THE PRACTICABILITY AND IMPORTANCE OF A SHIP CANAL TO CONNECT THE ATLANTIC & PACIFIC OCEANS: WITH ...

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Trieste

THE

SHIP CANAL

TO CONNECT THE

ATLANTIC & PACIFIC OCEANS.

WITH A HISTORY OF THE ENTERPRISE

From its first Inception to the Completion of the Surveys.

INCLUDING THE INSTRUCTIONS FROM F. M. KELLEY, ESQ., TO WILLIAM KENNISH, ESQ., CIVIL ENGINEER—REPORT OF MR. KENNISH'S SURVEY, WITH ACCOMPANYING PLATES, AND A PAPER UPON THE THEORY OF THE TIDES—CONFIRMATORY REPORT OF R. W. SERRELL, ESQ., CONSULTING ENGINEER—AND AN ESSAY UPON THE IMPORTANCE OF THE CANAL IN ITS RELATIONS TO THE COMMERCE OF THE WORLD.

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1853.

REPORTS, ETC.

INSTRUCTIONS TO CIVIL ENGINEER.

NEW-YORK, *November 2d*, 1854.

WILLIAM KENNISH, ESQ., *Civil Engineer.*

DEAR SIR:

Be pleased to form a party forthwith for the purpose of making explorations for a ship canal in New Granada, and proceed at once to Panama, *via.* Aspinwall, by the next regular steamer.

At Panama charter such a vessel as, in your judgment, will best suit the purpose, and follow down the coast to the southward, with a view of discovering a good harbor in the vicinity of latitude 7 deg. north.

Having found such a bay as will admit the largest class vessels, make a regular hydrographical survey of the same, noticing in particular such improvements (if any are required) that can be made, to render it perfectly safe under all circumstances.

While passing down the coast, observe closely the mountain ranges, and look for any decided breaking down of the Cordilleras that occurs.

From the bay (if you are fortunate enough to find one), proceed eastward towards the dividing ridge of the country, and search for such a line as will admit the construction of an open cut, without locks, for a ship canal that shall connect the waters of the Pacific Ocean with the Atrato River, near its confluence with the Truando River, in latitude 7 deg., longitude 77 deg. west from Greenwich.

The researches which have heretofore been made at my instance, and those made by distinguished travelers, indicate that the summit of the country in this general direction is very low; and in order to establish the lowest pass—having reached the ridge between the waters flowing into the Pacific and those discharging into the Atrato River in an opposite direction—you will run an instrumental line of levels along the summit of this ridge, in a direction transverse to your general line.

By so doing, the lowest point will be determined, and into this gap, from the Pacific, direct your researches. It is important, when the general direction is approximately determined, that a regular transit line should be run, and carefully measured, and all the inequalities of the surface ascertained by level, in the usual manner.

When you have crossed the dividing ridge in the best place, proceed to the Atrato River, on the most practicable route, and then descend to

the Atlantic Ocean, continuing your examinations of direction, currents, soundings, &c., &c.

At the mouth of the Atrato make the necessary examinations for harbors, &c.

The more immediate object of these surveys being to determine the approximate cost of an open cut, without locks, from ocean to ocean, having thirty feet depth of water at extreme low tide, and sufficiently wide to pass two of the largest steamers afloat, you will fill up the details of the examination with reference to this purpose.

All particulars that your time and circumstances will permit you to record, of climate, and the natural productions of all kinds, of the country, be pleased to note.

The sanitary condition of this region requires your special attention.

As it is of the greatest consequence that whatever is done should be most thorough, please provide yourself with all instruments and apparatus that will ensure exactness.

Report to me by letter, from time to time, as opportunity offers, and when you have finished, please return to New-York as expeditiously as possible.

Herewith I hand you such letters of credit and introduction as are necessary, and will facilitate you in the prosecution of the enterprise.

Wishing you and your party health, and a safe return, and confiding in your ability, energy, and faithfulness,

I remain, yours truly,

F. M. KELLEY.

REPORT OF CIVIL ENGINEER.

F. M. KELLEY, Esq.

SIR:

In compliance with your order, bearing date November 2d, 1854, directing me to proceed to the Province of Choco, in the Republic of New Granada, South America, and explore a route across the Cordilleras, from 7 deg. north latitude, on the Pacific, to 7 deg. north latitude, 77 deg. longitude west of Greenwich, on the Atrato River, for the purpose of locating a line for an *inter-oceanic ship canal*, without locks, I have the honor to

REPORT:

That, accompanied by my first assistant, Mr. Norman Rude, I started, in the steamship George Law, for Aspinwall, on the sixth November, 1854, and arrived there on the fourteenth day of the same month, whence we proceeded across the Isthmus, and arrived at Panama the next night, where I was joined by my second assistant, Dr. R. G. Jameson.

December 10, 1854.—We sailed from Panama for the Island of Tobago, and arrived there the next day. Here we remained, in order to get necessary alterations and repairs made to a bungo, which we purchased for the voyage down the coast.

December 13.—Sailed at one o'clock, A. M., for the Pearl Islands, which were in our course; the wind light.

December 14.—We laid to all night, and reached the pueblo of San Miguel, on the Island San Miguel (one of the Pearl group); the weather clear and pleasant.

December 15.—At San Miguel. The 16th, 17th and 18th were occupied in the voyage from the Pearl Islands to the Boca Chica, the smallest of the two mouths that connect the harbor of Darien with the Gulf.

We stopped the night of the 16th at Palma, a pueblo, or village, of five houses, built of cane, and situated just inside the harbor of Darien.

December 19.—Arrived at two o'clock, P. M., at Chapigana, and landed at the residence of Messrs. Hossack and Nelson.

Here the Alcalde and village Judge called upon us, and offered their services, and gave us information of a very encouraging nature respecting the country between the Jurador River and the river Atrato.

They expressed much apprehension of being attacked by their neighbors, the San Blas Indians, who, ever since the memorable and unfortunate expedition of the Virago, and of the American party, under Lieut. Strain, have been more inveterate than before against foreigners.

The object which we had in view in visiting this place, was to obtain the aid of Mr. Nelson, and one or two sailors acquainted with that portion of the Pacific coast which extends from the Gulf of San Miguel to the river Jurador. Skillful and experienced pilots are very necessary for this voyage, as the coast is bold and rocky, with numerous reefs and strong currents. The thermometer was 82 deg. at noon.

December 22.—We obtained two sailors, one of whom engaged for the voyage; the other would not go further than Garachine. Mr. Nelson also agreed to accompany us. Here our cook deserted, but was retaken, and sent on board by the Alcalde.

We returned from Chapigana to Palma, which we reached in the afternoon, and found the tidal currents of the harbor of San Miguel very strong.

December 23.—Left Palma for Garachine, passing the Boca Chica; emerging from this narrow and remarkable passage, we steered for Garachine, and reached it about 5.30 o'clock, P. M.

Here we found that it would be impossible to obtain the services of any sailors until after Christmas, and were therefore constrained to remain until the 27th.

December 24.—We took altitudes, &c., in order to determine the longitude of Garachine.

December 27.—Obtained a pilot; also another to replace the one who left us at Garachine.

At Garachine we noticed a lofty range of mountains, one of which, immediately behind the village, rises to the height of 3,000 feet; and from this the range passes southwards, following the coast to Puerto Pinas, where it is but little diminished in altitude.

December 28.—We made sail and rounded Cape Garachine, and being apprehensive of not having water enough on board, we put in at Puerto Escondido, a small boat harbor, very inaccessible, with narrow entrance, through which there rushes a furious tidal current, causing a heavy swell and formidable surf.

When safely anchored inside, we obtained excellent water; and suspending our hammocks from the branches of trees, passed a comfortable night.

December 29.—Sailed again; the wind being light and baffling, we were compelled to anchor during the night.

There are few situations along the Pacific, in this latitude, where good anchorage is obtainable. The coast all the way from Garachine, is rocky and bold, and has but little beach.

The hills, from the margin of the sea to the highest visible mountain ridges, are covered with dense forests, rarely traversed by any human being. This is true of the coast all the way from Punto Garachine to Puerto Pinas, and from thence to Punto Ardita.

With the exception of Puerto Pinas, there is no harbor of sufficient depth for vessels larger than those used for coasting, (which are small,) on all this line of coast. Puerto Pinas, however, is capacious, and deserves a more extended description, which is given hereafter.

December 30.—We arrived within a mile and a-half of the entrance of Puerto Pinas, but were baffled by the winds, and were compelled to anchor in a dangerous situation, exposed to a heavy swell, which threatened to drive us ashore.

December 31.—We weighed anchor at daylight, and, after four hours' heavy pulling against a current, made the entrance of Puerto Pinas, near which there are several remarkable detached rocks, which mark the position of the harbor very distinctly.

We entered the harbor about eight o'clock, A. M., and followed closely the rocks on its northern margin, until we reached the mouth of a river which flows into it from the direction of the Sierra, which is lofty, and limits the view towards the interior.

At the time of landing, the thermometer stood at 88 deg. A rancho was speedily erected on the sandy neck, between the river and the bay.

This harbor is two miles and a-half wide at the mouth, and extends inwards, to the crown of the bay, about five miles. It is closely hemmed in by mountains, which are densely wooded, and rise to the altitude of from five hundred to one thousand feet.

The more distant ranges, in the interior, appear to have an altitude from three thousand to four thousand feet. The shores, on both sides, are indented with bays, which would shelter a vessel against all winds. These are of limited extent, but have deep water close to the shore.

The Rio de Pinas is an inconsiderable stream, liable to sudden and heavy freshets, during one of which, our bungo dragged her anchor, and was with great difficulty prevented from drifting out into the bay.

The playa, or beach, which margins the crown of the harbor, is very smooth, with a gradual slope, but, owing to the tidal current, is at all times beaten by a succession of breakers, rendering it difficult, and even dangerous, to land upon from boats. Landing-places can only be found at the mouth of the river, or in the various inlets which indent its northern and southern shores.

January 1, 1855.—I started from the rancho at half-past eight o'clock, A. M., and, accompanied by the Doctor, walked towards the crown of the harbor, intending to ascend one of the hills. We were attended by our pilot and the sailors, armed with hatchets, to cut the brushwood in our ascent.

After walking three miles along the beach, we reached a cool and shaded rivulet, falling in a cascade. Here we breakfasted, and then commenced the ascent.

We took with us one aneroid barometer and detached thermometer; the other aneroid, with thermometer, being left at the rancho, with Captain Rude, who was directed to note, every hour, the barometer pressure, and register the atmospheric temperature.

When we reached the summit of the hill, which was very steep, and difficult of ascent, and, moreover, extremely slippery from the clayey nature of the surface, we observed the instruments, and found the atmospheric pressure diminished 45-100 of an inch, indicating, with the correction for the temperature, a height of nearly 500 feet.

January 2.—We took angles of elevation, to ascertain, trigonometrically, the height of the hill which we ascended yesterday; but the angles obtained were, necessarily, very acute, and consequently, unsatisfactory.

In ascending and measuring the altitude of this hill, we had two objects in view: First, to test the accuracy of a barometrical observation, as compared with a trigonometrical one; and, secondly, to obtain a view, from an elevated summit, over the neighboring country. But in the latter we were completely disappointed; the foliage being so dense, that it was impossible to see to a greater distance than a few yards.

This difficulty we had to contend with during all our subsequent travels, from the Pacific to the Atrato. Hence, all statements respecting views from the tops of hills in New Granada, are to be received with caution and distrust. No extensive prospects are obtainable from any mountain seen by our expedition in New Granada.

January 3.—At Puerto Pinas, we became acquainted with a resident of Jurador, who gave us a very intelligent account of the country between the mouth of that river and the Atrato.

January 6.—This evening, at seven o'clock, we got under way, and stood out of the harbor, with light, unsteady winds. We passed a row of remarkable detached rocks, seven in number, which mark the southern head of the harbor.

January 7.—We reached Punto Ardita, after two days of difficult, harassing, and tedious navigation; making sail when the wind was favorable, and anchoring when it was calm, or foul. The coast between Puerto Pinas and Punto Ardita, is bold, rocky, and dangerous. There are two remarkable promontories. The most northerly is called Punto Muerto; the more southerly, Punto Caracoles. In the vicinity of these points, the small coasting canoes and piraguas find anchorage. Punto Cocalito is another similar promontory, within about six miles of Punto Ardita. At this last-named promontory commences the remarkable and important bay, which encloses the outlet of the Jurador and Paruchichi rivers, besides others of lesser note; and here we perceived, at a glance, that depression of the Cordilleras, (from the altitude of thousands to that of hundreds of feet,) where we have determined to effect a hitherto unexplored route from the Pacific to the Atrato. This important bay terminates, towards the south, in the remarkable promontory of Punto Marzo. An extent of not less than thirty-five miles, with a depth of fifteen miles, from the crown of the bay, to a straight line, connects the two headlands. This line of coast presents three great playas, or beaches of sand, the first of which, forming the segment of a circle, intervenes between Punto Ardita and the mouths of the Jurador; the second runs nearly in a straight line, from the Jurador to the mouths of the Paruchichi, a distance of ten miles; the third extends from the mouth of the last-named