

# THE NICARAGUAN CANAL PROJECT (1891)

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PART ONE: 'T WAS A CHEERFUL DISASTER.<sup>1</sup>

The Story of the Wreck of Warner Miller's Party on a Coral Reef.

No Lookout—No One on the Bridge.

*The Aguan's Captain Made a Mistake in Reckoning and Didn't Make Allowance for Strong Currents—Driving at Full Speed Upon the Reef—Passengers and Crew Go Seven Miles in Small Boats to a Desert Island—Danger Enough to Add a Spice of Excitement—Sending 200 Miles for Help—Mr. Miller Elected Governor of the Colony During the Six Day's Exile—Agent Rankine's Conduct.*

San Juan del Norte (Greytown),<sup>2</sup> Nicaragua, April 3. The story of the wreck of the steamship *Aguan*<sup>3</sup> on a coral reef in the Caribbean Sea, and the subsequent life of crew and passengers, including Warner Miller's Nicaragua Canal excursion party on the little mound of sand at one end of the reef is perhaps the most cheerful tale of disaster ever told. Of hardship there was a little, and of danger there was fully enough—that there would be terrible suffering for all and death for some seemed certain at one time, but of courage and good heart and a disposition to treat the affair as a premeditated outing instead of the result of what was well-nigh criminal negligence there was no lack at any time. Indeed, to show the cheerfulness of some of the party, it need only be said that with the second load of passengers sent from the ship to the desert island went a dozen wine glasses with champagne to fill them, although plates, knives, and forks sufficient for the use of even the first-class passengers were not landed until the third day.

However, to begin the story of the voyage at the point of departure, the reader of THE SUN will remember that the steamer *Laura M. Starin* carried a party made cheerful by good music and a free lunch down New York Bay on Saturday, March 14, to bid farewell to Mr. Warner Miller, the President of the Nicaragua Canal Construction Company, who was to sail on the steamship *Aguan* for San Juan del Norte, Nicaragua, with a party composed of two English engineers, two

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<sup>1</sup> Part One — Published Wednesday, April 15, 1891, page 5

<sup>2</sup> Greytown (alternate name- San Juan del Norte) — Town on the Caribbean coast of Nicaragua; the proposed Atlantic terminus for the projected Nicaragua Canal.

<sup>3</sup> *Aguan* — Steamer built 1886 in Port Glasgow, Scotland for the Honduras and Central American Steamship Company; occupied in the fruit and general cargo trade.

American army officers, several capitalists, and a few newspaper correspondents, in order to inspect the route of the proposed ship canal between the Atlantic and Pacific Oceans, and tell what work had been accomplished by the expenditure of some four million dollars in furthering that project.

For an hour or so after the *Aguan* had been boarded, the party were kept busy looking after baggage and settling matters in their staterooms, and then at 5:30 all hands gathered to eat a hearty dinner. This fact is worth mentioning for the reason that no other gathering to eat a hearty dinner was held for three days thereafter, because the capitalists, the eminent engineers, and the rest were, with few exceptions, as seasick as mortals usually are when making such a journey, though Mr. Miller stood up under the strain so well, and in cap and pea jacket had such a nautical bearing, that he was dubbed the commodore by general consent.

Even the excitement incident to seeing five waterspouts within an hour on the third day out failed to settle all stomachs, but when, on Thursday, the 19th, the sea became as calm as New York Bay in June, and what at first looked like a streak of fog on the starboard bow eventually developed into land, which the skipper said was San Salvador Island, the one first discovered by Columbus, there was none but was able to join in emptying the bowl of punch which Major Dutton, United States army, brewed in honor of the occasion, and none but enjoyed the dinner that followed an hour or so later.

Thereafter it was a regular yachting trip, ever the sort of seas one reads about in tales of the days when pirates swarmed along the Spanish Main. Not a day but land was seen, and not an island but had a story. Thus, there was one island on which a great house could be seen, and a passenger who had heard the story said that many years ago a Lieutenant in the British navy ran away with another man's wife and took her to this little spot in the winterless sea, and built the great house and laid out beautiful grounds for her, and there made love to her until she died, when he went away nobody knows where, leaving the house, which remains to this day uninhabited.

And then there was the eastern end of the island of Cuba, which we passed at so short a distance that the unbroken tropical forest could be seen—the forest that has often and alternately sheltered patriots, brigands, and runaway slaves—while next day we passed barren Navassa, the one Yankee possession in that part of the world, the guano island on which the workmen revolted

because of harsh treatment and killed some of their overseers a year or two ago, but were eventually taken to Baltimore and tried and convicted of murder in the first degree.

Then we headed away for Jamaica. It was on Saturday, March 21, and at sunset we were rounding the eastern end, where the low, sandy plain at the water's edge, with the undulating hills beyond, rising higher and higher to join the cloud-turbaned Blue Ridge Mountains of the interior, formed a picture so beautiful that everyone was loath to leave it, even when urged to do so by a vigorous sea appetite and the dinner bell.

That night we anchored near the site of the old Port Royal, which just 200 years ago was so rich and so wicked that the fame of it has lasted to this day. It was in those days the market place and the paradise of the buccaneers, and gold and silver and human life were held as cheap as smiles. Then came a great earthquake that buried most of the revelers under the sea and more of them in cracks that opened in the land, "so that some remained with their heads above the earth when the cracks closed again," and the rest were left to go up the bay and found the city of Kingston. A few, however, clung to their old homes, and now there is a settlement called Port Royal where the British have a naval station.

At daylight on Sunday, March 22, the *Aguan* steamed up to Kingston, and the excursionists were told *en route* that they would have two days in which to see the sights of Jamaica. The sights were worth seeing! a trained observer could scarcely do them justice in a month. The first person to board the ship was a handsome young customs officer, in a snow-white helmet and snow-white jacket, and with a face so white that it was hard to believe that he was of negro blood. With him came a young man of absolutely pure African descent, black as night, dressed in comfortable blue flannel, with his card in one hand and a notebook in his hip pocket, the reporter of the Kingston *Gleaner*, Mr. John Robinson. Behind these two came a procession of women of many shades of black, and dressed in many shades of calico, all having baskets of good oranges and poor pineapples for sale at New York prices.

Some of the excursionist party went directly to the Myrtle Bank, a new hotel built to accommodate the hosts of visitors who were expected to go to Kingston (but didn't) to see the exhibition held there. The rest of us, with the reporter for a guide, drove about the town and gazed at the ruins where a fire devastated many blocks several years ago; at the macadamized streets, down the middle of

which streams of clear water run to the sea; at the houses whose blank front walls make one feel as though the streets were lined with penitentiaries; at the cactus hedges that replaced the walls in the suburbs; at the exhibition building that seemed, when seen at a distance, to tremble in the glaring heat of the sun; at the barracks, where black soldiers lolled on the shady side, the picture of idle content. From the sea the city had seemed to be one huge grove of coconut palms, with here and there a roof. From a "trap", as they called their carriages, it seemed to be an aggregation of hot walls covered with dust. The contrast was easily understood, however, when we found here and there a door in the blank street walls standing open and saw within the rows of palm trees, fig trees, banana trees, orange trees, breadfruit trees—what not—and such mounds and heaps of flowering plants in full bloom as we had never seen before.

Then we went to the hotel for dinner. It was a delightfully cool and comfortable place to look at—an aggregation of halls, verandas, and window and door spaces, that gave the maximum of shade, and seemed to gather in its embrace every zephyr that came drifting from over the sea. We sat down to dinner in hungry anticipation of such delights for the appetite as one might expect from a region of perpetual summer. A polite, soft-spoken waiter gave us bills of fare, and then went away immediately, saying: "*I'll bring yo' all dey is h'on it, sah.*"

He came back with soup made of oxtails that had lashed flies on the plains of Texas; roast beef that had paid tribute at the Chicago stockyards; potatoes from Washington county, New York; asparagus, peas, and green corn that were canned on Long Island, and yams. We were not very thankful even for the yams, for though a tropical vegetable, they tasted too much like dried coconut to be wholly pleasant.

Next morning, we got out at daylight and went to the markets, where every darky woman carried a basket half as large as herself on her head, and every donkey carried two baskets of the same relative size on its back; where yams, tamarinds, sweet potatoes, oranges, Spanish mackerel, red snappers, and eggs were the principal native products on sale, and where the meat was from American cattle slaughtered that morning.

Quite as interesting as the markets was the police court. Capt. Mainwaring, late of the British navy, "retired after a long and honorable career," was the magistrate and had been for thirteen years. He told the strangers from the States that he had often heard of Justice Duffy of New York, and greatly admired the blunt

and sturdy decisions of the little Judge. Then he proceeded to try some forty negro men and three negro women for the usual police court offences. The usual sentence imposed on the guilty was "three shillings or two days," though one very obstreperous hackman who had blocked the way before the exhibition building and had refused to move on at the behest of the police (colored) was fined a pound.

It would take an entire page of THE SUN to fully describe the Jamaican exhibition, and it would be about the most uninteresting page ever printed. The article there that attracted most attention was a Yankee-built cane mill, for sale at £10 10s., that was good for thirty gallons of juice an hour when turned by one mule. The Yankee visitors were most interested in such things as the old stone weapons from the Windward Islands, the model of the salt works on Turks Island, and the red earthen crockery which is made in Jamaica. One lady, not of the party, was seen trying to buy a silver ornament at one of the stands. She was told the price was sixteen shillings.

*"Oh, but I bought one like it in London for eight,"* said she.

*"In London? I beg pardon. Are you English? I thought you were an American. The price is ten, mum,"* said the attendant.

After hearing that, we were ready to go to the ship. The *Aguan* was to have sailed at 5 o'clock, but the negro laborers were not up to be hurried and she got started at ten, but only to set a hawser in her screw, and so she had to tie up again until two native divers could cut it loose by diving (naked), knife in hand, to give the rope two or three slashes and then come up again for breath—a process that took until 8 A. M. on Tuesday, March 24.

Then we sailed away for Nicaragua. It should have taken the *Aguan* two and one-half days to reach San Juan del Norte (Greytown). No navigator could ask for more beautiful condition of sea and air and sky than that which favored the *Aguan*. The sun was bright and clear by day, and the moon in that pure atmosphere rendered the flotsam and jetsam of the sea visible at an almost incredible distance at night. On the second day out (Wednesday, March 25), the tables in the dining room were continually covered with the paper &c., of passengers who were writing letters which they expected to mail within thirty-six hours at most. That night, many lingered on deck until midnight to admire the beauties

of the tropical sea. There never was a ship or a time at sea when danger of wreck and hardship seemed more remote.

By 1 o'clock in the morning, every one of the passengers was sleeping peacefully, and at 3:14 o'clock that peace was undisturbed. A minute later, a rasping sound without was followed by a violent jerking and careening of the ship that awakened everybody. An appreciable space of time—perhaps two or three seconds—passed in perfect silence, and then the passengers heard the signal on the bridge, which the engineer rang in answer to an order to reverse his engines.

Clothed in scant apparel, most of the men ran on deck. They found the sea as calm and peaceful as it had been on the night before when they retired, but square across the bows, and not more than fifty yards away, lay a reef just awash, and extended to starboard and port as far as the eye could reach. The surf glistened in the moonlight, and here and there black rocks projected above like the heads of sea monsters. A look over the bow showed the vessel had risen five feet out of water there, and a look over the stern showed that her heel was on the rocks as well.

We could not at first believe or, at least, could not realize the fact; but there lay the *Aguan*, so high on the reef that no power could drag her off. And a right lucky thing it was for the passengers that no backing of the engines could get her off. A cry went up for the carpenter, and while the passengers gathered on the bow to discuss the matter in sober voices, he was set to sounding the different compartments to see if she were leaking.

"*How much is she making?*" was asked.

"*Not much, sir.*"

Somehow it made the listeners shiver to think she was leaking at all, but when, two hours later, the water within was at sea level, no one minded it.

Among the excursion party was Mr. G. Hilton Scribner and his daughter, Miss Florence. The young lady's cheery ways and musical laughter had been the delight of the company from the first day out of port, and now when everybody was looking glum she came on deck with her accustomed smile for everyone, as self-possessed and as bright as though about to land in the port of destination

instead of to look at a disastrous wreck. The effect was magical, for two or three of the men at once ventured on jokes, and everybody talked louder and with more animation than before. The Hon. C. L. Merriam of Lewis county went back to his bunk, and Mr. Scribner, the father of the young lady, sat down on a chair on deck and went to sleep. Those who had come on deck in pajamas went below again and dressed, while the others gathered forward and gazed at the dancing reflection of the rocks on the bottom or asked one another where the ship was and how she got there.

Out of these questions grew several rumors. One of the officers said at first that the ship was on Quita Sueño reef, but afterward it appeared that she was on Roncador Reef <sup>4</sup>instead. The way in which she got there was simple enough, too. The course of the ship should have been forty miles east of Roncador, but somehow Capt. Bailles made a mistake in navigating. He allowed but twenty-five miles to eastward. He had a taffrail log to tell how fast the ship traveled; he had taken observations for latitude at noon the day before, and out of it all concluded he had traveled south far enough to round the reef before he had really done so, and so changed her course too soon. Moreover, there is a current running to the west there, impelled by the trade winds, at a speed plainly indicated in the chart books. He said, and so did Mr. Rankine, one of the ship's New York agents, that the current was running much faster than ever before known, a statement that the passengers did not believe.

The truth is that the *Aguan* was overdue already, because her bottom was foul, and so to save time her agent and the Captain had tried to shave the reef. Mr. Rankine said an allowance of but twenty-five miles was made. Commander Brunson of the *Petrel* afterward said that he always allowed forty-five miles, and Capt. Brownrigg of the *Carazo* said that when in the *Hondo* he never allowed less than forty, and even then, was sometimes drifted very close to the reef.

Further than this, the second officer, Mr. Morris, who had the deck, told a passenger that he was aft looking at the taffrail log when she struck. It was near the end of the mid watch, and so it was his duty to do that, but no lookout was posted on the bows meantime; nor was any lookout kept there on any night during the passage. In short, the ship went ashore because of an error in the

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<sup>4</sup> Quita Sueño Reef and Roncador Reef (Colombia) — Islands in the Caribbean, formerly claimed by the U.S. as guano islands.



reckoning and because no proper lookout was kept. It should be said here, however, that Mr. Rankine said afterward that the Captain, the second officer, and a lookout were all on the bridge at the time, although Capt. Bailles had said distinctly that he had turned in at 1 A. M., giving orders that he be called in two hours, and that he was not called.

While the passengers were still talking over this somewhat indignantly, the rose tint of dawn appeared in the east, and that set everyone talking of the necessity of going away in the small boats, of which there were five, and ninety-three souls on board! One boat would hold twenty-five on a pinch, and the rest say fifteen or eighteen each, at most. The crew numbered thirty-eight, and were a weak-looking gang. The prospect was not pleasing, but no one complained of the probable hardship.

Daylight followed very quickly, and then, to the surprise of all, a small island was seen to the northwest. The Captain knew the island was there, for it was fully described in the chart book, but not a word had been said about it during the three-quarters of an hour that the passengers had been talking on the forward deck. Indeed, neither Captain nor agent came near them. The sight of the island put a new aspect on the case.

Among the passengers was a citizen of Nicaragua, Mr. F. A. Pellas, who owned a coasting steamer called the *President Carazo*, and who had among other property 12,000 Colombian dollars in silver on board. Accordingly, at daylight, a conference was held between the Captain, Mr. James Rankine, as agent of the line, Mr. Miller of the excursion party, and Mr. Pellas. It was agreed that Mr. Claude Lapsley, the chief officer, should take the best lifeboat, fit her out for a long voyage, and with four picked men sail for Old Providence Island,<sup>5</sup> seventy-eight miles away, west by south, the nearest inhabited land, and try to get help there. It was known that small schooners were owned on the island, the population of which was chiefly engaged in turtle fishing during the summer season. From Old Providence the boat was to sail for Corn Island,<sup>6</sup> 120 miles further. Here it was hoped she would find other schooners, at least, with the possibility of meeting the steamer *Carazo*, belonging to Mr. Pellas. Thence they were to sail to San Juan del Norte (Greytown), where they expected to find the United States war ship *Petrel*, that had been ordered there to meet the excursion party.

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<sup>5</sup> Providencia Island (Colombia)

<sup>6</sup> Corn Island (Nicaragua)

While the crew got the boat ready, the passengers went down and drank coffee and ate hard bread as usual, and having heard the arrangement, talked of the chances. The sea was smooth and the wind fair and fresh. The hopeful ones thought the boat could reach Old Providence in eighteen hours at most. Those of more experience thought that with good luck she could get there in twenty-four hours, and that it would take two days more to reach Corn Island and two more still to get to Greytown. From Greytown to Roncador the distance was over 200 miles, but the Petrel could do it in a day or a little over. We could confidently look for help in a week—if no accident befell the chief officer.

That was so cheering that we went on deck and watched the boat sail away with much the same feelings that a New Yorker sees a district messenger boy start on an errand. She might be slow, but she would get there eventually.

Next a yawl was prepared to take passengers for the island. It required not a little courage to take passage in this boat, for no one could tell whether a landing could be effected through the surf or not, or what would be found there if a landing were effected. If they could not land there was nothing for it but to sail away for Old Providence, as the chief officer was doing, and the boat was very deeply loaded as she left the ship's side. Second Officer Morris had charge of her and among the passengers were Miss Florence Scribner, Mr. Scribner, Mr. Charles Watrous, Mr. W. J. Marrias, Mr. Stanton Sickles, son of Gen. Dan Sickles, Mr. C. L. McArthur, the wife and three children of Bishop Holme of Honduras, with the nurse of the children, Miss McCann, the *Aguan's* stewardess, two newspaper men, and two sailors, who were kept busy bailing. They carried also a gripsack of clothing for each one, a barrel of hard bread, a keg of water, and a few tins of meat. The journey before them was at least seven miles long, skirting a most dangerous reef, in a boat not only overloaded, but leaking badly.

The next boat carried Mr. Rankine, his wife, and a friend, Miss Clarke, with a number of other passengers, including one or two colored women. Capt. Bailles took charge of this boat to see the agent of the line safe ashore, and it was in this that the wineglasses and Pommery<sup>7</sup> were carried. The third boat with passengers was steered by Lieut. Guy Howard, U. S. A. It had a heavier load than any that preceded it, and when it had gone but two members of the excursion

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<sup>7</sup> Pommery — Brand of French champagne

party remained on the ship, Major Dutton, U. S. A.,<sup>8</sup> and a newspaper man. The Bishop of Honduras (Episcopal) remained with them, and so did Mr. Pellas, Mr. Livingstone, Mr. Edwards (who came on board at Jamaica), and Mr. Allen, all first cabin passengers. The ship was left in charge of Purser Morris during the absence of the Captain. It is not uninteresting to note that, fearing a rush of firemen for the liquor room, the Purser borrowed a big revolver, and carried it on his hip. Capt. Bailles had borrowed one much earlier in the day to ensure order when loading the boats, and both got their weapons of Mr. John Allen, a Texas youth, bound for Bluefields, Nicaragua.

After the boats had gone, those who remained sat under the awning and followed their movements with glasses. It was not a very enviable condition in which they found themselves. One boat remained with the ship, but the members of the crew on board were more than enough to fill it without considering a number of second-class and negro passengers. Suppose the boats that had gone failed to land, would any one of them come back to the ship for the passengers remaining there? Certainly not, for all three were overloaded already. Supposing a storm impended, could the passengers get into the small boat that remained and seek safety in the lee of the reef? Perhaps so, if they fought for a place. While thinking of this, some went forward and looked over the bow. A big shark was floating about idly. The sight gave the passengers a chill. Looking away up the reef, the watchers could see a big black object that for a long time seemed to be a rock, but which on more careful examination was seen to be a part of the hull of some ship. The discovery that it was a wreck had a most cheering effect on the watchers. There was a hull still intact after at least one storm, and it was a wooden hull at that. If that hull could stand one storm, doubtless the steel *Aguan*, a vessel built in 1887, could stand two storms—maybe more—and since water and food were likely to last, there was hope of rescue long before that shark under the bows. could get a nip at anyone on board.

So, they went to the chart room, and here is what they found in the book there, about Roncador Reef.

Roncador Bank is a pear-shaped coral bank, seven miles long northwest and southeast, two and a half miles in breadth at its southeast end, and three and a half at the middle. It terminates almost in a point at its northwest extremity, on which, about half a mile from the edge of soundings, in latitude 13° 34' 30" and longitude 80° 03' 39", there is a bay 800 yards long

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<sup>8</sup> U. S. A. — United States Army

and 800 broad, composed of sand and blocks of broken coral heaped into a wall on the north-east side, about seven feet above the sea. On the south end there are some bushes and three or four dwarf palms, which afford shelter to large flocks of birds. There is usually a fisherman's hut at this end. From Roncador Cay a barrier reef extends to the southeast end, presenting no opening whatever. At half a mile from the cay, just within the reef, there is a small sandbank, and about a mile further southeast there is another. The northeast side of the reef is skirted by a bank of soundings about one-half mile broad and varying from twenty to five fathoms over sand and dark coral. Water may be procured by digging wells near the center of the large cay, but it is very brackish and only used for culinary purposes.

Meantime the boats had all disappeared beyond the island. They were a long time out of sight, but finally one appeared standing to the south of the reef. It seemed as though she must have landed her people and started back, but when she again disappeared it looked as though she had failed to land and so had sailed away for Old Providence. That was discouraging.

And so, between hopes and fears and talk about the chances and questions and answers about the position of the boats, the time passed away on shipboard until luncheon. A good meal (the bill of fare on the *Aguan* was always admirable) cheered everybody, and then another look toward the island showed a boat returning sure enough. Then they sat down and considered that they had had a good breakfast and a good luncheon and a cool place on the ship's deck, while those who went earlier had had a terribly hot time of it, unsheltered from the vertical rays of the sun, and had only hard bread to eat and tepid water to drink. They wholly forgot the anxiety they had felt lest they were left alone on the wreck to wait for a storm to come and knock them to pieces on the coral rock.

An hour or two later came the boat, with Mr. Watrous at the tiller, his face and hands, like those of his crew, well blistered by the sun, and all very thirsty and very hungry, for not one had eaten anything but a hardtack or two since coffee at daylight.

Before they had reached shore, Mr. Watrous, who was a Yankee whaler before he became a capitalist and a member of the Union League Club, took the tiller and, having discovered a passage a fathom wide through the reef on the lee side of the island, ran the nose of the boat on a sandy beach, to which the ladies stepped dry shod and none the worse for a journey seven miles long, skirting a most dangerous reef, around which sharks find a congenial home. Mr. Watrous was by far the best seaman on the ship.

Among the stores loaded into the boats on their second trip were two kinds of hard bread, a little soft bread, a lot of roast beef cooked for the occasion, some roast ducks, a lot of boiled meats such as salt beef and pork and bacon, a box of mixed limes and oranges, some boxes of pickled lambs' tongues, potted fish and shrimps, smoked beef tongue boiled, an exuberant quantity of wine, beer, whiskey, apollinaris,<sup>9</sup> ginger beer, tea and coffee, and a bag of coal. A rum cask was full of water, and there were three kegs full as well. It was enough for the night.

In the boat in which the writer went ashore were two large tarpaulins and the awning that had covered the *Aguan's* forecastle deck.

We reached the shore of the island at about 4 o'clock. We found it a remarkable land. At first glance it was a barren mass of weather-beaten rocks—rocks of about the color of those on which Hoboken<sup>10</sup> stands, only these had all been rounded by the action of waves, were coral instead of trap,<sup>11</sup> and were light-colored within when broken open. On the corner of the island (if a pear-shaped island may be said to have a corner) was a collection of stone walls, plainly built to form the walls of human habitations. There was one long L-shaped wall, the short arm of which was 25 feet long, and the long one over 30 feet, and against the outside of these arms four small huts, varying from 6 by 8 to 8 by 14 in size, had been built. Within the arms of the L was a great heap of guano, perhaps 6 feet deep at the deepest, and at least 25 by 40 feet, large enough to load a schooner. A glance at the rocky surface about the huts showed that the great heaps had all been made by hand. There were paths and roadways in all directions, with low but regular walls along them, and within these walls the rocks were piled in rounded heaps. Not that the paths were smooth: they were littered and in places almost obliterated with the coral boulders. Here and there were traces of human occupation—a rusty tin can, a barrel hoop, a part of a weather-beaten box, the remains of a fire, bones that had been charred, &c. Two hundred yards from the hut walls were two little stone vaults that looked something like overgrown outdoor ovens. Their sandy floors were covered with the remains of roasted crabs, but there were no traces of fire. Each was large enough for one man to live in.

Although there were no roofs to the old huts, it was tolerably certain that at some time a gang of men had been at work there gathering guano, and that they

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<sup>9</sup> Apollinaris — An effervescent mineral water

<sup>10</sup> Hoboken — City in New Jersey, located on the River Hudson; part of the port of New York

<sup>11</sup> Trap — Type of igneous rock

had done an immense amount of work for that climate, and then had gone away, leaving a lot of valuable fertilizer behind. The island was at the northwest end of the reef, and the big end of the island was its northwest end. There, too, was the height of the land, but it seemed to be no more than seven feet above ordinary high tide. It seemed to be more than 300 yards wide, too, but was certainly no longer than the 600 yards given in the chart.

A very fair road led from the landing around the huts and down the island between the heaps of rock for two-thirds of the distance, when the rocks came to an end and a level plain about three or four feet above the water was found instead. It was well covered with a species of weed that slightly resembled what Ohio folks call "*pusley*."<sup>12</sup> It grew from a brown little root that tasted good enough, though slightly bitter, and had fat green stems branching out over the ground until a circular space ten or twelve inches in diameter was covered. Some of us noted the weed's peculiarities with considerable care on arrival, because there was no telling what use we might want to make of it.

At the southeastern end of the island we found remains of a very different sort of settlement from that at the wide end. Here were two thatched shacks or huts. They were A-shaped, about 6 by 10 feet large on the ground and eight feet high, made of forks and poles bound together with bark thongs and covered with palm leaves, and bunches of long, coarse grass over the peak. They faced the west—that is, away from the trade wind and toward the afternoon sun, but it needed only that a blanket be hung over the front and a hole made in the rear to render them quite comfortable, if not commodious. So, the Bishop's family was assigned to one, with Miss Nixon, while Miss Scribner, Miss Clarke, and Mrs. Rankine received the other. What with a few rugs, shawls, and blankets, and a mirror or two, the rude shacks were, under the care of the ladies, soon as tidy and cozy as camps in the Adirondacks. Everywhere at this end of the island were heaps of turtle bones from which the valuable shell had been stripped. It was plain the island was a resort of the turtle, and, further, that the inhabitants of the nearby islands came here to capture them. Here there was a double hope: We could find turtles to eat, and there was a chance that turtle fishermen would find us there, if we remained long enough. These were cheering thoughts, and helped make lighter the work of building tent frames, a work that was done during the day before the awning and tarpaulins arrived.

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<sup>12</sup> Purslane

It should be said that two camps were established on the island. The first-class passengers settled about the shacks at the southeast end, while the rest, and those of the crew who were ashore, stayed at the stone huts. Roofed with tarpaulins, these stone huts made much cooler and more comfortable shelters than the tents at the other end were; nevertheless, the stone-house population showed discontent before sunset, saying covertly that the rich folks took the best and gave the leavings to the poor. This talk was of course started by white firemen shipped in New York. Then, too, there was some dissatisfaction over the food and drink. A tub of ice water stood in the shade of a stone hut, and a more than equal share of the fresh meat, including the ducks, and the soft bread as well, was left at the westerly end but, as far as possible, the whiskey and other hard liquors and the wines were taken to the other end and put under guard. This made more growling among the firemen, although they had lived on salt meat only *en route*. There was nothing more serious in it, however, than in the usual talk of seagoing men, and it created no apprehension among those grumbled at. Indeed, having worked rather harder than the sailors in getting the stores on shore and in putting up shelter for the night, the passengers of Mr. Miller's party were entirely too tired to pay attention to anything else after sundown than the bread, potted and pickled meats, and light drinks that formed their dinner. And when dinner was over they curled down on the sand, and for the most part slept as sound as they would have done in their own homes.

Before leaving the account of the first day's happenings, it should be said that, directly after Lieut. Howard's boat arrived on shore, a meeting of the men there was held to consider the government of the camp. It was agreed that Mr. Miller should be the general commanding the forces, and that Lieut. Howard should serve as executive officer, officer of the day, sergeant-at-arms, and general utility man. If one may anticipate a little, it may be said here that he discharged the laborious, and in some cases delicate, duties thus thrust upon him to the entire satisfaction of everybody, from the general commanding to the most envious firemen.

From Thursday to Monday the routine of one day was much like that of another. We turned out when the rose tint suffused the east—turned up would be more accurately descriptive, perhaps, for all slept on the sand without undressing, some having a blanket each, and some using a coat for a covering when the air became cold during the night. From the tents we went to the sea, and took a plunge that was refreshing beyond description. Next, we had coffee and hard bread.

At 10:30 we ate breakfast—a full meal which included such meats as we had, beans, rice, and potatoes, with bread and coffee. Dinner was served at 5:30 and did not materially differ from breakfast, save that nearly everyone ate a raw onion with this meal.

After breakfast in the morning the boats were sent off to the ship for supplies. Passengers and crew alike manned the oars. Messrs. Pellas, Edwards, and Livingstone voluntarily took charge of the commissary department and looked after the meals during the entire stay. The cooking was done by the cooks and stewards from the ship, but Mr. Miller had to guarantee their pay to get them to do the work.

As for the rest, there was plenty of work to be done—plenty considering the heat of the sun and the necessity of caution. The passengers brought their own hand baggage from the landing, while the firemen carried up the trunks at 50 cents each. Then the tents had to be perfected in order, if possible, to make them strong enough to stand a norther. We never got them to exactly suit us, but we improved them day by day. Thus, at first the poles which supported the awning of which the main tent was composed (poles left there by turtle catchers) were tied up with old rope found on the island. The tent was perhaps 14x20 feet large. Afterward we brought three twenty-foot wooden rails from the ship, and with boards and poles made a substantial frame, having the rails for ridge poles, over which we stretched the awning, forming a most excellent tent. A smaller tent nearby was made of poles and a square jib from the ship. A storehouse was made of tarpaulins, and a boat stove, which served as kitchen range, stood under an awning made of cotton goods from the cargo. By means of blankets and poles, a fair veranda was made in front of each shack occupied by the ladies, and so by the time relief came we were pretty well prepared to stay a month, if no very heavy norther came.

At first there was a well-grounded fear that we would suffer for water. We were afraid that the supply on the island would be valueless, and on the second day the water had risen above the tanks in the hold and spoiled all the water there, leaving but one tank on deck. Agent Rankine and Capt. Bailles had talked much about sending water ashore, but said there were no casks to send it in; there were rum casks in the hold, they said, but these were under water and could not be got at. A passenger, who had on other occasions seen ships' officers more solicitous for cargo than for human life, went 'tween decks and found a cask of



rum handy by. Mr. Rankine, when spoken to about it, denied its existence, so the passenger broached the rum and sent the cask full of water to the shore. Mr. Rankine talked of shooting the passenger after the passenger had gone away. That night, when the facts were learned on shore, Mr. Miller had an interview with Mr. Rankine, in which the ship agent heard some plain truths, and was persuaded to change his course. The passengers were indignant, but they rather enjoyed the row after all.

On Saturday, all anxiety about the water was dispelled by the finding of a well once used by the grave [guano?, Ed.] diggers. The water was not very pleasant to taste, but it was healthy, and when boiled, excellent. Editor Stauffer of the *Engineering News*, New York, dug another well on Sunday and got still better water.

Meantime, Good Friday had come and gone, and Bishop Holme had held a brief service in the evening. It was a weird scene, as the audience sang "*Nearer my God to Thee.*" Two ship lamps made barely visible the rude shacks and tents, and the Bishop, in a black surplice, with his audience standing in a half circle, facing him. He talked of the mercies extended to us, and of the comforts we enjoyed—comforts, considering that we were wrecked on a desert island, but all thought more of the possibilities of further trouble than of the consolation offered, and that was probably the only gloomy night of the stay on the island. Water had not at that time been discovered.

Moreover, Editor McArthur of the *Troy Budget*, the oldest man of the party, was feeling very sick. He had not been well for some days, and on the night of the wreck his temperature got up to 104°. He got better afterward, however, and improved rapidly on landing. On Sunday night, however, when another service was held, everyone enjoyed it very much.

A very interesting natural feature of the island was the great flock of seabirds. The island is said by the chart book to be 300x600 yards large. Allowing a bird to every nine square yards, which is a very moderate estimate, there were 20,000 all told, including some 500 frigate birds, the boobies, with a few white gulls and two small flocks of plover, forming the majority. They all sat on the island facing the wind, which blew steadily from the east. At daylight they got up in flocks of from 2,000 to 5,000, filling the air as they circled around for a few minutes, and then they sailed away, dividing into small bunches as they went. At sunset they came back from all directions to unite above the island in

immense flocks, and finally settle down for the night. Their chatter and piping could be heard all night, and it was cheering or the reverse, according to the mood of the listener.

The boobies had nests on level spots of sand, where a few weeds were dragged together. Some nests had one and some two eggs. The eggs were very much like common duck eggs. There were young boobies of every age, from the little, wretched, naked blue body just from the shell to the black-billed squab covered with fleecy white down, who was almost as big as his mother. Both father and mother were very kind to the youngster (there was never but one young one at a nest), one remaining with it while the other searched for food. The human visitor who chanced along was received with open beaks that could make the blood run when they snapped together on the finger, as one foolish sailor demonstrated.

The frigate birds had two small colonies, one on the weather and one on the lea side of the island. Their nests were piles of sticks from six inches to a foot high. There was an excellent opportunity for studying the habits of these birds, but those who might have done so had to work, and those who could not work could not stand the labor in the heat of the sun while watching the birds.

On Monday, March 30, the surf was so heavy that no boats ventured off to the ship. Capt. Bailles, Purser Morris, two engineers, the boatswain, and three other men had remained on board, but at 3 o'clock she was pounding so that they thought it unsafe to remain. Getting into the yawl, they came flying up to the island and were received heartily. This was at about 4 o'clock.

At 4:50 o'clock a commotion among the darkies at the northwest end attracted the attention of THE SUN correspondent and, on leaving the tent, a look to leeward showed a schooner beating up. The Rev. Mr. Proud, a colored parson from Jamaica, had first observed her. No sooner was the sail seen than Capt. Bailles and his crew were sent on their way to the ship as fast as the wind could carry them, lest the crew of the schooner find her deserted and claim her as a good wreck. It was a foolhardy errand, as the event proved, for the wind increased and night fell, and at daylight next day they were twelve miles downwind from and out of sight of the island, having suffered the tortures of thirst, hunger, and fear of swamping in the sea for twelve hours without reasonable occasion.

Although everybody had seemed very cheerful during the stay on the island and had talked of the probability of staying there a week or two longer, the appearance of the sail brightened us all noticeably. With one accord all hands went out to look at her, and when, after half an hour on the port tack heading, say east by south, she came about and headed almost for the island, showing that she was really coming to us and not casually passing, as a few had feared, there was such a stir in camp as had not been seen before. Dinner was eaten seated on the sand facing the schooner, and the sea sharps, who pretended to know all about such things, gained an unusual hearing that night as they guessed when and where she would anchor.

By 8 o'clock she had dropped her anchor not a quarter of a mile from the camp, and a few minutes later a shout at the beach told us somebody was there. A crowd of us ran down and found four jolly-looking young colored men standing beside a dugout of handsome model. We shook hands with them, laughed at one of our number who timidly asked them if they were peaceable, took them to the camp, gave them whiskey, meat, and cigars galore, and pumped them the while about our courier boat sent for help on the Thursday morning when we struck.

The boat had reached Old Providence in twenty-five hours, and had found the schooner (the *Enterprise*, Capt. Fred Robinson, sixteen tons burden, crew of twenty all told) almost ready to sail for Roncador Reef to fish for turtles. After telling of the wreck, the courier boat had sailed away for Corn Island, and on Saturday the *Enterprise* sailed for Roncador. It is worth noting that no move to get possession of the wreck was made by these men, either that night or while we remained. They have the reputation of dearly loving a wreck, but it seems from this incident not to be a deserved reputation.

According to their stories, we were not the only ones, nor by any means the most unfortunate people, who had been on the cay. In 1865 the ship *Golden Rule* stranded on the reef, and for fifteen days, 800 people lived there. They were obliged to rig a condenser to get enough water to sustain them. The old hulk we had seen was that of the bark *Ydon*, bound from Savannah to Bluefields. She struck a year ago last February and eight men were washed away and drowned. Of other wrecks and losses, the particulars were nor remembered.

As we had nothing else to do, we talked to them of their business and manner of life, and sent them to the other end of the island to carry the news and see the colored folks *en route* from Jamaica to Greytown. Even the most nervous

slept well on Monday night, and all had a most pleasant awakening on Tuesday at daylight. From the very first, a guard over the liquors was kept all night, the night being divided into watches of two hours each. At the peep of day, the guard discovered a black smoke down to leeward, and soon roused the camp with the news. We had expected the *Carazo* belonging to Mr. Pellas and gunboat *Petrel*, but we soon learned that she was the *Carazo*. She had been met by the courier boat at Corn Island.

As she approached the island, another unpleasant little incident occurred. Mr. Rankine was very anxious lest the *Carazo* claim the *Aguan* as a good wreck, and was anxious as well about the open boatload of men he had sent away the night before. That they had not got on board was plain, because no signal had been made. When the *Carazo* had been recognized, Mr. Pellas was about to take his bath and said to Mr. Rankine that as soon as he was dressed he would go off to her. Mr. Rankine went at once to the other end of the island and got a boat to row him to the *Carazo*, where he found First Officer Lapsley, who had boarded her at Corn Island at 1 P. M. Sunday. Mr. Rankine had the *Carazo* steam to the *Aguan* at once, where he landed Lapsley to hold the wreck, and then went off in search of Capt. Bailles and the lost boat's crew. He found them, as said, twelve miles to leeward. Then he went back to the *Aguan*, and got out some of the mail, 12,000 *soles* (Peruvian and Colombian dollars), belonging to Mr. Pellas, and then brought her back to an anchorage near the camp. Mr. Pellas was furious at seeing his own steamer used against his interests, but he charged Mr. Rankine \$1,500 for the use of the boat, and so got partly even.

Meantime everybody had been alternately engaged in packing trunks and valises and watching the turtle men make a camp and bring ashore stores. Our last meal on the island was breakfast at 10:30. It was a bountiful feast of canned goods, rice, beans, bread, tea, and coffee. Our supply of fresh meat had been exhausted on Monday.

At about 1 o'clock we began to embark. A ship's boat was moored in smooth water as near shore as possible, and then the baggage and passengers were carried to it in the Old Providence canoes, and thence to the ship in the yawl. It was a job requiring much patience and hard work, but under the care of Lieut. Howard and Mr. Elbert Rappleye<sup>13</sup> (the canoe man who paddled across the Continent last fall), all hands and all baggage were put safely on the *Carazo*.

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<sup>13</sup> Elbert Rappleye — New York newspaper man

About a dozen officers and men were left to hold the wreck of the *Aguan*. They included Capt. Bailles, First Officer Lapsley, and Purser Morris. If they do not get caught on board in a norther and are not thrown on the reef in trying to leave her, they will be saved eventually.

The rest of the story is soon told. We sailed from Roncador at 3 P. M. on Tuesday, March 3. We overloaded her so far as staterooms were concerned, but with clear skies and smooth seas we found cots on the upper deck most delightful. The colored folks and deck passengers on the main deck found life so pleasant that they gave a minstrel show on the hatch every night.

And so, after a most comforting night, we awoke at daylight on the morning of Wednesday, April 1, to find the low Mosquito coast abeam and Greytown but a few miles to southward. The old New York tug *Maillard* came out to meet us after we had sighted the settlement: she looked like an old friend to some of us. And then there were no end of American flags flying from the buildings on shore and from the huge dredges at work on the canal, besides other places, and nothing looks quite so well to a Yankee in a foreign land as the Stars and Stripes. We had arrived in port, and among our own people.

On landing we learned a most peculiar fact. The story that the *Aguan* was on Roncador Reef was told all over Greytown on Friday night, thirty-six hours after she stranded. How did it get there? We were wrecked on Thursday, at 3:15 in the morning. At 8 o'clock Friday morning our messenger had reached Old Providence with the news, but Old Providence is nearly 100 miles from the nearest mainland and 200 from Greytown. Our messenger did not reach Corn Island until Sunday morning. The people here say that this is not a singular or an unusual case. During revolutions and other exciting times news travels with equal speed and mystery among the natives. The story on Friday seemed so incredible—it was so incredible that a Thursday's wreck on Roncador should be known here on Friday—that the whites could do nothing about it until a schooner from Corn Island confirmed the fact, when the gunboat *Petrel* sailed to rescue us, but arrived a day too late.

The party will remain here a few days to rest and inspect the work before going to the interior. All are well.

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PART TWO: IN A TROPICAL FOREST.<sup>14</sup>

## A Party of Americans Adrift in Nicaragua.

## Experiences of Warner Miller's Canal Explorers.

*As Rounders[?] in San Juan del Norte—A Cock Fight—Keno and Poker—A Good Dinner Well Appreciated—A Nicaragua Street Car Driver—Over the Trail—It Rained Some—Nothing Bad About the Water—Venomous Reptiles had to be Sought For if Wanted—A Buck That Was Not Lassoed—The Unbroken Forest—The San Juan River—Didn't Waste the Thirst—Warner Miller's Tramp.*

This is the beginning of the story of a journey made from the Atlantic to the Pacific across Central America by a party of American explorers: a journey made by rail, on foot, by steamers of various sizes, by canoes, and on mule back; a journey in which the explorers expected to encounter such terrors and discomforts as a tropical climate and a tropical forest are supposed to afford, and some not down in the program. It was a journey, however, in which the delights of novel scenery and customs and the pleasures of new associations and acquaintances far outweighed all discomforts and terrors, and even led some of the explorers to doubt the existence of the terrors.

The explorers had come at the invitation of the Nicaragua Canal Construction Company to spy out the route of the proposed canal, and see what work had been accomplished already in opening such an important highway for commerce. What we saw of this work and what we were told and what we concluded on the subject, has been related already in THE SUN but our own adventures in a little-known country may not be without interest, while the character of the country and the habits of the people, who will someday be much nearer to the American people than now, should surely be worth describing.

## WE SAW THE TOWN.

We reached San Juan harbor on Thursday, April 2, and left it on the morning of Wednesday, April 8. It need scarcely be said that we did not devote all of that

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<sup>14</sup> Part Two — Published Sunday, May 31, 1891, Page 23

time to a study of the eastern terminus of the canal. We saw such native life as the town afforded, as well.

An excellent idea of what the general appearance of the town is may be had from the illustrations. The houses in the business part are chiefly of wood, and by their forms, colors, and frailness of construction suggest the houses of frontier towns in the States. They are built without plastering and, in most cases, no ceiling is used. The partitions are of single thicknesses of boards. The sheeting on the walls is not carried up to the roof, a space being left there to permit the circulation of the air. Some have shingle roofs, many have tin and corrugated iron, and the rest have a thatch of coconut palm leaves. There is one wooden-walled church, with a thatched roof. The native shacks are made of poles, with walls and roof made tight with coconut leaves. Sometimes these have board floors and sometimes none at all. Some of the wooden houses of white men have little shacks behind them for kitchens. In most of the houses the rear verandas serve as dining rooms, and a very comfortable scheme that is, for the back yards of the houses are always full of plants and flowers. There are no front yards, the houses being built on the street line.

The town is laid out along the low bank of the big lagoon forming the mouth of so much of the San Juan as does not run down through another branch, which is called the Colorado. There is another lagoon behind it. The streets are laid out at right angles, and there are two plazas, or public squares, where a few mangoes, coconuts, and other trees grow. The turf of the plazas is cut by paths where the people go cross lots just as people do over the public squares of Yankee villages.

An interesting feature of the town is the street railroad. Bobtail cars<sup>15</sup> drawn by gentle-looking mules pass over the road every twenty minutes from 5 A. M. to 11 P. M. There is something incongruous in the sight of a Yankee street car running along a street lined with Central American shacks. But, to the New Yorker, the most marvelous thing about the car is the driver. The driver is courteous. A stranger who got into a car and sat down where the sun would shine presently was told of the fact. The driver's voice was low and pleasing. His bearing was neither familiar nor offensive. He was not well educated but he had the instincts of a gentleman. He was a native of Nicaragua.

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<sup>15</sup> Bobtail car — Small tram-car, pulled by a single animal



Little steam launches, brought from the States, carry the canal company people from the village of America City across the lagoon to San Juan, and land them under a covered wharf where all San Juan freight is received from the lighters that convey it from the steamers. The most conspicuous part of the goods stored here and in a freight house nearby was barbed wire. Hundreds of spools of it were piled up there. The use of barbed wire is spreading rapidly over the country, taking the place almost entirely of the palisade and the pineapple-shaped cacti that form the original native hedges. The Yankee invention is not pretty, but it is cheaper and more effective, the planters say, than cactus. By the time the canal is opened and Nicaragua becomes a tramping ground for excursionists, the cactus hedges will be found about ornamental gardens only.

There is a narrow bit of board sidewalk from the warehouse out to the main street, and that is the only walk of the kind in town. When we were there the turf of the streets was dry and brown under the heat of the sun. By this time, the rains have flooded the streets and brightened the vegetation to a beauty beyond description.

San Juan has no end of hotels, three or four of which are run by white men; no end of places where aguardiente<sup>16</sup> is sold; one club house; an uncounted number of sporting houses, a peculiarity of which will be mentioned further on, and one dance house. The dance house was run by a native of Colombia, who brought what was called a band of beautiful girls from Colon.<sup>17</sup> The dance business in Colon was bad after the Panama Canal failed. How it ever should have been good under any circumstances with such hideous hags as these so-called girls were, is beyond the ken of the explorers.

We went over to San Juan on Sunday afternoon, April 5, because that was the day when there was most life to be seen. The chief sport of the town, one Balthazar Algomez, owned the Spanish hotel. He was a tall, black-haired, black-eyed man of 80-odd, who had a smiling face and a genial air, well suited for business purposes. His house occupied a whole block and was two stories high. At one end of the block on the ground floor was a parlor 20 feet wide by 50 long. At the other end was the barroom, which extended to the corner and 20 feet down a side street.

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<sup>16</sup> Aguardiente — Distilled liquor made from sugarcane

<sup>17</sup> Colón — Town located at the Atlantic entrance to the (present-day) Panama Canal

It was crowded full when we entered, so full that we could with difficulty cross the floor. Everybody was talking, the proprietor was shouting, when a fat, small boy on a stool behind the counter began ringing a bell that was heard three blocks away. A game something like keno,<sup>18</sup> with forty or more players and three times as many spectators, was in progress. The bell brought quiet and then the game went on. It cost ten cents of the country (a dollar there is worth eighty cents in gold) to take a hand in. But one man of the players could win in each game. Half a dozen of the exploring party learned the game, of whom one won a pot and the rest left thirty or forty cents each behind them. The dealer raked down ten per cent., a commission established by law. He had no other interest in the game and there was a square deal every time.

Seeing that the strangers were of sporting blood, the Señor Algomez offered to set up a cock fight for our benefit, and we encouraged him to do so. Three or four policemen (of whom a dozen were to be found about the hotel) were sent scurrying off for cocks, and in a trice half a dozen beauties were in the street before the hotel. Two of the best were selected for the fight—a red and a yellow— both of choice lineage and heavy weight, and said to be worth \$10 each. A steel spur, with a slender curved blade 2½ inches long by an eighth wide was lashed to a leg of each cock, the blade having at the butt a fork and two prongs at right angles thereto, to enable this to be done. Then chairs were placed for the strangers, the birds were set over against each other, and the shouts of men anxious to back their faith with cash filled the air. In about two minutes bets were completed, and then the cocks were allowed to set at each other.

They were eager for the fight. They put their heads down for a good look at each other, and then up they rose with a flutter of wings and feet, and down they came again, none the worse for the encounter. Another good look followed, and then the red one sized up the yellow for soup and went for him. The collision was as brief as before, but the yellow dropped on his side instead of his feet, a bright stream of blood spurted from under his wing, and his eyes closed. He was killed instantly, the spur of the red having pierced his heart. It was a short and probably painless fight—certainly much more merciful than the prolonged encounters in which the birds with natural spurs tear each other to pieces.

The winners yelled in glee and grabbed the money, while the losers went into the barroom again, hoping to recoup at the gambling table. A few Jamaican

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<sup>18</sup> Keno — Card game of chance

darkers who had won went off down the street to the house where a shrill piano announced the presence of the Colombian crowd of women and their admirers.

The club house of San Juan is the resort of the sporting gentlemen of the town. It is run like some English clubs. A two-story building, surrounded by palms and other trees, is leased by one Capt. Simmons, a Yankee, who also commands the big steamer running on Lake Nicaragua. We found there the latest States papers—those that had landed from the steamer preceding the *Aguan*—very good whiskey and wines, with Apollinaris, a good billiard table, and stacks of poker chips. The dues of the members of the club were nominal, and strangers were welcome on introduction by a sober member. Capt. Simmons, with persuasive tongue (on occasion with persuasive hand) kept the members from boisterous inebriety on the premises. The game was usually twenty-five cents ante and \$2 limit. At one game that we watched a boyish young fellow raked in over \$30 on two seven spots. A little later he missed a jackpot of nearly \$100 because the other fellow had four sevens to his ace full.

#### A NICARAGUA DINNER.

Soon after our arrival it was arranged for the explorers to start over the canal route on Tuesday, April 7. To give us a proper send off the Governors of America City and San Juan as the representatives of the national Government [gave] us a dinner on Monday night. Before the dinner was ended the start over the canal route was postponed until Wednesday.

The dinner party would have attracted attention could it suddenly have been transferred to New York, on several accounts. Probably no feature of it would have been noticed more than the dress of the explorers. We all had dress suits, it is true, but the suits had been through a shipwreck on Roncador coral reef, while in headgear there was a variety that included one silk hat, two colors of derby, three colors of slouch, and a picturesque number of straw. There was one pair of patent leather shoes and many qualities of calfskin.

The dinner was served at the Hotel San Juan. A look at the front of the hotel, a two-story affair, that reminded one explorer of hotels in the back counties of Virginia, was not promising, but once within all fears about the menu and service, if any had been entertained, vanished. On arrival we were ushered into a room off the bar, and a good old-fashioned, soul-stirring cocktail was administered with caviar sandwiches. No better beginning for a feast need be asked for

than soul-stirring cocktails with caviar sandwiches. The guests all became well acquainted and friends while yet the farewell of the cocktail had not vanished, although some, being natives, could not talk English, and but two of the explorers had acquired the Spanish tongue.

From the cocktails we marched through a vine-covered arbor draped beautifully with flags and lighted with lamps and candles to a house a long way off, where we found a great room open on the left with a U-shaped table, laden with flowers, occupying most of the space.

Mr. Miller sat at the head of the table, with Gov. Sacassa of San Juan at his right and Gov. Saenz of America City at his left. Both hosts were colored gentlemen. The rest of the guests, and they included the Miller party and the prominent citizens of the town, white and colored, were intermingled about the table very skillfully. The menu was a work of art. It was written in French and English on cream linen notepaper with red ink dashes between the courses, and was decorated with a wide slip of ribbon on which the flags of Nicaragua and the United States were tastefully embroidered. The guests promptly pocketed the slips as mementoes.

We began with "potage oxtail" and ended with "diverses liqueurs." The wines included Sauterne, claret, sherry, port, and champagne. The foods included oyster patties, roast turkey and currant pie. It is likely that the Governors smiled when they put pie on the list. They were both capable of enjoying a practical joke, and no pie—more especially currant pie—is eaten by Nicaraguans. Some of the Americans eat it, however, with apparent relish. The rest ate everything else with absolute relish.

San Juan del Norte is a village of less than 1,000 people, the most of whom are uneducated negroes from Jamaica. Imagine the Mayor of a backwoods village of that size in the States getting up a dinner of six courses which three members of the Union League Club should privately as well as publicly pronounce really good.

#### AFOOT THROUGH A TROPICAL FOREST.

The start on the overland journey for the inspection of the canal route was begun on Wednesday morning, April 8. It was arranged that our baggage should be sent around in a small steamer up the San Juan River, while we, with a small

outfit, struck across the country direct to see what had been done and the lay of the land. The outfit which each [carried] was significant. It included for each of us a mosquito net, a rubber blanket, long-legged leather boots, heavy canvass leggings to wear over the leather boots, with extra flannels and light shoes to wear in camp at night. We were told such tales of coral snakes, venomous insects, and fever-laden rains as would frighten less hardy explorers out of the journey.

On Wednesday morning we were called at 4:30 o'clock (before daylight), and at 5 were served with coffee and bread and butter after the usual manner of the people there for, it should be said, breakfast is not served in Nicaragua until 11 o'clock, and the dinner hour is 5 P. M. There is no luncheon. Then, at 7 o'clock, we set down on the benches placed on a gravel car that was to carry us over the nine miles of track already laid. Of the party on the *Aguan*, however, we were unable to muster either Mr. or Miss Scribner, Mr. Merriam, or Mr. Watrous. Mr. Watrous went around with the baggage and accompanied us to Managua, where he left us to go to San Francisco. The rest went home on the steamer *Hondo*, which had arrived meantime from New York. But we gained Commander Brownson, Captain of the U. S. steamer *Petrel*, and Lieut. Chambers also of the *Petrel*, who had once surveyed the country under orders from the Navy Department. They proved in the end that naval sailors could stand as much hard marching on shore as the best of the experienced woodsmen. Indeed, Mr. Chambers carried his own outfit in a knapsack, while the rest of us had our packs carried by natives who, with a host of canal officers, went with us. We even had two doctors and a medicine chest along. This is a list of the explorers: President, Warner Miller; Major Dutton, U. S. A.; Lieut. Howard, U. S. A.; Commander Brownson, U. S. N.; Lieut. Chambers, U. S. N.; H. F. Donaldson and H. F. Gooch, representing English capitalists; D. Mc N. Stauffer of the *Engineering News*; W. J. Marrin, G. H. Sickles, and half a dozen newspaper writers.

No sooner were we seated than the first shower of rain for that day began to fall, and in five minutes we were wet to the skin. At the end of fifteen minutes, when the rain ceased, we were soaked. Those accustomed to the country said it was a mere sprinkle; that when the rain fell in that country the gauge showed from three to ten inches per day, and that in 1890 the fall was 106 inches. However, the sun came out and dried us quickly, and then it became so warm as we left the car at the end of the track and started afoot over the graded way that we well-nigh wished for another rain.

Then, at the end of a mile, we left the road-bed and struck into the forest on a narrow trail cut with a machete. The rank foliage above shut out the rays of the sun and the trail looked wonderfully dark and cool. We plunged in and laughed at the thought that the camp for the night was but five miles away in a direct line. Once in the shade we found the air as humid as it was dark, while the thermometer was not far from 90 degrees.

As was said, it had rained when we started, and the acclimated people called it a mere sprinkle. When we had walked half a mile in that leafy arbor we agreed with them as to the rain. The walk wet the clothing as thoroughly as a week's hard rain could do, and from that time until, on the evening of Friday, April 10, we ended our walk, our days were passed in clothing laden with perspiration.

The days were much alike in other respects. We found the camps were made of poles, tied together with native vines and palm leaves. There was usually nothing of the shack but the roof and the floor—a thatch of palm leaves and a floor of poles or pieces of the split rind of the maquergi[?] palm. The beds were like the floors, elevated platforms, floored over with split palm tree trunks. These splits were on an average two inches wide, an inch thick, and warped in seventeen ways. In my time, I have slept on a heap of leaves in the swamps of the Maumee, on a ship's deck with a coil of rope for a pillow, on a flat rock in the Adirondacks, on a heap of shavings in a Nova Scotia shipyard, on a table a foot too short and without a pillow, among the hermit crabs and coral rocks on Roncador Reef, but for solid discomfort I never saw anything equal to the split palm tree bed. And yet no one awoke during the night to turn over and [try] a new spot and, on the whole, we got an abundance of sleep, and turned out in the morning with an unequalled appetite for a plunge in the nearest water.

This leads to a bit of information about the water. We used large quantities of it—drank many quarts of it every day. It was warm, but it was sweet and wet. We had been told in the States that drinking much water was dangerous, unless it was flavored with limes or whiskey, or something to kill the germs. This warning was like the stories of venomous insects, snakes, and alligators told by the engineers. It was nonsense.

As. to insects, I carried three boxes of the best Adirondack black fly lotion to keep off the mosquitos which the canal officers had said were terrible. I did not open even one box. I did not have to. On the second day out, I saw one innocent mosquito. He came along with a weak little buzz in his wings that was really

pitiful, indeed, that when he settled for a bite on one of the other fellows, I let him alone. I hadn't the heart to kill him.

It is a fact that I did not see a score of mosquitos in Nicaragua. I did not see a single centipede, tarantula, or other vicious insect, save a few alligator ants, and they did not bite me. There were a plenty of lizards, of which two seen were as long as a man's arm and terribly ill-looking, but they were not only harmless, they were actually good to eat.

During the first day, I shrank away at every motion among the leaves beside the trail, expecting to see the deadly coral snake strike at me but, on investigation, I always found frogs or toads. Then I went hunting for snakes, and, after much labor, found one. He was a yard long and two inches in diameter.

Then there were the alligators. We had been led to expect shoals of them—islands covered with alligators as thick as the garbage on Coney Island beach. We found them as scarce as sweet smells in Mott Street<sup>19</sup> and Panama. Even when afloat on the San Juan, the stories of alligators were retold, and anxious sports, with rifle in hand, stood on the boat's bow ready to shoot at the 'gators to be found just around the next bend. Monsters as big as a saw log were to be found on the sandbar around the next bend. At last, as we tied up under a bank for wood, Max Miller, a son of the President, killed one with a Winchester. It measured 27½ inches in length.

In the matter of monkeys and other harmless denizens of the tropics, we were well satisfied. We saw gray monkeys, red monkeys, white-faced monkeys, and the howling black congos. They leaped gracefully from tree to tree, they hung motionless by the tail and hand; they sat with dignity in the crotches as we followed the trails; some even ventured to drop sticks and bark at us. The congos made the welkin ring at sight of us. There is more howl to the square inch in a congo monkey than in any other mammal. They are in this respect equaled only by screaming members of the parrot family that breed in vast numbers throughout the country. In spite of this, however, the woods were musical rather than discordant. The voice of the toledo<sup>20</sup> seemed never stilled, while an endless number of other calls and notes as sweet lulled us to sleep at night and roused us again at the break of day.

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<sup>19</sup> Mott Street — A busy street in Manhattan's "Chinatown" district

<sup>20</sup> Saltarín toledo (songbird) — *Chiroxiphia linearis*

There was game a plenty in the woods, as well as monkeys and songbirds. The natives eat the red monkey, and some of us would have been glad to try, had opportunity offered. But the men with the guns objected to shooting monkeys. They wanted a wild pig, or a turkey, or a deer. They did not see either turkey or pig, though fresh signs of both were found all along the trail, but near the end of the journey, when going down the Rio Grande to the Pacific, they saw a deer.

We were rounding a bend in the dry bed of the stream when one man saw a handsome little four-prong buck lying in a muddy puddle under the bank.

*"There's a dead buck,"* said he.

*"That's so,"* said another.

*"Let's look at him."*

*"Those horns are worth saving."*

*"Gad, he's alive."*

*"No, he isn't."*

*"Yes, he is. Look at his eyes wink."*

*"That's so. He must have been badly wounded."*

*"Let's carry him into camp."*

So, one who had a rope made a noose, and, while the rest stood around within a couple of yards of the deer, he stepped up to tie the buck. Thereat, the buck rose over the bank like a rock from a catapult, leaving the explorers to wonder why they hadn't thought to have their guns ready in case he eluded the noose.

The food provided for the party included a dozen kinds of tinned meats, tinned hard bread, and tinned milk and butter. The only foods that did not come from tins were the red beans, the rice, and plantains. It is impossible to preserve even bread in the moist climate east of the lake. But everything was very well



cooked by the Indians, while the explorers had appetites scarce to be equaled elsewhere.

However, to return to the trail. We walked, in spite of the oppressive atmosphere, at from one to two and a half miles an hour, according to the trail, but no one really suffered from the heat or from the oft-repeated showers. We were three days reaching the waters of a branch of the San Francisco, in what will be the artificial lake west of the divide, however, and when we were told that the rest of the overland route to the site of the great dam in the San Juan was like that already passed over, while the river steamer was likely to reach the mouth of the San Francisco, thirty-seven miles away, before dark, we agreed to take the rest of the land route on trust and head at once for the steamer landing.

Those of us who were in advance, taking an Indian with a machete for a guide, struck into the unbroken wilderness on a bee line, leaving those behind to take canoes down the San Francisco. We wanted to see for ourselves how hard it was to cut through palms and vines and tangled marsh grass. We found it harder to make a trail there than in a blackberry patch in the States, but by no means was the work to be compared with crossing a patch of brush in what is called a hemlock peeling—a patch of undergrowth and treetops where men have been getting out hemlock bark for tanneries. We could get on at one mile an hour easily. Probably the most interesting experience of this trail-making trip was the crossing of the San Francisco on a tree trunk, a part of which was submerged. Lawyer Marrin sat down on the log and hitched himself across, while the rest of us managed to walk and make cheerful remarks to Mr. Marrin. Another pleasing picture was that presented when, on getting thirsty, we cut sections from the water vine and stood about, each with his head thrown back and a two-foot length of vine in air above while the vine sap drained into his mouth. But we never laughed more heartily than at Lieut. Howard at the end of the trip. He had traveled in a suit of white linen, and had clambered over logs and crossed the streams, keeping the suit almost as clean-looking as at the start. He had been particularly careful not to sit down at any time, because a tell-tale mark of weariness would then have been left on the trousers. Reaching the end of the journey a canoe was found in the San Juan. The river bank was of yellow clay and rain had moistened the clay. Going down to the canal Mr. Howard's feet slipped, and his pride was gone in a flash. He slid down that clay like a boy off a haystack, and the seat of his trousers was no longer white.

It was here that we obtained our first view of the San Juan River. It was a revelation to all of us. We had to stop to consider the shoals before we could realize that it was not in itself a highway for ships, and it was easy to believe that at one time the old-time Spanish frigates actually sailed and worked their way up to the lake, as history says they did.

But being tired and hungry we got into the canoe and were paddled over the stream to a banana plantation, owned by an Italian who began life in Nicaragua as a river steamboat man a few years ago and is now worth, they say, \$10,000 a year. His hacienda is a pale and broad house of two rooms, with a very wide veranda or open shed at one end where the cooking is done. It was neither beautiful nor picturesque, but it was comfortable, and the food—the tortillas (i.e., corn meal pancakes), the red beans, called frijoles; the rice, the white native cheese, and the coffee, with fresh milk and sugar—were beyond reproach. Moreover, there were, first and last, the bananas fresh off the stalk. Bananas in New York are good, but the flavor of the fruit picked ripe from the stalk is almost beyond description. Here the banana absorbs the woody odors and the fragrance of the myriad flowers that bloom about it as it ripens, and melting in the mouth releases them all.

When our dinner was over we stripped our wet clothing and dried it on the sunshine. We did not take it all off at once, but imitated the natives who were in charge of the plantation, by keeping on at least one garment. The native men wore either trousers or long tailed shirts. So did we. The two women wore very low-necked sleeveless dresses, revealing arms and shoulders and chests that were well rounded and smooth, although the faces showed the women to be well on in life. There was nothing immodest in the dress or lack of it, because it is the custom of the country. In fact, the women were, so to speak, in New York evening dress while we were rigged like oarsmen fresh from the shell.

The steamer arrived at the San Francisco just at sundown. We of the advance boarded her and had time for a good bath and to dress in fresh clothing before dark. Then came two canoes down the San Francisco, near which we had tramped. They were deep laden with President Miller, the rest of the party, and the packs. The passengers were cramped with long sitting on their heels and weary with oft getting out to lift the canoe over half-submerged logs and were wet with the drainings of the San Francisco and their own pores. They were hungry and thirsty. Climbing to the upper deck (it was a regular Missouri River steamer, with upper deck and cabins perched on stilts), H. F. Donaldson, one of

the British engineers, called his valet to bring to bring him a drink. The boy came quickly with a glass of water.

*"Take it away," said Donaldson, "and bring me a bottle of claret. It'll never do to waste a thirst like this."*

It was the hardest day of the tramp, and was quite equal in its physical strain to a tramp of thirty miles in a cold climate.

It should be said of Mr. Miller that when he had girded his capacious abdomen with a six-inch canvas belt, and had taken in hand a five-foot staff, he tramped over the trails with all the speed, if not the ease, of the lighter men of his party. He had brought a mule from San Juan, an offering from the Governors of San Juan and America City, as far as the end of the railroad. He had intended to ride it. But the trail began on a six-inch log over a ten-foot gully and crossed a fallen tree top a few rods further on that would not have done discredit to a hemlock slashing. The mule was no acrobat, it could not even climb a fallen tree like that, and it was abandoned. Mr. Miller isn't very much of an acrobat, either, but he crossed a trail that must have been worse than Stanley's in Africa, for not even Stanley's mule could have gone over it. The spectacle of the President of such a company as this, tramping over the route of the canal, was not lost upon the Nicaraguans, some of whom remembered the princely reception [given] to Lesseps on the occasion of his visit to Panama. Nothing Mr. Miller could have done could have raised him higher in the estimate of the people of the country. The following from *El Diario* of Granada<sup>21</sup> expresses the common sentiment.

There is a very notable difference between the courses followed by the construction companies of the two canals of Panama and Nicaragua. The contrast must attract the attention of those who for some reason may have observed what happened in Colombia and observe the present situation here.

When the principal agents of the French enterprise arrived at Colon and Panama to inaugurate the works, they had sumptuous banquets at which there was a flow of champagne and gold, palaces were built and gardens made, villages were formed, and all were employed in improving fortunes and leading an idle life, as if nothing else were to be done.

Here work has been begun and has expanded over the whole line without banquets, without extravagance, without noise. The President of the construction company has just arrived, accompanied by engineers and representatives of the American press; instead of attending

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<sup>21</sup> Granada — Town on the western shore of Lake Nicaragua

receptions and banquets, he walks over forty miles of canal line between San Juan and San Francisco, inspects everything that [has] been done on the Atlantic section, and now goes to the Pacific section from the lake to Brito.

Is there not truly a notable difference in the courses pursued? A great many commentaries can be made by anyone, and the close observer can reach the conclusion that the French company came to its ruin on account of extravagance and bad administration, and that the American company will finish its work because it does not spend its money badly, and understands very well that the question is not one of pleasure or pastime, but of work for the completion of the canal.

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## PART THREE: ON THE NICARAGUA ROUTE.<sup>22</sup>

### Story of the Warner Miller Party's Journey Across Nicaragua.

When Mr. Warner Miller's exploring party had tramped and ridden over that part of the Nicaragua canal route lying between the sea and the great dam in the San Juan river, and had taken passage on the river steamer at the mouth of the San Francisco, the physical hardships of the explorers practically were at an end. As recalled now, the hardships seem rather the most pleasant part of the whole journey, for, in spite of heat and of rainstorms by day and of beds made of warped poles at night, we found great pleasure in the fact that the terrors of a tropical forest of which we had heard so much proved to be no terrors for us.

On the river and the Lake, part of us had to sleep or dress for want of room in the cabins, and during the entire trip to the Pacific we found the accommodations different from anything we had ever seen, but we had beds and we had shelter from rain and the direct rays of the sun, and we had our meals served from covered tables, instead of camp fashion. The journey, however, if devoid of hardship, was in no part lacking in interest.

The San Juan is the sole highway between what may be called the inhabited portion of Nicaragua and the Atlantic Ocean. Save for a few small settlements along the Mosquito coast, the people of Nicaragua live about the two great lakes. Here cities and villages and haciendas can be found dotting the country thickly. If Nicaragua has 250,000 people, as estimated, 240,000 live about the lakes. To the east of the Lake lies one vast wilderness which has scarce been crossed by human foot. There is one route by the Bluefields river over which people have crossed, and within a year a route for a railroad between the Rama river and Ubaldo on the Lake has been surveyed by English capitalists. Engineer Gillespie, who made the survey, told me that when crossing the divide, the wild animals, including the wary black tiger, came about the camps, utterly fearless, never having seen man before.

The only means of communication between the people of Nicaragua and the Atlantic can be found in the line of steamers plying between Granada on the Lake and San Juan del Norte on the sea. When goods are shipped or letters

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<sup>22</sup> First published by *New York Sun*; reproduced by *Watertown Times*, June 11, 1891, page 7

mailed from New York for Managua, the capital of Nicaragua, they are carried on a steamer by the way of Jamaica Island to San Juan del Norte on the Mosquito coast. Here they are discharged into lighters as the ship lies in the open sea. The lighters take the goods into port, where they are transferred to a coasting steamer that runs down the coast to what is called the mouth at the Colorado river, the Colorado being that branch of the San Juan which runs through Costa Rican territory. When the coaster has crossed the bar at the mouth of the Colorado, which it does easily when the weather is fine, the cargo is transferred to a little flat-bottomed stern-wheeled steamer, built on the exact model of a Missouri river steamer. So far, three transfers have been necessary to get the stuff into the San Juan, the highway between the Lake and the Atlantic. The river steamer runs to the Machuca rapids, where the cargo is transferred to scows, that men with much labor push up the rapids, a distance of two miles. Here another steamer is met, which carries a part of the cargo up to the Castillo rapids and comes back for more, store-houses having been built at both ends of the rapids to protect the cargo meantime — store-houses that were choked full of goods when we saw them.

At Castillo the freight goes into a lighter that carries it ashore, where it is loaded on a tram-car drawn by a mule, and thus it reaches the head of the rapids, the broken water here being less than a half mile long.

A steamer interesting to see awaits it. She is about 50 feet long, 10 wide and 2½ deep. She has neither deck nor cabin, the passengers, the baggage and freight simply occupying different parts of the floor of the steam canoe. Her route is nine miles long, and at its upper end are the Toro rapids. Small as she is, she bunts bravely into the rolling tide until at last she is brought to a standstill, when a cable attached to an anchor well upstream is taken quickly on board and to the capstan. Then the crew take hold and warp her up for a hundred yards, when she clears the crest of the fall, and can once more travel by unaided steam power.

When well clear of the rapids, another steamer is found in waiting that is large enough to carry the canoe on deck, and to her the freight must go. When loaded she runs through the Lake at San Carlos, where a still larger steamer is in waiting to which the cargo goes to be carried to Granada. At Granada it is landed on a tramcar that takes it to the Nicaragua national railroad, and by this the freight is at last landed at Managua. If bound for Leon it would have to be transferred to another steamer, and thence to another railroad.

It was on the first of the steamers in the San Juan that we took passage for the interior of Nicaragua. The line is owned by members of the Nicaragua Canal Construction Company, and the steamers were therefore under orders to await the convenience of the explorers. We left the mouth of the San Francisco at sunrise on the morning of Saturday, April 11, but for the greater part of the day the steamer was tied up beside the bank at the site of the great dam that is to turn the current in among the hills on the north side of the stream. The banks were everywhere lined with an almost unbroken forest, which, though brightened here and there by a tree in full bloom and fringed with silver where the wild plantains grew near the water, looked much like an American forest of deciduous trees. The breaks in the forest were so few that we counted them—six plantations in all, including one so recently began that the thatched roof of the shack was still green, and the cleared patch was not an acre large. The crops seen growing were bananas and corn, but every plantation there raises beans as well. There were no smooth fields such as the farmers in the States have, no ploughs or other machinery, no barns, no stables. There is no need to plough the ground even for corn, for it is so rich and mellow that bountiful crops are gathered where the seed is simply dropped in a hole in the ground. The one tool used is the machete. It is at once plough, cultivator, and reaper, for with it the seed is planted, the weeds are kept under control, and the corn cut at harvest time.

Toward night we passed the mouth of the San Carlos river, where a native canoe—a well-shaped dugout—came out from a plantation to bring off a man who was to serve the steamer as deck hand. There were five men in the canoe. They tried to board the steamer directly in front of a scow we towed alongside. In an instant there was a crash and the canoe was overturned. Four of the men managed to get on board, and the fifth disappeared under the scow. We thought him gone, but he came up astern very much frightened and struck out for shore wildly. There was reason for his fear, for the San Juan is said to have sharks as well as alligators in it. He was a strong man, but because of the shock he had received was not able to reach the shore. We stood on the under deck watching as he drifted away, growing rapidly weaker, till he at last cried out that he was gone, while yet a rescuing canoe, guided by Mr. Louis Shable, was a long way off. But he made a few more feeble strokes and then, just as he sank, a friendly hand grasped his bushy hair and hauled him up. Mr. Shable represents the canal interests at the capital of Costa Rica, and is a handy man with a paddle as well as a diplomat.

We reached the Machuca rapids—the first in the stream—at daylight on the morning of Sunday, April 12. It is a beautiful tumble of water, where fish that look like shad and fight like bass literally swarm. A score of fins could be seen breaking through the surface at any instant. The name of the rapids—the Machuca—was interesting too, according to an interpreter, who said that whenever the Nicaraguan lover squeezed his sweetheart a little too hard, she would say: “*No me Machuca,*” which by a liberal interpretation means, “*don’t crush me altogether, old fellow.*” The rapids are crushers. There is but one settlement or village on the San Juan, between the mouth and the Lake. It is called Castillo Viejo. It is an odd village. The river here rolls down over a ten-foot ledge of rock and takes a sharp curve to the right. On shore, within the bend thus formed, rises a sugarloaf hill that is crowned by a picturesque fort, so old that it was called old when Lord Nelson, the great British Admiral, was lieutenant, and lost an eye and gained fame by capturing it from the Spanish. Around the base of this hill is a narrow shelf of ground a few feet above the water, and on this shelf stands Castillo Viejo. The street is so narrow that a six-foot train track fills it. When the car that carries freight and baggage around the falls passes along the people in the street have to stand very close to the houses to avoid it.

The fort is garrisoned, and at least seven men are always on duty there while twice as many more can be found in the two-story building used as a barracks down on the waterfront. The armament consists of two good six-inch cast-iron rifles, made in Boston in 1865. The garrison on duty lived in a concrete house in the old stone fort and one of the cannons is mounted as a pivot on top of this house. In looking about the old ruins, we came upon a tunnel which our guide said led down through the hill to the river so that the garrison could get water in time of siege. Another reminder of old days was a room built in the solid masonry foundation of the fort. It had no other opening through its walls than the door, and, when that was shut, was absolutely without light or ventilation. It was a prison for political offenders in the days of Spanish rule.

It is at Castillo that the custom house for the river traffic is established, and the town is supported wholly by the money brought there by the soldiers, the customs employees, and the river trade. Most of the houses are thatched shacks, and are picturesque rather than attractive to northern eyes. Nevertheless, a candid observer must admit that, for the climate, they are at least as comfortable as, and far more healthy than, the homes of the equally poor in New York.



An old freight house on the waterfront was recognized by Mr. Watrous, who was a "forty-niner," as one that was old when he crossed the country bound for the land of gold. The whole town will be buried under water when the canal is done, leaving the fort on what will become a little island on one side of the greatly widened river.

Above Castillo we traveled in the steam canoe, that had neither cabin nor deck, but only a space between the boiler which stood forward, and the engine at the stern, reserved for passengers and baggage. The baggage served in place of chairs for the passengers. Her capacity was equal to about half our party, but she runs by day and her route was only nine miles long, so there was no hardship in the journey on her, save in the heat from her furnace and steam pipes.

Above the Toro rapids the river looks like a tropical stream. It is sluggish and the water flows between banks that are marshy and palm-covered. Half-way to the lakes, the mountain peaks of Costa Rica come in sight, and thereafter, as the steamer sweeps along to San Carlos, the scenery grows from charming to magnificent.

Nowhere in Nicaragua—in few places in the world—does the spectator wish to linger longer than on the little promontory that rises in the angle between lake and river at San Carlos. The smooth water of the Lake, the islands that dot its surface, the peaks of the Costa Rica mountains on the left, and the smoky blue cones of the volcanoes called Ometepe and Maderas on the left form a picture not to be forgotten. The little promontory is occupied by the barracks of the troops quartered in San Carlos. Hearing that we were there, the governor of the village made haste to organize a little reception for Mr. Miller, at which the native gentlemen made pleasant speeches of welcome over imported wine of a very good flavor, while a few of the explorers who were much interested in the quaint streets and houses of the town went elsewhere. The chief novelty of the streets was in the fact that they were paved with cobble stones and had a gutter in the middle.

The houses were not novel for that country, being much like those of San Juan, but we had not been among such houses long enough to lose all interest. As we passed one of them, Major Kirkland, a Chicago newspaper man, thought he would like to treat the rest of us to milk. Taking off his hat before a bright young woman whom we had praised openly, for we thought her Spanish, he said with a marked Chicago accent:

*“Tiene un poco leche?”*

*“No, sir,”* said she in perfect English, *“but we will have a-plenty in the morning.”*

It was stunning; but by her womanly tact she put us all at ease in a moment. We found she was an English woman, the wife of a former captain of the steamer plying on the Lake, who had been in Nicaragua some years, and was able to tell no end of interesting things to her visitors before they returned to the Lake steamer to pass the night.

We reached San Carlos on the Lake on the night of Monday, April 13. The next morning, we started across the largest inland sea on the continent south of the Great Lakes that border the United States. Such a resort for yachtsmen, as that will become when the canal is opened, can be found nowhere else under the sun unless, indeed, it be compared with the Mediterranean. Leaving the American metropolis after the Christmas festivities, the gentleman sailor will head away for San Juan del Norte. There is music in the simple name of his destination. Then his path lies across summer seas and among islands at once beautiful in themselves and of wonderful interest through historic associations. With visiting by the wayside, he will reach the canal in the month of March, when the forests are aflame with brilliant flowers and all nature is vigorous with the life imparted by the rainy season, which is just at an end at that time. In a day he will find himself afloat on the great Lake with islands full of unexplored deposits of a civilization ancient beyond knowledge; with its volcanoes, likely to burst into activity at any time: with its shores inhabited by a most interesting people, and yielding such tropical products as coffee, cocoa and indigo; with its waters teeming with fish, some of which may be compared with the bass and some with the tarpon, and some of which, curiously enough, are real sharks—the only freshwater sharks in the world—with the forests and fields full of game birds akin to the grouse and the wild turkey, and mammals, such as the spotted jaguar and the tawny panther, fit to awaken the ambition of any trophy hunter. It is true that personally conducted excursions and the building of Yankee resort hotels will soon destroy, to an extent, the novelty of the country, but to those who are first on the ground it will be almost a *terra incognita* waiting to be explored.

Such at least it seemed to us, as we steamed across the Lake toward Granada on that Tuesday morning. We had, indeed, seen a great stretch of the country, but

we had only obtained glimpses of the people at San Juan del Norte, Castillo, and San Carlos. We were now to see the best and the worst of them, beginning at the ancient city of Granada and ending at San Juan del Sur, where, if any spot in the world, even a restless Yankee might be willing to lie down and dream his life away.

## PART FOUR: SKETCHES IN NICARAGUA.<sup>23</sup>

### Brief Glimpse of Tropical Home Life.

Although a journey from the Caribbean Sea up the San Juan river to Lake Nicaragua is full of interest for the stranger, in spite of (perhaps because of) the almost unbroken wilderness that borders the stream, it is not until one has crossed the Lake that the people of the country and their surroundings can be seen appreciatively.

The route across the Lake is from San Carlos to Granada, and the tepee-shaped peak of the active volcano of Ometepe is constantly in view. As the steamer passed the peak we saw the smoke of fires where natives were clearing the land for coffee plantations, and we were told that when, some five years ago, the volcano was pouring out lava on the southerly side, the natives continued their usual avocations on all other sides. The fact that they live over a cauldron of molten lava that may burst at any time and destroy them gives them very little concern.

Beyond Ometepe the island of Zapatera is likely to attract attention for the reason that it is about as full of ancient artwork as the district of Copan in Honduras—a district, by the way, where the Peabody Museum of Boston is spending \$15,000 in collecting plaster casts of the statues, &c., to be found in the forest where a great city once stood. Zapatera was once the home of a great population, but now only a few Indians can be found there, and few people know, and fewer care, about the treasures in stone and terra cotta that it contains.

In the olden days, when these treasures were made, the people who produced them had two magnificent specimens of nature's carving constantly before them on the top of Mount Mombacho, that rises on the mainland opposite the west end of the island—"the lions of Granada." Mombacho shows two peaks with a small knife-edge ridge between, and here on this ridge once crouched two such statues of lions as could be found nowhere else in the world. Unfortunately, one of them has broken under the action of the elements until no semblance of a lion remains. The other, with its ears erect, its shaggy mane standing out from its neck, its prominent shoulders and hips, with the curved back, is perfect in form, and when seen in black silhouette against the evening sky, is

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startlingly lifelike. But we saw no evidence that the natives, ancient or modern, were ever influenced in any way by these curious rock formations.

Freight and passengers are landed on a pier at Granada, and a tramcar conveys the freight and baggage to the station of the government railroad running to Managua, the capital. A host of cabs stand beyond the pier, and their drivers swarm over the steamer in search of fares as soon as she arrives. Dozens of young women come down to the pier as well, but, unlike the young women about piers and railroad stations in the States, these will not flirt with even the best-looking passenger. Other young women and many not young can be seen alongshore and in the Lake on both sides of the pier, caring for the family washing or gathering up the clothing that has been spread upon the sand to dry. It is a typical scene that can be duplicated on the waterfront of every city and village about any of the lakes of Central America. The only men to be seen at the Granada pier besides the hack drivers and a few idlers waiting for a job as longshoremen, were the drivers of water carts. The Granada water cart is not unlike a Yankee street sprinkler, save that the wheels are cut from a solid log of wood. It is drawn by oxen. These wade out into the Lake until obliged to hold their heads up, till their backbones are awash, and then the driver fills the tank by dipping the water with a bucket. He peddles the water about the street, his price being five cents a "monkey" full. The monkey is a globe-shaped terra cotta jar that will hold anywhere from five to ten gallons.

They say it is a mile from the Lake to the plaza of Granada. The land on which the city is built is a gently sloping hillside. The streets are wide and laid out at right angles, as all Nicaragua streets are. Those of Granada are most curiously graded in terraces—level stretches from fifty to seventy-five paces in length connected by steep stone-paved grades that give a rise of about ten feet in fifteen length of street. The level stretches are nearly all unpaved, and when we saw them, several inches deep in dust.

Along these streets are found the typical homes, and the business houses as well of the rich people of Central America. It is impossible to tell by a look down the street whether a house is a home, a dry goods store or a coffee warehouse. All that can be seen is a succession of one-story houses, with tile roofs and smooth, white-washed, windowless walls, broken, perhaps, twice between cross streets by doors. There are no sidewalks, strictly speaking, but only narrow ledges where sidewalks might be. No two of them are on the same grade. People rarely walk on them. They rarely walk anywhere on those streets after mid-day unless

impelled by dire necessity. In a walk along the streets after that hour there is a sense of weight upon the head from the rays of the sun above. The dust from about the feet rises up to fill the heated air as it boils and surges before the eyes, while on every side is the maddening glare of red-tiled roofs and blank white-washed walls. Fever and death follow in the footsteps of the unacclimated one who exposes himself to such conditions.

In marked contrast are the homes of the wealthy. The doors lead through thick, adobe walls in great windowless rooms where the soft light of nightfall pervades the air; where the deep blue marble of the tiled floors almost suggest a sheet of ice; where the cedar timbers and bamboo poles of the roof are seen dimly high overhead; where a look through another door to the courtyard shows heaps of green plants and mounds of lovely flowers, with wide, shady verandas on all sides, and here and there a hammock inviting to rest and peace.

According to the tales of travelers, the Spanish-Americans are lazy. What nonsense! They are the only people in the Americas who know how to live. The outer walls are whitewashed that they may reflect the heat away. The walls are made of thick adobes because they do not conduct the outer heat within. There are no windows because the darkened room is cooler than one full of windows would be, and because nothing is more grateful to the eyes after a walk in those streets than the soft light of twilight found within. There is no front yard to the city house, and in place of the backyard is the court—a great bouquet. One who admires flowers must love the Spanish-Americans. None is so poor in Nicaragua that he cannot have an abundance of flowers, none so lacking in a love of nature that he does not admire nature's floral profusion. There is never a day in the year when flowers in countless numbers may not be found there, and never can a home be found that is not brightened by them.

Not all the houses, even of the wealthy, are adobe: in Managua there is a rock so easily worked that it is hewed out with axes and takes the place of the adobe. Then, too, they build frame houses, over which, in place of clapboards, they nail bamboo poles, and then plaster the walls within and without with cement. Brick or marble tiles laid in cement are used for flooring. Now and then one finds a window in the largest rooms, but it is the exception. The rooms are large—an ordinary parlor is 25 by 50 feet, and one in Managua was 30 by 75. The bedrooms are large in proportion, one that I measured in Rivas being 24 by 42 feet on the floor, while the walls were not less than fourteen feet high. A good house

will measure fifty feet front on one street and run down a side street half the length of the block, say 140 or 150 feet.

There are smaller houses built on this style. Houses of four rooms are most common. The parlor faces the street, having a veranda before it. Behind is a small court with a veranda all around it. Back of that are two bedrooms with an alley between leading to another court also surrounded by verandas, while back of this court are a bath and a servants' room.

At Granada we stopped at a hotel kept by an American. It was called "Los Leones de Granada," after the lions of Mombacho. It consisted of two houses on opposite sides of a wide street, both of the houses having been private dwellings at one time. In one house the parlor had been turned into a bar and billiard room, while the veranda on one side of the court had been utilized for a kitchen. The veranda on the other side served as a dining room. The old bedrooms served their original purpose. The other house was used for bedrooms, but the old parlor was now reserved for ladies. Because of the size of the bedrooms and the number of beds in each, there was not much privacy for the traveler, but, aside from that, "Los Leones de Granada" was a very comfortable place. At Managua is a new two-story hotel, built of wood, with a double court, on which some of the bedrooms on the second-floor face. These bedrooms are small, so that a foreign guest may have one to himself, but on the first floor and facing the street on the second floor are the large rooms to suit the customs of the people there.

The most striking peculiarity of the tables of the hotels was the hash. They use the best of the beef—the part cut up as porterhouse steak in the States—for hash. Steaks and roasts are cut elsewhere. The meats are as good as could be expected where the law compels the butcher to sell his meat within twenty-four hours after killing the animal because ice is too dear to be used for cooling it. Because meat spoils easily, it is cut up in strips instead of slices; cut in strings, it dries instead of decomposing. Rice is served at both breakfast and dinner; so are beans. Omelets are common and good. Beef and mutton are served in two or three forms each, and chicken in two at each meal, while we had turkey and venison or some other kind of game at every dinner. Fish was served at the hotels in the Lake towns at least once a day and it was always good. The tea and coffee were excellent and the chocolate the best in the world.

Beside the hotel at Granada was a great gateway, with rudely carved figures on the posts, and much gilt about the old carved arms of Spain that appeared above

the gate. There were holes in the posts and the gate as well, which we were told were made by bullets in the time of Filibuster Walker. There had been a fight over the possession of that gate. The gate served as an entry to the vice-regal palace when Spain ruled the country. Now it leads to Granada's theatre—an amphitheater of seats, with a roof built within a large block. It is an airy place. A Cuban comic opera troupe drew large houses while we were there, the hit of the play being a topical song. An improvised stanza on the night we attended asked whether and when the canal would be built, and concluded that it never would be, whereat everybody laughed and looked toward "the Yankee corner," as our seats were called. The stanza, by the way, expressed the feeling of the Nicaragua people in the canal matter. "*We have been disappointed so often in the matter,*" said one, "*that we have lost hope.*"

The unfinished churches of Granada are the largest buildings, and the most interesting perhaps. One of them is on the corner of the plaza and the street from the pier. It looks more like a ruin than a new church—in fact, is at once a ruin and a beginning. The greatest cathedral of Nicaragua stood there till one day an earthquake shook the country and the people fled, praying, to the church. Then another shock followed and tumbled the walls on those who prayed, killing hundreds. The lower parts of the walls still stand, showing cracks in places. The decorations of the finished churches are very expensive, and some are beautiful. The grand altar in the Iglesia de la Merced is extraordinarily rich in gold and silver and silks.

We talked some with politicians about Nicaragua politics. According to Belt's "*Naturalist in Nicaragua,*" a change of rulers can only be effected by a so-called revolution. Northern people seldom think of Central America without wondering whether the last war there is ended or a new one recently begun. Central American republics do have some troubles of that kind, but our attention was called to one very interesting fact in Nicaragua politics, to wit: Nicaragua is the only American republic, in which, during the past thirty-one years, all the presidents have served out their full terms undisturbed by the assassin or a revolution of some kind. Even the United States has lost two presidents by assassination.

The political campaigns are always exciting. The politicians call one another all sorts of names and accuse one another of many crimes. Thus, an opposition politician said that at the last election, the present incumbent being then in power by appointment, compelled 7,000 men of his opponents to enlist temporarily in



the army because soldiers cannot vote. Further than that, he made a few active leaders among the opposition governors of remote districts—appointments they did not dare to refuse. Thus, it was said, he was able to obtain an election. The head center of the opposition is at Granada. There is a garrison of troops there, as there is in every city of the country; but in Granada certain hours of the day are emphasized by the firing of a cannon at the barracks, while in other cities a bell is rung in a church to call attention to the hours. The Opposition say a cannon is fired at Granada to remind the opposition party that the government eye is always open. The opposition say, further, that President Sacassa found a full treasury when he came into power, and that now a debt of \$400,000 has to be carried.

The friends of the government say that the administration has been improving the country by its use of money, that no one accuses Sacassa of using a cent for himself; that everything is flourishing; that, for the first time, elections have been held without corruption.

Whatever the facts as to other matters may be, it is the boast of all politicians there that no Nicaraguan president has ever enriched himself while in office.

The cemeteries adjoining the cities are interesting in one particular. Every cemetery has a lot of vaults built in a huge wall in the shape of a stack of pigeon holes, each hole or vault being large enough to receive a coffin. The vaults are rented out by the year to those wishing to bury their dead. When the coffin is placed in the vault a square slab of marble suitably engraved is sealed in to close the vault. Sometimes it happens that the relatives of the deceased stop paying the rent, the result being that after a time the coffin is taken out and, with the bones in it, placed in a great vault in one corner of the yard, where the coffin breaks up and the bones are intermingled and destroyed by time with those that have been dumped there before.

The ordinary graves with their monuments do not differ from those in the States.

As said, there is a garrison of troops in every town of any importance. Central American troops have commonly excited the derision of the book-writers because the uniform consisted of blue jeans, trimmed with red calico stripes, straw hats and bare feet. Then, too, the rank and file are commonly youths of from 18 to 20 years—boyish-looking fellows. I asked Major Dutton and Lieut.

Guy Howard, U. S. A., of our party, what they thought of the troops, and they replied that in any war involving matters in which they were interested, as one where invaders were to be repelled, they would make tip-top fighters. The government building at Managua and the churches and church schools there are other large buildings that are used as stores, with dwelling rooms above. In front of them can be found the city market, where vegetables and produce generally are sold, as in the streets about Washington market. A curious article of traffic was the dried oyster—dried oysters having a better sale there than tinned oysters do in the New York retail markets.

In Managua the market has a building occupying an entire square. It was built by English capital under a government concession granting a monopoly for twenty-five years. The selling is done almost wholly by women, who bring the produce many miles, in some cases, coming by the cars or Lake steamers.

After we had rested a day at Granada we took the cars to Managua, the capital. The railroad was built by the government, and is operated by the government now. The track and rolling stock are American. The engine burns wood. The first-class car has a smoking compartment at one end, but in other respects is like an American first-class car. No palace cars<sup>24</sup> are run. The second-class cars are simply American smoking-cars. In them the fare is less than a cent a mile. Everybody smokes in them, for the women of the laboring class smoke as much as the men.

It is a very level road between Granada and Managua, but interesting nevertheless. Some of the stretches are so much like the swampy woods of Long Island as to be scarcely distinguishable. Where the yellow sandy roads of the country crossed the railroad, the resemblance was very close too. Near Masaya the eye fell upon some low black ridges—ridges say from three to five feet high, that looked much like waves of coal. In places the road cut through the ridges, and we could see then that they were of lava. In the old days the volcano back of Masaya had poured out floods of melted lava, which spread slowly over the plain, consuming the face of the earth as they rolled along, and driving the natives in terror before them, until, at last, they hardened where we saw them.

The use of the ox cart for carrying water has been mentioned. Among three carloads of passengers on our train was the family of a Nicaraguan country

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<sup>24</sup> Palace car — Sleeping car

gentleman—the father, the mother and a charming daughter of perhaps sixteen. The train stopped at a cross road that this family might leave. A couple of servants and a solid-wheeled ox cart were in waiting for them. The cart was covered with bull hide, as prairie schooners are covered with canvas. The young men on the train craned their necks that they might see the young lady climb into the cart. Reaching the cart, she glanced out of the corners of her eyes and saw a number of spectators, and then putting one hand on the cart box, jumped in gracefully, without so much as showing her shoe tops.

The features of Managua that first attract the attention of the stranger are the policemen and the government buildings. The police force is made up of the best-looking men in the city. They wear a blue cloth uniform, and the ranks of roundsman, sergeant, captain, &c., are indicated by stripes of white tape, which are kept carefully clean. White gloves are worn, too, on occasion. I was told that patrolmen receive \$1.25 a day, which is good pay for that country. The number of the force is great enough to keep a man on every block by day. I saw but one man under arrest. He was drunk and had been boisterous, they said. But, as a matter of fact, that was the only drunken man I saw in the whole country, and I was constantly about the streets of the cities, day and night.

It may be said here that liquor is on sale in every block. The national drink is kind of rum called aguardiente. After a taste, no one would blame foreigners for not getting drunk on it. But wine, whisky and brandy are imported, and can be had at the hotels. The quality is good, but the price very high because of the duty. A whisky glass full of aguardiente costs ten cents and half-full five cents.

The capitol building is called the palace. It is a two-story building, with marble walls, fronting on the plaza. It is guarded by a squad of troops constantly, but the government officers are very easy of access on proper occasion. The different heads of departments have suites of rooms. If there was any peculiarity about the officials it was the fact that they all seemed to be under middle age and very bright and active.

In a two-story building adjoining the palace is the national library. It fills two rooms, each about 25x40 feet large, and is composed chiefly of what may be called practical works—scientific and historical. A very large percentage is of English books, among which the librarian pointed to Bancroft's histories as those that attracted most attention from native readers.

At Managua the party made a formal call on the president one afternoon, and a night or two later the national band serenaded President Miller at his hotel. The rest of the time was passed by the party in idling about the city and in a brief journey to Leon.

Leon is reached after a trip across Lake Managua and a journey on a railroad, both of which are under the government management, very comfortable and pleasant for all passengers. The scenery about Lake Managua is particularly grand, for the volcano of Momotombo is always smoking, while the mountains near the city, pictured on the national coins, are marvelously beautiful.

The most vivid memory of Leon which the visitors brought away was that of a cat yowl. Nicaragua domestic cats differ materially from northern felines. Their heads are larger in proportion to the body and more pointed. As all the party slept peacefully in the hotel at Leon, a tabby cat came in at the open door followed by a brave old Tom. Then came a rival Tom and a fight. No such wild screams had ever been heard by any member of the party. The first yell raised every person upright in bed, and the effect was so startling that it was some moments before anyone was able to determine just what was going on.

President Miller made the acquaintance of a Nicaragua dog under a somewhat startling condition. He slept in a bed on the ground floor with the street door wide open for ventilation. At the break of day one morning a huge dog, with massive features stalked into the room, and going to Mr. Miller's bed, poked the curtains aside and gazed severely at the sleeper. The hot breath of the brute awakened Mr. Miller instantly.

*"Get out,"* said the President. The dog did not move.

*"Get out of this,"* repeated the President sternly, and then remembered that Nicaragua dogs were not learned in the English language and stopped talking. The dog, however, seemed to understand directly that he was intruding, for he opened his mouth in a very good dog smile, wagged his tail, and went away out of the door.

The one peculiarity most noticed about Nicaragua dogs was their politeness. Only two dogs were ill-mannered enough to bark at me during the entire journey from sea to sea, although I encountered dozens of them. There were few shaggy dogs, and none that seemed to be of pure breed of any description.

From Managua back to Granada we had a special train. We left the capital on the evening of Sunday, April 19. We were to have had a grand banquet at Granada, but because of political trouble between the citizens who were going to give it, it had to be abandoned after all the viands had been ordered. So, on Monday we sailed away to Rivas, whence we were to take mule passage over that part of the canal route between the Lake and the Pacific.

Rivas proper is a village lying three miles back from the Lake, but the name is commonly applied as well to two suburban villages, St. Jorge and Buenos Ayres, on the Lake. A magnificent turnpike leads from Rivas to the pier on the Lake, and the side streets all along have been graded in a way we did not see elsewhere in the country. This road work was done by Carazo, a Rivas man, who was president before Sacassa. A company is now building a tram road from Rivas to the Lake under a government concession.

The old adobe houses of this community have seen a lot of fighting in their time. When Walker's filibusters were in Nicaragua, a large part of the traffic bound for California crossed from the Atlantic to the Pacific by Lake Nicaragua, and Rivas was the key to the situation. Walker strained every nerve to get and hold Rivas on the Lake and the port of San Juan del Sur on the Pacific. A number of battles were fought here. At one time Walker established a foundry here, in which he cast cannon balls, but the allied forces of the republics were too strong for him.

We saw here two large cocoa plantations. The cocoa tree, a shrub with dark bark, some twelve or fifteen feet high, was in bloom in some parts of the plantation, and in others had the fruit well-nigh matured. The fruit, as most people know, is a bean. It grows in a pod that looks like a purple or brown or green-colored butternut, six inches long, the color depending on the variety. The cocoa shrubs grow under a large tree always cultivated for its shade, because the cocoa does not thrive in the open. The flowers and fruit are developed on the body of the tree near the ground, and we were told that an ordinary tree would yield \$2 worth of beans a year.

It is not uninteresting to note that the irruption of our party was such a strain on the hotel accommodations that the public school was dismissed for a week in order that the room occupied by the pupils might be turned over to our use.

At Rivas our party divided. The newspaper writers were sent to San Juan del Sur to take passage on the Pacific Mail steamers via Panama from New York, while Mr. Miller and the rest went back by the way of the San Juan river, Mr. Miller himself and one other going to the States on the United States ship *Petrel*, while the others found their way by the usual mail steamer.

I was six days in San Juan del Sur. The harbor is rose-shaped. The waves of the ocean come in through a portal half a mile wide, guarded by piles of rock more than 400 feet high, and then, spreading out in all directions, break at last on a wide-curved sandy beach that is beautiful to look upon. The village nestles under the trees on a narrow valley that is shut in on all sides by hills, forming a great amphitheater about the bay. The hills are always green with verdure and bright with flowers; the houses are buried in the shade; the beach is always white with the foam of the breakers; the sea is forever dancing and sparkling in the light of the sun. Morning and night the natives go down to plunge in the surf and make merry, and life is a perpetual holiday. The workday of the poorest is but six hours long, and he lives in comfort on his wages. There is game a-plenty in the woods; there is fish a-plenty in the sea; there is music and dancing in the village. What would you have? Let him who eschews ambition seek San Juan and be content.

Don Louis Aranda was our landlord at San Juan del Sur. He was a wild, harum-scarum fellow, who, having been a soldier under Walker, (whose memory he still idolizes,) thereafter carried a revolver and a machete wherever he went, until disarmed by the government as a dangerous character. Now he is content with a ten-inch knife, keen as a razor, for a weapon. Don Louis's hotel had a sitting room, two bedrooms, and a kitchen. He occupied one bedroom, the guests the other and a room hired in the house adjoining. The first night there, three slept on the floor and I slept on a narrow table a foot too short. Thereafter we had cots or hammocks. One of the cots was covered with bull's hide instead of canvas, and was as springy as boilerplate—exactly so.

An interesting feature of the town was Walker's tree. Its huge dead trunk towered at the foot of the main street. They said a number of natives were shot at its foot by command of Walker, and that afterward some of Walker's men were shot there by the troops.

Under a tree near the beach two men sawed logs into lumber. One stood on the log, which was on a high scaffold, and pulled the saw up, while one below pulled it back again and swore softly when he got sawdust in his eyes.

The houses of San Juan del Sur are probably those handed down from the days when it was a way-station on the route to California, for they are nearly all very old and built of wood. The interiors of all save a few owned by rich people were unpainted, but not unornamented, for colored lithographs were tacked on the wall everywhere.

The fences along the San Juan river were of barbed wire. West of the Lake barbed wire was coming into use, but cactus hedges were most common. At Rivas and San Juan del Sur the palisade fence was found almost everywhere. The palisades were generally seven inches thick. This fence, they said, was adopted in the time of Walker, when war was a pastime, and the custom once established is not easily changed. I have never seen a country where, because of thick-walled houses and palisade fences, determined troops could make a better stand against an enemy than this part of Nicaragua.

On the afternoon of Friday, May 1, the shouts of "*El vapor*" on the street announced the coming of the steamer *Barracouta*, Capt. Passmore, and before nightfall we had bidden farewell to the people and a country that had charmed us, and before 9 o'clock were *en route* down the Pacific coast to Panama.

PART FIVE: THE NICARAGUA CANAL<sup>25</sup>

*[Note: Parts of this article were poorly printed, and some numerals may have been misread.]*

## The Route and the Work Accomplished.

## The Facts as Found by Warner Miller's Explorers.

*Unequalled Preliminary Investigations—Making a Harbor of a Lagoon—Nine Miles of the Ditch Excavated—The Hospital Record—Peculiarities of the Proposed Highway—Some Estimates.*

RIVAS, Nicaragua, April 23. The party of explorers which, led by the Hon. Warner Miller, left New York on March 14 last bound for Central America to explore the route on which Mr. Miller proposes to construct a ship canal from the Atlantic to the Pacific—the party which, as THE SUN has told, was wrecked on a coral reef in the Caribbean Sea, to be rescued after five and a half days by a coasting steamer—has at last accomplished practically the object of its journey. The members of it have crossed from sea to sea along the route, and have seen and learned all that such explorers could. see and learn in so brief a visit.

It was on the morning of Thursday, April 2, that the shores of Central America were first seen by the. explorers. There was a low-lying coast with blue peaks beyond, but not until close enough to see the wheel-shaped tops of the coconut palms did the shore look materially different from any other low shore. By this time, however, two separate settlements could be seen. The one was but a suggestion of human habitations—here and there a corner of a roof with a patch of house wall, maybe, appearing through foliage that is forever green. The other settlement stood on a wide, barren beach, a mile to the west, as bald and unpicturesque as a seaside resort in [New] Jersey.

The first was the hamlet of San Juan del Norte, and the other America City, the village of laborers established by the company that has undertaken to make the canal from sea to sea. Between these two settlements, but much nearer to America City than the other, was seen a long wooden pier with a pile driver on top of it. Pretty soon, an opening through the beach near the pier and leading to a narrow lagoon within, was seen, while two dredges of huge size were

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<sup>25</sup> Published Sunday, May 24, 1891, pages 28-29



discovered very busily at work in what was plainly the beginning of a very big ditch. Then we crossed the bar—rolled in broadside on, because it was pretty shoal water for the steamer—and were received by screaming whistles on a number of shoal draught launches, and by the explosion of many stumps which workmen were dynamiting out of the way of the dredges at work scooping out the ditch.

It was a significant fact that even the salutes in honor of the arrival of the President of the company with his guests were, in the interest of economy, made to do valuable service. With so much to prejudice us in favor of the company, we landed at a bulkhead beside a big wooden storehouse, and were ready to begin an examination into the feasibility of connecting the two oceans by way of Lake Nicaragua.

#### THE ROUTE ON PAPER.

We began our examination first by learning what the company proposed to do. After a look at a general map of the route, the reader will understand readily what the proposition is: some of THE SUN's readers who travelled during the old gold excitement days between California and the States by the Nicaraguan route, will not need to look at the map. A great lake—it is more than 100 miles long, almost as large as Lake Erie—forms the chief geographical feature of a map of Nicaragua. From the southeastern end of the Lake a broad river, the San Juan, flows gently away to the east to empty at last in the Caribbean Sea—a stream, by the way, that one thinks almost could readily be made into a highway for deep-sea ships by a simple dredge. West of Lake Nicaragua, the strip of land that separates the lake from the sea is but a step wide; but, in all places, save one, it is covered with hills and highlands.

It is proposed by the promoters of the interoceanic canal to make a ship route across this country in a fashion interesting alike to engineers and to those unlearned in that profession. First of all (to begin on the Atlantic coast) they intend to dredge a ditch of sufficient size for the greatest ships afloat, from the harbor of San Juan del Norte, across the wide swampy plain there, to the foothills. Although this ditch starts from a lagoon forming part of one of the mouths of the San Juan River, the canal runs back from the seashore almost regardless of the channel of the river. On the hills beyond the flats, a series of artificial lakes is to be created by building a dam across the San Juan River and turning its water into the valleys. These valleys have been found to lie so that once the lakes are

created, a ditch here and there, across a ridge, and a few embankments built where the side hills are low, will create a slack-water highway, not only of sufficient depth for the greatest ships, but of such width as to permit much freer navigation than any canal would allow. The damming of the San Juan is not only to create these lakes; it is to make slack-water navigation in the river itself above the dam, clear to the lake.

A. part of the lake is deep enough already, and where it is not a channel will be dredged.

On the west shore of the lake is a low beach, which will be well remembered by the Forty-niners as Virgen Bay. It was from Virgen Bay that they used to go whooping over a broad and more or less poorly kept road to the picturesque port of San Juan del Sur, where they took ship for the Golden Gate. It lies a short distance east of the settlement, one part of which is called Rivas, another St. Jorge, and another Buenos Ayres, all of which figured in the stories of the adventures of filibuster William Walker.<sup>26</sup> From Virgen Bay the land rises toward the Pacific very gradually, until a divide is reached that is forty-one feet above the lake. Beyond the divide is a creek that runs to the Pacific. It is proposed to build a big dam at a certain point on this creek and flood a valley and create a lake that will be called the Tola basin, whose waters shall be on a level with those in Lake Nicaragua. A ditch will be dredged to connect the lake with the basin, while two locks will let vessels from the basin down almost to sea level. Beyond the locks the land lies level to the sea, but a third lock is to be put in to connect the ditch with the harbor called Brito.

Further than this, two harbors must be made. A hook in the coastline at Brito needs only that a couple of short artificial barbs be built, in the shape of breakwaters, to enclose a space ample in size for all traffic. Depth will be secured by dredging out the sand between the breakwaters. At San Juan del Norte, two piers are to be built to deflect the along-shore currents, and then spaces for the shipping will be dredged out as at Brito.

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<sup>26</sup> William Walker (1824-1860) — American citizen who attempted to establish English-speaking slave colonies in Central America; usurped presidency of Nicaragua in 1856; executed by Honduras in 1860.

## SURVEYING IN THE TROPICS.

We soon learnt that a large and very important part of the work done was to be appreciated only by an engineer. The visible signs of this work were a huge stack of notebooks used by the engineers of the company in making their surveys, and certain chests, many yards in length, that were to be found in the draughting room. The surveys were made under the immediate direction of Mr. Frank P. Davis, and were begun in December, 1887. From two to five parties of surveyors, each party including five officers (transit man, level man, rod man, &c.) and seventeen laborers, have been constantly at work, and a few surveys are yet to be made.

When the work was decided on, the engineers and their white assistants were engaged in the States and with suitable instruments and some supplies in the shape of tents, food, and medicines, were sent in a steamer to San Juan del Norte. The steamer dumped the outfit on the beach, and work worth mention on the Nicaragua route for the first time was begun. They first of all provided quarters for themselves—rigged up tents—and then began to hire native laborers to help in its surveys.

It should be said here that previous investigations had shown two important geographical features of the country between the lake and the Caribbean coast. First, that for say half its length from the lake down, the river was deep and free from shoals (though obstructed by rapids), while the remainder of its course was as full of shifting sands as the Missouri. The other feature was a series of low valleys among the hills on the north of the river. The first survey party started into the woods to survey a line direct from the sea across the low lands adjoining and through the low-lying valleys to a point on the river just below where the deep water ended and the shoals began. Another party was organized and set to work on a route along the river itself, very near the line which the party under Commander Lull, U. S. N., surveyed in 1872.

As already said, the land for miles back from the sea at San Juan del Norte lies low and level, a tropical swamp where the trees and underbrush and vines grow so exuberantly that only those who have seen such swamps can fully appreciate the density of the vegetation. Incidentally, it was a place where alligators, poisonous serpents, and venomous insects thrived. It was not, on the face of it, an attractive place for a man to enter.

However, enter they must, and they did. They used, so their story runs, wading boots at first, the long-legged variety affected by dude fishermen in the Adirondacks, but after getting them filled with swamp water a few times, they concluded that sandals would be better, and eventually compromised on lace boots reaching to the knees.

Every step made forward had first to be cleared by the natives with their machetes.

The machete is an interesting tropical tool. It is a cross between a broadsword and a cheese knife, and has a blade two feet long and two inches wide, with a six-inch bull's horn handle rivetted on at one side. It is the handiest possible tool for cutting away the brush and vines of a tropical forest, and is used by the natives for about every purpose to which an edge tool can be applied—as a hoe, a mowing machine, a carving knife, and a meat axe.

But clearing away the brush from the line of sight of a transit man and leveler was one of the least of the troubles of the surveyors. That could be done with a machete save where, here and there, big trees had to be cut with the axe. The work, as said, was begun in December, and December is in the rainy season. They call it the dry season on that coast when it does not rain above three hours a day. In the rainy season water has been known to fall to a depth of ten inches in one day, and 306 inches fell in 1890. The surveyors and their men were wet continually.

Then, as they worked back from the sea, provisions had to be transported to them. The trails were sometimes so deep with water that the men carrying the supplies had to wade in it up to their necks, holding their packs at their heads. They didn't hold them thus to keep them dry, however, for there was only a little less water in the air than around them, but because that was the custom. The provisions liable to injury by water had to be packed in sealed tin cans and opened only in the shelters built on little knolls and ridges found in the swamps.

In the hills, the trails were in places so steep that the men had to use their hands as monkeys do to get up. This was particularly interesting because no one could tell what he was going to find under his [hand] when he reached up to grab a root or branch. Cases in which centipedes were grasped were so rare that every instance is remembered; cases where alligator ants were encountered were so numerous that the mention of the spotted little beast is enough to excite every

man on the force. The alligator ant is less than three-quarters of an inch long, but his bite is fire that sinks to the bone and stays there for hours.

Moreover, it was depressingly hot—constantly as hot and depressing as the air is in New York on those days when the signal service man reports a temperature above 80 degrees with a per cent. of humidity just short of 100. To do any kind of work required a strong mental as well as a physical effort.

The hydrographic work on the lake and about the proposed harbor was no less disagreeable and really more injurious to the health of the men.

It is almost all done now. Not only were direct lines run along the possible routes, but cross lines were run at frequent intervals. Every ridge and every valley and every little, as well as every large brook and creek was surveyed — the waterways to their sources. When these lines were laid down on paper they made a perfect topographical map of the region; when their length was computed, it was found that eighty miles of lines had been surveyed for every mile in length of the proposed canal.

Another part of the preliminary work which may be called surveying was the use of the drill to learn what kind of rock and soil would have to be cut through in digging the canal. The drills were worked by hand, in some cases the machinery being placed on log frames built up several feet above the ground to keep the men clear of the water lying there. Holes were drilled at the cuttings, at the sites of locks and dams, and wherever there was any reason for learning the character of the strata below the surface. The visible results of all this work included a lot of marks on the charts and some stocks of round cylinders of rock brought up by the drill, but to the engineer these marks and cores of rock give complete information about the character of the work to be done in digging the canal.

As said, the results obtained for the information of the company can be appreciated fully only by engineers. The effect of the work on the men was illustrated by a chainman who modestly declined to sign his sketch.

From a consideration of the maps and notebooks of the preliminary surveys the explorers turned to the work done that was patent to all. There was, for instance, the collection of houses first seen from the sea, where the engineers and officers had their headquarters. The following is a list of the structures:

BUILDINGS OF THE N. C. C. CO.	
Chief engineer's, two stories	24x 40
Office and officers' quarters, two stories	25x100
Dining room for officers	20x 40
Kitchen for officers	20x 20
Laundry at headquarters	30x 10
Bath house for chief engineer	8x 10
Bath house at headquarters	8x 22
Doctors' residence, two stories	41x 47
Officers' hospital, two stories	30x 48
Laborers' hospital, two stories	20x 95
Mess hall for patients	30x 54
Store room and quarters	12x 25
Deadhouse	15x 27
Bath house, two stories	11x 11
Laundry for hospital	15x 37
Store house at La Fe, three stories	39x138
Dry house	15x 37
Quarters for employees	15x 40
Mess hall at La Fe	25x 50
Carpenter shop	20x 50
Paint and tin shop	12x 25
Oil house	20x 30
Storehouse	24x 54
Office and officers' quarters at railroad	24x 45
Mess room and. kitchen at railroad	18x 26
Mechanics' quarters at railroad	24x 80
Laborers' quarters at railroad	35x170
Laborers' quarters' kitchen at railroad	24x 40
Tool house	12x 17
Tool house and blacksmith shop	24x 60
Water tank for locomotive	
Engine house	30x191
Officers' quarters at Camp Cheney	30x 40
Laborers' quarters at Camp Cheney	25x 96
Machine shop	61x109
Blacksmith shop	30x 60
Division Engineer's office and draughting room, two stories	40x 56
House for chief surgeon, two stories	
Storehouse at Camp Cheney	
Blacksmith and machine shop at Camp Cheney	

It is a more interesting collection of houses than one would imagine from reading the list, or even on first sight. They are pine houses with not a cent spent in ornament, but no pains have been spared in making them healthful. The sleeping rooms are all in the second story. Verandas surround the buildings where the men live. The air circulates freely through latticed windows and open doors, and through transoms overhead. The houses all stand on posts some feet above the ground, so that the air circulates under them freely. In fact, with the trade wind forever blowing in from over the sea, this barren beach on the edge of an all but impassable swamp is found to be a most pleasant location.

There is a very complete hospital under the charge of Dr. J. Edward Stubbert, of which something further should be said. There are two hospitals, really, for the laborers are either Jamaican negroes or natives of mixed blood, while the officers are white men from the States. A building is required for each class, but equal care is taken in the two buildings to promote the health of the patients. There is no difference in the sanitary measures. The results of the care and precautions taken at the hospital appear from the records, which were opened for inspection, and will be given further on.

Another very important building is the machine shop. It is a great open establishment, suggesting in appearance those found in the Brooklyn Navy Yard and other shipbuilding establishments. The lathes, planers, trip hammers, &c., bear the marks of the best-known American manufacturers. This is the only machine shop in the country. It was an absolute necessity, for the breaking of any bit of a casting about a dredge, for instance, would necessitate a stoppage until the piece could be sent to the States for repairs, were no machine shop here. The company is now prepared to make iron and brass castings and to forge anything from a nail to a steamer shaft.

## THE RAILROAD.

Necessarily a very important part of the preliminary work of constructing the canal is the building of a railroad along the route. The material taken from the cuts must be hauled to the sites of the dams, and no end of material must be hauled to the sites of the locks and the pier, not to mention other uses. Work was begun on the line in June, 1890, just at the beginning of the rainy season. The route lay for six miles across the big swamp, and the work of grading was done in water of an average depth of three feet for four miles of the distance, and two feet for the rest of the way to the hills. The men cut down the trees

along the route, cut the trunks into suitable lengths, and piled them up, corduroy fashion. On this foundation, strings, ties, and rails were laid. Meantime, a dredger was set to work digging a ditch where the canal was to be, and the sand thus scooped out was carried along the track and dumped for ballast. In the hills the grading was done as usual.

We found a well-ballasted track, nine miles long, completed, and grading for another mile about done. When done, the road will be thirty-two miles long. Rails weighing fifty-seven pounds to the yard are used, fifty-six being the American standard. The materials for seven miles of track, beyond that already laid, are on hand. At one place a bridge and trestle 180 feet long have been constructed. The equipment on hand includes three locomotives, fifty cars of various kinds, a steam shovel for loading cars, a ballast unloader, lifting jacks, &c. It is proposed to carry the road directly across the lagoon at San Juan harbor and out on the pier. The first quarry of the sort in the hills to be reached by the road is three miles beyond the present terminus, but the three miles will be completed in three months.

It should be noted that the engineers, in planning this railroad, estimated its cost at \$60,000 per mile. They find, now that it is about one-third done, that the cost will not exceed \$35,000 per mile.

When the canal is completed, the railroad will by no means be abandoned, but will become, it is believed, a very profitable investment. One of the engineers, who has purchased land near the route for a plantation, said he was confident the banana traffic, which will be developed, will alone pay the interest on the cost of the road.

#### THE HARBOR.

When work was begun on the harbor, which it is proposed to make at the east end of the canal, there was a lagoon where the harbor was located. It was three miles long, three-quarters of a mile wide, and a sandbar from 300 to 800 feet wide separated it from the sea. This bar, according to observations made, was formed by a current sweeping alongshore from the east. To make a harbor in the lagoon and a channel across the bar, the engineers planned a pier or breakwater which, starting on the inner edge of the bar, should run square out to sea, a distance of 1,700 feet. This would intercept the alongshore current that had



formed the bar. Then, by dredging, they proposed to cut through the bar and dig out a basin or harbor within.

They began on the breakwater in December, 1889, and when they ceased work, some four or five months ago, they had driven piles for 1,015 feet of the length of the pier. The pier is 42 feet wide, and is constructed by driving piles (North Carolina yellow pine trees) in vents, 8 feet apart, each vent having 12 piles, capped by a 14x14-inch timber. On top of the caps are placed stringers, 12x12 inches large, running lengthwise of the pier.

At first, they hammered down the piles, but later used the water jet, and then were able to build at the rate of 75 feet a week.

The adoption of wood for the pier was attended with one expensive necessity—the use of creosote. The water there is full of the teredo—a worm that gets fat on North Carolina yellow pine. They therefore impregnated the piles with sixteen pounds of creosote to the cubic foot, and found the dose sufficient to injure materially the digestion of the teredo, but not wholly to destroy it. Some of the piles remain untouched after being exposed over a year; nearly all are substantially sound, but a few are destroyed wholly.

The teredo, however, was provided for in advance, in another way. The use of piles was a temporary expedient, and if they serve for a year or two more, as they are sure to do, their mission will be completed. As soon as the railroad is built from the first rock cut to the pier, the stone from the cut will be dumped into the pier and eventually will wholly take the place of the wood.

Meantime, the pier has received some rock. A pocket of boulders was found back in the swamp and these were carried down and used with mats of brush to fill in the pier for a certain distance.

The pier has accomplished even more than was expected of it. Not only did it interrupt the alongshore current, it created a channel through the bar. The long swells propelled by the northeast tides came rolling in toward the beach till the end of the pier was reached. There their course was interrupted, so that they bent around the end of the pier like a whiplash on a stock, and reached the beach under the lee of the pier. Striking there, an eddy was created that cut away the sand and carried it out to sea, so that very soon a sufficient channel to admit a vessel drawing twelve feet was created by this agency alone.

However, that was not to be a permanent improvement for, while the open pile work of the pier served to stay the current in ordinary weather, it did not answer in a gale. A norther that came on drove the sand from alongside through the pier and partly filled the new channel so that it had to be dredged out again. So, work on the pier was stopped to await the completing of the railroad to the stone quarry. When the pier can be ballasted with stone it will be extended beyond the outer bay, and a big dredge which has been built in Scotland for sea work, and is probably now *en route* to San Juan, will cut out the channel to the required depth. To preserve the channel so made, another pier is now being constructed on the west side of the line.

After looking over the plans and the work done at the new harbor, the visiting engineers said they were satisfied that the plans were adequate to the work to be done. Engineer Davis said that the cost of the improvement had been so far about 70 per cent. of the amount set aside for it.

#### SOME OF THE DITCH IS DUG.

The work of cutting out the channel of the canal—the ditch itself—was begun early in January this year in order to get sand wherewith to ballast the railroad. However, the route of the canal has been chopped out 486 feet wide for a distance of eleven miles back of the lagoon. A look up the broad roadway thus created makes the ordinary unlearned observers feel more confidence in completion of the project than does a look at all the other work done. Moreover, there are two big dredges, bought from a Panama contracting company when De Lesseps failed, now actually digging out the earth. We saw big buckets that scoop up a cubic yard of sand each, coming up full on endless chains and dumping their contents into discharge pipes at the rate of nine a minute to each dredge. Of course, this work is really much less important than the surveys, but it makes very large showing. The channel dug was 1,800 feet long, 270 wide, and 20 deep when we saw it.

#### WATERWORKS AND TELEGRAPH.

Although the people employed have enjoyed health that to the one who reads travelers' tales of the tropics must seem marvelous, the well water at the village of America is bad. To remedy this defect, a water supply is to be brought from the hills. A suitable stream of clear cool water was found. It will be dammed and an

8-inch pipe will be laid to carry the water to the seaside. The plans are completed, the site of the reservoir has been cleared, and the pipe is on the ground. The dam will be erected and the pipe laid as soon as the railroad has been completed to within reach of the dam site.

It was found necessary to establish telegraphic communications with the various parties at work along the line, and for this purpose a telegraph line was put up. Some idea of what this involved may be had from the facts that new poles have to be provided every six months, and that the undergrowth has to be cut from under the wires every four months. A superintendent, three foremen, and seventeen men are always busy keeping the pathway of this line clear. The truth is, the undergrowth of Nicaragua is composed in great part of weeds that assume the dimensions and some other characteristics of trees. They have huge bodies and leaves of marvelously quick growth, but the wood is soft and easily cut when green. The telegraph route is cleared about four rods wide.

#### A CONCLUSION.

To describe in further detail what has been accomplished by the company at the eastern terminus of the canal would be wearisome to the reader who is not an engineer, but at a dinner given to the explorers by the Governors (native term for Mayors) of San Juan and America, two speeches were made by two disinterested engineers, who had examined the work with care. One was by editor Stauer of the *Engineering News* and the other by Mr. H. F. Donaldson of the Manchester, England, ship canal. The words of Mr. Donaldson will serve as well for Mr. Stauer. They were:

The start has been made, it is evident, and, speaking professionally, it is more than started, for I confess I have never seen a work in an unknown country so thoroughly and entirely surveyed, as the plans show, from every point of view.

I hope, if American capital should not be forthcoming, that English capital will carry it through.

We left America City to inspect the route on Wednesday morning, April 8. The railroad does not differ, so far as laid, from new railroads in the States: indeed, we found it smoother than new roads in the West usually are. Beyond the rails, which ended where a Yankee pile driver was driving logs for a trestle over a narrow stream, we walked for a mile over the grade—passing through several

red clay cuts and climbing over several that were but partly finished, and then we struck off on a trail through the native forest.

When a certain place in the "woods" had been reached, a company engineer said: "*Here is the site of the first lock.*"

There were remains of old derricks for drills about and portions of the drillings. It appeared that the first lock would have to be built on a hard clay foundation, and this the engineers said would be perfectly satisfactory if the lock was properly built. Among other things said about the lock and the canal were these:

#### LOCKS AND ARTIFICIAL LAKE.

The route of the canal from San Juan harbor to this lock is 9.3 miles long. It lies in the valley of a small stream called the Deseado. The country is flat and the excavations will be wholly in alluvial soil, as numerous borings show. It is practically a prolongation of the harbor at San Juan. There will be ample room in it for vessels to pass each other. It is as easy to dig as a canal in the Jersey flats.<sup>27</sup> The lock is to be 650 feet long by 70 wide, with 30 feet of water on the sill—large enough for any ship afloat. It will lift the vessels 30 feet. From the head of this lock to lock 2 is 1.26 miles. In this space the canal follows the valley of Deseado Creek, the valley being partly flooded through the construction of four embankments connecting lock 1 with the sides of the valley.

That is, the system of artificial lakes really begins above lock 1, but the depth of water to be obtained there being small, the greater part of the canal depth will be obtained by dredging, as will be done below the lock. Nevertheless, the surplus water from above can be the more easily controlled, because of the basin thus afforded, than it could be if only a simple ditch were there.

Having passed more woods and hills, we finally stopped on top of a very steep hill and were told that there was the site of lock 2, which would have a lift of thirty-one feet, and, that lock 3 was 1.927 miles further away.

Lock 3 has a lift of 45 feet and when the ships pass it they will enter an artificial lake that is 3.086 miles long. It was found that above the site of lock 3 the hills closed in on the valley of Deseado Creek so that, by building a dam across the

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<sup>27</sup> Jersey flats — New Jersey foreshore

valley and raising ridges on the sides where they were too low, the valley could be flooded. The dam will be 38 feet high and 1,300 feet long on top, while two of the embankments to help out the side ridges will aggregate 1,400 feet long and 20 high. On the whole, the expense of building dam and embankments is very small compared with that of digging a ditch of full size. However, three red clay hills of small extent will have to be cut down to make a channel and buoys set to mark their location. Elsewhere in the basin, navigation will be comparatively free, the water being from 30 to 70 feet deep over a length of 2.6 miles. The surface of the water in this basin is 105 feet above the sea. The dam is to be built of rock backed with earth and provided with a waste weir, 600 feet long, while another waste weir 600 feet long will be made in one of the side embankments.

It is at the head of this basin that the greatest height of land is found and, in consequence, where the greatest amount of digging must be done. We found the hills here almost as steep as those in Pike county, Pa.<sup>28</sup> To reach the top of the highest was like walking from the steamers in the Hudson River up to the top of the bluff at Weehawken.<sup>29</sup> The engineers told us that the cut there would be 327 feet deep, at the maximum, that the cut through was 2.9 miles long, and that the average depth of the cut was 150 feet to the bottom of the 30-foot canal. It is a rock cut and it contains 21 per cent. of the excavating of the whole canal route. The walls of the ditch proper will be vertical here, the water prism<sup>30</sup> being 30 feet deep and 80 feet wide. Above the water there will be a berm or tow-path of 10 feet on each side, and above that the rock walls will rise with a slope of five vertical to one horizontal.

An old sailor in the party figured that the width of this cut at the height of the main yard of the California clippers would be 120 feet. Main yards of clippers are about 100 feet long.

*"There is not much margin on the ends of these yards"* he said to an engineer: *"how will you get them through?"*

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<sup>28</sup> Pa. — Pennsylvania

<sup>29</sup> Weehawken (New Jersey) — Location on the Hudson River waterfront, two miles upstream from Hoboken.

<sup>30</sup> Prism — Shape of the canal as seen in cross-section

"*Brace the yards sharp up and if anything goes wrong, splice the main brace,*"<sup>31</sup> he replied.

As a matter of fact, it may be predicted that California clippers will not, as clippers, use the canal very much for, with the sailing route to San Francisco shortened by 10,000 miles, the big hulks will be more profitable as tow-barges than as clippers.

It took us two days to travel from the sea across the divide, the second day's walk covering what was about four miles of the canal route, though we really walked over a curved trail nearly twice that length. On the morning of the third day, we entered the valley, which is to be called the San Francisco Basin, from the San Francisco River that rises in it. An examination of the country west of this divide had showed two ranges of hills running parallel to each other and very nearly at right angles to the line of the divide. That is, the axis of the valley is nearly east and west. In this valley rises the San Francisco River and several of its branches, the Francisco being a tributary of the San Juan. It was found that by building dams where these streams broke through the southerly range of hills, a very large lake basin could be created. We tramped over a part of this range, and looked upon the sites of the proposed dams, as well as the sites of several embankments where the hills are low. It was easy for even the unlearned in engineering matters to see that a very deep valley existed there, and we were all willing to believe that a great lake would be created by turning the San Juan into it. But, when we reached the vicinity of the San Francisco River, after a six hours' tramp, and were told that the San Juan River steamers would call that night at the mouth of the San Francisco for all who had seen enough of the route, the party agreed to take the rest of the valley on trust.

#### THE RIVER ROUTE.

However, although we finished our tramp in the afternoon of Friday, April 10, we had only begun our inspection of the canal route. Our next point was the Ochoa dam, which by closing the channel is to turn the San Juan into the hills. It is to be located at a spot just above a bend where the hills come close in on each side of the river bed. The length of the weir on the crest of the dam will be 1,250 feet, and of the abutments 650 feet more. The dam will be 61 feet high, 500 feet wide on the bottom, and 25 feet on top. It is to be built of rock and earth, the

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<sup>31</sup> Splice the main brace — (Humorous) Serve an extra ration of rum to the seamen

core of the rock portion being composed of quarry waste, "with three rows of sheet piling from abutment to abutment, and substantial concrete core walls from the ends of the sheet piling will be built well into the abutment hills and up along the slope beyond the maximum flood level. The upper portion and long flat apron, over which the surface water will flow, will be made of the largest rocks that can be handled, with the interstices filled in with gravel and earth."

This dam will, of course, raise the water above it to the height of that proposed for the artificial lakes—106 feet above the sea. This height, it is worth noting, is 4 feet less than that of the surface of Lake Nicaragua; but Lake Nicaragua is 64½ miles away, and the fall allowed for the current between lake and dam is therefore but three-fourths of an inch to the mile. The river will therefore become practically an arm of the lake.

It is worth noting, further, that there are three rapids in the San Juan. above this dam—the Machuca, the Castillo, and the Toro. The Machuca and the Castillo will be buried out of reach of keels by the dam. More interesting to the engineers than either of the rapids is a tributary from the Costa Rica side of the San Juan, called the San Carlos. This stream comes laden with silt and sediment, which mix with the San Juan. It is this sediment that has filled the San Juan below the San Carlos with shifting sandbars, and made it look so very much like the lower Missouri. Above the San Carlos the San Juan is deep and fairly clear, save, of course, where it tumbles over the rocky rapids.

An artificial lake will be formed at the junction of the two rivers, and the waters setting back up the San Carlos will make a navigable stream of it for many miles. The surveys show that the hills along the San Carlos do not form a continuous ridge sufficient to confine the backed-up water, and a number of embankments will have to be built to connect the hills. On one of these embankments, a waste weir will be made for the surplus water of the San Carlos. The valley through which this waste water will run debouches on the San Juan below the great dam. The engineers think that by running the surplus water of the San Carlos off through the valley they will, to a great extent, get rid of the silt that would otherwise run into their reservoir above the dam.

The Toro rapids do not show as very great falls as seen by the spectator, but considerable dredging, or rather blasting, will have to be done there to create a ship channel, for the back water from the great dam will not cover them very

deep. On the whole, the deepening of the channel between the dam and the lake is equal to a cut  $4\frac{1}{4}$  feet deep and  $2\frac{1}{4}$  miles long in rock under water.

The following résumé gives the most important figures of the canal between San Juan harbor and the lake:

San Juan harbor to the first lock, 9.357 miles, the canal being 288 feet wide on top, 120 on bottom, and 25[?] feet deep. Lock 1 lifts the vessels 30 feet; lock 2 lifts 31 feet, and lock 3 40[?] feet. To lock 2 the distance is 1.258, and the ditch 210 instead of 284[?] feet wide on top, and 30[?] feet deep instead of 24. Between locks 2 and 3 the canal part is 1.650[?] long and of the same area of prism as the last. The basin part is 1,762 long and 30 feet deep. The greatest depth of cut in the divide is 327 feet, and the average depth is 150[?]<sup>—</sup>the ditch proper is 80 feet wide and 34[?] deep. The cut is  $3\frac{1}{4}$  miles long, and contains 21 per cent. of all the digging to be done. The big dam at the point of the river called Ochoa is to be 61 feet, and it will create slack-water navigation from the lake to the eastern divide.

#### THE LAKE.

Lake Nicaragua is 110 miles long, and it has a surface area of 2,000 square miles. Its watershed is 8,000 square miles large. Gauges show that the outflow into the San Juan at the lowest stage is 11,300 cubic feet per second, and the mean outflow is put at 14,700 per second. That is a mean outflow for a day of 1,272,000,000 cubic feet, while the water required for thirty-two lockages a day is 127,000,000 cubic feet, leaving a surplus of over one billion feet. However, there are streams tributary to the San Juan and the artificial lakes and, on the whole, it is calculated that there will be ten times as much water at hand in the driest seasons as will be needed for locks.

The canal route across the lake is fifty-six and a half miles long. At the east end of this route they will have to dredge a channel 14 miles long, 9.8 feet deep, and [??] feet wide at the bottom, in order to get the needed 30-foot depth for shipping. The rest of the route across the lake is from 30 to 150 feet deep until within 1,400 feet of Virgen Bay, the proposed entrance to the cut across from the lake to the Pacific. The excavation under water there is rock. Moreover, because the prevailing winds over the lake are from the northeast, and because these winds sometimes make a dirty sea, there are two breakwaters, 1,800 and 2,400 feet long, respectively, which will have to be built to create a harbor about the mouth of the canal.



## FROM THE LAKE TO THE PACIFIC.

The old transit road from Virgen Bay to San Juan del Sur started on a level plain, but after a while it went winding about through picturesque hills and eventually pitched down and down—how the mule teams used to hump themselves over that long, steep stretch on their way to the Pacific, if one may believe the tales the old inhabitants tell!

It was a ride to make one catch his breath, but as a route for a canal the road was not to be commended. They used to talk of a canal there, however, and in Squier's book on Nicaragua it is estimated that this part of the canal would cost \$250,000,000. There is a significant footnote under this estimate, however:

It will be time enough to credit the report which has recently been set afloat that a passage has been discovered "which is only twelve miles in length and requires but forty-eight feet of vertical cutting to cause the waters of the lake to mingle with the ocean," when we shall have the facts and figures presented by competent engineers; when, in short, it is demonstrated.

The engineers of the present canal company have got the figures. The route begins at Virgen Bay and runs over to a creek called the Rio Grande. The height of land is but 41 feet above the lake level, that is 143.5 feet above the sea, the Pacific being but 102.5 feet below the lake. The maximum cut, therefore, to give thirty feet of water in the ditch is but 71 feet. The route from lake to ocean is 17.04 miles long, of which 11.44 miles will be ditch, and the balance artificial lake navigation. It happens that a stream called the Tolo flows into the Rio Grande, and that a short distance below the junction the bordering hills approach so close together that a dam 1,800 feet long and 70 feet high will create a triangular-shaped lake through which the sailing route is 5.06 miles long. The top of the dam is placed 112 feet above the Pacific, and this basin will be practically an arm of the lake. The arrangements for caring for surplus water in lake and stream, during times of freshet, consist of waste weirs and culverts which the visiting engineers said were more than ample.

Three locks will let the ships pass from lake to sea. Two are located at the big dam, the lift in each being 42.5[?] feet. A third dam, a little over a mile and a half nearer the sea, has a lift of from 29 to 21 feet, according to the state of the tide.

From the lake to the divide cut the distance is a trifle over a mile and a half, and the ditch will be 210 feet on top, 120 on bottom, and 80 deep. The western divide cut is five miles long, and there the canal proper is but 80 feet wide. Then comes a stretch of 2½ miles, where the ditch is 181 feet wide on top and 80 on the bottom, after which comes the basin. Beyond locks 4 and 5, which adjoin each other, the canal is of the same dimension of prism as above, while the canal beyond the last lock is practically an arm of the harbor.

The port on the Pacific will be called Brito, and it is located at the mouth of the Rio Grande. There used to be a little settlement there, and it figures in the history of the filibusters as the first landing place of Walker and his men. There is a rocky promontory just north of the mouth of the Rio Grande. A pier of stone, 900 feet long from this point, will not be very expensive, because the rock can be blasted from the promontory. Another jetty, 830 feet long, from the southerly side of the mouth will cost more, because the rock will have to be transported further, but after some dredging a harbor of 95½ acres area on the bottom and thirty feet deep will be had.

#### ESTIMATES.

Here are some estimates of the cost of the work on the route:

Earth excavation, per cu. yd	40 cents
Earth dredging, per cu. yd	20 cents
Rock excavation, per cu. yd	\$1 50
Rock under water, per cu. yd	8 00
Stone pitching, rock furnished, per cu. yd	2 00
Concrete, per cu. yd	6 00
Stone in breakwaters (from divide cuts) per cu. yd	1 50
Sheet piling in place, per M. H. M.	70 00
Trestles for dumping rock, per lin. feet	22 00
Clearing and grubbing, per acre	50 00

The total quantities for the larger items are as follows:

		Cu. Yds.
Earth dredging for canal (all above level)		29,823,161
Earth excavation (all earth above sea level)		21,773,810
Rock excavation		13,452,938
Rock under water		575,415
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Total, apart from harbor work		65,825,254
Greytown harbor, dredging	9,015,450	
Brito harbor, dredging	5,658,906	14,714,358
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Total earth and rock excavation		31,339,712
Rock fills for dams and breakwaters (from divide cuts)		4,033,810
Earth fills ditto (borrowed or from canal excavation)		6,106,380
Concrete (chiefly for locks)		615,651
Stone pitching		202,691

Among the miscellaneous items provided for in the estimates whose adequacy can be most satisfactorily judged by their aggregate cost, are the following:

Gates for the six locks	\$783,212
Two movable dams or guard gates	600,000
Machinery for locks	550,000
Buildings for locks	185,000
Pumping (chiefly for locks 1 and 6)	200,000
Plant for lighting and buoys canal	372,200
Crib piers at entrance to canal (apart from breakwaters included in rock fills)	783,924
Three swing bridges across canal	60,000
126 miles telegraph	64,000
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Total of miscellaneous items	\$3,578,366

It is not uninteresting to note that the actual cost of operating the dredges in the earth excavations done at the Atlantic end of the route has been from 6 to 15 cents per cubic yard, so that the gross cost, including interest on investment in plant and wear of machinery, has been much less than the 40 cents per cubic yard estimated, perhaps not more than 25 cents.

On the whole, the chief engineer estimates that the canal will cost \$65,000,000. A committee of experts went over the figures in New York and made allowances for what might be called the sanguine temperament of the engineer and raised the estimate to nearly \$90,000,000. In all his talks on the subject President Miller places the cost at \$100,000,000.

The estimates of costs have, in all cases where tested, proved more than adequate for the work. We had everywhere along the route ample evidence of the rigid economy practiced by the engineer in doing the work, but nowhere was this economy seen to better advantage than at America City, the headquarters of the work, where Chief Engineer Menocal lives. The chief engineer himself lived in a cottage as small as and really less expensive than the homes of gang foremen which we afterward saw along the line of the Panama Canal.

The workmen engaged along the line of the railroad, the chief work now on hand, live in thatched houses like the natives—homes that are at once perfectly healthful, and so cheap to construct that the cost is insignificant.

As an engineering problem, the constructing of the Nicaragua Canal is the simplest possible for any great work. That the sand can be scooped away, the rock blasted and carried away, the dams and the locks built, and the harbors created and maintained is not doubted by any engineer who looked over the plans and the country. There are no unknown contingencies nor unsolved possibilities. It is simply a question of labor and money to pay for it. The things President Miller has to do are to get men and money. The possibilities before him are worth considering:

#### WORKMEN.

In the work as far as done, less than 2,000 men have been employed at any time, and the average number has not been far from 1,000. When we were there only about 600 were at work. Part of them were Jamaica negroes and part natives, and the natives are Indians, commonly with a mixture of white blood. The engineers say that in all sorts of work in the woods the Indians were better than the negroes, while in the dredges the negroes excelled. It is, perhaps, for the interest of these engineers to make the efficiency of these laborers appear as great as possible. They say it was good. Nevertheless, we were able to judge of the efficiency by actual observation. These Indians carried the baggage of the explorers over the route of the canal. An average load was sixty pounds. They carried it on the back, the weight of the load being supported in part by a band or strap across the forehead. With this on the back and with a machete in hand the native walked over the trail as fast as the best of the white men did, though unencumbered by any weight. Reaching a camp, they dropped the load and did the camp work, showing no signs of fatigue whatever. In fact, they did an

amount of work equal to that commonly accomplished by North Woods guides, and did it cheerfully.

In Managua<sup>32</sup> we saw plenty of native mechanics at work at house building, for Managua is growing rapidly. During several days we watched them, and found them at least as active as the same class of laborers in New York.

At Punta Arenas we saw native stevedores stowing coffee in the steamer *Bar-racouta*. A sack of coffee weighs there about 110 pounds. They trotted (really trotted) about with these sacks on their backs. An exhibition of such pernicious activity would cause any member of a longshoreman's union in New York to be expelled in disgrace from his order.

The native laborer is efficient in the hands of a boss who understands his peculiarity. That peculiarity is an admirable one: he is proud. He will do anything for a boss who is his friend, but if treated with contumely he will either sulk and quit work, or he will cut the head of the offender off with a machete. Let it be further said that no fear of unions and disturbances following need be anticipated from either negroes or natives. Of the efficiency of negroes, we saw nothing, but everyone knows how they can be managed. So far, the company has paid the laborers \$20 in local coin (worth eighty cents a dollar in gold) per month, and has boarded them in addition. They could be hired so that they would board themselves, but they are so improvident at times and at others so penurious that they will not feed themselves in a way to preserve their efficiency as laborers. They will eat enough continuously only when it is provided for them. As they care chiefly for plantains, rice, and beans, their food is very inexpensive.

In talks with a number of contractors who had had experience with native laborers, we were told that 20,000 or 30,000 able-bodied men could be readily had on demand, but not for less than \$25 native coin a month. Moreover, the native laborer having no capital, must needs have an advance, when hired, of from \$10 to \$15. On these terms the labor problem was to be solved, and in this opinion a number of men united who were financially opposed to the canal, as will be told later.

## HEALTH.

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<sup>32</sup> Managua — Capital city of Nicaragua

A part of the labor problem is the problem of health. Men died like sheep in a plague at Panama, and were buried as dead sheep might be. To the reader unfamiliar with the country, the climate in Nicaragua is supposed to be like that of Panama because both are in the torrid zone, both have the sea on each side of them, and they are only a few hundred miles apart. Nevertheless, there is so great a difference between the two that one is liable to be thought a partisan of the Nicaragua route when he comes to tell of the superiority of Nicaragua.

The Nicaragua route is only about three degrees of latitude north of the Panama route, but that difference is sufficient to place Nicaragua in the zone where the trade winds forever blow. While one may be oppressed in the forests of Nicaragua because he cannot feel a breath of air, there is always a breeze above the treetops to carry off the exhalations of swamp and forest. Moreover, it is possible to supply the laborers with an abundance of pure and comparatively cool water. It therefore remains only to adopt such strict sanitary measures at the camps as will maintain the naturally healthful conditions, and the health problem is solved. That this is true may be inferred from the hospital ward at America City, where the coast, being flat and swampy, the conditions are worse than at any point on the route. Here is the hospital record as exhibited to the explorers:

Between Nov. 1, 1889 and Dec. 31, 1890, there were 1,347 medical and 322 surgical patients in the hospital, of whom 23 died. Of these 23, 5 were due to accidents and chronic diseases, and 6 died of diseases contracted in the company's service. Only 12 of all who were admitted died of diseases contracted in the company's service, among whom there was not a single white man. Of the 1,347 medical cases, 203 were remittent fever and 433 were intermittent. These diseases were, according to Dr. Stubbert, more amenable to treatment here than in the States, the average run of remittent fever being but five days.

#### THE MONEY.

Of the methods for raising money for the construction of this canal the people have already heard something. During the last session of Congress, a bill backed by Senators Sherman and Edmunds passed the Senate binding the United States to guarantee the interest on the bonds of this company as fast as issued in payment of work done on the canal, the work to be supervised by United States Army officers. Of the motives influencing the Senators in this

matter, it may be said that they were probably more desirous of promoting a Republican principle than anything else. That no effort to obtain such a guarantee could possibly be successful since the election of the Democratic House last fall need not be doubted. Nevertheless, it is certain that the Government guarantee of interest would have been a great benefit to the commerce of the world and particularly to American commerce. With such a guarantee, the face value of the bonds and stock which the canal must carry would approximately represent the cash cost of the canal—\$100,000,000 or less. What the face of the stock and bonds will be now is a matter of conjecture.

To begin at the beginning: A number of Americans organized an association, which obtained from Nicaragua a concession giving them exclusive right to construct a canal and operate it under certain liberal terms for ninety-nine years, with the privilege of extension for ninety-nine more on certain more stringent terms. The stock of the association was placed at \$100,000,000, with the privilege of twice that sum, while no limit was placed on the amount of bonds to be issued.

Then a construction company to build the canal was organized in New York, while the original organization was succeeded by the Maritime Canal Company. Life becomes a burden in unravelling the relations and dealings between these companies, but the sum of it all is that in return for certain construction company stock the Maritime Canal Company turns over its stock, bonds, and so on to the Construction Company, which is to market them and use the proceeds in constructing the canal. Between \$3,000,000 and \$4,000,000 has been raised so far, in doing the work and providing plant. The engineers assert (and there is corroborative evidence of the assertion to be given further on) that this money has been most economically invested.

It is proposed to market the bonds and stock in America, if possible, and in Europe if necessary. Mr. Miller says that he does not expect to see them sell for less than seventy-five cents on the dollar, or in any event that no more than \$100,000,000 of stock and \$150,000,000 of bonds, face value, will have to be sold to raise \$100,000,000 in gold. It is on this basis that it is proposed to build the canal. Mr. Miller says he never wanted Congress to back his bonds—that that was a scheme originating with Edmunds and Sherman. There is more profit and equal honor in building the canal as other great engineering schemes have been accomplished by putting it before the capitalists on its merits. But in the end, the burden of paying the interest on the stock and bonds must fall on

commerce. The interest on the bonds will not be less than 5 per cent. On the stock, according to the terms of the concession, it cannot exceed 15 per cent. If the canal pays a net income of \$12,000,000, the men who get \$250,000,000 in securities for \$100,000,000 in cash will be receiving a comfortable income on their investment, while those who receive \$100,000,000 in cash or thereabouts for building the canal will not lose anything.

#### THE TRAFFIC.

Of course, if the canal is admitted to be a feasible project from an engineer's point of view, and if \$100,000,000 will build it—and no one need doubt such assertions—the one serious consideration that remains for capitalists is the extent of the traffic that the canal may be expected to secure and handle. The company has put out a good deal of printed matter on this subject, a part of which is interesting. For instance, in the matter of the capacity of the canal, the chief engineer estimates that it is equal to a traffic of 20,000,000 tons. But in a table which the company publishes, giving an estimate of the time required for a ship to pass through the 170 miles of length of the canal, the lowest rate a vessel is put down for is five miles per hour. This is the speed which a big steamer is to make through the cuts where the channel is but 80 feet wide and 30 deep. Imagine a ship 50 feet wide, and drawing 26 or 27 feet of water, booming through at five miles an hour!

Then the time for transit includes less than two hours for delays at the narrow cuts where ships cannot pass. If anyone will consult the records of the Welland Ship Canal, between Lake Erie and Lake Ontario, he will find that delays about equal the time of actual transit. A speed of two or at most three miles is all that can be made in the cuts, and the Nicaragua estimate of 28 hours as the time of transit will be raised to 56 by every sailor man accustomed to steamer traffic in narrow channels. So far as the explorers examined the plans for the canal this was, however, the only error in preliminary estimates that was not an error on the right side.

Nevertheless, it is plain that the capacity of the canal will be sufficient to earn dividends. It is proposed to charge \$2.50 gold per ton, and the traffic sharps say that between six and seven million tons is the minimum to be expected at the date of opening the canal. De Lesseps estimated 10,000,000 tons for the Panama Canal.



That the canal can handle 12,000,000 tons need not be doubted. The amount of business is estimated from the present traffic which, for the most part, goes around the Horn and over the Panama and other transcontinental railroads. That the estimate is reasonable appears certain after a consideration of the time and expense saved by the use of the canal in the traffic between some of the principal ports of the world. In a sea journey from New York to San Francisco the route is 10,000 miles less via Nicaragua than around the Horn. To Hong Kong the distance is 2,000 miles less than by the Cape of Good Hope and 4,000 less than by the Horn. Hong Kong is 1,200 miles nearer Liverpool via Nicaragua than by the Cape of Good Hope.

Further than this, a good cargo steamer will carry freight from San Francisco to New York, via Nicaragua, in less than three weeks—not so very much more time, indeed, than that now required by the slower freight trains over the Pacific Railroad. At \$2.50 a ton, the traffic between the two coasts of the Americas must go through the canal, and so, too, must the traffic between Europe and a great part of the west coast.

The saving in time and cost means, of course, reduced rates for transportation, and reduced rates will necessarily give increased commerce. Thus, the tonnage using the Suez Canal in 1870 was 436,000, in 1880 3,057,000, and in 1888 6,600,000. In 1870 the tolls were \$1.99, in 1880 \$2.48, and in 1888 \$1.89. It is a fact that the grain traffic from the west side of the Rocky Mountains could be carried around by the Pacific and through the canal to New York at a much less charge than that now imposed by the railroads. There will, of course, be an increase in Nicaragua traffic after the opening, equal to that in the Suez. Should it open with 4,000,000 tons instead of the 6,000,000 in sight, no one need doubt the increase.

*"I wish I knew what English capitalists would think of Nicaragua bonds as an investment"* was said when our journey was done, to Mr. H. F. Gooch, one of the engineers sent to investigate the plans by those capitalists. *"In my opinion English capitalists will be hungry for Nicaragua canal bonds,"* he replied.