

# HAND-BOOK

OF

## THE PANAMA RAILROAD.

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IN ancient or in modern times there has, perhaps, been no one work which in a few brief years has accomplished so much, and which promises for the future so great benefit to the commercial interests of the world, as the present railway thoroughfare between the Atlantic and Pacific Oceans at the Isthmus of Panama. A glance at its geographical position can not fail to discover to the most casual observer that, situated as it is midway between the northern and southern, and alike between the eastern and western hemispheres, it forms a natural culminating point for the great commercial travel of the globe. Wise men in every enlightened nation had seen this for centuries, and had urged the importance of free interoceanic communication at this point; but its lofty and rugged mountain ranges, its deep and pestiferous morasses, seemed almost equally to defy the skill of the engineer and the physical endurance of the laborer. Even the possibility of opening such a communication by the government exercising jurisdiction over that portion of the isthmus through which it should pass had never been seriously entertained; but New Granada had long and earnestly challenged the more powerful nations of the world to break down this barrier to commerce and civilization, and reap the richest benefits which might result therefrom. England had looked toward the project with longing eyes, but quailed before the magnitude of the

labor. France had done more—surveyed and entered into a contract to establish it; but too many millions were found necessary for its completion, and it was lost by default.

Events at last occurred which turned the attention of the American people to this transit, viz., the settlement of the northwestern boundary, by which we came into possession of Oregon, and the war with Mexico, which added California to our possessions. But, while the accession of these territories was of the highest importance to us in a national point of view, their distance rendered them almost inaccessible to the class of emigrants who usually settle our new domains, as well as inconvenient to the proper administration of law and government. Still, urged on by that pioneering spirit which seems inherent in the blood of the American, and invited by the prolific soil and genial climate of these distant possessions, and a prospect of a new and enlarged field for commercial pursuits, large numbers of our people migrated thither around Cape Horn. Congress, however, in 1848, in order to render these countries more accessible, authorized contracts to be entered into for the establishment of two mail lines of steam-ships, the one from New York and New Orleans to Chagres, and the other to connect with this by the Isthmus of Panama, from Panama to California and Oregon. The inducements to invest in these projects were not sufficient to attract the favorable attention of capitalists, and the contracts were taken by parties without means, who offered them for sale, and for a long time without success.

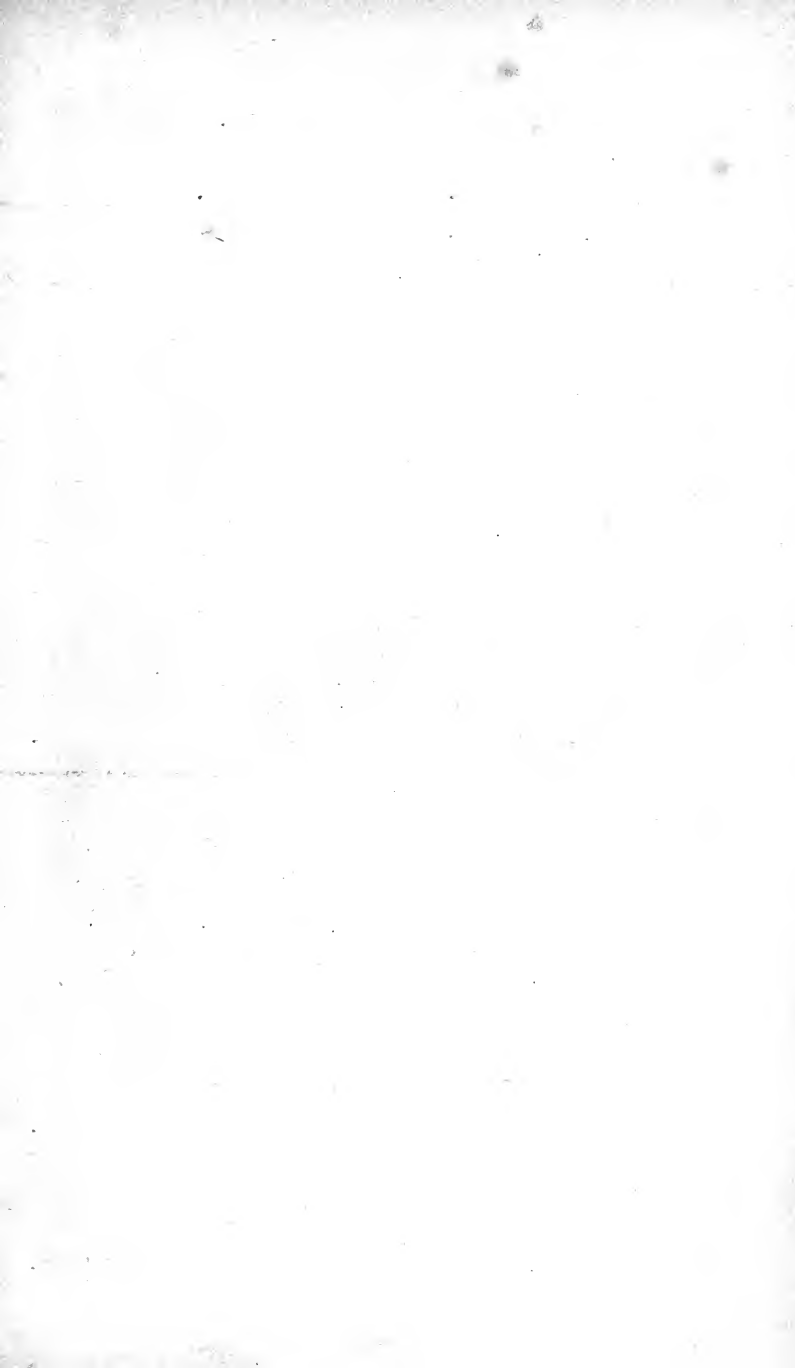
Men were at last found bold enough to venture upon the enterprise. Mr. William H. Aspinwall secured the line on the Pacific side, and George Law that on the Atlantic. In the Atlantic contract there was comparatively little risk, and a promise of almost immediate remuneration, as it connected with the cities of Savannah and New Orleans, and terminated at the portals of the Pacific Ocean. But the

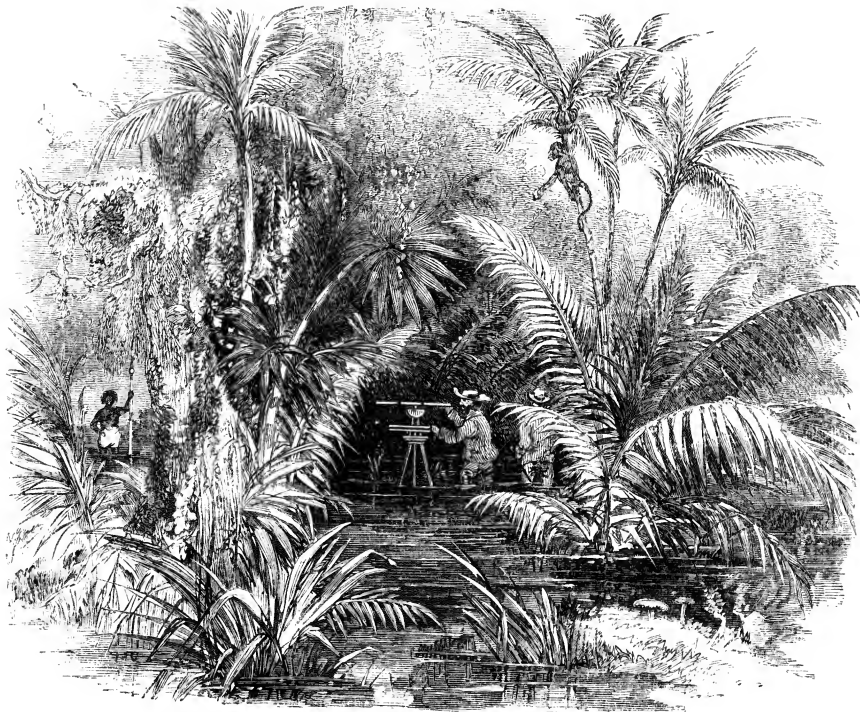
Pacific contract was looked upon by the generality of business men as a certain sequestration of a large amount of property for an indefinite time, with a faint prospect of profit; and the wonder seemed to be that so sound a man as Mr. Aspinwall should have engaged in it. But it soon became evident that he expected no great profit from the steam-ship line *per se*; but that, with those enlarged and far-reaching views for which he is so justly noted, this line was only a part of the great plan which he had conceived, the remainder being embraced in the bold design of a railroad across the Isthmus of Panama; and at this time he, with Mr. Henry Chauncey and Mr. John L. Stephens, entered into a contract with the government of New Granada for the construction of that work. Mr. Chauncey, like Mr. Aspinwall, was a large-minded and public-spirited capitalist, whose integrity and straightforwardness were undoubted. Mr. Stephens possessed an experience in the country through which the road was to pass, and a knowledge of its geography and its inhabitants, gained by practical study and observation. These three gentlemen were associated together for the prosecution of this great enterprise, and shortly after, Mr. Stephens, accompanied by Mr. J. L. Baldwin, a skillful and experienced engineer, made an exploration of the route, and decided upon its entire feasibility, dissipating the fears entertained by many that no line could be established without such heavy grades as would interfere materially with the paying character of the undertaking by the discovery of a summit gap no more than three hundred feet above the ocean level.

A formal contract was then entered into with the government of New Granada, on the most favorable terms, for the exclusive privilege of constructing a railroad across the Isthmus of Panama. Among the most important concessions by the terms of this contract was one guaranteeing that all public lands lying on the line of the road were to

be used gratuitously by the Company; also a gift of 250,000 acres of land, to be selected by the grantees from any public lands on the Isthmus. Two ports, one on the Atlantic and the other on the Pacific (which were to be the termini of the road), were to be *free* ports; and the privilege was granted of establishing such tolls as the Company might think proper. The contract was to continue in force for forty-nine years, subject to the right of New Granada to take possession of the road at the expiration of twenty years after its completion, on payment of five millions of dollars; at the expiration of thirty years, on payment of four millions; and at the expiration of forty years, on payment of two millions. Three per cent. was to be paid to the New Granadian government upon all dividends declared. The entire work was to be completed within eight years, and a sum of one hundred and twenty thousand dollars was to be deposited at its commencement, as security for the fulfillment of the contract, but to be refunded, with interest, on the completion of the road within the given time.

Up to this period calculations for the ultimate success of the undertaking were based upon the advantages it would afford in shortening, by many thousand miles, not only the route to California and Oregon, but to China, Australia, and the East Indies, and in the development of the rich, but then almost inaccessible countries bordering the whole Pacific coast. At this time, however (the latter part of 1848), the discovery of gold in California, with its accompanying tide of emigration across the Isthmus of Panama, changed the prospects of this projected road; and, from an enterprise which looked far into the future for its rewards, it became one promising immediate returns from the capital and labor invested, and in which the people, as well as the government of the United States, must be immediately and deeply interested. A charter was now granted by the Legislature of the State of New York for the formation of a





RUNNING THE LINES.

stock company, under which one million dollars of stock was taken—the original grantees having previously transferred their contract into the hands of this company. A large and experienced party of engineers, under the command of Colonel G. W. Hughes, of the United States Topographical Corps, were sent down, in the early part of 1849, to survey and locate the line of the road. The result of their work not only confirmed the previous reconnoissance in regard to the entire practicability of the railroad, but another summit gap was discovered by Mr. J. L. Baldwin, thirty-seven feet lower than that previously established by him, and a line was run from ocean to ocean not exceeding fifty miles in length. The Pacific terminus of the road was located at the city of Panama, on Panama Bay, and the Atlantic terminus at Navy Bay, on the Atlantic shore.

The character and geographical position of the country through which the line of the road had been carried was such as might well have made the hardiest projectors shrink from attempting its construction. The first thirteen miles, beginning at Navy Bay, was through a deep morass, covered with the densest jungle, reeking with malaria, and abounding with almost every species of wild beasts, noxious reptiles, and venomous insects known in the tropics. Farther on, though some of the land was so fair and beautiful that the natives called it *Paraiso*, the greater part of the line was through a rugged country, along steep hill-sides, over wild chasms, spanning turbulent rivers and furious mountain torrents, until the summit-ridge was surmounted, when it descended abruptly to the shores of the Pacific Ocean.

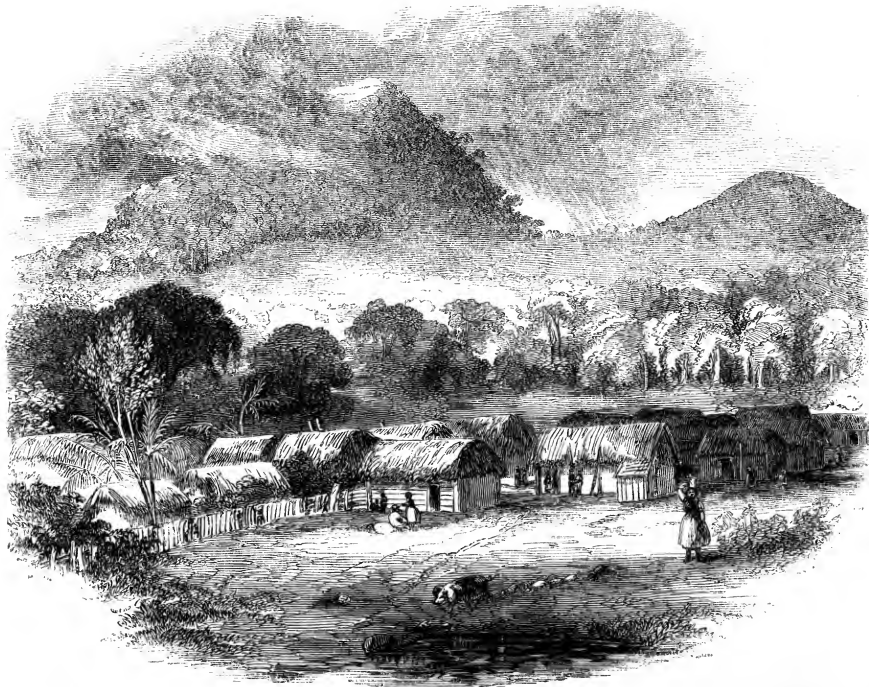
Situated between the parallels of  $8^{\circ}$  and  $9^{\circ}$  north of the equator, a sultry tropical heat prevailed throughout the year, nearly half of which time the country was deluged with rains that, if they would not seriously damage the works, were certain to impede their progress, and add greatly to the arduous character of the undertaking. The whole

isthmus, though covered with the most luxuriant vegetative growth, possessed little or no timber sufficiently durable to be of use in the construction of a permanent work. The native population, composed of a mongrel race of Spaniards, Indians, and Negroes, were too indolent and unaccustomed to labor to be depended on to any great extent. The resources of the country were entirely inadequate for the support of laborers. Men, materials, and provisions were to be transported thousands of miles. And yet, despite all these obstacles, the dim glimpses of which had, at a previous time, caused European capitalists to shrink back with fear, our bold operators at once, and earnestly, pushed forward this stupendous enterprise.

In the early part of 1849 a contract was entered into with Messrs. George M. Totten and John C. Trautwine for the construction of the road. The services of these gentlemen had been solicited by the Company, not only on account of their previously established reputation as skillful and successful engineers, but from having only a short time before been engaged upon a work of considerable magnitude in a neighboring province—the “Canal del Dique,” connecting the Magdalena River with the Caribbean Sea at Carthage: they had, consequently, a large experience in the character and resources of the country, and the conditions necessary to the success of such a project. The contractors at once proceeded to the Isthmus with a large force, and commenced the final location of the road.

Basing their operations upon the reconnoissance of Colonel Hughes and party, a native town called Gorgona, on the Chagres River, about thirty miles from the Atlantic, was selected as a point for the commencement of the work. This place was chosen on account of the facilities it afforded for communication with the Atlantic by the River Chagres (which was supposed to be navigable to this point for vessels of light draught), by which men, materials, and stores





PARAISO.



could be transported to a central point on the proposed road; and, on the completion of the Pacific section, traffic between the two oceans could at once be established, while the Atlantic section might be completed at the leisure or convenience of the Company. To this end, two steam-boats of very light draught were dispatched to Chagres for the navigation of the river. It was soon ascertained, however, that it was impossible to make use of these boats (drawing only from fourteen to eighteen inches of water), and that even the native bongoes and canoes were capable of the service only by great labor and exposure. In addition to this, the rush of California travel, which was then directed through this river as far as Gorgona, had so raised the hire of the native boatmen that the expense of river transportation was enormously increased. It was therefore determined to change the point of beginning to the Atlantic terminus of the road.

Mr. Trautwine, after a careful survey of the whole line of coast from the mouth of the Chagres to the harbor of Porto Bello, had located this terminus at the island of Manzanilla, on the eastern shore of the Bay of Limon, or Navy Bay, where the city of Aspinwall now stands. It was also found that, instead of a secluded and rarely-visited region, where laborers and materials such as the country afforded were comparatively inexpensive, as was the case when the contract was framed, and had been time out of mind, it was now swarming with emigrants from all parts of the globe *en route* for the land of gold. The conditions under which the contract was entered into were changed, the whole *morale* of the country had assumed an entirely different aspect, and it was evidently impossible to continue the work under the arrangement agreed upon. A fair representation of these things being made to the Company by Messrs. Totten and Trautwine, they were released from their obligations as contractors, and retained as engineers, the Com-

pany having determined to take charge of the construction themselves.

The plan of commencing at the Atlantic terminus being approved, Colonel Totten left for Carthagenia to make arrangements for procuring an increased supply of laborers.

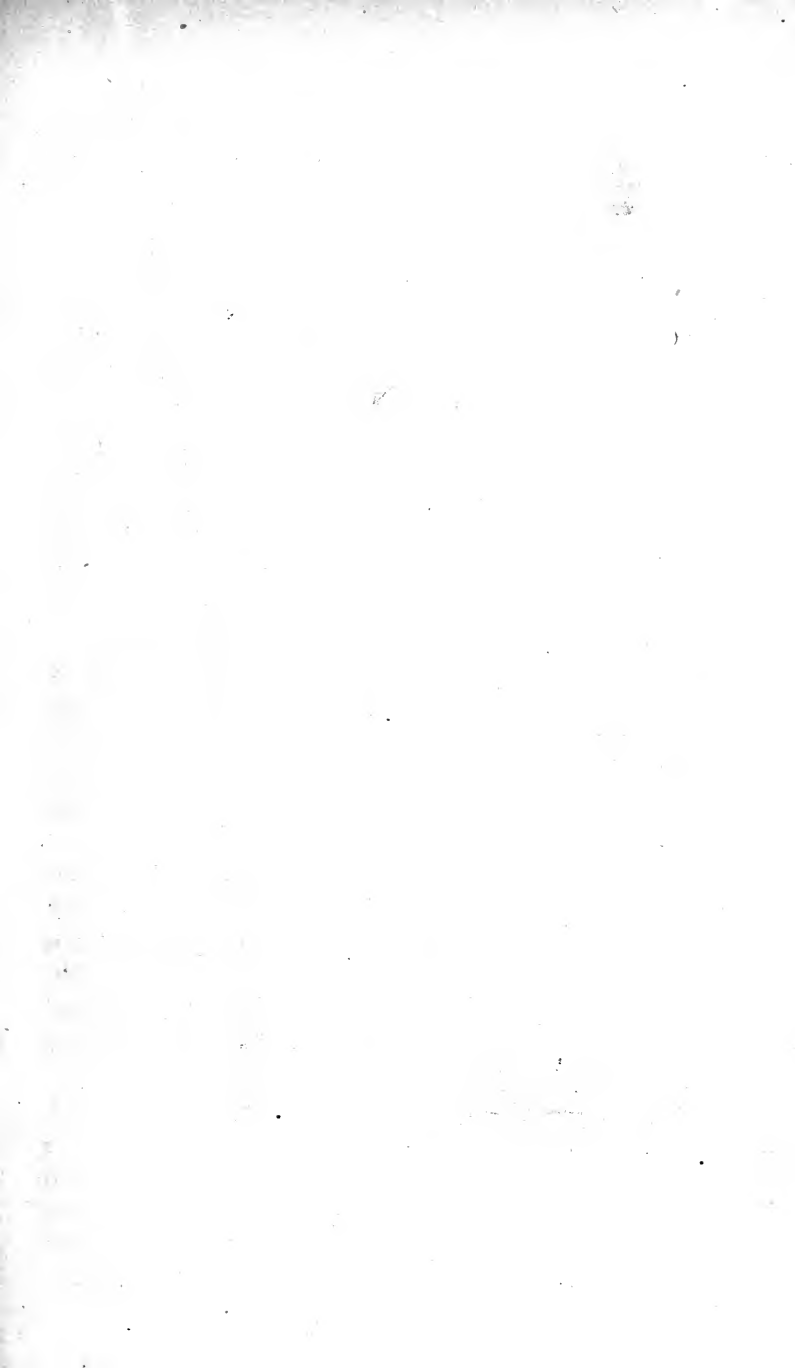
nounced the commencement of a railway, which, from the interests and difficulties involved, might well be looked upon as one of the grandest and boldest enterprises ever attempted.

Work upon the island was now fairly commenced. A portion was cleared, and a temporary store-house erected from the materials on board the brig. On the 1st of June Colonel Totten arrived from Carthagena with forty natives of that province as laborers for the work: these were descendants of the old Spanish slaves, a peaceable and industrious race, who, from having been employed on the works in Carthagena for several years, proved a valuable accession to their forces. Mr. T. was accompanied by Mr. John L. Stephens, the president of the Company, who was on his return from Bogotá, where he had been to obtain some important revisions in the contract. With their increased corps the clearing progressed rapidly; but the rainy season soon setting in, the discomforts to which they were subjected were very great. The island was still uninhabitable, and the whole party were forced to live on board the brig, which was crowded to its utmost capacity. Here they were by no means exempt from the causes which deterred them from living on shore, for below decks the vessel was alive with musquitoes and sand-flies, which were a source of such annoyance and suffering that almost all preferred to sleep upon the deck, exposed to the drenching rains, rather than endure their attacks. In addition to this, most of their number were kept nauseated by the ceaseless motion of the vessel. Labor and malarious influences during the day, exposure and unrest at night, soon told upon their health, and in a short time more than half the party were attacked with malarious fevers. Having neither a physician nor any comfortable place of rest, their sufferings were severe. At this time the hull of a condemned steam-boat—the Telegraph—lying at Chagres, was purchased, and sent down as a resi-

dence. This proved a vast improvement upon the accommodations afforded by the brig, but still annoyance from the insects was at times almost insupportable.

In the latter part of June Mr. Totten again left for Carthagenia to procure more men, and Messrs. Stephens and Trautwine returned to New York to digest farther plans of procedure. The work was left in charge of Mr. Baldwin, who continued the clearing with his crippled forces until the latter part of the following month, when Mr. Totten returned with fifty more laborers. Surveys of the island and adjacent country were now pushed vigorously onward. It was in the depth of the rainy season, and the working parties, in addition to being constantly drenched from above, were forced to wade in from two to four feet of mud and water, over the mangrove stumps and tangled vines of the imperfect openings cut by the natives, who, with their *machetas*, preceded them to clear the way. Then, at night, saturated and exhausted, they dragged themselves back to their quarters in the Telegraph, to toss until morning among the pitiless insects. Numbers were daily taken down with fever; and, notwithstanding that the whole working party was changed weekly, large accessions were constantly needed to keep up the required force. The works were alternately in charge of Messrs. Totten and Baldwin, one attending to the duty while the other recuperated from his last attack of fever. In the month of July Mr. Trautwine returned with a surgeon—Dr. Totten, a brother of the colonel—and several assistant engineers. About fifty Irishmen also arrived soon after from New Orleans.

The line had already been located for two and a half miles, and decided upon for two miles farther. It was so laid out as to strike a range of small hills half a league from the terminus, when it again stretched into the deep morass. The distance now required to be traversed from the work to the terminus was so great, and attended with so much





THE FIRST SHANTY.



fatigue and loss of time, that it was determined to erect a shanty for Mr. Baldwin and party in the swamp. The lumber for this was dragged on the backs of the men for more than three miles. Here was erected the first dwelling-house, built of rude boards, high upon the stumps of trees, to raise it above the waters of the swamp; and in the heart of this dank, howling wilderness our hardy pioneers took up their abode.

Large parties of mechanics and laborers were now constantly arriving from Jamaica, Carthagena, and the United States, so that the quarters on board the hulk were no longer adequate to house them. The insects had greatly diminished in numbers as the clearing progressed, and shanties were erected on the high ground before alluded to for the accommodation of the laborers. In August, 1850, the work of construction was commenced at this place. Another station was also established eight miles distant, opposite to the native town of Gatun, on the bank of the Chagres River, which was navigable to this point; and two of the Company's vessels arriving, laden with machinery, building material, and stores, they were debarked here, and the work of piling and grading was carried on from this station toward the terminus. The number of men now employed on both stations was between three and four hundred, among whom were many mechanics. The construction and surveys for a time progressed with vigor, and comfortable dwellings and hospitals were erected; but sickness, caused by exposure to the incessant rains, working waist-deep in the water, and in an atmosphere saturated with malarious poison, soon made such sad inroads among them that, in a few weeks, more than half their number were on the hospital records, and, either frightened by the fevers or seduced by higher wages offered on the California Transit, so many of the remnant deserted that the work came to a pause. Here the bravest might well have faltered, and even turned

back from so dark a prospect as was then presented to the leaders of this forlorn hope; but they were men whom personal perils and privations could not daunt, whose energy and determination toil and suffering could not vanquish. Even in this apparent cessation of labor they were not idle; but, pushing off into the neighboring islands and provinces, they collected recruits in such numbers that but a few weeks had passed before the work was again forced onward. Colonel Totten now assumed the direction of the work, and Mr. Center, the vice-president of the Company, repaired to the Isthmus to co-operate with him in the rapid advancement of the enterprise, so that by December over a thousand laborers were employed. With the commencement of the dry season the sickliness abated, the hospitals were soon cleared, and by April, 1851, a large portion of the road between the terminus and Gatun was completed. The line had been located to Barbacoas, sixteen miles farther on, while Mr. J. C. Campbell, chief assistant engineer, was actively employed in extending the location toward Panama, and work had been commenced at several intervening points.

Docks had been constructed at Navy Bay, and vessels were almost daily arriving from Jamaica and Carthagena with laborers, and from New York with stores, machinery, and materials for the road. On the first day of October, 1851, a train of working cars, drawn by a locomotive, passed over the road as far as Gatun. In the following month two large steam-ships, the Georgia and Philadelphia, arrived at the open roadstead of Chagres with passengers from the United States *en route* for California *via* the Chagres River Transit; but the weather was so tempestuous that, after several lives had been lost in attempting to effect a landing, they were forced to take refuge in the harbor of Navy Bay. It was then proposed that, instead of waiting for fair weather in order to return to Chagres, the passengers should be

transported over the railroad to Gatun, from whence they could proceed up the river in bongoes as usual. There was not yet a single passenger car on the road: an accident like the present had never been included in the calculations of the Company. Every objection was, however, soon overruled by the anxious emigrants, over one thousand in number, who were then disembarked and safely transported on a train of working cars to the Rio Chagres at Gatun.

At about this time the affairs of the Company in New York looked very dark and unpromising. The first subscription of one million dollars of stock was expended, and

dado, eight miles beyond Gatun, and passenger trains ran in connection with every steamer; by the 6th of July it was pushed on to Barbacoas, at which point the course of the road was intersected by the Chagres River, making a total distance from the city of Aspinwall of twenty-three miles.

Thus far the work had cost much more than was anticipated. In the hope of constructing the remainder more economically, it was decided by the Board of Directors to complete the road from Barbacoas to Panama by contract. Accordingly, an agreement was entered into with Minor C. Story, as principal, to complete the work. The death of the lamented president of the Company, Mr. John L. Stephens, took place at this time. From the very inception of the original contract he had devoted to the enterprise his active and intelligent mind with a zeal that knew no faltering. Much of his time had been spent amid the dangers and hardships of the wilderness through which it was projected, and his loss was deeply deplored by the Company. Mr. William C. Young was appointed his successor.

The work under the contract for construction had been commenced by the attempted erection of a bridge across the Chagres River at Barbacoas. The river at this point was about three hundred feet in width, flowing through a deep and rocky channel, and subject to sudden and resistless freshets, often rising forty feet in a single night: the bridge was nearly completed when one span was swept away. Work was again commenced upon it, as well as upon several sections of the road between this point and the Pacific terminus. At times there was a force of several hundred men employed; but they were mostly Irish, unable to endure the effects of the climate, and, being also badly cared for, their numbers were soon so thinned by sickness and death that the contractor found himself unable to accomplish any part of the contract for the price agreed upon. The work faltered, and at last stopped almost entirely; so

that when a year had expired not only was the bridge still unfinished, but not a tenth part of the work under the contract was completed, and the Company were obliged again to take the enterprise into their own hands, and carry it on by the same system pursued before the unfortunate contract was entered into. Mr. Young now resigned the presidency, and Mr. David Hoadley (the present president) was appointed his successor—a gentleman who deservedly enjoys the respect and confidence not alone of the Company which he represents, but also of the entire commercial community.

Valuable time had been lost from the delay occasioned by the non-fulfillment of the late contract. Not disheartened, however, the Company now redoubled their exertions, determined, if possible, to retrieve the error. Their working force was increased as rapidly as possible, drawing laborers from almost every quarter of the globe. Irishmen were imported from Ireland, Coolies from Hindostan, Chinamen from China. English, French, Germans, and Austrians, amounting in all to more than seven thousand men, were thus gathered in, appropriately as it were, to construct this highway for all nations. It was now anticipated that, with the enormous forces employed, the time required for the completion of the entire work would be in a ratio proportionate to the numerical increase of laborers, all of whom were supposed to be hardy, able-bodied men. But it was soon found that many of these people, from their previous habits and modes of life, were little adapted to the work for which they were engaged. The Chinamen, one thousand in number, had been brought to the Isthmus by the Company, and every possible care taken which could conduce to their health and comfort. Their hill-rice, their tea, and opium, in sufficient quantity to last for several months, had been imported with them—they were carefully housed and attended to—and it was expected that they would prove

efficient and valuable men. But they had been engaged upon the work scarcely a month before almost the entire body became affected with a melancholic, suicidal tendency, and scores of them ended their unhappy existence by their own hands. Disease broke out among them, and raged so fiercely that in a few weeks scarcely two hundred remained. The freshly-imported Irishmen and Frenchmen also suffered severely, and there was found no other resource but to reship them as soon as possible, and replenish from the neighboring provinces and Jamaica, the natives of which (with the exception of the Northmen of America) were found best able to resist the influences of the climate. Notwithstanding these discouragements, and many others too numerous to be narrated within the compass of this brief sketch, the work continued to advance, so that by January, 1854, the summit-ridge was reached, distant from the Atlantic terminus thirty-seven miles, and eleven miles from the city of Panama.

Simultaneously with the operations toward the Pacific, a large force was established at Panama, under the superintendence of Mr. J. Young, one of the Company's most efficient and energetic officers, and the road was pushed rapidly onward, over the plains of Panama, through the swamps of Corrisal and Correndeu, and up the valley of the Rio Grande, to meet the advancing work from the Atlantic side; and on the 27th day of January, 1855, at midnight, in darkness and rain, the last rail was laid, and on the following day a locomotive passed from ocean to ocean.

The entire length of the road was 47 miles 3.020 feet, with a maximum grade of sixty feet to the mile. The summit grade was  $258\frac{6}{100}$  feet above the assumed grade at the Atlantic, and  $242\frac{7}{100}$  above the assumed grade at the Pacific terminus, being  $263\frac{9}{100}$  feet above the *mean* tide of the Atlantic Ocean, and the summit-ridge two hundred and eighty-seven feet above the same level. Commencing at the city



ANCIENT BRIDGE AT OLD PANAMA.

