about two-thirds of the year; value or quantity produced not known.

Tobacco.—This soil and climate are favorable for raising tobacco, and considerable quantities of good quality are produced, and mostly made up into cigars of good kind, which bring here from \$10 to \$35 per thousand. Many are sent to Arizona, United States. Tobacco, six to twelve cents per pound.

Coffee and Tea.—Some experiments have been made in the south of the State, demonstrating the practicability of their successful culture here.

Vegetables of all kinds grow very finely here.

Silk and grape culture would be a success here.

Products indigenous to the country are—

The indigo-plant, castor-bean, cactus, soap-plant, and mescal, large quantities of the latter of which are distilled; copal, gum arabic, bone-seed for oil; and of dye-stuffs, orchill moss, cochineal insect, and sea-gout; medical plants and shrubs of great virtue; *visnaga*, a succulent plant much valued for quenching thirst; tropical fruits in great excellence and abundance—oranges, limes, lemons, figs, plantains, grapes, quinces, pomegranates, dates, &c.; peaches, good quantity in the north.

Salt in great quantity and good quality in the lakes and islands.

Butter and cheese they have not learned to make of good quality.

Seals, turtles, oysters, and fish of excellent quality and inexhaustible quantities found in the Gulf of California.

Pearls and shells also found in the Gulf of California.

POPULATION—CAPITAL—LABOR.

The census of this State in 1841 showed a population of over 150,000 inhabitants, including Indians, who are mostly considered citizens, and vote. There has been no census for the last four years reliable. In 1868 reported census was 108,000, all told. I would judge there is a population at present, including Indians, of about 100,000. Mexican population mostly of mixed blood. Pure Indian race is about one-third of the above—33,000—comprising ten tribes, numerically estimated, viz: Yaquis, 18,000; Mayos, 6,500; Opatas, 2,700; Papagos, 2,600; Pimos, 1,500; Apaches, 700; Ceris, 600; Cocomaupos, Yumas, and Gilas, about 400. Indians live all over the State, mostly in pueblos, or working in mines or ranches, and all peaceable except Apache Indians, who are broken into small bands, under different chiefs and names, and have no fixed abodes. They are the scourge of the country—the Bedouins of North America; the most barbarous and savage Indians upon the continent; several thousand strong, roving from latitude 27° in Mexico, to latitude 34° or 35° in the United States, robbing and assassinating without regard to race, sex, or nation, all who come within their power. “Their hand is against every man, and every man’s hand against them.” By their rapine and murder they have depopulated the north of Mexico, and the same rapine and murders perpetrated in Southern United States almost with impunity, defying the power of both governments. The governor of Sonora offers a reward of \$300 per scalp, and gets only a few a year.

Foreigners are about 400—one-third American, one-third English and German, one-third French, Spanish, Italian, and some few South Americans.

Labor, of hard kind, is mostly performed by the Yaqui and other Indians, who receive from \$6 to \$8 per month and a small ration of beans and corn. One of the superior advantages of this country is that labor out-doors can be performed every day in the year, unobstructed by rain, heat, or cold. But these people are indolent—do not work one-third of their time, and live from hand to mouth, without regard to the future; subsist mostly on beans, corn, and fruits; require but little clothing or shelter.

American interests remain unchanged. There is one large mining company at San Marcial, and many others in a limited way. No large commercial houses; only small traders. Some work in mines or on ranches, and at their trades. Steam-packet every forty days from San Francisco, and owned there.

Foreigners of other nationalities engaged in about the same employments. English have one large mining company at Alamos, and some smaller ones. Germans have several respectable small mercantile houses; also the French. Mexicans sell most of the goods; mostly in debt; no capital. Total foreign capital will probably fall under \$1,000,000.

MINTS AND COINAGE.

There are two mints in the interior of the State at Alamos and Hermosillo. They were established some twelve or fourteen years ago by an English company; but owing to some alleged forfeiture of the privi-

lege, they were forcibly taken possession of by the Federal Government, who now conducts them and are in charge.

Alamos coinage, gold.....	\$
“ “ silver.....
“ “ copper.....
Alamos total.....	\$
Hermosillo mint, gold.....	\$
“ “ silver eagle dollars.....
Hermosillo total.....	\$
Total coined at both mints in State.....	\$

Owing to the fact that bullion for the last few months being allowed export, reduces the amount of coinage.

CONSULAR.

The German Empire has established a consulate at this port. Mr. Adolfo Bülle, an intelligent German merchant of this place, has been appointed vice-consul for this port and for the German Empire. There is no other consular representation except our own government. This allowing consuls to engage in business transactions where their pecuniary interests are involved, is a great temptation for favoritism and in office, and destructive to that personal independence so essential for the stern and impartial discharge of their official duties, and derogatory to that dignity and official standing which should characterize the representatives of all great and powerful nations. At this port, however, other consuls than those of our own have little official influence or favors to bestow.

BODY POLITIC OF THE STATE OF SONORA.

Legislative branch.—To the National Congress of Mexico there are two members sent from this State, chosen indirectly by the people through election for two years. Members of the State legislature are elected direct by the people yearly, for each of the nine districts in the State, who annually hold their sessions at Ures, the capital. Cities have their common councils elected by the people, who regulate municipalities, and have a mayor, who is *ex-officio* president, and who commands the city police and performs other duties.

Executive power is lodged in the governor of the State, who is elected by direct vote of the people every four years, and a vice-governor, who is appointed by the legislature, together with a prefect from each of the nine districts, who are appointed by and are under orders of the governor, and when deemed necessary, exercise despotic power. The governor calls upon and commands the State militia when required. The national government at times have regular troops stationed at Guaymas; now only State troops.

Judiciary is composed of three supreme judges of the State, and in each of the nine districts a judge of the first instance, who are recommended by the legislature and commissioned by the governor. Also alcaldes, for the trial of minor cases, elected by the people, and a civil judge, for

marrying, &c.; also, federal judge, to decide marine cases, &c.; and a federal supreme court of the republic, who hold their sessions at the city of Mexico, and have original and appellant jurisdiction in important cases. It may be remarked that, as a general rule, the Mexican laws for the protection of persons and property and right are just and good, founded upon the United States laws. The difficulty is in the administration of the laws without an independent, honest, impartial and just judiciary. Laws are frequently used as engines of injustice and oppression, or are suffered to remain a dead letter.

MILITARY AND POLITICAL CONDITION.

All is tranquility and peace at present in this consular district. In fact there has been but little disturbance within the borders of Sonora, the past year. There was a revolt of the federal garrison of some two hundred and fifty troops at Guaymas in October last, headed by subordinate military officers, in which their commanding officer and three others were killed, and the city taken possession of for a few days, levying upon the merchants a contribution of \$15,000, and collecting \$30,000 of dues due the general government forcibly, and then left for the interior of the State, where they were met by the State troops under Governor Pesqueira, and defeated, and seven of their leaders tried by a drum-head court-martial and shot, by order of the governor, which ended the rebellion in Sonora. Governor Pesqueira marched with the State forces to the relief of the federal government, into the neighboring State of Sinaloa, where he had some engagements with the revolutionary forces with varying results. There are no federal troops at present in this State, only a few State troops at this port, Hermosillo and Ures, with a few pieces of artillery. The revolutionists at last accounts had again taken possession of the city of Mazatlan, and rumors from other sections of the republic bring the conviction that we will have a renewal of the general devastating revolutions which have so long weighed down the people. The temporary peace appears to have arisen from the exhaustion of the country, and if we may judge from past experience, discord will again be inaugurated, so soon as recuperated, which indeed appears to be the normal condition of this distracted people, destructive alike to all prosperity, and indeed to her very political existence.

GENERAL REMARKS.

I close this report by a few general remarks, which perhaps may not be considered strictly in keeping with an official communication of this kind. But I think, however, a few details connected with the working of the government of Mexico and characteristics of the inhabitants may not prove unwelcome, as all that relates to the neighboring republic, at this critical era in her history, is of equal interest in the United States. I thought you would not object, as a practical man of thought and foresight, to an unvarnished history of "facts," upon which sound policy of government alone can safely be based.

In this age of rapid communications and changes, and great developments, when all the rest of the civilized world is moving onward, we find this people going backward. The ignorance of the masses, and bigotry of the higher classes, reject all progress. They want vitality, industry, and enterprise. In agriculture, they still use the grub-plow with oxen yoked to the horns, and cultivate alone with the hoe; in other branches of industry, and manufactures, modern improvements are

mostly rejected. Mining, manufacturing, and in fact all industrial pursuits, are taxed to that extent to render them unproductive. This people cannot comprehend the mutual advantages which would arise by the introduction of capital and skilled labor, and a liberal policy of duties. The wealth of Mexico, handled by enterprising, industrious business men, would yield, at a fair rate of duties in the end, a much larger revenue, and institute a constant tendency toward progress in every branch of industry, and create new sources of wealth. But they seem to single out for levy and taxation, every new branch of industry and trade until it becomes unprofitable and dies out. They have a strange antipathy to Americans. The good which we have done them is forgotten, while the smallest injury is carefully notched upon the tally. There are, however, to be found in this country many liberal, intelligent gentlemen, with solid reason, and business men of capacity, and good merchants; but, unfortunately, they do not control the destinies of the country. The future of Mexico looks dark and gloomy to me. Revolutions and intestine wars, in my opinion, will exist in this country until radical change and some other form of government is instituted. The masses, from ignorance, superstition, and their reckless, improvident nature, with an habitual indolence which makes industrial pursuits distasteful to them, become an easy prey to any ambitious adventurer who demagogues with them, and the petty jealousies and ill feelings among their chiefs will keep alive their internal dissensions, and, I am afraid, will never be obliterated, and end only in a Kilkenny fight. The young men, the bone and sinew of the country, are forcibly pressed into the army, leaving but few for work. There can be but little mining or agricultural wealth produced, their only source of subsistence. Governments are instituted for the protection of the body-politic in their chartered rights. Here the citizens have little security for their lives or property, the government of their own creation frequently being oppressor. Spoliation and outrages are mutually committed by the contending factions, who are as atrocious and cruel as in the most barbarous ages. The fate of the captive most usually is decided by the bullet. There is no security for the fireside and home. The good citizen of substance and industry is broken up and ruined, destroying all hope and personal ambition. All this is producing fearful embarrassment and destitution. Capital shrinks from investment where life, property, and liberty are so insecure, and men of means are embracing every available opportunity of winding up their business and leaving the country. There has been an exodus of more than one-third of the entire population of Sonora, mostly her productive citizens, in the last eighteen years. I see no hope of an end to existing evils, and there is no telling what amount of bloodshed may ensue, and then be no nearer to a peaceable solution of their difficulties. A temporary quiet is only the peace that follows exhaustion and pronunciamientos to be renewed so soon as recuperated. It would seem that universal anarchy must prevail. The revenue of the government does not meet their current expenses, and I see no other way of discharging the national debt but by repudiation. The federal government of Mexico has proved too weak, or is unwilling to protect foreigners within her borders in their treaty-stipulated rights, or prevent marauding upon our territory. This consulate has presented cases of robbery and murder, wantonly, of our best citizens by lawless Mexicans on our borders and in the neighboring territory of the United States, and there are now lying before me well-authenticated statements that our peaceable citizens in Texas are daily butchered and despoiled of their property by bands of robbers from Mexico, and a loud and urgent demand

is made for protection against their aggressions as the paramount duty of the United States Government. All these facts, united with the ruinous, corrupt, and expensive system of collecting taxes, (estimated at $33\frac{1}{2}$ per cent.,) and the constant increasing demand for revenue, with the declining ability of the people to pay, are the obvious causes which have borne this country and people to the very verge of the vortex of bankruptcy and political desolation. History tells us of somewhat similar disorders existing in governments of the old world which have been restored to order and prosperity by—

1. The foreigners of the country assuming authority; but here there are not sufficient to venture upon an effort.

2. Some neighboring sovereignty, assuming direction, have inaugurated a stable and honest government. The United States will not suffer any foreign power to interfere with the domestic relations of Mexico, as the Monroe doctrine is the popular theory there, and I see no disposition upon the part of the United States to interfere for the establishment of law and order and guarantee to this people that protection of life, liberty, and the pursuit of human happiness, with religious and political freedom, which is the inalienable right of all mankind, and which the moral sense of progressive, enlightened civilization demands.

I have the honor to be, sir, very respectfully, your obedient servant,
A. F. GARRISON,
Vice-Consul.

[22.]

MAZATLAN, SINALOA, MEXICO,
August 21, 1872.

SIR: In compliance with your verbal request, I take pleasure in submitting the few following remarks in regard to the resources and capabilities of Northwestern Mexico.

Strange as the fact may be, that portion of North America which is in immediate contact, geographically, with one of the most advanced people of the day, and within easy communication with the balance of the civilized world, is, to-day, less known to the world than many other more remote and inaccessible countries. This is the case with Mexico, and nothing, perhaps, but the advent of a new people may tear away the mist and vagueness which surround her.

The extreme northwestern part of the republic of Mexico is, properly speaking, composed of the States of Sinaloa and Sonora, and, separated from these by the inland sea called the "Gulf of California," the territory of Lower or Baja California. This Gulf is embraced between the parallels of latitude $22^{\circ} 45'$ and $31^{\circ} 45'$ north, while its extreme southern and western jaw, or limit, is in longitude $109^{\circ} 30'$ west from Greenwich, and known as "Cape San Lucas." Its extreme boundary to the north is in longitude $115^{\circ} 15'$ west. The widest portion is at its mouth, and extends from the cape mentioned to the harbor of Mazatlan, on its eastern shore, and measures nearly 185 miles from point to point, but narrows gradually and irregularly until it terminates at the mouth of the Colorado River. Throughout its entire length, which is not far from 750 miles, islands of greater or less magnitude are to be found; notably amongst which are the "Espiritu Santo," "El Carmen," "Tortuga," "San Yldefonso," "San Marcos," "San Estevan," "Los Angeles," "Tiburon," "Consag," and many others of smaller dimensions. On some of these, more particularly a rock to the north of Tiburon, guano has been found and exported to advantage.

About many of the islands in the northern part of this Gulf immense numbers of the common hair-seal (*Phocidæ*) abound, and so unused to the presence of man, that they could not be made to move out of your way on landing. I have seen the beach of Los Angeles Island lined for miles with them, basking in the sand. I mention this simply with the idea that they might be made an important source of revenue, as has been done in our newly-acquired Territory of Alaska.

Not only are seals found here in great numbers, but whales, porpoises, and other cetaceans find the waters of this Gulf a favorite feeding and breeding place. Fish in endless varieties, turtle, oysters, and the hawk's-bill turtle (*Chelonia imbricata*) which furnishes the tortoise-shell of commerce, abound in countless myriads. None of the islands are inhabited, if we except the southern end of Tiburon, where a few miserable Ceres Indians maintain a scanty livelihood by fishing. A solitary, scanty spring furnishes them with water. No attempt has ever been made to cultivate any of the islands of this Gulf, for the reason that water is not to be found on them in sufficient quantities for irrigation. With the exception of a limited supply on the northern part of Los Angeles Island and that mentioned as existing on Tiburon, no other island in the Gulf contains a drop.

The peninsula of Lower California, which forms the western boundary of the Gulf, extends from a point fifteen miles below San Diego in Upper California (lat. $32^{\circ} 15' N.$) and extending S. $33^{\circ} E.$ for seven hundred and fifty miles, terminate at Cape San Lucas, in lat. $22^{\circ} 45' N.$ Taken as a whole, probably no more uninviting stretch of land is to be found in North America. With the exception of a few well-known springs, two or three extremely scant rivulets and some wells and water-holes, the entire peninsula is devoid of water in quantities sufficient for any large or practical purpose. The entire population, consisting of about ten thousand inhabitants, is congregated principally about the small towns and villages which have sprung up about or near the most favorable spots, where water could be obtained. Among the principal ones of these I may mention "La Paz," capital of the territory, and containing a population of nearly 2,500; San José del Cabo, at the extreme southern end of the peninsula, with a population of 1,500; Loreto, the ancient capital during the Spanish administration, with a population dwindled down to not over 300; Mulegé, the garden-spot of Lower California, with 1,000; Comondri, on the Pacific or western coast of the peninsula, a great resort for runaway whalers, contains about 300 souls; Santo Tomas missions and surroundings, with about 1,500—mostly cattle-breeders. The balance to make up the ten thousand are scattered over the length and breadth of the land wherever water is to be had; these eke out a scanty subsistence by cultivating the vine, sugar-cane, figs, and dates, all of which arrive at wonderful perfection in this climate; and the assistance of a few cows, which manage in some miraculous way to thrive on the dry, thorny brush which scantily grows on the sides of the hills. Neither corn, wheat, nor other cereal is ever attempted to be raised, except in the extreme northern part, and there only in very small quantities. Every inch of ground capable of being moistened from some adjacent spring is rigidly devoted to the production of the above-named fruits, and may be, where nature has been more liberal, the olive and orange. The population, rendered frugal from the nature of their country, manage, in the face of this great dearth of water, to produce a surplus over and above their wants, and this finds its way across the Gulf in the form of dried dates, figs, raisins, and "panocha," (or raw sugar,) together with cheese and dried beef. Hides to the num-

ber of ten thousand annually are exported directly to Upper California. These are collected by the small traders throughout the peninsula, who, in turn, take them to La Paz or San José for shipment. In return, they import corn, flour, and cottons, and such articles of native production (sarapes, or woolen blankets, and rebosas, or cotton shawls) as they may be in want of.

A superior kind of wine, resembling the peninsular wines of Europe, is produced, but not in sufficient quantities for exportation. The little village of El Patrocinio, a few leagues to the southwest of Mulegé, produces annually about sixty barrels of a wine resembling sherry, which is considered superior to any European production, and sells readily in Lower California at from \$12 to \$18 per barrel of eighteen gallons.

The valley of Mulegé, situated on the Gulf side, about midway of the peninsula, and in which the village of the same name is found, contains a small lake fed by large springs, three miles from the coast. A stream or brook, the largest in Lower California, takes its rise here and flows its short course to the Gulf. On either side of this stream are found the most magnificent groves of date, fig, and olive trees, and so plentiful is the production of the latter, that I have seen hogs turned in to fatten on the olives which were allowed to ripen and fall, simply, as it was explained to me, for the want of barrels in which to cure them and send them to market. The most important branch of industry, however, which is carried on on the Gulf side of the peninsula, is the pearl fishery. The pearl-oyster (*Avicula margaritifera*) is found along the western shores of the Gulf, between La Paz Bay and Point Santa Inez, twenty miles to the north of Mulegé. The work of diving for the oyster in which the pearls are found, goes on continually between the months of May and October, and is mostly done by Indians brought over for that purpose, from the Yaqui River, in the State of Sonora, who hire themselves out for the season for a share in the "catch," to the parties entering on this kind of business. These are generally native Californians, who furnish the provisions, and are the owners of the canoes which are used for the work. The entire yield of the pearl-fisheries varies, but may be set down as not less than \$50,000 nor more than \$75,000 per annum. To these amounts, however, we must add the value of the pearl-oyster shell, (*Concha nácar*), which is worth about two dollars per quintal on the ground, and is exported to Europe. The sale of the shell is reckoned as being sufficient to cover the expenses of the diving season, leaving the pearls obtained as profit.

Some of the noblest bays and harbors in the world are found on the coasts of this peninsula, notably among which I may mention Magdalena Bay, on the western or Pacific side of Lower California, where the colonization schemes of Jacob P. Luse, Capt. J. B. Isham, and Col. Drake De Kay culminated and came to an untimely end, and this simply for the want of drinking-water. These parties, who were associated with others in New York, had obtained a large tract of land from the Mexican government, about this bay, and, with views to its colonization, had landed some three or four hundred people there, who, after struggling along miserably for a few months, drinking nothing but such water as they were able to distill from the salt waters of the bay, had to abandon the project. The only real favorable result of the whole thing was the discovery of a lichen known in commerce as "orchilla," (*Rocella tinctoria*), from which a valuable scarlet dye is obtained. This branch of industry may eventually induce the partial settlement of this part of the peninsula, should artesian wells prove a success. Apart from Magdalena Bay and farther to the north, and

running parallel to the coast for a distance of nearly two hundred miles, is a system of estuaries or arms of the sea which vary from half a mile to five miles in width, and communicating in several places through deep and safe channels directly with the Pacific Ocean. These estuaries seem to be and are the favorite resort of large numbers of the common as well as the right whale (*Cachalot*.) which enter here yearly in immense schools to calve. This place has been regularly visited since the year 1857, when it was accidentally discovered by a fishing-vessel from San Francisco, by from ten to twenty whaling-vessels, which as a rule have always succeeded in filling with oil. On the inner or Gulf side we find also several large and safe bays or harbors, of which probably the best are La Paz, Puerto Escoudido, Mulegé, Los Angeles, and San Luis. Unfortunately all these noble harbors, having no back country or population seeking an outlet, are rendered for these reasons of no account to the shipping-interest of the world. Possibly at some future day, Magdalena Bay may be used as a naval depot or coaling-station, but this can hardly be expected without, as I said before, artesian wells should be a success. The mineral resources of Lower California, though not as important as those of other parts of Mexico, are still of considerable value. Silver is found in paying quantities about San Antonio, in the Cacachila range of mountains, while copper is mined to advantage in the neighborhood of Mulegé, and the Gigante Mountain near Loreto. A gold vein of great value exists near Santa Gertrudis, which has been worked only to a very limited extent, owing to the lack of water, which can only be obtained by packing it thirty miles. One of the most remarkable salt-deposits in North America exists on Carmen Island, opposite the old capital of this territory, Loreto. This salt forms by infiltration and evaporation, and is of extreme purity. It is found in a depression near the beach of the island, and covers a surface of nearly 160,000 square yards, and is from four to six feet in thickness. So rapid is the evaporation, which is continually going on, that a block of salt taken out is replaced by a new formation within twenty-four hours. This island is owned, I believe, by Mr. Ben. Holladay, of San Francisco, who finds a ready sale for all the salt that he can ship away from there. On the island of San Marcos, a little to the north of Mulegé Bay, are inexhaustible quarries of gypsum, both selenite and alabaster. Forty miles north of this last-named island, and nearly opposite Guaymas, in Sonora, from which they are ninety-five miles distant, are situated three remarkable conical mountains called Las Tres Virgenes (The Three Virgins.) These are extinct volcanoes and stand near the coast, from three to five miles distant from the safe harbor of San Carlos, where fresh water is found. Between these Three Virgins, which stand relatively to each other as if they formed the apexes or apices of an equal-sided triangle, is an incalculable deposit of sulphur, which must have formed or flowed here when the volcanoes were in active eruption. This sulphur is of considerable purity, and with proper refining-works could be made to supply the world for the next century. I accidentally discovered the deposit while hunting for Rocky Mountain sheep, (*Ovis montana*.) which exist here in this neighborhood in large numbers, in the year 1859, while attached to Stone's survey of the Gulf.

The States of Sonora and Sinaloa, which, as I before remarked, form the extreme northwestern boundary of the republic of Mexico, present characteristics so totally different from Lower California, that one can hardly realize them to be within so few degrees of each other. That great range of mountains—the backbone of the American continent—

known as the Rocky Mountains in the United States, the Andes in South America, takes the name of Sierra Madre (*Mother of Mountains*) on its way through Mexico. Against this lofty range the rain-charged clouds which sweep over the Pacific from June to October of each year are condensed. Lower California, possessing no very elevated range of mountains, as a consequence, suffers from a want of rain; while on this (the eastern) side of the Gulf the country is made fertile through the abundance of the rain-fall. The Sierra Madre runs nearly parallel with the coast for a distance of several hundred miles, and at an average distance of say 60 to 75 miles from it. Shooting out, as it were, from the main range are numerous spurs or ridges, which push their way to the Gulf. Several small rivers, which take the surplus rain from the mountain, find their way between these spurs or ridges to the Gulf. In the State of Sinaloa we have the Rosario, Mazatlan, Camacho, Braziles, Piastla, Elota, San Lorenzo, Culiacan, Sinaloa, Ajome, Mayo, and, dividing the two States, the river Fuerte. In Sonora we have the river Yaqui, Rio de Ures, and the Colorado of the West, which empties into the extreme north end of this Gulf. None of the rivers of Sinaloa are navigable, owing more to their rapid fall than to a want of water. The Fuerte, however, is navigable for flat-bottomed vessels of not over four feet draught for a distance of nearly one hundred miles above its mouth. The Yaqui, in Sonora, is also navigable for small vessels for about the same distance; while the Colorado gives employment to several low-draught stern-wheel boats, which run up as high as the mouth of Black Cañon, a distance of nearly 400 miles.

The valleys of all the rivers mentioned, from the Yaqui to the Rosario, are not excelled in fertility by any other lands on the face of the globe. Not only corn, beans, and tobacco are raised—articles of primary importance to the inhabitants—but rice, coffee, sugar-cane, and cotton grow with wonderful prolificness. As we ascend the slopes of the Sierra Madre, wheat, oats, barley—in fact, all the cereals, are found to grow and produce with equal prolificness. Magnificent forests of timber, only limited by the extent of the mountain range, cover the slopes and summits of the Sierra Madre. Here we see the pine and the oak growing side by side, while in the valleys and along the water-courses we find the ash, red-cedar, (*Juniperus sáбина*,) lignum-vitæ, (*Guaiaacum officinale*,) ebony, ava, (*Strychnos nux vomica*,) higuera or higueron, Brazil-wood, mesquite, rosewood, and a variety of others which will eventually become of value as they are better known.

The total population of the two States of Sonora and Sinaloa, including the tribes of Indians who inhabit different portions of them, (the Papagos, Ceres, Opatas, Yaquis, and Mayos, in Sonora, and the Taramanos, in Sinaloa,) may be reckoned as miners, rancheros, or farmers, and arrieros, or packers. No adequate conception can be formed of the mineral wealth of the Sierra Madre range within the limits of the two States mentioned. Innumerable veins of quartz, rich in both gold and silver, traverse the western slope of the great range in every direction, and only await the advent of skilled labor to yield returns unheard of in the annals of mining. Not only are these two precious metals found in inexhaustible quantities, but quicksilver, copper, lead, tin, antimony, and iron are found in great abundance. Both the tin and iron which have been produced until now have been in the neighboring State of Durango, where float-tin exists over a space of nearly 1,800 square miles. One of the most remarkable mountains in the world, composed of nearly pure magnetic-iron ore, overshadows the city of Durango. This mountain, two miles in length by one in width, and averaging 700 feet in

height, was formerly supposed by Baron Humboldt and other scientific persons to be an immense æreolite, which had fallen here at some remote period; but later investigations have proved the contrary, as ores of the same nature are found to exist in other immediate localities, but at too great distance to have been the result of scintillations from the original heated mass. Should a railroad ever cross Mexico, seeking an outlet at the Gulf of California, it must cross within a comparatively short distance of these two great sources of national wealth, *i. e.*, iron and tin. Notwithstanding that so much has yet to be done in Northwestern Mexico for the full development of her mining system, we can still point with some degree of satisfaction to the results obtained under the rude Mexican way of mining; and we have but to visit the mining centers of El Rosario, Copala, Panuco, San Dimas, Zaragosa, Gaudalupe de los Reyes, Zapote, Metates, Batopilas, Cerro de Alamos, La Silla, Gavilanes, Ventanas, Plomosas, and scores of others I could mention, to fully realize the enormous wealth buried in the bowels of these mountains, which silently waits the advent of the intelligent miner, as I said before, to throw the results achieved by California and Australia in the shade. My pen fails to do justice to this, more than any other, important branch of future wealth.

The Sierra Madre range, which traverses or divides the States of Sonora and Sinaloa from the States of Chihuahua and Durango on the east, runs nearly north and south, and attains within the limits indicated an elevation of nearly 12,000 feet. Though this is the highest elevation, we have gaps breaking through of not over 4,000 feet in height. The ascent from the east is easy, as the slope from the great central plateau of Mexico is gradual and regular, and no engineering difficulties may be apprehended in topping the summit, should a railroad ever be projected.

On the western slope the descent is much more rapid, and though comparatively impracticable for the passage of railways, yet not impossible to capital and skillful engineering. A natural pass through the mountain, which presents many less difficulties than those at other points along the range, is to be found on the line commencing at the town of "El Fuerte," passing through "Chois" and Batopilas, thence a little to the north of Santiago Papasquiario, sweeping down an easy grade into the great elevated plain of Mexico to the north of the city of Durango. This route follows the Fuerte River to the sources of its waters, and presents no remarkable engineering difficulties, as the grade is comparatively easy and regular. This route taps some of the richest silver districts probably in the world, and I have only to mention Batopilas, where native silver is frequently cut from the veins, to convince you of the truth of this statement.

No clear-sighted person can fail to see the importance which the geographical position of Northwestern Mexico offers as a terminus to some future system of railways, which must connect somewhere in this vicinity with one of the shorter routes to Japan, China, and the East Indies.

Canton, the Sandwich Islands, and the mouth of the Gulf of California lie each within a few minutes of the 23d parallel of north latitude. Within easy reach of this parallel lie Australia to the south and Japan to the north. * * * While from here east we are not only nearer New York, but absolutely clear of the dread of snow-blockades. When we take all this into consideration, together with the fact that such a road would pass through both great agricultural and mineral wealth, who can doubt but that in time the steam-whistle may be heard as the train whirls down the slope of the Sierra Madre, chasing away ignor-

ance, superstition, and darkness from one of the fairest portions of this earth.

While we have noted that Lower California, poor in everything else, contains some of the noblest bays in the world, we have to regret that nature was not more bountiful in that respect to the eastern shores of the Gulf. The entire distance between San Blas and the head of this Gulf contains so few good harbors that the number may be limited to two only. One, the well-known harbor of Guaymas, requires no description. Its great fault, if any there be, is that it is too far up this Gulf for practical purposes; but this might not be a drawback had we not a harbor superior in every respect to that of Guaymas, situated much nearer to the mouth of the Gulf, and so far entirely unoccupied, and almost equally unknown. Such a harbor, possessing all the necessary requisites to become a point of importance on the highway of nations, I believe to exist half way between here and the port of Guaymas.

Our mutual friend, Dr. B. R. Carman of this place, has also given me valuable information touching this interesting point. He it was who, accidentally hearing from some travelers of the existence of this magnificent internal sea, and knowing the value of such a harbor on a coast nearly devoid of them, went to the expense of fitting out three different exploring parties, both by land and by sea, to search for it, and to him belongs the honor and right of discovery. It is called Topolovampo, and is situated near the mouth of the river Fuerte.

Centrally situated between Alaska and Cape Horn, with no rival to equal its magnificent harbor and bay; a climate unrivaled in the world, partaking of both the torrid and temperate zones; surrounded by a land capable of producing all that the most favored climates yield for the comfort and luxury of mankind; with forests of magnificent timber growing almost in sight, on the one side, and a water teeming with the finest fish, turtle, and oysters on the other; mines of gold, silver, copper, quicksilver, tin, iron, and lead, on her right hand within her grasp, balanced on the other side by pearl-fisheries and alabaster-quarries, together with immense and inexhaustible deposits of both salt and sulphur; why, with all these advantages, may not this nearly obscure bay of Topolovampo become one of the great points toward which shall center the greater portion of the commerce of the Pacific.

I sincerely believe that as the needs of the world are developed, this point, dormant since the creation, shall spring into a life rivaling ancient Carthage and eclipsing the famous maritime age in which Venice was mistress of the sea. This is no dream, for we have but to study the capacities of the bay in question, its surrounding resources and geographical position, together with the necessity which approaches on the rapid wings of civilization, to believe all that we predict as to its future.

Very respectfully, your obedient servant,

FRED'K G. FITCH, *C. E.*

ALBERT K. OWEN, Esq., *Mazatlan.*

[23.]

[The information contained in this notice will be carefully considered, will be noted in the sailing-directions, and compared with the chart when the ship is navigating the parts to which it refers.]

HYDROGRAPHIC NOTICE.

[No. 11—1869.]

The following hydrographic information is an extract from a journal

kept by Commander William T. Truxton, commanding United States sloop of war Jamestown :

GULF OF CALIFORNIA.—TOPOLOVAMPO—The entrance to this harbor and the inland sea of San Carlos is in latitude $25^{\circ} 32'$ north, longitude $109^{\circ} 14' 25''$ west, between two sand-banks covered at high, and awash at low water, and through which three and a half fathoms can be safely carried at low water.

The land of Topolovampo and the island of San Ignacio (between which are the straits of Topolovampo and entrance to the bay of San Carlos) is high and easily distinguishable.

With the Farallone San Ignacio, (in latitude $25^{\circ} 27'$ north, longitude $109^{\circ} 27'$ west,) bearing S. W. by S., (mag.,) you have a fair view up Topolovampo Straits.

With the Farallone San Ignacio bearing S. $54\frac{1}{2}^{\circ}$ W. (mag.,) the entrance between the sand-banks bears N. $54\frac{1}{2}^{\circ}$ E. (mag.)

You can then stand in on that course (N. $54\frac{1}{2}^{\circ}$ E.) with safety till you see the breakers on either side of the smooth water of the channel ; the soundings decrease regularly and gradually ; bottom, smooth, hard sand, free of all dangers.

When on this line the straits of Topolovampo will be shut in, and you must be careful not to be misled by an apparent opening a little to the northward of the N. $54\frac{1}{2}^{\circ}$ E. and S. $54\frac{1}{2}^{\circ}$ W. line given above.

For the present, and till a more thorough examination of the approaches are made, it will be well to keep about half way between the Farallone and the mainland before standing in too close to the land.

The set of the tides on and outside the sand-banks is not determined ; they are quite strong ; apparent-rise and fall about seven feet.

The high lands of Topolovampo are faced with (but separated by a narrow strip of water from) a bright yellow sand-beach, which stretches away to the northward and westward and is lost in the distance.

It makes a good mark for the north side of the entrance as you approach from the westward, and in the afternoon shows well. We carried four fathoms to within three hundred feet of the beach.

The water in Topolovampo Harbor and Straits varies from six (6) to fifteen (15) fathoms till well in San Carlos Bay, when it gradually shoals.

Further investigations, however, may develop good channels through this magnificent inland sea.

In Topolovampo fair drinking-water may be obtained by sinking wells in the sand on Conchal Point. Wood is not to be had except the thin growth of chaparral that covers the hills of the vicinity.

No signs of fresh water in San Carlos Bay, no wood, no arable land, and no desirable place to locate a city could be found during the brief time given to its investigation.

The anchorage outside is perfectly safe, as a ship could always lie off shore with a S. E. or S. W. wind, should it begin to blow.

Inside Topolovampo, vessels are entirely protected from the sea, while only S. W. and N. W. winds would be felt. In San Carlos, vessels would be entirely land-locked.

In fact, for safety, no more secure anchorage is to be found, while, with the aid of two or three buoys, access to it could be made perfectly simple.

There are many rivers emptying into the Gulf of California, not laid down on the charts. I am satisfied also that other good harbors will be found.

Imray's chart, probably the best at present published, is exceedingly incorrect.

* * * * *

Sailing-directions for entering the harbor of Topolovampo, Sinaloa, Mexico, prepared by Lieutenant-Commander Allen V. Reed, in charge of surveying party from the United States sloop of war Jamestown, Commander W. T. Truxton commanding.

“Bring the middle of the Farallone de San Ignacio to bear S. W. $\frac{3}{4}$ W. a little westerly, and stand N. E. $\frac{3}{4}$ E. a little easterly, toward the northern slope of Mount San Carlos, (the most prominent mountain looking in the bay, its ridge running N. and S. and the northern end sloping down to the water;) stand on till you bring Shell Point (low sand) to bear E. N. E. distant $1\frac{1}{4}$ miles, in $3\frac{1}{2}$ or 4 fathoms water; pass between two small sand-islands (the southeastern one covered at high water, but their presence always shown by breakers;) from mid-channel, when directly between these islands, steer N. E. by E. toward the same slope of Mount San Carlos, gradually shoaling the water from $10\frac{1}{2}$ to 5 fathoms; when the Round Hill, on northern shore of the bay, (at the water’s edge,) is in line with Camel’s Hump (or mountain peak over the ridge of another mountain, which has very smooth sides and a straight ridge slightly descending toward S. E.,) steer east along the northern shore of Conchal Island, about $\frac{2}{5}$ of a mile distant, in 7 and 8 fathoms; when entrance to Topolovampo Straits, seen to left of Mount San Carlos, bears N. E. $\frac{1}{2}$ N., stand for the highest point of Mount San Carlos, passing the headlands about $\frac{2}{5}$ of a mile distant.

“Topolovampo Straits are clear passages; from 6 to 12 fathoms water on either side close to shore; no hidden dangers.

“Anchor anywhere after passing Shell Point. Avoid a shoal, with only two or three feet of water, off east end of Conchal Island, where the high land commences. It sets out about $\frac{1}{5}$ of a mile, but is easily known by the discolored water.

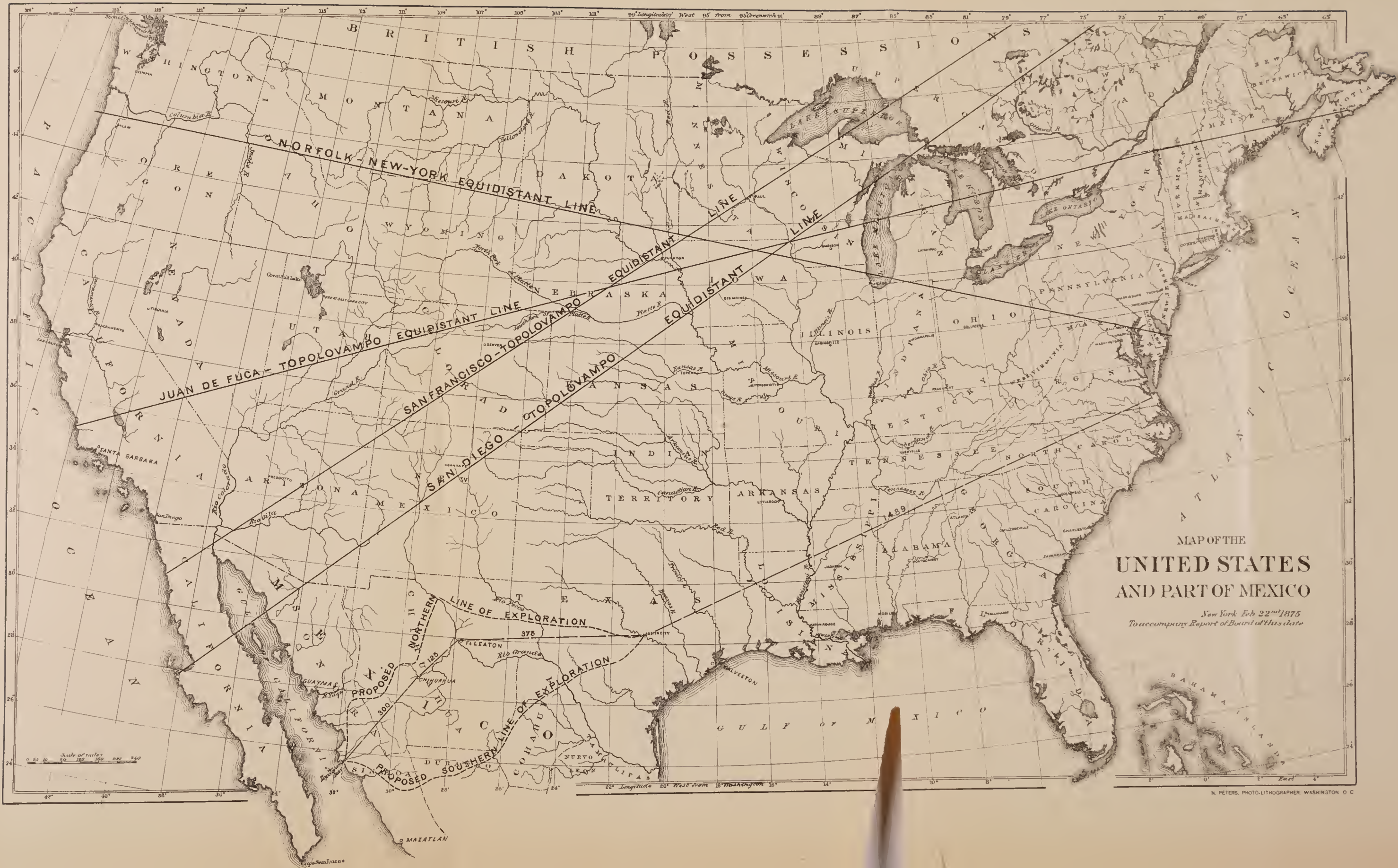
“Bottom, sand, but good holding ground. Tides regular as far as observed; neaps 3 feet, springs about 5 feet.”

BUREAU OF NAVIGATION,

HYDROGRAPHIC OFFICE,

Washington, D. C., June 19, 1869.





MAP OF THE
UNITED STATES
AND PART OF MEXICO
New York Feb 22nd 1875
To accompany Report of Board of this date

Scale of Miles
0 50 100 150 200 250 300

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON D. C.

NORFOLK - NEW-YORK EQUIDISTANT LINE

JUAN DE FUCA - TOPOLOVAMPO EQUIDISTANT LINE

SAN FRANCISCO - TOPOLOVAMPO EQUIDISTANT LINE

NORTHERN LINE OF EXPLORATION

PROPOSED SOUTHERN LINE OF EXPLORATION

22° Longitude 20° West from Washington



Var.
9°45'E.

Mag. Mer.

True North

Asinagua

Mud Flats
at low tide.

BAY

O G Ü I R A

BAY

TOPOLOVAMPO

GULF OF CALIFORNIA

MAP OF
TOPOLOVAMPO BAY

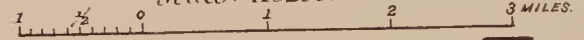
including the inner
BAY OF OGÜIRA
Gulf of California
Sinaloa, Mexico.

New-York, Feb. 22^d. 1875

To accompany Report of Board of this
date.

Survey made in July 1873, by
F. G. FITCH, C.E.

Scale: 115200.



Small Sand Island at A { Lat. 25°32'N.
Long. 100°10'25''W.

Variation at Asinagua, April 10th 1873,
9°45'E.



H 164 74584

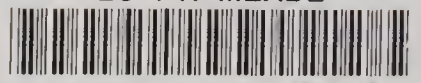


MAY 74



N. MANCHESTER,
INDIANA

LC FT. MEADE



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