

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 Carthage to make arrangements for procuring an increased supply of laborers. Mr. Trautwine, in company with Mr. Baldwin, as chief assistant engineer, then proceeded to Manzanilla Island with a small party, and commenced clearing in the month of May, 1850. This island, cut off from the main land by a narrow frith, contained an area of a little more than one square mile. It was a virgin swamp, covered with a dense growth of the tortuous, water-loving mangrove, and interlaced with huge vines and thorny shrubs, defying entrance even to the wild beasts common to the country. In the black, slimy mud of its surface alligators and other reptiles abounded; while the air was laden with pestilential vapors, and swarming with sand-flies and mosquitoes. These last proved so annoying to the laborers that, unless their faces were protected by gauze veils, no work could be done, even at midday. Residence on the island was impossible. The party had their quarters in an old brig which brought down materials for building, tools, provisions, etc., and was anchored in the bay.

Thus situated, with a mere handful of native assistants—most of the original forty or fifty having previously deserted on account of the higher wages and easier life promised them by the Transit—Messrs. Trautwine and Baldwin struck the first blow upon this great work. No imposing ceremony inaugurated the “breaking ground.” Two American citizens, leaping, axe in hand, from a native canoe upon a wild and desolate island, their retinue consisting of half a dozen Indians, who clear the path with rude knives, strike their glittering axes into the nearest tree; the rapid blows reverberate from shore to shore, and the stately cocoa crashes upon the beach. Thus unostentatiously was an-

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 Carthage 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, Carthage, 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 sickness 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 Carthagená 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

[The text in this block is extremely faint and largely illegible. It appears to be a biographical entry or a page from a historical document, possibly related to the life of Samuel Johnson as indicated by the page header. The text is organized into several paragraphs, but the specific details are difficult to discern due to the low contrast and resolution of the scan.]

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 $258\frac{64}{100}$ feet above the assumed grade at the Atlantic, and $242\frac{7}{10}$ 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.



of Aspinwall, on Limon or Navy Bay, the Atlantic terminus of the road, latitude $9^{\circ} 21' 23''$ N. and longitude $79^{\circ} 53' 52''$ W., the road skirted the western shore of the island of Manzanilla for about three quarters of a mile, then bent to the east, and crossed the channel which separates the island from the main land at a point nearly central of the breadth of the island, thence around the southern and eastern shore of Navy Bay until it reached the small river Mindee, cutting off a bend of this river about one thousand feet from its mouth; then it stretched across the peninsula formed by this bay and the River Chagres up to the mouth of the River Obispo, one of its branches, seldom, however, following the tortuous course of that stream, but cutting across its bends, and touching it only at intervals of two or three miles. The line continued upon the right or easterly bank of the Chagres as far as Barbacoas (twenty-five miles from Aspinwall), where it crossed that river by a wooden bridge six hundred and twenty-five feet in length; from thence it followed the left bank of the Chagres to the mouth of the Obispo River, thirty-one miles from the Atlantic terminus, leaving the native town of Gorgona on the left. After striking the Obispo, the line followed the valley of this stream to its head in the summit-ridge, which it reached $37\frac{3}{8}$ miles from the Atlantic and $10\frac{1}{2}$ miles from the Pacific terminus. The lower part of the valley of the Obispo, being crooked and bound in by precipitous hills, compelled the line to cross the stream twice within the first mile, when it passed the summit-ridge by a cut one fourth of a mile in length and twenty-four feet in depth, and then struck the head waters of the Rio Grande, which flows into the Pacific Ocean. Following the left bank of this stream, and descending by a grade of sixty feet to the mile for the first four miles, the line crossed the rivers Pedro Miguel, Caimitillo, and Cardenas, near their entrance into the Rio Grande; thence it stretched across the savannas of Corrisal and the

swamps of Correndeu, and cut through a spur of Mount Ancon, leaving the main elevation to the right, and reached the Pacific Ocean at Playa Prieta, the northern suburb of the city of Panama.

Four tracks were laid at the Atlantic and three at the Pacific terminus, and the line of the road was well supplied with sidings and machinery for reversing locomotives. A machine shop one hundred and fifty feet long by fifty wide, stocked with first class machinery, sufficient to do all the repairs required for the road, was in operation at Aspinwall; also a blacksmith's shop, containing six suitable forges, and a brass foundry, with a small cupola for iron castings. There was also a car-repair shop, one hundred feet long by eighty feet wide, a freight-house and passenger depôt at either terminus, and suitable buildings for the accommodation of the employes of the Company.

A pier of four hundred and fifty feet in length was constructed at the Panama terminus, which gave greatly increased facilities for embarking and landing passengers and freight, and a steam-tug was substituted for the lighters and small boats which had been previously used for transportation between ship and shore, a distance of two and a half miles. The Company owned, by purchase, fourteen acres of land, having a front of five hundred feet on the bay. The Company also obtained by purchase, in connection with the Pacific Mail Steam-ship Company, a group of four islands in the Bay of Panama, about two and a half miles from the city, affording good shelter and anchorage for vessels of the largest class, and well supplied with good springs of water.

But the road at this time, though in *working* order and performing a large and daily-increasing service, was by no means actually completed. Much of the work, especially on the Pacific division, was of a temporary character; streams were crossed on temporary trestles, many of them of timber procured from the adjoining woods, and which it

was known would not last more than six or eight months; deep ravines, requiring embankments from twenty to eighty feet in height (which it was found, from the nature of the adjoining soil, as well as from the amount of work involved in filling them, would delay the laying of the track for many months), were crossed on temporary trestle-work, in order to obtain the advantage of immediate communication between the two oceans by rail, thereby saving the thousands of men, women, and children, who were then crossing the Isthmus every month, the thirteen miles of mule-ride over a dangerous path, as well as the almost incredible hardships and perils to which they were subjected.

The difficulty and expense of keeping the road open in this state was very great; but, while this was safely accomplished, the work, under the energetic and skillful management of Messrs. Totten and Center, rapidly assumed a permanent character; firm and thoroughly secured embankments took the place of the trestle-work; for the temporary bridges were substituted heavy iron substantial structures, with abutments of stone.

Some idea of the magnitude of the bridge and culvert work may be obtained when it is known that the waterways on the route were no less than one hundred and seventy in number, viz., one hundred and thirty-four culverts, drains, and bridges ten feet and under, the remaining bridges ranging from twelve to six hundred and twenty-five feet in breadth.

The iron bridge across the Chagres at Barbacoas may be taken, for its great strength and durability, as the type of all like structures on the line of the road. This bridge was composed of six spans of over a hundred feet each, built of boiler iron, with a top and bottom chord two feet in breadth and one inch in thickness, and joined together by a web of boiler iron nine feet in height at the centre and seven feet at the ends. The track was laid on iron floor-girders three feet apart, and the whole structure supported by five piers

and two abutments of hewn stone twenty-six feet wide and eight feet in thickness, increasing in the proportion of an inch to the foot down to their foundations, which were constructed of piles and concrete.

The ballasting, which was, however, previously well under way, was carried on and completed throughout the entire line of the road in the most substantial manner, and the rapidly decaying spruce, pine, and native wood ties were removed, and replaced with ties of *lignum-vitæ*, imported from the province of Carthagenæ. Additional buildings for the accommodation of freight and passengers were erected at the Pacific terminus, to meet the wants of a greatly increased business, and at the Atlantic terminus new and commodious wharves were built, besides a massive stone warehouse three hundred feet long by eighty wide, the stone taken from quarries along the line of the road. Large and commodious station-houses, for the use of the local superintendents, were erected at intervals of four miles along the entire line, and an electric telegraph was established between the termini for the use of the Company. These, besides many other improvements, in reducing grades* and straightening curves, were accomplished

* TABLE OF THE GRADES FROM ASPINWALL TO PANAMA.

Rate of grade per mile in feet.	Length of grade in feet.	Rate of grade per mile in feet.	Length of grade in feet.
Level.	123,539	24.82	418
2.64	1,000	26.40	13,600
5.28	1,900	30.00	8,868
7.92	1,500	30.25	1,936
8.45	2,500	31.68	1,100
9.24	3,100	34.15	1,400
10.56	13,313	36.00	2,200
12.14	2,600	36.96	2,396
12.41	4,300	37.49	1,916
13.20	6,500	38.54	1,707
15.10	2,100	46.20	3,430
15.84	3,700	47.30	3,250
17.42	200	52.80	6,300
19.01	1,400	58.87	3,355
20.60	4,900	60.00	20,107
21.12	4,595		71,983
23.25	2,052		179,199
	179,199		251,182





during the two years following the opening of the road in 1855, involving an additional expenditure of nearly two millions of dollars. This great expenditure was not, however, incurred without satisfactory proof that the enterprise would equal, in its pecuniary advantages, all the calculations which had been made in regard to its increase of revenue. Up to the opening of the road in 1855, that is to say, from the running of the first passenger train in 1852, the amount received for the transportation of passengers and freight was \$2,125,232 31. See Appendix B, p. 61, et seq.

From 1857 the Company were actively engaged in establishing every needful arrangement and improvement which was found necessary to facilitate the perfect working of the road. Side tracks at either terminus were added to meet its increased requirements; the wharves at Aspinwall were improved and covered, and substantial bulk-heads were erected over a considerable portion of the frontage of the port. Much of the low ground on the island was filled in and laid out into streets, and many buildings erected. In addition to this, an immense reservoir was in process of construction on the site of a natural basin some two miles distant, from which water was to be conveyed in iron pipes to Aspinwall for the use of the town and shipping; and a substantial iron light-house, sixty feet in height, and furnished with a Fresnel light, was substituted for the wooden structure at the western side of the entrance to the port. At Panama the wooden pier was replaced by one of iron four hundred and fifty feet in length, and steam-tugs for towage, and several iron launches, each of one hundred tons burthen, were added to the facilities for the transshipment of goods between ship and shore. These were the principal works and improvements up to January, 1859, when the construction account of the road was closed, showing its entire cost up to that date to have been eight millions of dollars.

The *gross earnings* of the road up to that time amounted

to eight millions one hundred and forty-six thousand six hundred and five dollars.

The running expenses, together with depreciation in iron, ties, buildings, etc., amounted to \$2,174,876 51, leaving a balance of \$5,971,728 66 as the legitimate returns for the money invested in the road in a period of seven years, during the first of which but twelve miles were in operation, the second twenty-three, the third thirty-one: only for the last four years was the road in use throughout its entire extent.

Out of these receipts, the directors of the Company, having paid the regular interest on all mortgage and other bonds, a ten per cent. dividend to stockholders in 1852, one of seven per cent. in each of the years 1853 and '54, and one of twelve per cent. for every succeeding year, showed a balance of \$529,041 50, besides a sinking fund of \$153,395 83, and no floating debt.

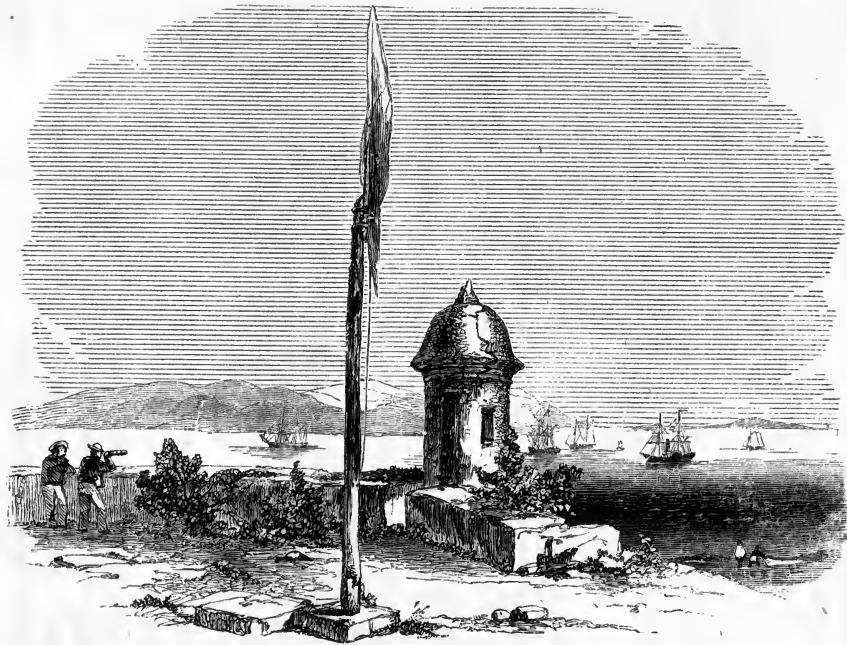
The increase in the receipts from the commencement of the road was as follows:

From December, 1852, 12 miles open,	} \$73,266 32.
To " 1853, 23 " "	
From 1853 to 1854, 31 miles open,	\$131,143 91.
From 1854 to 1855, opening of the entire road,	\$645,497 29.
From 1855 to 1858 showed an increase of	\$416,006 84; and
From 1858 to 1859, an increase above that of	\$419,477 93.

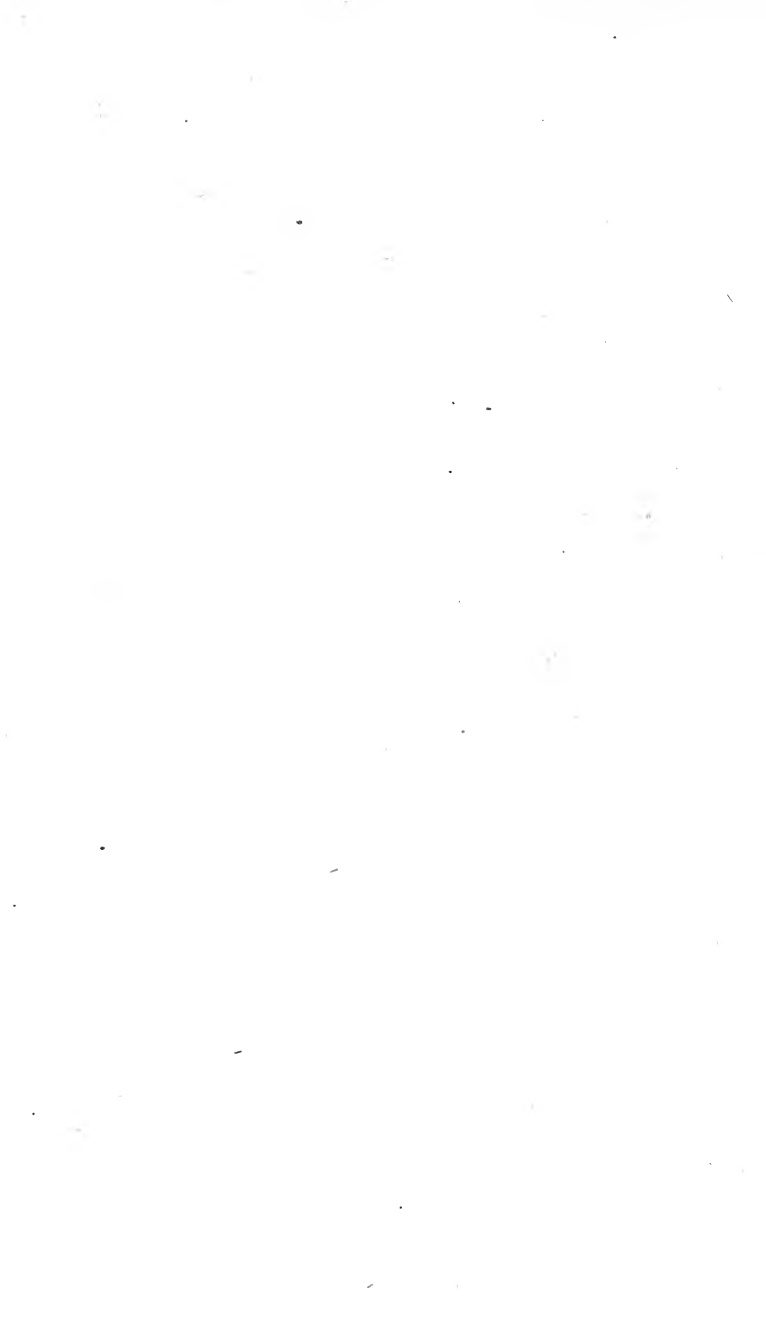
(For a particular statement of items of expenditure and income, see Appendix B, page 61, et seq.)

HEALTH OF THE ISTHMUS.

It may interest the general reader to know that more than 196,000 passengers have been transported over the road during the five years ending in December, 1859, and it is not known that a single case of sickness has occurred during or in consequence of the transit since the entire opening of the road in 1855. The diseases contracted by persons in transit previous to that time were of a purely ma-



VIEW FROM THE RAMPAETS, LOOKING TOWARD THE SITE OF THE ANCIENT CITY.



larious character, and identical with the intermittent (fever and ague) and bilious fevers of the Western States, always found resulting from great exposure and fatigue, so often unavoidable while the transit was performed upon mules and in open boats, occupying from two to five days, the traveler frequently obliged to live upon the vilest food, and sleep upon the wet ground or in the but little less comfortable huts of the natives; the comfortable railway carriage, and the passage from ocean to ocean reduced to *three hours*, having fully demonstrated a *perfect* immunity to the traveler from all those varieties of sickness long popularly recognized under the head of *Panama Fever*. The sanitary condition not only of Aspinwall, but of the country along the entire line of the road, has also been improved by the filling in and draining of the swamp and low land to such a degree that the congestive forms of fever among the laborers and residents which, during the earlier days of the road, were the chief causes of mortality, are now rarely met with, and the whole line of the transit will, in point of healthiness, compare favorably with many of the equally recent settlements in the Western States.

SAFETY TO PROPERTY.

The amount of specie conveyed over the road from 1855 to 1860 was over three hundred millions of dollars, *without the loss of a single dollar*; and during the same period there were sent over the road nearly 100,000 bags of mail matter (the greater part of which consisted of mails between the Atlantic States and California), not one of which was lost. And of the many thousands of tons of freight which have been transported over the Panama Railroad since it was first opened, the losses by damage and otherwise do not exceed five thousand dollars.

SOURCES OF BUSINESS.

Erroneous impressions in regard to the sources from whence the business of the Panama Railroad is derived prevail extensively even among intelligent business men and members of our national councils, many regarding it as entirely dependent upon our trade with California. The fact seems to be overlooked that while California has a population estimated at only 500,000, the population of Central America is over 2,000,000; and that that portion of South America, whose only means of communicating with the Atlantic is either by the Isthmus of Panama or around Cape Horn, contains nearly 8,000,000, and that regular and direct steam marine communication exists between those countries and the Panama Railroad.

The fact that up to the establishment of the Isthmus Railroad the trade of South and Central America had been carried on almost exclusively with Europe (that between the United States and those countries being estimated at less than ten per cent. of the whole) has prevented its magnitude and importance from being fully appreciated by the American people.

Careful estimates, however, show that the value of the trade of these countries to and from the Atlantic exceeds \$60,000,000 per annum. The managers of the Panama Railroad Company, from its earliest existence, were aware of that important circumstance, and looked confidently to the business of those regions already existing, and that which would undoubtedly be developed by the facilities afforded by the railroad, as one of the surest elements in its ultimate and permanent success.

It was not lost sight of that the European trade (as far as European influence extended) would cling tenaciously to its circuitous track around Cape Horn, fully aware that, when the business was turned into the direct route across

The first of these is the fact that the University of Chicago is a private institution. This means that it is not subject to the same public scrutiny as public universities. It is also a non-profit institution, which means that it is not subject to the same financial constraints as for-profit universities. These two factors have allowed the University of Chicago to pursue a policy of academic excellence that has made it one of the most respected universities in the world.

The second of these factors is the fact that the University of Chicago is a research university. This means that it is committed to the pursuit of knowledge for its own sake, rather than for the sake of practical application. This has allowed the University of Chicago to make significant contributions to a wide range of fields, including physics, chemistry, biology, and the social sciences.

The third of these factors is the fact that the University of Chicago is a selective institution. This means that it only admits students who are highly qualified academically. This has helped to maintain the high standards of the University of Chicago and has contributed to its reputation as a leading university in the world.

Finally, the University of Chicago is a university with a strong sense of community. This is reflected in its motto, "The University of Chicago is a community of scholars." This sense of community has helped to create a supportive environment for students and faculty alike, and has been a key factor in the University of Chicago's success.

In conclusion, the University of Chicago is a unique institution that has achieved a high level of academic excellence through its commitment to research, its selective admissions policy, and its strong sense of community. It is a university that has made significant contributions to the world of knowledge and is a source of pride for all who are associated with it.

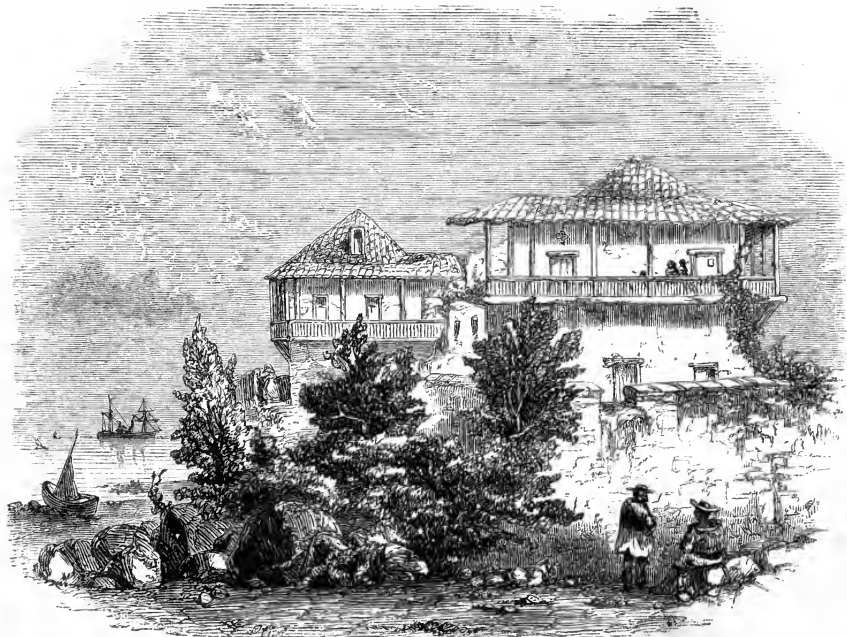
ment of such a line, that they finally decided to identify its interests with those of the road. In the latter part of 1856 the first vessel was dispatched under the command of Capt. J. M. Dow. The returns from the monthly voyages of the "Columbus" soon proved the wisdom of the measure, for in less than two years the cargoes of merchandise brought from those states for transportation over the road often exceeded half a million of dollars, while a large amount of foreign merchandise found its way to those countries by the same channel.

In 1858, the business over the road from the South and Central American states exceeded in value *nine times* the freighting business of California *via* the Isthmus, and by 1860 less than *one fifteenth* of the freighting business of the road was due to the California trade, the remaining fourteen fifteenths consisting mainly of shipments from the United States, British manufactures and other goods shipped direct from England for South and Central America, and the produce of those countries in return, such as indigo, cochineal, India-rubber, coffee, cocoa, deer-skins and goat-skins, besides orchilla, pearl-shells, tobacco, balsams, Peruvian bark, ores, straw hats, etc., etc.

When it comes to be considered that in the California trade large amounts of goods and merchandise for Oregon and Washington Territory and the British Possessions are included, likewise occasional shipments from China and the Sandwich Islands, and that it is still in its infancy, the importance of the South and Central American trade to the Panama Railroad may be in a measure appreciated. The conveyances by which the business of the Pacific coast finds its way to and from the road are,

1st. By the Pacific Mail Steam-ship Company, plying tri-monthly between California, Mexico, and Panama, with a fleet of twelve large steam-ships.

2d. The Oregon and California Steam-ship Company,



RAMPARTS ON THE NORTHEASTERN BEACH OF PANAMA.



running between California, Oregon, and Washington Territory, with a branch line to the Mexican coast, and connecting with the Pacific Mail Steam-ship Company tri-monthly, with a fleet of five steam-ships.

3d. The Pacific Steam Navigation Company, plying semi-monthly between Chili, Bolivia, Peru, Ecuador, New Granada, and Panama, with a fleet of nine large steamers for the main service, and three smaller steam-ships performing a coasting service, and connecting with the main line.

4th. The Central American Steam-ship Company, running semi-monthly between Guatemala, Salvador, Costa Rica, Nicaragua, and Panama, with two large steam-ships and one steam-tug.

Besides these are numerous sailing vessels with freight from different ports for transportation over the road.

On the Atlantic side are,

1st. The Atlantic and Pacific Steam-ship Company, plying tri-monthly between New York and Aspinwall.

2d. The Royal Mail Steam Packet Company, running semi-monthly between England, the West Indies, the eastern coast of South and Central America, and Aspinwall, with a fleet of twenty-three large steam-ships.

3d. Holt's line of screw steamers between Liverpool and Aspinwall, monthly—two steamers.

Besides the steam lines are,

1st. The Bremen and Aspinwall line of sailing vessels, monthly.

2d. The Bordeaux and Aspinwall line of sailing vessels, quarterly.

3d. The Panama Railroad Company's line of sailing vessels between Liverpool and Aspinwall, monthly.

4th. The Panama Railroad Company's line of sailing vessels from New York to Aspinwall—seven vessels: three barks and four brigs.

5th. Five ships a year from Boston to Aspinwall. For

particular information in regard to these lines, see Appendix C, p. 139, et seq.

CHARACTER OF THE SERVICE PERFORMED ON THE ROAD.

As early as the year 1855 daily trains were established each way over the road, requiring in its then imperfect state from five to six hours for the transit. As the character of the road improved, a corresponding improvement took place in the time-table, and for the past three years the passage has been uniformly and safely accomplished in three hours, or even less, when the exigency of the case required it. The rolling stock of the road has always been most ample. Fifteen hundred passengers, with the United States mails, and the freight of three steam-ships, have not unfrequently been transported over the road during a single half day. The engines, some eleven in number, are of the first class, averaging twenty tons burden; the passenger-cars are large and commodious, and built for convenience and comfort, especially with reference to the climate; the cars for the transportation of the mails and treasure are entirely of iron. The usual freight-cars are built to carry not only the ordinary freight, but the heaviest and coarsest materials—large quantities of gold and silver ore, timber, anchors, and chains of the largest size, cannon shot and shells, iron-work in pieces of twenty-five tons, heavy machinery, guano, whale-oil, etc., more or less of which are daily passing over the road. The arrangements for the loading and unloading of cargoes are unusually perfect; double tracks run from the main road down the different wharves to the very ship's side, and the lading process is so effectively managed that frequently less than two hours pass between the *arrival of the largest ships*, laden with from two to three hundred tons of merchandise, besides the baggage of from four to eight hundred passengers, and the *departure of the trains* for Panama bearing the entire freight.