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.
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
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 Paraíso, 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 Paraíso 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 28, 1909. It is not particularly attractive architecturally. 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 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:

<table>
<thead>
<tr>
<th>Description</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Through commercial freight</td>
<td>36.80</td>
</tr>
<tr>
<td>Local and I. C. C. freight</td>
<td>40.93</td>
</tr>
<tr>
<td>Local commercial freight</td>
<td>10.37</td>
</tr>
<tr>
<td>Panama Railroad Company's freight</td>
<td>2.90</td>
</tr>
</tbody>
</table>

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 employees 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.
THE FRENCH FAILURE

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 employees 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 International du Canal Interocéanique, 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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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
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.
monopoly of the Isthmian route. Work was to be begun not later than 1883, and was to be completed within 12 years, with an extension of six years in case the original term proved too short.

Although Wyse went over not more than two-thirds of the distance from Panama to Colon, he submitted what were supposed to be complete plans and a statement of cost for a sea level canal between the two points, following the line of the Panama railroad. These plans and estimates were submitted to an international engineering congress which was convened in Paris, May 14-29, 1879, in accordance with the terms of the concession, with Ferdinand de Lesseps at its head. These plans were the basis of a decision by the congress in favor of a sea level canal, following the route of the Panama railroad, by way of the pass at Culebra, using the valley of the Chagres river on the Atlantic side, and the valley of the Rio Grande on the Pacific side of the continental divide. It is pertinent to note that in this congress, consisting of 136 delegates from France, Germany, the United States and other countries, only 42 were engineers, while the remainder were promoters, politicians, speculators, and personal friends of De Lesseps. The Wyse concession and plans were "shoved through," approved, and turned over to La Societe International du Canal Interoceanique, commonly known as the first French Canal Company, for a consideration of $2,000,000. This was the first "step in the dark," taken by the company.

DE LESSEPS' PLAN.

De Lesseps made two visits to the Isthmus, the first in December, 1879, and the second in 1880, remaining for about two months on each occasion. On his first visit he was accompanied by his wife, three of his children, and an international technical commission, consisting of nine members. At one of the
numerous receptions and banquets tendered him, he said: “There are only two great difficulties to be overcome, the Chagres River, and the deep cutting at the summit. The first can be surmounted by turning the headwaters of the river into another channel, and the second will disappear before the wells which will be sunk and charged with explosives of sufficient force to remove vast quantities at each discharge.”

The engineering commission, after a superficial study of the route and former incomplete surveys, in a report submitted February 14, 1880, estimated the cost at $168,600,000. The engineering congress estimated the cost at $214,000,000. On February 20, De Lesseps reduced this estimate to $131,600,000, and again on March 1, without apparent reason, to $120,000,000. The proposed sea level canal was to have a uniform depth of 29.5 feet, a bottom width of 72 feet, and a width on the water line of about 90 feet, and involved excavation estimated at 157,000,000 cubic yards. The engineering congress estimated seven or eight years as the time required to complete the work. De Lesseps, with his usual optimism, reduced the time to six years. To control the floods of the Chagres River, various schemes were proposed, the principal one being the construction of a dam at Gamboa, a little below Cruces, and the construction of channels to the sea to carry the impounded water away from the canal. On account of the great difference in the tides of the two oceans, a maximum of two and one-half feet in the Atlantic and 21 feet in the Pacific, a tidal basin or lock was to have been built at the Pacific entrance. (The high tide on the Pacific side is due to the fact that the Bay of Panama is funnel-shaped.) No work was ever accomplished on either of these two

Front Street, Colon, during the flourishing French days, with the pay car at the old depot.

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The famous flat arch in the ruins of Santo Domingo Church, Panama City. It is an architectural curiosity of the early day Spanish masons and has withstood the assault of fire and earthquakes. It has a span of over 40 feet, and a rise of two feet, and has stood in the ruins of the old church for 206 years.
A group of views of Balboa and the canal entrance and operations, during the days of both the First and Second French Companies. The wharf was the first constructed by the French. The one-sided dump cars shown in the top picture are now obsolete.
projects. A dam at Gamboa was found later to be impracticable, and the problem of the diversion of the Chagres River was left to some future time.

INAUGURATING THE WORK

On January 1, 1880, the ceremony of breaking the ground was to have been performed by De Lesseps at the mouth of the Rio Grande, about three miles west of Panama city. The boat bearing a party of ladies and gentlemen who were to take part was delayed in starting, with the result that it could not get within two or three miles of the shore on account of the ebbing tide. This, however, did not dampen the ardor of the versatile Frenchman, as the arrival of the steamer in the entrance of the river mouth was considered by him a sufficient beginning. The first blow was thereupon struck with a pick in a box of earth upon the deck of the steamer, while the observers aided their imagination by copious draughts of champagne. On January 10, 1880, De Lesseps, with another party of civil and church dignitaries, went to Culebra to witness the first blast. Accounts differ as to this event. Tracy Robinson, the oldest American on the Isthmus, states in his book on Panama, that the blast never came off, and as he was present, he ought to know. On the other hand, the "Star and Herald" of the day following gives a circumstantial account of the affair, ending with: "The mine had been carefully laid in an exceedingly hard and compact formation of basalt at a few feet below the summit, and charged with 30 kilograms of explosive. The operation was performed with complete success, and immense amount of solid rock being hurled from its original position." No photographs of the incident are extant.

Actual excavation work did not commence in Culebra Cut until some time
later. "The Bulletin du Canal Interocéanique," published by the company for the benefit of the stockholders, of February 1, 1882, states: "The first work in the great cut of the maritime canal was formally inaugurated today (Jan. 20, 1882), at Empire in the presence of the dignitaries of the state, the leading citizens of the city and a great assemblage of the people. The first locomotive has arrived at the newly opened excavation. The city of Panama is celebrating the event with a great fête."

De Lesseps left Colon for the United States on February 22, 1880, for the purpose of interesting Americans in the undertaking. Although he was received with a great deal of enthusiasm everywhere, he was unable to dispose of the stock which he had thoughtfully reserved. Americans were interested in a canal, but not in a canal under French control. He then proceeded on a similar tour of Europe, where he was more successful from a pecuniary point of view. The first issue of stock, 600,000 shares of $100 each, was subscribed twice over, mostly taken in France. These shares were distributed among 100,000 persons, indicating the great Frenchman's popularity with the people of his country. In 1888, when the company failed, the total subscriptions, stocks and bond issues, had reached $393,505,100, and the shareholders numbered 200,000.

Two years of feverish preparation followed which witnessed the making of hasty surveys, the bringing together of machinery and a labor force, and the erection of quarters and hospitals. The actual construction work was let to a firm of French contractors, Courvieux & Hersent, but they soon realized the difficulties of the undertaking and withdrew from the last part of their contract.

FRENCH LABOR FORCE

There seems to have been little difficulty experienced in obtaining a labor force, which in 1888, numbered about 20,000 men. Nine-tenths of these were
negroes from the West Indies, and many of them held clerical and other similar positions. The white employees, mainly from France, were treated with extreme generosity. Economy was an unknown factor in the administration of affairs of the first company. The average pay of a clerk was $125 per month, and of a division chief from $200 to $300 per month. After two years' service, five months vacation, with free traveling expenses to and from France, were granted. The hours of labor for the clerical force was from 8 to 11 a. m., and 2 to 5 p.m., six hours a day. Free quarters, furniture, bedding, lamps, kitchen utensils, etc., were provided. As there was no system of accounting in vogue, many did quite a profitable business in the buying and selling of the company's furniture. This was merely one of the petty forms of graft in vogue, however. Enormous salaries were paid to the directors, engineers, and other officers on the Isthmus. The director-generals lived in a house that cost $100,000, now used as the American Legation in Panama City; they received $50,000 a year, and when they went out on the work they were allowed $50 a day additional. One of the private cars in which they rode cost $42,000.

LA FOLIE DINGLER

There formerly stood on an artificial terrace on the western slope of Ancon Hill a building that commanded ready attention from passersby on the road from Panama to La Boca, now Balboa. It was the prospective home of M. Jules Dingler, probably the foremost director-general of the first French company, prospective, because he never occupied it. Work on the mansion was begun shortly after he came to the Isthmus in February, 1883, and the cost including the grounds is said to have been about $50,000. For many years

La Folie Dingler, built for M. Julius Dingler in the first French Company's days, but never occupied by him. The experience of M. Dingler on the Isthmus constitutes one of the saddest incidents in French canal history. His son, daughter and wife all contracted the dreaded yellow fever and died.
The village of Empire in the old French days. The French began their first excavation in the cut near this point in 1882.

it had been called La Folie Dingler, or Dingler's Folly. The experience of M. Dingler on the Isthmus constitutes, perhaps, one of the saddest incidents in French canal history. Stories of the fatal effect the climate of the Isthmus was said to have on foreigners reached France, but Dingler scoffed at these reports. "I am going to show them," he is credited with having said, "that only drunkards and the dissipated contract yellow fever and die." In this spirit he brought with him to the Isthmus, his wife, son, and daughter. His son, who was made director of posts, shortly fell victim to yellow fever and died. Dingler subsequently went to France on leave of absence, and upon the return of himself and family to the Isthmus, his daughter met with the fate of his son. On his return from a second trip to France, his wife also sickened and died from the same fell disease. Dingler later relinquished his post and went back to France a man broken in mind and body. At the time the American Government took possession, La Folie Dingler had fallen into partial decay. Needed repairs
were made and for several years the building was utilized as a detention station for the quarantine service. It was sold in 1910 for $525, and removed to make way for quarry work on the side of Ancon Hill.

During the period of greatest activity there were probably 2,000 Frenchmen on the Isthmus, all non-immune to yellow fever. Life was a gamble and, with no suitable social diversion, they naturally resorted to the only forms of amusement available, the saloons, gambling rooms, and houses of ill-repute. Colon and Panama became the Mecca of the parasites of society, the non-workers who live on vice, with the result that an efficient labor force could not be kept long under such conditions, and it was continually changing.

In the center of the Cut at the end of the first French Company’s days, 1889. The first French Company operated from 1881 to 1889.
THE SICK POORLY CARED FOR

Two hospitals were built in 1883, which, with additions and alterations have been in constant use by the Americans. Ancon hospital originally cost $5,600,000, and Colon hospital cost $1,400,000, a total of $7,000,000.

The hospitals, although fairly well equipped, with excellent doctors and surgeons and supplied with the best medicines and instruments of the time, were poorly managed. They were handled under contract, and the administration
It almost entirely to French Sisters of Charity, who, although they were untrained and religious women, were not trained nurses. These worthy women went to the wards at night after prayer, closing the doors and windows tight to prevent the night mists, which were supposed to bring malarial fever, leaving the patients without any other care than that which was given by the less feeble patients themselves. When the wards were opened for morning prayer it was
often found that some patient had died during the night, who might have been saved with proper attention. The legs of the hospital beds were placed in tins of water to keep insects from crawling up. These pans of stagnant water, and also the many ornamental basins containing flowers and plants in the grounds outside made ideal breeding places for mosquitoes, and it is quite probable that many patients fell victim to fever while in the hospital suffering with some minor illness, due to the unscreened windows and doors.

The Cut in French times, showing their cableway plan of excavation. These cableways carried the material out of the canal and deposited it to one side, but unfortunately not far enough, for much of it has slid back into the Cut, causing extra excavation.

The hospital records show that during the construction period of the old company—1881 to 1889—there were 5,618 deaths, 1,041 of which were from yellow fever. The old yellow fever ward in Ancon hospital, now ward No. 16, was called St. Charles, and it is believed that more people died from yellow fever in it than in any other one building in the world. The West Indian negroes were immune to yellow fever, and very few of them were admitted to the hospitals. The victims, therefore, were nearly all white persons, and mostly Frenchmen. A large proportion of the sick did not enter the hospitals, as the contractors were charged one dollar a day for skilled medical treatment of employees. Colonel Gorgas estimates the number of laborers who died from 1881 to 1889 at 23,189, or a rate of something over 240 per thousand per year. He also estimates that as many died of yellow fever outside the hospitals as in, and places the total number of deaths from that disease at 2,082. In September 1884, during an attack of yellow fever, the Canal Company lost 654 employees out of a force of about 18,000. This is in part based on surmise, for the truth was partly suppressed or minimized by the Canal Company in order not to destroy the confidence of the people in the project, and outside of the hospital rolls, the records were incomplete. A virulent form of malaria, known as "Chagres fever," caused a greater toll in lives than any other one disease. The negro laborers, although immune from yellow fever, succumbed quickly to attacks of this form of malaria.