

THE LAND DIVIDED ~ THE WORLD UNITED

on Panama and went to Cartagena instead, at which place he met with a decisive defeat. Anson learning of this event, left to attack Manila and the new city of Panama was again saved.

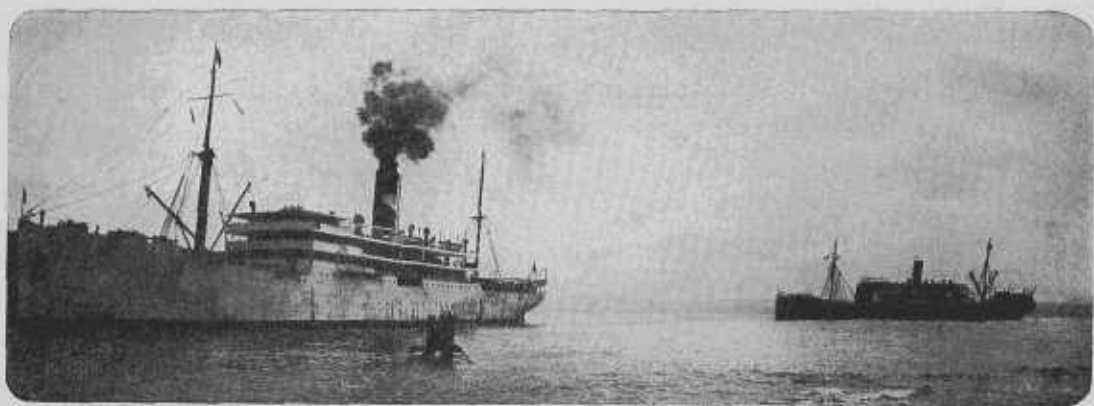
The last of the Spanish galleons from Peru during the latter part of 1739



Pile of cannonballs at Fort San Lorenzo, used by the early Spaniards in resisting the attacks of the buccaneers.

found upon its arrival at Panama that Porto Bello was being attacked by Admiral Vernon, so it returned to Guayaquil and sent its treasure to Cartagena over the trail from Quito to Bogota. Thus the commerce of the Spanish galleons across the Isthmus ceased, and the gradual decay of the towns on the Isthmus wherein lived the merchants and traders set in.

“From sacked Porto Bello redhanded they came,
All bloodstained from conquest unworthy the name,
To the mouth of the Chagres, where, high on the hill,
San Lorenzo kept guard, to plunder and kill
Its devoted defenders, who courageously fought
For homes, wives and children, accounting as naught
Their lives held so precious, so cherished before,
Could they drive the fierce pirates away from their shore.
Three days they repulsed them, but to find every night
The foe still upon them in ne'er-ending fight.
Their arms could not conquer the powers of hell!
San Lorenzo surrendered—ingloriously fell!
Burned, famished and bleeding from many a wound,
They lay while their stronghold was razed to the ground.”
—Gilbert.



PROPOSED CANAL ROUTES

THE project of connecting the Atlantic with the Pacific has attracted the attention of the civilized world since the discovery of the Isthmus. In the years 1534 to 1536, studies were made under the direction of the then governor of Panama, Pascual Andagoya, in compliance with a royal decree, dated February 20, 1534, for a ship canal across the Isthmus by cutting from the Chagres River to the headwaters of the Rio Grande, but the idea was abandoned on account of the excessive cost.

With a revival of interest in the subject, many routes were suggested and many surveys were made at different points where the width of the American Isthmus was found to be favorable, or where rivers and lakes were found that might be utilized as a possible passageway. Of the many routes proposed, it has been found that the one across Nicaragua, utilizing the San Juan River and Lake Nicaragua, and that at Panama along the line of the Panama railroad, utilizing the valley of the Chagres River and the Rio Grande, are the only practicable ones. Of the others, those which gained the most attention and which were given the most study were across the Isthmus of Tehuantepec, in Mexico, and three in Panama, the Darien, or Atrato River, the San Blas, and the Calidonia Bay routes.

TEHUANTEPEC

The Tehuantepec route, where the Spaniards under Cortez, after the conquest of Mexico, built a road across the Isthmus, is the best location, geographically, for a canal, it being so much closer to the Pacific and Gulf ports of the United States, while the distance from New York is practically the same as from Panama. However, the summit level at this point was found to be in the neighborhood of 700 feet and very broad, and it is doubtful if a sufficient supply of water could be obtained for it even if it could be materially lowered by excavation. When the French were at work on the Panama project, Captain James B. Eads selected this place for the location of a ship railway with large cars to transport ships from one ocean to the other. This never got beyond the "scheme" stage, although at that time it was considered practicable by engineers.

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There is now an ordinary standard-gage railroad engaged at this point in carrying transcontinental freight.

ATRATO RIVER AND TRIBUTARIES

Various projects have been proposed to utilize the Atrato river, which flows almost directly north about 200 miles into the Gulf of Darien, at the point where the Isthmus joins the continent of South America, and several of its tributaries, which approach the Pacific coast very closely. There is an Indian legend that canoes can be carried for a short distance from the headwaters of the Atrato to another river flowing into the Pacific. The Atrato is a silt-bearing river and has a considerable fall, and is not in itself adapted to the use of ocean-going ships. It would necessitate continual dredging for a hundred miles to canalize it, and a cut through the continental divide much greater than the Cut at Culebra. The streams flowing into the Pacific are little more than mountain torrents. On this account this route has not been considered with as much favor as the more northerly ones. There is a widely circulated story that King Philip III, in the period 1616 to 1619, issued an edict at the request of Pere Acosta forbidding further consideration of the project on the ground that the will of God was made manifest by the fact that He had created an isthmus instead of a strait, and that it would be impiety for man to put asunder what God had joined. Probably a more reasonable objection was that a ship canal would make the Spanish colonies too easily accessible to their enemies. The policy of King Philip was adhered to for over 200 years after his death in 1698.

CALIDONIA

The Calidonia route is where Balboa crossed to the Pacific in 1513, and is the one which William Patterson chose in 1698 for a line of transit across the Isthmus to control the trade of the Pacific with the east. This route starts from Calidonia Bay on the Atlantic where Patterson's colony of New Edinburgh was located, to San Miguel Bay on the Pacific. At first this appears to be an ideal location for a ship canal on account of the short distance, 35 miles, between the two oceans. It was advocated by Dr. Edward Cullen of Dublin in 1850. He claimed that the summit level on this line was not over 150 feet. It was partly explored by Mr. Lionel Grisborne, an English engineer, in 1852, and he reaffirmed the claim of Dr. Cullen. Later explorations, among them those of Lieutenant Isaac G. Strain, U. S. N., in 1854, and by the United States Darien expedition in 1870, failed to confirm this low altitude. It was found that the summit level is at least 1,000 feet above the sea. Although the Isthmus is very narrow at this point, the excavation required is so great that it was proposed to build a tunnel 4.2 miles long through the mountains through which ships might pass. This project has long been considered impossible.

SAN BLAS

The San Blas route from the Gulf of San Blas to the Bayano River, which flows into the Pacific about 15 miles from the Pacific entrance of the present canal, is across the narrowest part of the Isthmus, the distance being about 30 miles from shore to shore. The distance from the Atlantic tidewater to tide-water in the Bayano River is about two-thirds of that distance. This route was explored under the direction of Mr. Frederick M. Kelley in 1857, and subsequently by an expedition under Commander Thomas Oliver Selfridge, Jr.,

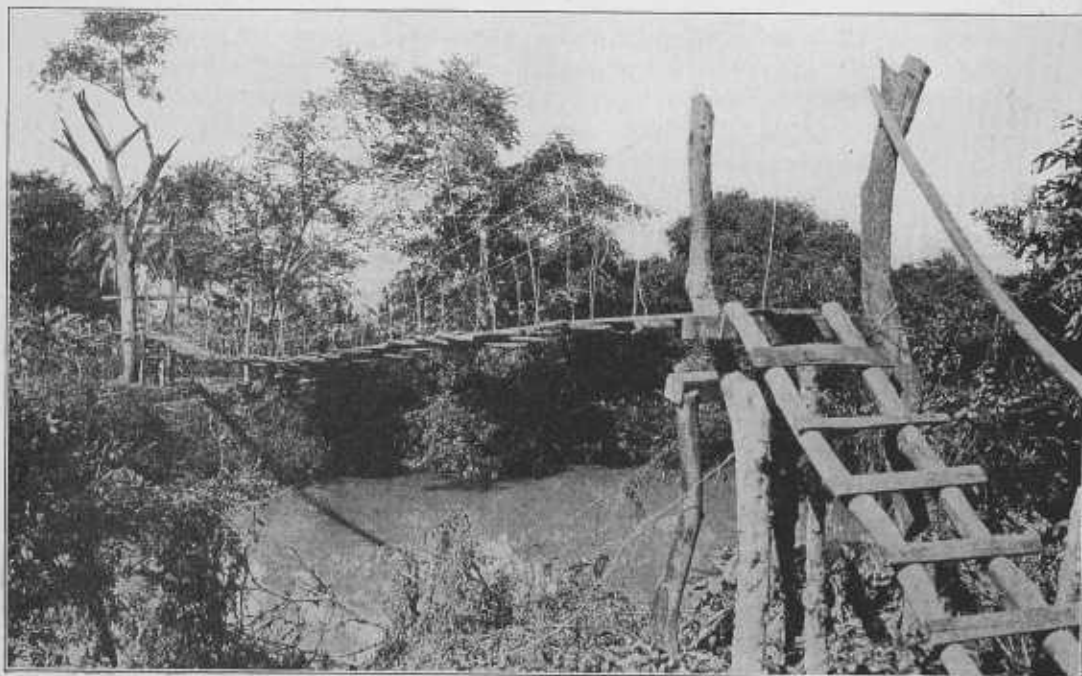
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U. S. N., in 1870. The difficulty here, as on the Calidonia route, lies in the height of the summit, to cross which tunnels from eight to ten miles long were also proposed.

The result of all these explorations and surveys resulted in the conviction that no other route compared in practicability with that of Panama and Nicaragua.

NICARAGUA

This route, utilizing Lake Nicaragua and the San Juan River, which flows out of it into the Atlantic, was used as an isthmian transit by the Spaniards as early as 1529. It became the subject of investigation as a possible Canal route in 1825, when the newly federated state of Central America advised the United States that it would encourage any such project by Americans. Several surveys were made, but no construction work was attempted. In 1850-1852 an American, O. W. Childs, organized a company under an agreement with Nicaragua, and established a transit route, partly by water and partly by stage road. This transit company also made surveys for a ship canal along this route. It forfeited its concession in 1858 without doing any work on the proposed canal. Later surveys were made by the United States under Commander E. P. Lull, and in 1889 canal construction was begun when the Maritime Canal Company of Nicaragua, composed of Americans, was formed under a concession from Nicaragua and Costa Rica. Financial difficulties, however, stopped the work and the company failed in 1893. For some years after efforts were made to induce the United States Government to finance the project, with the result that, in 1895, Congress provided for a board of engineers to ascertain the feasibility and cost of a canal at this point. This board, appointed by President Cleveland, consisted of Colonel William Ludlow, U. S. A., Civil Engineer M.



Swinging bridge, Chame.

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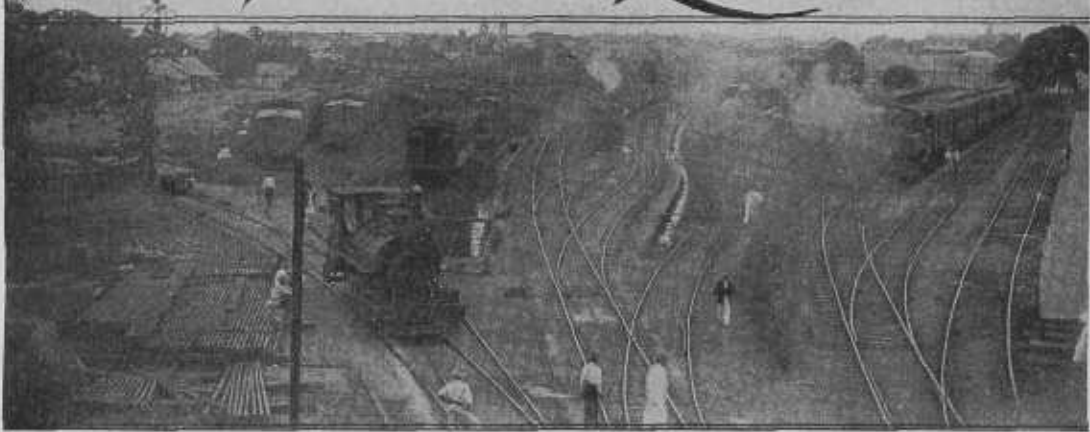
T. Endicott, U. S. N., and Civil Engineer Alfred Noble. They reported that the Canal was feasible, but recommended further surveys and investigations. Accordingly a commission was appointed by President McKinley, which consisted of Rear Admiral J. G. Walker, Colonel Peter C. Hains, and Lewis M. Haupt. Before the work of this commission was completed Congress provided, in 1899, for increasing it for the purpose of making surveys, comparisons and a thorough examination of all possible routes from Tehuantepec to the Atrato River. The Commission, which became known as the Isthmian Canal Commission, was now reinforced by the appointment of Colonel O. H. Ernst, Alfred Noble, Geo. S. Morrison, and William H. Burr, engineers, and Professor Emory R. Johnson and Samuel Pasco as experts, respectively, on the commercial and political aspects of the problem. Explorations were made of the entire Isthmus, but no favorable route was found other than that at Nicaragua and that at Panama. The Commission reported on November 16, 1901, in favor of the construction of a canal across Nicaragua, provided the property of the New French Canal Company on the Isthmus of Panama could not be purchased for \$40,000,000, nearly one-third of the price asked.

The total length of the canal proposed at Nicaragua was about 187 miles, 47 miles of which was in deep water in Lake Nicaragua, 17 miles in the river not requiring improvement, leaving 121 miles of river to be canalized. It was to have nine locks. The difficulties which would have to be overcome are about the same as at Panama. However, the longer distance at Nicaragua and the proximity to active volcanoes made it less desirable than the Panama route. The latter was more advantageous because of the Panama railroad and the extensive plant and work of the French.

PANAMA

The Panama Canal project, like the others, was the subject of many studies and surveys, the first, as stated above, being made in 1534. None of the surveys however were thorough prior to the one made by the Isthmian Canal Commission in 1890. Simon Bolivar, in 1827, caused a survey to be made of the route by an English surveyor, and in 1835 the United States sent Charles Biddle to investigate possible water or railroad routes across the Isthmus. He obtained a concession from New Granada (Colombia) for a railroad, but nothing further was done at that time. A few years later, 1838, a company of Frenchmen obtained a similar concession, and a report that a summit pass of 37 feet above sea level caused the French Government to send out Napoleon Garella to make a survey which corrected this error. He recommended a lock canal with a summit level of about 160 feet above sea level, a tunnel of $3\frac{1}{2}$ miles through the divide, and 18 locks to make the required lift. It was not until May, 1876, that the Government of Colombia gave to the French Canal Company the concession under which the first canal work was done, although the Panama railroad was built in 1850-5, and other surveys had been made under the direction of the United States Government in 1854 and 1866. While the French were at work on the Canal many studies were made of the project by officers of the United States Navy.

The PANAMA RAILROAD



FROM 1750 to 1849, trade across the Isthmus was at a standstill, and the old pack trails from Porto Bello and from Cruces on the Chagres became nearly obliterated through disuse. Spain's belated change of policy, the granting of free trade to the colonies, came too late to be of much benefit to Panama. A few ships discharged their cargoes at the mouth of the Chagres for transportation over the Cruces trail, but there were no adequate facilities for handling any great amount of trade had there been any. What little trade there was went around Cape Horn or via the Cape of Good Hope. The Isthmus became a place of so little importance that it was reduced from a viceregency in 1718, when it became a province of New Granada (the old name for Colombia). It obtained its independence from Spain on September 26, 1821.

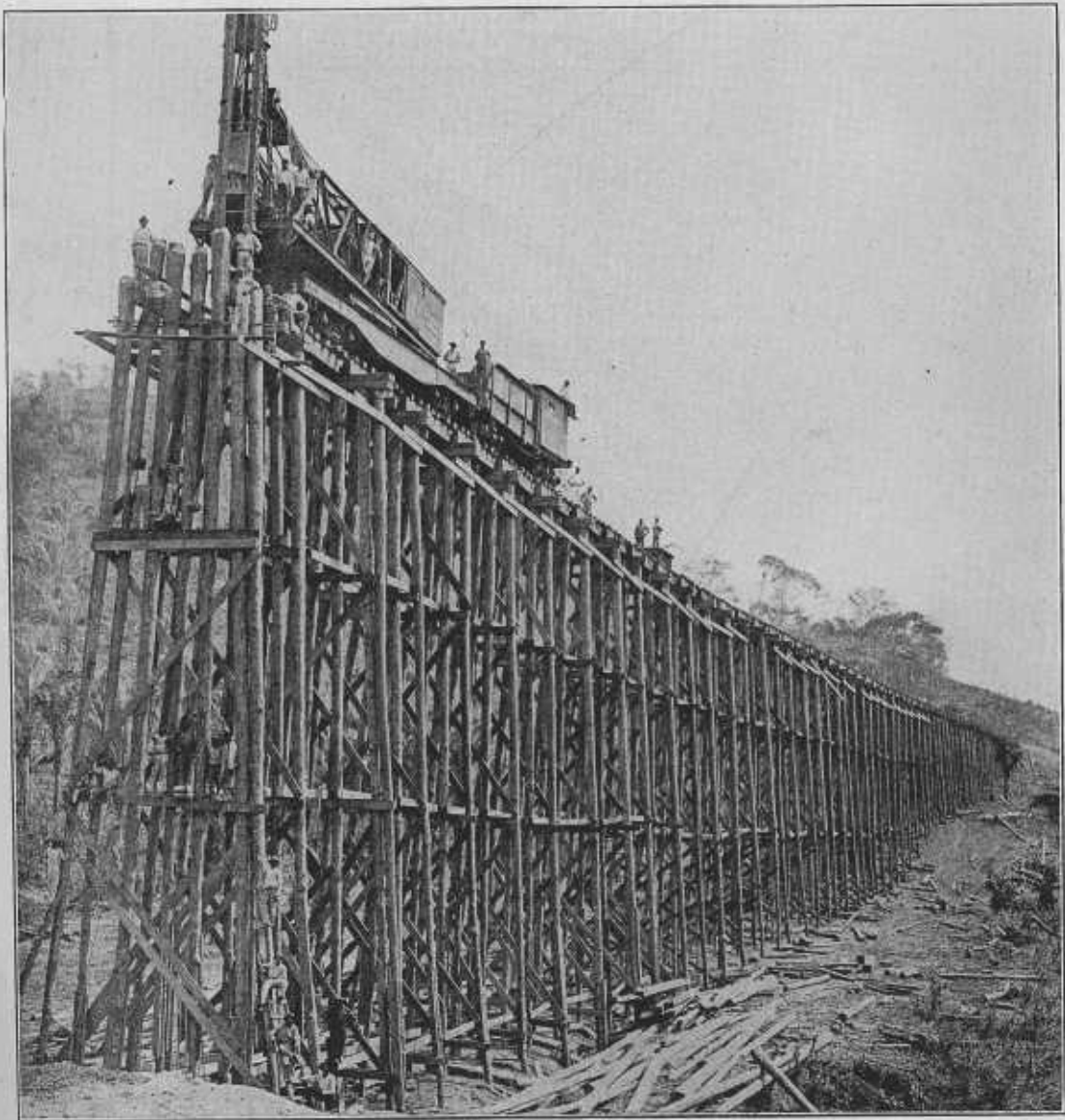
In 1849, however, the Isthmus again came to life with the steady flow of emigrants bound for California, where gold had been discovered during the previous year. California and Oregon had also been thrown open to settlement, and the Isthmian transit became almost a necessity, for the only other means of communication with those states were the long overland journey by wagon train across the American continent, and the long voyage around South America. Thus the Isthmus as a trade route again came to the front.

The advantages of an Isthmian railroad as a means of developing the trade of the United States with the growing republics of Central and South America was realized as early as 1835, when President Andrew Jackson appointed Mr. Charles Biddle as a commissioner to visit the different routes best adapted for interoceanic communication by rail or by water between the two oceans. Mr. Biddle visited the Isthmus, went to Bogota, and obtained from the Government of New Granada a concession for constructing a railroad across the American Isthmus. He returned to the United States in 1837 with this document, but died before he was able to prepare a report, so nothing further was done at that time. In 1847, a French syndicate, headed by Mateo Kline obtained a similar concession, but was unable to raise the money necessary to carry out the work. In December, 1848, three far-sighted Americans, William H. Aspinwall, Henry Chauncey, and John L. Stephens, entered into a contract with New

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Granada to build the road, and the Panama Railroad Company, with a capitalization of \$1,000,000, was incorporated under a charter granted in the state of New York. Aspinwall, in the same year, obtained from Congress a contract for carrying United States mail by steamer from Panama to California and Oregon, as a part of his railroad scheme. A similar mail contract authorized by Congress on the Atlantic side, New York and New Orleans to Chagres, was obtained at the same time by Mr. George Law.

As soon as the concession was obtained from New Granada, Mr. Stephens, accompanied by Mr. J. L. Baldwin, an engineer, went over the proposed route for the road and, finding a summit pass of a little less than 300 feet, decided that



High trestle for embankment fill. The new line was built on a 95-foot level and across the lowlands of the Gatun Lake region a number of long and high trestles for embankment fills, some of them 90 feet high, had to be built.

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it was feasible. In the early part of 1849, a party of engineers in charge of Colonel G. H. Hughes of the United States Topographical Corps, was sent to locate the line. Finding a summit ridge of 287 feet, a line was laid out not exceeding 50 miles in length from ocean to ocean, with the Atlantic terminus on Navy Bay, as Limon Bay was formerly called, and with the Pacific terminus in Panama City.

A contract was then entered into with two experienced contractors, Colonel Geo. M. Totten and John C. Trautwine, for the construction of the line. These men decided upon Gorgona, on the Chagres river, 31 miles from Colon, as the base of operations toward Panama, thinking that material could be easily landed there by boat. However, the river was so low in the dry season and so swift in the rainy season that light draft steamers were found out of the question



Loading dirt train for trestle fill.

for the transportation of railroad material. At the same time the increasing rush to the California gold fields by way of the Isthmus, made river transportation and the cost of labor prohibitive, and the contractors begged the company to release them from their obligation. This the company did, and, deciding to undertake the construction work itself, retained Messrs. Totten and Trautwine in its service.

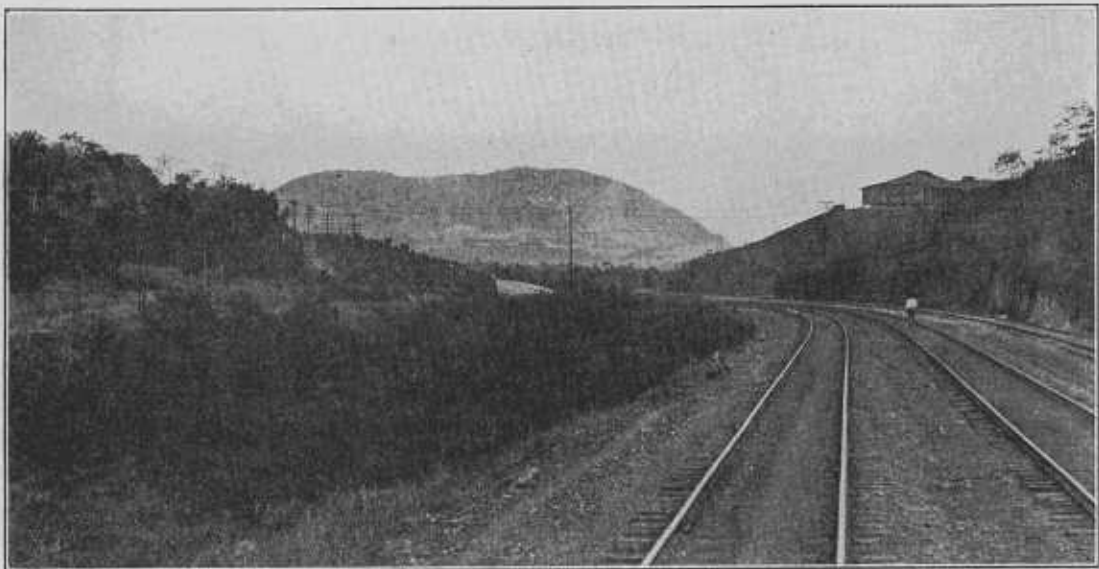
FIRST WORK ON THE PANAMA RAILROAD

Clearing on Manzanillo Island began in May, 1850. This was a low swampy plot of land of about 600 acres separated from the mainland by a narrow arm of the sea, and is the site of the present city of Colon. Although clearings had been made, residence upon the island was impossible and for the

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first few months the men engaged in making the surveys, and the laborers brought from Cartagena, Colombia, were obliged to live on board an old brig anchored in the bay. When this became overcrowded, as additions were made to the force, it was supplemented by the hull of a condemned steamboat. The village of Aspinwall was founded on February 2, 1852, but on account of Colombia's refusal to recognize the name, it was later rechristened Colon, in honor of Columbus.

The first seven miles of the road was through an extensive swamp, covered with jungle, and the surveyors were compelled to work in water and slime up to their waists. In a short time the entire force suffered with malarial fever, and great difficulty was experienced in obtaining sufficient laborers. Irishmen were brought from the United States, negros from Jamaica, and natives from the adjacent tropical countries, and fever made inroads on all of them. The importation of Chinese coolies was tried, and nearly 1,000 of that race were



Scene on the Panama railroad, near El Diablo, Ancon Hill in the distance.
Corozal-Ancon wagon road on the left.

brought from China. Native hill rice, tea, and opium were supplied them, but within a few weeks disease broke out among them, and, many becoming melancholy, are said to have committed suicide, so that inside of 60 days scarcely 200 able-bodied remained. The high mortality of these Chinese laborers, probably helped develop the story that each of the ties on the original Panama railroad represented the life of a laborer. The facts in the case make the story ridiculous. There were at least 150,000 cross-ties in the original road, including sidings and yards, while the largest number of employes at any one time was not over 7,000, and the road was completed in four years. According to the most authentic records, the total mortality during the construction period was about 1,200. Added to the difficulties of maintaining a labor force, was the necessity of bringing nearly all food and supplies from New York, a distance of nearly 2,000 miles.

By the first of October, 1851, the track had been laid as far as Gatun, and

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The largest railroad bridge on the new line, spanning the Chagres River at Gamboa. It is 1,320 feet long. The Chagres River empties into the Canal at this point.

in the following month, 1,000 passengers were carried to that station from Colon. These passengers had arrived at Chagres for the California transit in two ships, but could not be landed there on account of a heavy storm, and were disembarked at Colon. This happened most opportunely for the railroad, as the original million dollars had been expended and things were beginning to look dark to the stockholders. When the news reached New York that passengers had been carried as far as Gatun, seven miles by rail, even though they had been carried on flat cars, the company's stock immediately rose in price. The work was pushed on with renewed vigor, for, from this time on, there was a small and steady income which could be applied to the construction expense. In July, 1852, the road had reached Barbacoas, a total distance of 23 miles, where it was necessary to construct a bridge 300 feet long to span the Chagres.

On October 10, Mr. John L. Stephens, who was president of the company, died in New York, and his successor, Mr. W. C. Young, decided to have the remainder of the work accomplished by contract. The contractor, however, failed to fulfill his obligation and after a year's delay, the company again decided to do the work.

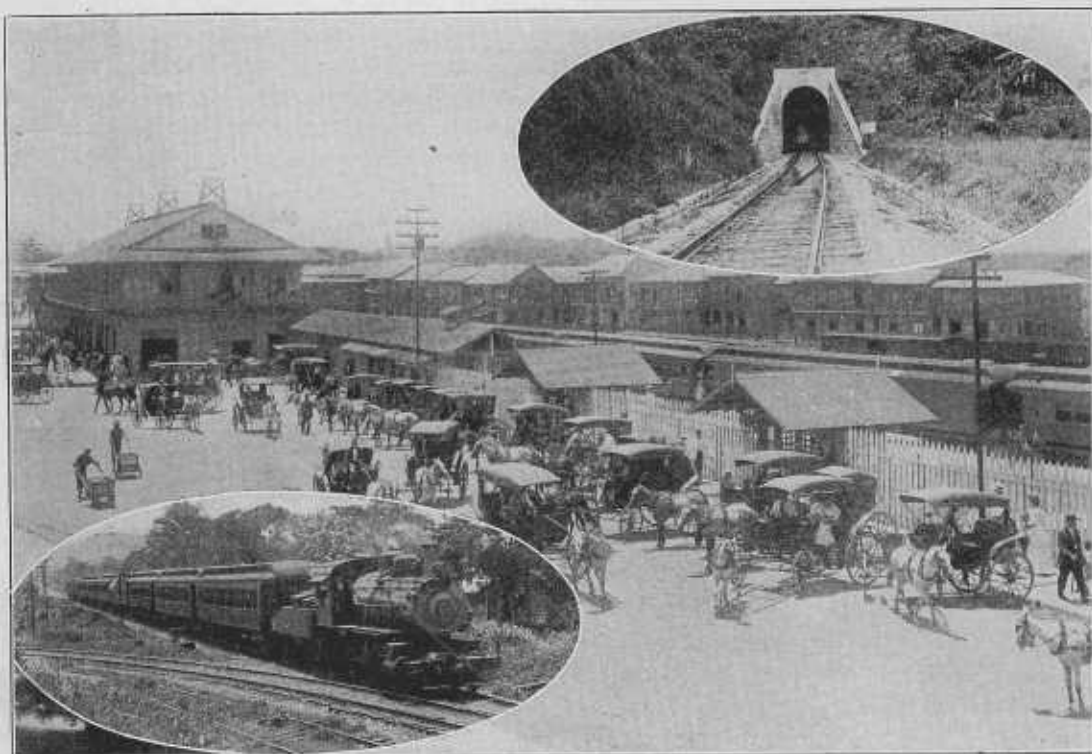
COMPLETION OF THE ENTERPRISE

On the 27th of January, 1855, at midnight and in rain, the last rail to the summit ridge at Culebra, 37 miles from Colon and 11 miles from Panama, was laid, and in the meantime, work had been advancing steadily from Panama city, to which point material had been transported around Cape Horn. On the following day, the first locomotive passed from ocean to ocean, nearly four years after ground was first broken. The completed road was 47 miles 3,020 feet long, with a maximum grade of 60 feet to the mile, in order to surmount the summit ridge at elevation 287 feet. The first president was Mr. David Hoadley.

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Although track had been laid from ocean to ocean, the railroad was in poor physical condition, and it was not until 1859 that its construction account was finally closed, at a total expenditure up to that time of \$8,000,000. The road was properly ballasted, heavier rails were laid, using hardwood ties, bridges of iron replaced flimsy wooden structures, and station buildings and wharves were erected. To cross waterways, 170 bridges and culverts had been built and the wooden bridge at Barbacoas was replaced by one of iron.

The road was a paying investment from the time when the first 11 miles were opened in 1852, for, as new sections were built they were put into immediate service for passengers and freight, and at the end of 1855, the year the entire road was opened, its income from passengers and freight was \$2,125,232.31. When the original construction account was closed in January, 1859, the gross earnings amounted to \$8,146,605.00, while operating expenses, together with depreciation amounted to \$2,174,876.51, leaving a balance of \$5,971,728.66, as legitimate earnings for a period of seven years, during the last four of which the road was open throughout its entire length. Dividends have been paid every year on the stock, with the exception of a few years previous to the taking over of the road from the French Canal Company by the United States. The average dividend during the years 1852-1881 was 16 per cent., and since that period, five per cent; the smallest dividend was two per cent. in 1885, and the largest 44 per cent. in 1868. In 1865, the capital stock was increased from \$5,000,000 to \$7,000,000. In 1881, the year when the road was sold to the French Canal Company, a



The station of the Panama Railroad at Panama City always presents an active scene at train time. A new first class station has taken the place of the old one shown here. All passenger locomotives are oil-burning and the coaches are thoroughly up-to-date, having first and second class accommodations. The tunnel at Miraflores is 736 feet long.

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dividend of 52½ per cent. was declared, but this not only represented the earnings for that year, but also included the assets and surplus on hand at that time.

EARLY RATES NEARLY PROHIBITIVE

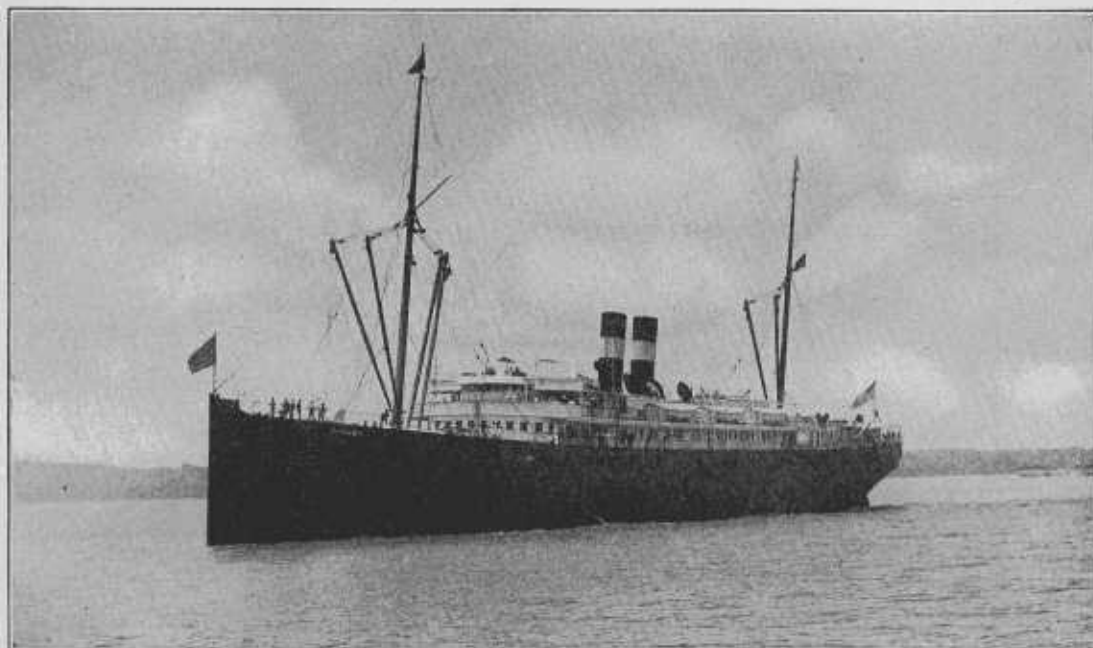
The following table of rates, placed in effect when the road was first opened in 1855, remained in force for 20 years, and following the company's policy, were intended to be prohibitive at first, on the theory that they would be lowered when the company had had an opportunity to improve its line, will explain in a measure the large profits made on this road which cost about \$170,000 a mile to build:

	1885	1903	1907
Fare, Panama to Colon, 1st-class	\$25.00	\$5.00	\$2.40
Fare, Panama to Colon, 2d-class	10.00	2.25	1.45
Charge for baggage	.10 per lb.	.02 per lb.	.02 per lb.
Freight rate, 1st-class	3.00 per cwt.	.40 per cu. ft.	.50 per cwt.
Freight rate, 2d-class	2.00 per cwt.	1.20 per cwt.	.44 per cwt.
Freight rate, 3d-class	1.00 per cwt.	.80 per cwt.	.32 per cwt.

At the present time the first-class passenger fare is \$2.40, with 150 pounds of baggage free; second-class, half of that rate.

ESTABLISHMENT OF STEAMSHIP SERVICE

In 1856, the company established a steamship service between Panama and San José de Guatemala, thus opening up the rich coffee country of Central



The Panama Railroad operates a steamship service with a fleet of six vessels plying between New York and Colon, two of which were purchased in 1908 for the carrying of cement. This is the Panama, one of the passenger steamers.

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America. This line continued until October, 1872, when it was taken over by the Pacific Mail Steamship Company. At one time the road had a line of its own between San Francisco and Panama, but this was withdrawn in 1902. In 1893, the present Panama Railroad Steamship Line was established between New York and Colon, and there are now six ships in this service, the *Ancon*, *Cristobal*, *Panama*, *Colon*, *Allianca* and *Advance*, although the two former vessels purchased in 1908 are owned by the Canal Commission, and have been used mainly in transporting cement to the Isthmus.

CONCESSIONARY RIGHTS AND PRIVILEGES

The terms of the original concession granted by the Government of New Granada provided, among other things, the exclusive privilege of building a railroad on the Isthmus of Panama; that no undertaking for the opening of a canal to connect the two oceans would be permitted without the consent of the railroad company; that the railroad company should have the exclusive privilege of building wagon roads across the Isthmus and the use of the Chagres for steamer travel, and the exclusive privilege of the use of the ports at the two termini for the anchorage of vessels, and for the loading and unloading of cargo.

This concession was to remain in force 49 years from the day of the road's completion, subject to the right of New Granada to take possession at the expiration of 20 years upon the payment of \$5,000,000, or at the expiration of 40 years upon the payment of \$2,000,000. The provisions of the contract were modified several times, but its exclusive features remained practically the same. In 1867, it was renewed for 99 years on payment of \$1,000,000 in cash, and an annual payment of \$250,000 guaranteed to New Granada. The railroad also obligated itself to extend the road to the islands in the bay of Panama. This extension of the contract for 99 years was secured 12 years after the opening of the road by Colonel Totten, when it was realized that New Granada would surely raise the necessary \$5,000,000 to obtain the road after 20 years of operation, a road costing \$8,000,000 to build and, at that time paying 24 per cent on a capitalization of \$7,000,000.

Two years later, 1869, the Union Pacific was completed across the American continent, with a consequent decline of California trade across the Isthmus. The loss of this trade would have been offset by the trade of Central and South America, had the company seized the opportunity, but its policy, apparently, was to make all it could there and then let the future take care of itself. In 1868, the Pacific Steam Navigation Company withdrew its line of steamers from the Isthmian transit, and sent its ships to England via the Strait of Magellan, and transferred its repair shops and coaling station from the island of Taboga to Callao, Peru. It was forced to do this by the shortsighted policy of the railroad's directors who refused to ratify a traffic agreement profitable to both, which had been tentatively drawn up, giving the company where freight originated the right to make a through charge to be divided equally between the three carriers, the railroad and the steamship lines on either side of the Isthmus. The steamship company took most of its trade with it and an idea of what was lost to the railroad can be obtained from the fact that, in 1874, it had 54 steamers, with a total of 124,000 tons, in operation between Valparaiso and Liverpool. Only its smaller boats were sent to Panama, and these merely to act as feeders to the main line on their return south. This policy of offering no encouragement to steamship lines also forced the Panama, New Zealand



The headquarters of the Panama Railroad are located at Colon. The new line runs on the east side of the canal and is 47.11 miles long. It was completed on May 25, 1912, at a cost of \$8,984,922.18.

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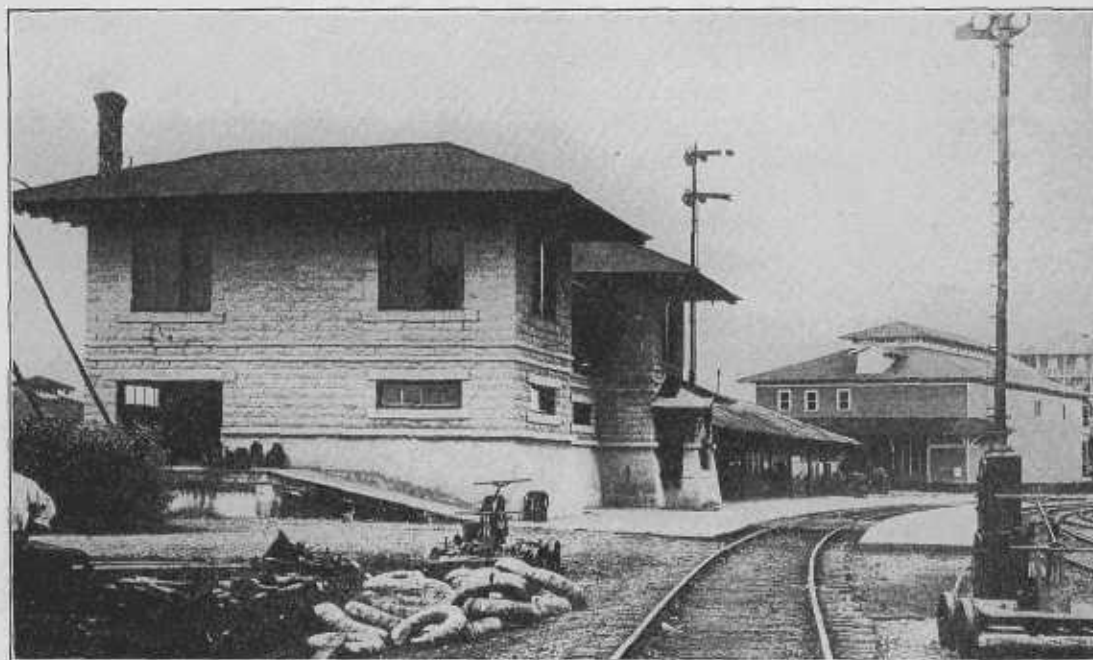
and Australian Steamship Company to give up its attempt to inaugurate a monthly service via Wellington to Sydney, connecting with the Royal Mail Steam Packet Company, operating between Southampton and Colon.

In spite of this policy of taking more than the trade could stand, the railroad continued to pay dividends, but it would undoubtedly have done a much more profitable business had it endeavored to help, instead of oppressing the growing trade of Central and South America.

CHANGES IN OWNERSHIP

When the French operations were begun in 1881, the French Canal Company found that in order to build a canal it would first have to gain the consent of the railroad or to purchase it. The latter plan was followed, and in June of that year, 68,888 of the 70,000 shares were obtained for a little over \$20,000,000 or two and one-half times what the road had originally cost to build. In addition to the amount expended for shares, bonuses paid brought the total cost to a little over \$25,000,000. When the United States, on May 4, 1904, took over the affairs of the New French Canal Company, they came into possession of these shares, and obtained the remainder, 1,112 shares, by private purchase at a cost of \$157,118.24, or an average price of \$140.00 per share. The entire stock of the Panama Railroad and Steamship Company is now owned by the United States, with the exception of one share transferred to each of the directors to enable them to qualify under the articles of incorporation. The Chairman and Chief Engineer of the Isthmian Canal Commission is also President of the Panama Railroad Company.

Since it has become a government-owned corporation, the road has become secondary to the Canal work, although it is still a common carrier, and carries



The railroad station at Gatun, which is the only station of a permanent type so far constructed, except at Colon and Panama City.

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Old Washington Hotel, showing statue of the Panama Railroad founders, Henry Chauncey, Wm. H. Aspinwall and John L. Stephens. A new modern hotel has taken the place of the old one.

about 70,000 tons of commercial freight a month, which is about one-half of the total amount, the balance being handled for the company and for the Canal work.

When the road was turned over by the French it was found to be in a neglected condition, with obsolete equipment and rolling stock. Since that time terminal wharves, equipped with modern cargo cranes, have been constructed, terminal yards, warehouses and machine shops provided, new and powerful locomotives, 12 of which are oil burners, larger cars for passengers and freight put into service, heavier rails laid, bridges strengthened to enable them to carry the heavier equipment, and the whole line double-tracked. Permanent reinforced concrete stations have been built at Colon, Gatun and Panama, and a modern concrete hotel, the Washington, costing upwards of \$650,000 has been constructed on Colon beach.

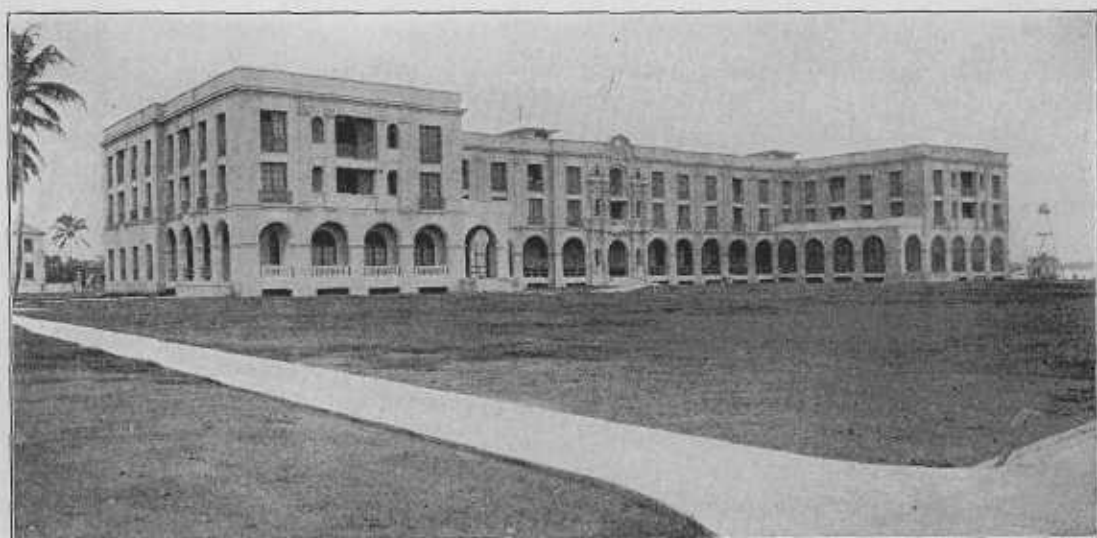
THE NEW MAIN LINE

The relocated, or new main line of the railroad runs on the east side of the canal for its entire length of 47.11 miles. From Colon to Mindi, 4.17 miles, and from Corozal to Panama, the old location was used, but the remaining 40 miles are new road. From Gatun, the line skirts the north shore of the lake for about four miles, and then turns south, crossing the eastern arm of the lake on a high trestle fill at an elevation of 95 feet above sea level. Near Caimito, the road approaches the canal again, and parallels it to Gamboa. Originally, it was planned to carry the road through Culebra Cut on a 40-foot berm, 10 feet above the water level, but slides caused the abandonment of the project, and it was built on a high level around Gold Hill instead. Its highest point is 271

THE LAND DIVIDED — THE WORLD UNITED

feet above sea level near LaPita, and where the continental divide is crossed, opposite Culebra, the height is 241 feet. From the south end of Culebra Cut at Paraiso, the railroad runs practically parallel with the canal to Panama. Where the road crosses the Gatun River, near Monte Lirio, a steel girder bridge with a lift span has been erected to permit native sailing craft to pass into the east arm of the lake, and at Gamboa, the Chagres River is crossed with a steel girder bridge one-quarter of a mile long. At Miraflores, the road passes through a tunnel 736 feet long.

The new line was completed on May 25, 1912, at a cost of \$8,984,922.18, but passenger trains were not run over it for its entire length until September 2, 1913, when the former crossing at Gamboa dike was abandoned on account of the rise of Gatun Lake. On that date a new schedule was placed in effect, whereby the main line trains run all the way from Colon to Panama on the east side of the canal, and the towns on the west bank are served with a shuttle train service from Panama to Bas Obispo, the present terminus of the old double-track line. The shuttle trains now cross the canal, near Paraiso on a trestle bridge, but as this will have to be removed to permit the navigation of the canal, a wooden pontoon bridge will be built in the same locality of sufficient width for a single track and a roadway for vehicles. This is not intended for a permanent crossing but only to such time as the villages on the west bank of the canal can be abandoned. South of Corozal, a change will be made in the road which will have the effect of placing the new town of Balboa on the main line, with its terminus at Panama as at present. The railroad possesses modern passenger terminals at both ends. The one in Colon is of concrete block construction, and was opened on July 23, 1909. It is not particularly attractive from an architectural standpoint. The new station in Panama, costing about \$100,000, was completed in the latter part of 1913. The only other station of a permanent type so far constructed is at Gatun, built in 1909.



The new Hotel Washington at Colon. Cost about \$500,000.
Operated by the Panama Railroad.

THE LAND DIVIDED — THE WORLD UNITED

The total mileage of the road, exclusive of sidings, is 58.79, as follows: Main line, 47.11 miles; Pedro Miguel to Bas Obispo, 9.12 miles, and Panama to Balboa 2.56 miles.

BUSIEST SHORT LINE IN THE WORLD

During the years 1911-1912 the road carried 777,121 first-class passengers, and 1,980,550 second-class passengers, an increase of over 300,000 for the year. During the fiscal year just closed, the passenger traffic is expected to show material increase due in part to the increased tourist travel. Freight amounting to 1,871,076 tons was transported over the railroad during 1911-1912, divided as follows:

	Per cent.
Through commercial freight	36.80
Local and I. C. C. freight	49.93
Local commercial freight	10.37
Panama Railroad Company's freight	2.90

The net revenue from its operation was \$1,997,280.80. The steamship line, on the other hand, has not paid as an investment, except as a feeder for the railroad, and for the benefit of the Isthmian Canal Commission. It has had a steady freight and passenger traffic, but the cargoes have consisted principally of canal supplies, and the passengers have been mostly employes of the Canal Commission and railroad, who are carried at a reduced rate. The net deficit from the operation of the steamship line for the fiscal year ending June 30, 1912, was \$305,742.85.

With the completion of the canal it is possible that the road will be electrified, obtaining the necessary power from the hydroelectric plant at Gatun spillway, and will be devoted almost entirely to local traffic. This traffic will, no doubt, be considerable, for Colon and Panama will always be important cities.



New Panama railroad passenger terminal in Panama, just completed.



THE French attempt to construct a waterway across the Isthmus was foredoomed to failure because the project fell into the hands of promoters and speculators. A contributory cause was the very high sick and death rate among the French employes on the Isthmus. This added greatly to the cost of administration and resulted in an unstable labor force. Many of the best engineers left the Isthmus after short service, or died, and these constant changes made it difficult to pursue any regular plan to keep up an effective organization to carry on the work. The company had to pay high wages and offer special inducements to persuade men to take the chance of one in five of surviving an attack of yellow fever which they were liable to contract. Had the work been in charge of a rich and powerful government, public opinion would not have allowed the work to have been carried on at such an appalling cost of life. When the enterprise was started the method of transmission of malaria and yellow fever was unknown, and, even if the French had taken the sanitary precautions prevailing at that time, they could not have stamped out these two fevers which gave the Isthmus the reputation of being the most unhealthy place in the world for a white man. As a private corporation, it could not enforce sanitary regulations had it desired to do so, for, unlike the United States, it did not acquire absolute jurisdiction over the Canal strip, but was at the mercy of the Colombian courts.

Other causes were extravagance, which naturally developed into graft, for the supply of money which came flowing into the coffers of the company from eager investors beguiled by the name of De Lesseps seemed inexhaustible; the lack of suitable machinery, the want of preparation, and misguided leadership. All these mistakes have served as warning signals to the Canal Commission, so that the failure of the French has contributed, in a large measure, to the success of the Americans.

DE LESSEPS—PROMOTER

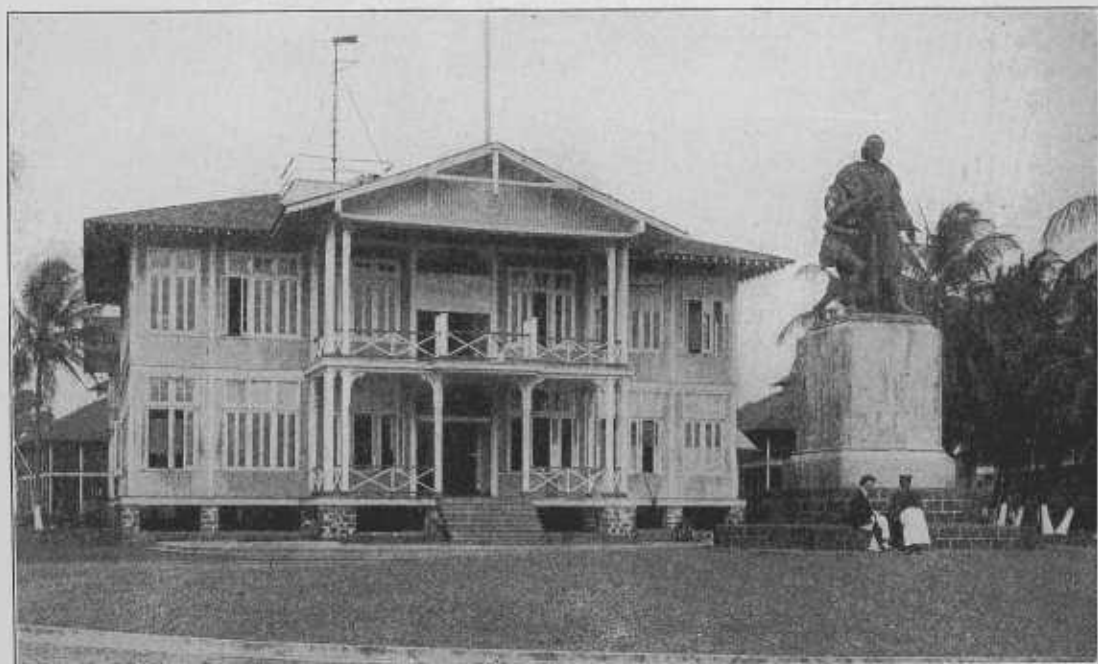
The first French Canal Company, La Societe Internationale du Canal Interoceanique, inaugurated the undertaking with an exclusive concession from Colombia, but with an incomplete survey of the proposed work, and an estimate of cost and time placed much too low. The necessary money was

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Count Ferdinand de Lesseps. His name will always be linked with the great enterprise as it was under his direction and control that the work first took definite form.

obtained from the French middle classes, who were induced to part with their savings through the magic name of Ferdinand de Lesseps, who had just brought to a successful close his great work at Suez, and who was placed at the head of the new enterprise. De Lesseps was honest and sincere, but he was an old man, somewhat blinded by his previous good fortune, and, therefore, easily deluded. He was enthusiastic over the idea of a canal connecting the Atlantic with the Pacific, and made himself and others believe that the work could be accomplished more quickly and much easier than the Suez. His ability as a missionary made him valuable to the promoters, for the difficulties of the work across the Isthmus, as compared with the work at Suez should have been apparent even to the layman. He was not an expert engineer; it did not require any engineering ability, but merely imagination, to see the practicability of cutting a sea level channel through the low desert region of upper Egypt, while at Panama, a hilly and



Former headquarters of De Lesseps, Cristobal, now used by the Canal Commission.

THE LAND DIVIDED ~ THE WORLD UNITED

rock country had to be traversed, torrential streams diverted, and a tidal basin constructed, problems which the world's foremost engineers have differed in the solution. And yet De Lesseps sincerely believed that he was to achieve a second triumph, and much easier than his first. (The Suez Canal was opened in 1869, took ten years to build, and cost about \$100,000,000, or a million dollars a mile. This low cost was due to the fact that the cut was made through a stretch of level sand, and Said Pasha, the Khedive of Egypt, a large stockholder in the enterprise, practically forced his subjects to work on the project in much the same manner as Rameses of old).

PROCURING THE CONCESSION

The concession for the privilege of constructing the Canal was obtained from Colombia in May, 1876, by General Stephen Türr, a Hungarian, who had become acquainted with De Lesseps when the latter was planning his work at Suez, and who was later incited by the Frenchman's success in an effort to duplicate the feat at Panama. He organized a provisional company in France and sent an engineering party to the Isthmus in November, 1876, to make explorations and surveys. The party was in charge of Lieutenant Napoleon Bonapart Wyse, of the French Navy, a brother-in-law of General Türr, and at that time only 23 years of age. The first expedition was only partly successful, several of its members falling victims to disease. Wyse was again sent out in the spring of 1878 with Lieutenant Armand Reclus, also of the French Navy. On this trip he obtained a new concession, approved May 18, 1878, in the name of the association presided over by General Türr, which modified and extended the former one, so as to give the promoters the exclusive privilege of building a canal across the Isthmus anywhere within the United States of Colombia. This concession was to remain in force 99 years, provided the necessary permission was obtained from the Panama Railroad Company which held a



The old port of Colon in 1884, during the early French days. This photograph was taken with a wet plate, a relic of photography.