CHAPTER X

HOW THE FRENCH TRIED TO DIG THE CANAL

THERE is a large, iron steam-launch, used by our government to carry sick canal-workers to the sanatorium on Taboga Island, that was brought to the Isthmus by the French, but for a very different purpose. With two oceans to float it in, they stuck this launch high and dry at the bottom of the unfinished Culebra Cut, to the great astonishment of the Americans who found it there in 1904. It had been placed there, explained an old employee of the French company, and a trench dug round it, so that when the floods of the rainy season filled the trench, a clever photographer could take a picture showing “navigation through the Cut.” Such a picture, when exhibited in Paris, would make people think the work was nearly finished, and that the money they had invested in it was well spent. It is a good illustration of how the French tried to dig the Canal.

From the beginning, the French Canal Company (known in full as “La Société International du Canal Interocéanique”) sailed a great many boats on dry land and made people believe they were afloat. They sent Lieutenant Lucien Napoleon Bonaparte Wyse of the French Navy, to make a survey of the Isthmus in 1877, and, though he never went more than two-thirds of the distance from Panama to Colon, he brought back com-
complete plans, with the cost of construction figured out to within ten per cent. for a sea-level canal between the two cities. After a little more work on the Isthmus, next year, Wyse obtained a concession from the government at Bogotá, granting the exclusive right to build an interoceanic canal, not only at Panama, but anywhere else through the territory of the United States of Colombia, as New Granada was then called. When we remember the thorough preliminary surveys made for the Panama Railroad by Stephens and Hughes and Baldwin, it seems incredible that the French people should have taken Wyse seriously, and invested hundreds of millions of dollars in an enterprise of which they knew so little. What blinded them was the name of the man who now came forward as the head of that enterprise, Ferdinand de Lesseps.

He was "the great Frenchman," the most popular and honored man in France, because of the glory he had won her by the construction of the Suez Canal. Sent on a diplomatic mission to Egypt, de Lesseps, though not a trained engineer, had recognized the ease with which a ship canal could be cut through the hundred miles of level sand that separated the Mediterranean from the Red Sea. It took both imagination and courage to conceive a ship canal of that length, and the greatest difficulty, as with every new thing, lay in persuading people that it would not necessarily be a failure, because there had never been anything just like it before. The actual digging was as simple as making the moat round a sand
castle at the seashore. A company was formed in France, the Khedive of Egypt took a majority of the stock, and forced thousands of his subjects to work as laborers for virtually nothing. The Suez Canal was completed in ten years, at a cost of a million dollars a mile, and ever since its opening in 1869 it has paid its owners handsome profits. But the bankrupt successor of the Khedive sold his stock to the British government, which has a very great interest in Suez because its ships must pass through there on the way to India, and to-day the English are the real rulers both of Egypt and the Suez Canal.

De Lesseps first appeared in connection with Panama as chairman of the International Canal Congress held in Paris in May, 1879. The experienced naval officers and trained engineers who were invited from many different countries, found themselves in a helpless minority. Their advice was not asked, and their presence had been sought merely to lend dignity and a show of authority to M. de Lesseps's decision, already made, to build a sea-level canal across the Isthmus of Panama according to the plans of Lieutenant Wyse. The chairman allowed no discussion of the advantages either of a lock canal at Panama, or of any kind of a canal at Nicaragua, but forced the adoption of the type and route he favored, by the vote of a small majority of French admirers, very few of whom were practical engineers. Then, adjourning his dummy congress, de Lesseps came forward as head of the French Canal Company, which had already paid Lieutenant Wyse $2,000,000 for his worthless surveys and valuable concessions. Finally, after everything
had been decided on, de Lesseps went to the Isthmus with an imposing "Technical Commission" of distinguished engineers.

When President Roosevelt made his first inspection of the Panama Canal, nearly twenty-seven years afterwards, he went there in November, at the climax of the rainy season, because he wanted to see things at their worst. For exactly the opposite reason, de Lesseps chose December and January, when the rains have virtually ceased, and the country looks its prettiest. After one trip across the Panama Railroad, many speeches, and no end of feasting and drinking of healths, he hurried away to the United States, where he spent a great deal more time trying to induce the Americans to invest money in his enterprise, but without much success. De Lesseps made another trip to the Isthmus in 1886.

Except for these two short visits, which together covered barely two months, de Lesseps never set foot in Panama, but attempted to dig the canal from his office in Paris. Few people realize that to-day, or that de Lesseps was born as long ago as 1805. He was more than seventy years old, and though he knew very little about technical engineering, his success at Suez and the praise of flatterers made him believe that he was the greatest engineer in the world. As he had dominated the Congress, so he ruled the Canal Company, absolutely and blindly. Ignoring the great differences between the level, rainless sands of one isthmus, and the rocky hills and flooded jungles of the other, de Lesseps declared that "the Panama Canal will be more easily begun, finished, and maintained than the Suez Canal."
The proposed canal was to be a ditch dug down to twenty-seven and a half feet below sea-level, seventy-two feet wide at the bottom, and ninety at the water-line. In general, it was to follow the line of the Panama Railroad, from ocean to ocean. To keep the canal from being flooded by the Chagres, a great dam was to be built across that river at a place not far below Cruces, called Gamboa. Because of the difference between the tides of the two oceans, a large tidal basin was to be dug out of the swamps on the Pacific side, where the rise and fall is ten times that on the Atlantic.

The Paris Congress thought that such a canal might be built for $214,000,000. The Technical Commission, after a few weeks on the Isthmus, said that it could be done for $168,600,000. Ferdinand de Lesseps, on his own responsibility, reduced these figures to $120,000,000, and declared that the Canal would be open in six years, and that enough ships would pass through in the first year after that to pay $18,000,000 worth of tolls. Allured by these figures, and trust-
The French and the Canal

...ing in the word of the "great Frenchman," hundreds of thousands of his countrymen invested their savings in the worthless stock of the Canal Company. But the only persons who made any money out of the enterprise were the swindlers and speculators who used the deluded old man's honored name as a bait for other people's money. De Lesseps himself was honest, but so blinded by the memory of his past success that he could see nothing in Panama but another Suez.

Thousands of laborers and millions of dollars' worth of machinery were sent to the Isthmus, before the slightest preparation had been made to receive them. The Panama Railroad refused to carry these men and materials except as ordinary passengers and freight, at its own high rates. This soon forced the French Canal Company to buy the railroad, paying for it, including termini, $25,000,000, or more than three times what it cost to build it. The organization and management of the road, however, still remained American.

This lack of foresight was the first great cause of the French failure, and the second was disease. From the beginning, yellow fever and malaria broke out in every labor camp, and attacked almost every engineer and workman, killing hundreds, and demoralizing the rest. At that time, no one knew how to prevent these diseases, but the French tried their best to cure those that fell sick. They built two splendid hospitals, one on terraces laid out on the side of Ancon Hill, overlooking the city of Panama, and the other on piles out over the water of Limon Bay at Colon. In these hospitals, the feet of the cots were placed in little pans of water to keep ants...
and other insects from crawling up, and no one noticed the mosquito "wrigglers" swarming in the stagnant water of these pans, or in the many ornamental bowls of flowers. But when a fever patient was brought into the hospital, the mosquitos bred there would suck the poison from his blood, and quickly spread it through the unscreened wards. Malaria means "bad air," and the French in Panama thought it was caused by the thick white mist that crept at night over the surface of the marshes, and men spoke with terror of this harmless fog and called it "Creeping Johnny." Every evening the Sisters of Charity who acted as nurses—good, pious women, but ignorant and untrained—would close all the doors and windows tight to keep out the terrible Creeping Johnny, and then leave their patients to spend the night without either attendance or fresh air. Too often there was more than one corpse to carry out in the morning.

No proper attention was paid to feeding the force, and there was altogether too little good food, and too much bad liquor. Such a combination is harmful enough anywhere, but in the tropics it is deadly. And there was no lack of other evils to make it deadlier.

"From the time that operations were well under way until the end, the state of things was like the life at 'Red Hoss Mountain,' described by Eugene Field,

When the money flowed like likker...
With the joints all threwed wide open 'nd no sheriff to demur!

"Vice flourished. Gambling of every kind, and every other form of wickedness were common day and night."
The French and the Canal

The blush of shame became virtually unknown. That violence was not more frequent will forever remain a wonder; but strange to say, in the midst of this carnival of depravity, life and property were comparatively safe. These were facts of which I was a constant witness."¹

This state of affairs naturally caused a great loss of life; exactly how great it is difficult to determine. As in the case of the building of the Panama Railroad, there has been much exaggeration and wild guessing. After careful research, the Secretary of the Isthmian Canal Commission estimates the number of deaths among the French and their employees at from fifteen to twenty thousand.

The third great cause of the failure of the French Canal Company was graft. Every one connected with it was extravagant, and very few except M. de Lesseps were honest. More money was spent in Paris than ever reached the Isthmus, and what did come was wasted on almost everything but excavation. The pay roll was full of the names of employees whose hardest work was to draw their salaries. "There is enough bureaucratic work and there are enough officers on the Isthmus to furnish at least one dozen first-class republics with officials for all their departments. The expenditure has been simply colossal. One director-general lived in a mansion that cost over $100,000; his pay was $50,000 a year, and every time he went out on the line he had fifty dollars a day additional. He traveled in a handsome Pullman car, specially constructed, which was reported to have cost some $42,000. Later, wishing a summer residence,

¹ Tracy Robinson, "Fifty Years in Panama."
a most expensive building was put up near La Boca (now Balboa). The preparation of the grounds, the building, and the roads thereto, cost upwards of $150,000."

When the Americans came to the Isthmus, they found three of these private Pullmans, on a railroad scarcely fifty miles long; a stableful of carriages, and acres of ornamental grounds, with avenues shaded by beautiful royal palms from Cuba. There was one warehouse full of what looked like wooden snow-shovels, but were probably designed for shoveling sand, which is not found on the canal line, and in another were several thousand oil torches for the parade at the opening of the Canal.

When we consider these things, the wonder is, not that the French failed to dig the Canal, but that they dug as much as they did. Our army engineers speak very highly of their predecessors' plans and surveys. The French suffered, like the Scotch in Darien, from the lack of a leader, for there was usually a new chief engineer every six months, and the work was split up among six large contractors and many small ones. Though the engineers who directed the work were French, the two contractors who did most of the digging were not. It was a Dutch firm (Artigue, Sonderegger & Co.) that took a surprisingly large quantity of dirt out of the Culebra Cut, with clumsy excavators that could only work in soft ground, and little Belgian locomotives and cars that look as if they came out of a toy-shop. The dredges and other floating equipment were much better, and many of them are still in use. Most of these dredges were built in Scotland. But it was an American firm (the

1 Dr. Wolfred Nelson, "Five Years in Panama."
FRENCH METHOD OF EXCAVATION IN THE CULEBRA CUT.
American Dredging and Contracting Co.) that dredged the opening of the Canal from Colon to beyond Gatun. This company was the only contractor that made an honest profit out of the enterprise, and its big homemade, wooden dredges had cut fourteen miles inland, when the smash came in 1889.

Instead of the $120,000,000 originally asked for by M. de Lesseps, he had received and spent over $260,000,-000. Instead of completing the Canal in six years, his company had dug less than a quarter of it in nine. Not a stone had been laid on the proposed great dam at Gamboa. Nothing had been done on the tidal basin except to discover that a few feet under what the Technical Commission had supposed to be an easily dredged swamp lay a solid ledge of hard rock. Year after year M. de Lesseps had kept explaining, and putting off the opening of the Canal, and asking for more money, until more had been spent than any possible traffic through the Canal could pay a profit on. Instead of finding Panama an easier task than Suez, the French had already dug 80,000,000 cubic yards, several million more than they did at Suez, and spent more than twice as much money. It was plain that the end had come.

The French fled from the Isthmus, leaving it strewn as with the wreckage of a retreating army. Trains of dump cars stood rusting on sidings, or lay tumbled in heaps at the bottom of embankments. In one place, over fifty vine-covered locomotives can be counted at the edge of the jungle, from which the Americans dug out miles of narrow-gage track, cars, engines, and even a whole lost town. A lagoon near Colon was crammed
with sunken barges and dredges. Others were abandoned at the Pacific entrance, or tied up to the banks of the Chagres, where the shifting of the river left some of them far inland. Thousands of Jamaican negroes who had worked on the Canal had no money with which to return home, and either went back to the West Indies at the expense of the British Government, or else built huts and settled down in the jungle.

A receiver was appointed for the French Canal Company, and a careful investigation made of its affairs. Criminal charges were brought against de Lesseps, who was convicted and sentenced to five years' imprisonment. But the sentence was never enforced against the old and broken-hearted man, and in a few months he died. Thousands of poor people were ruined. As for the real culprits, several committed suicide, and others were fined and imprisoned. Among those found guilty were so many senators, deputies, and other members of the French Government that for a short time there seemed danger of a revolution and the overturning of the Republic.

As most of the assets in the hands of the receiver consisted of the equipment and the work already done on the Isthmus, it was his duty to see that the enterprise was continued. So the French Government permitted the formation of the New Panama Canal Company out of the wreckage of the old one. This company took over all the machinery and buildings on the Isthmus, and in 1894 secured a concession from Colombia to finish the Canal in ten years.

The New Panama Canal Company went to work in the right way, and made most of the excellent surveys for
which our engineers, who have found them extremely valuable, have given so much credit to their French predecessors. But the new company had so little money that it could keep only a few hundred men and two or three excavators busy in the Cut. It became plainer every year that the Canal could never be finished by 1904, and that the company's only hope was to find a purchaser. And every one knew that the only possible purchaser was the United States Government.
CHAPTER XI

HOW PANAMA BECAME A REPUBLIC

"BUT I should wonder," said Goethe, as the great German poet was discussing with his friends, in 1827, the possibility of a Panama Canal, "if the United States were to let an opportunity escape of getting such a work into their own hands. It may be foreseen that this young state, with its decided predilection to the West, will, in thirty or forty years, have occupied and peopled the large tract of land beyond the Rocky Mountains. It may, furthermore, be foreseen that along the whole coast of the Pacific Ocean, where nature has already formed the most capacious and secure harbors, important commercial towns will gradually arise, for the furtherance of a great intercourse between China and the East Indies and the United States. In such a case it would be not only desirable but almost necessary that a more rapid communication should be maintained between the eastern and western shores of North America, both by merchant vessels and men-of-war, than has hitherto been possible with the tedious, disagreeable and expensive voyage round Cape Horn. I, therefore, repeat that it is absolutely indispensable for the United States to effect a passage from the Mexican Gulf to the Pacific Ocean, and I am certain that they will do it."

Less than twenty years after this prophecy, the United
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States, by the treaty of 1846, obtained from New Granada the perpetual right of transit for its citizens across the Isthmus of Panama, promising in return both to maintain the neutrality of any trade-routes that might be built there, and to guard the local government against attack by any foreign power. And ever since the making of this treaty and the building of the Panama Railroad, the Isthmus has been kept alive by American business and kept more or less peaceful by American ships and guns.

Left to itself, the Isthmus would have been anything but peaceful. In the fifty-seven years between the treaty of 1846 and the final revolution in 1903, there were at least fifty-three disturbances and outbreaks, beginning with a riot in which two Americans were killed, and ending with a civil war nearly three years long. Six times our warships had to clear for action and land sailors and marines to protect life and property, and at four other times the government at Bogotá begged that United States troops be sent to Panama. This may surprise many people who believe that nothing of the kind ever happened in that country before 1903, but there were revolutions in Panama not only before then, and before 1846, but even before Nathaniel Bacon, our own first “revolutionist,” rose against the royal governor of Virginia, and burned Jamestown in 1676. To understand this properly we must go back to the time of Balboa.

Balboa, Pizarro, Cortez, and all the other conquistadores, were men of the Middle Ages, living by the sword and despising honest labor. They were robber-barons, forcing the conquered Indians to pay them tribute in
food and gold, and when there were no native warriors left to fight, they turned their swords against one another. And when, in 1543, the Emperor Charles V, urged by the good bishop Las Casas, decreed in his "New Laws for the Indies" that no more Indians must be enslaved or cruelly treated, Spain nearly lost America at that time, instead of two centuries and a half later. A fleet from Peru captured and plundered Old Panama, and, when reinforced and joined by the Panamanians, the Peruvians seized the whole Isthmus and held it in the name of Pizarro. Instead of an army, Charles V sent Pedro de la Gasca, a clever, smooth-tongued priest, who won back the leaders at Panama to allegiance to the emperor, and with their aid put down the rebellion in Peru. As Pedro de la Gasca was about to take ship for Spain at Nombre de Dios, after his triumphant return from Peru, the Contreras brothers, turbulent grandsons of old Pedrarías, came down the Pacific coast after raising a successful rebellion in Nicaragua, suddenly captured Old Panama and started to march across the Isthmus. But the citizens rose behind them, and the Contreras "revolution" came to a sudden and bloody end.

These old, half-forgotten fights among the early Spanish colonists in America were the children of all the feudal wars of Spain, and the fathers of all the nineteenth- and twentieth-century revolutions of Spanish America. Fear of Drake and the bucaniers made the once-turbulent colonists glad to submit to the royal will for as much protection as the King could give them. He ruled like a feudal overlord,—a big bully over a crowd of little ones,

1 Gonzalo Pizarro, brother and successor of the conqueror of Peru.
COLOMBIAN BARRACKS AND GARRISON IN PANAMA CITY

Shortly before the revolution of 1903.
— and when his power was ended, they all started up again. The Spanish Americans had nothing like the training in self-government and respect for law and order that our ancestors received both in England and here, for centuries before they won independence. The Spanish Americans have had to work it all out for themselves in the last hundred years or so, and a wonderfully good job they have made of it in that time; particularly in the big, stable republics of the south temperate zone. But in too many of the little countries along the shore of the Caribbean,— the region which a great American statesman has called "the land of the fantastic and the unexpected," men still prefer to vote as their forefathers did, with swords and cannon. Of all these backward countries, the one that has changed least since the days of the conquistadores is Colombia.

Panama was too small a state to stand alone, after it became independent of Spain, and accepted an invitation from Bogotá to put itself under the government there, but quickly found that it had exchanged King Log for King Stork. Almost immediately there were attempted revolts, and twice, in 1830 and again ten years later, the Isthmus won complete independence, and only returned to New Granada on promises of better treatment, solemnly made, but never realized. It was furthermore recognized, and set forth in the Constitution of that country, that Panama was a sovereign state, and that it or any one of the others had as much right to withdraw and set up an independent government as Virginia or New York or Massachusetts had under the old Articles of Confederation.
But constitutions and written laws have never been worth much in those parts, except for musket-wadding. The local idea of government was to put yourself in power and then squeeze all the taxes you could out of everybody else. Nobody ever became president of New Granada or Colombia except by violence, and no president was strong enough to keep peace in Panama.

Revolutions, like every other industry, were revived on the Isthmus by the coming of the forty-niners and the building of the railroad. The Spaniards there have always been predatory by choice, and as they had lived off the Indians in the old days, they now lived off the Americans and other travelers. It is the old story of the robber-barons of a trade-route, fighting each other and their equally greedy overlord for the privilege of extorting toll from the traders passing through their territory. Panama in the nineteenth century was still in the Middle Ages. The landward walls of the city were torn down less than fifty years ago, and underground passages still connect the fortress-like, town houses of the haciendados, the rich landowners who used to make revolutions and fight them with armies of peons from their great estates, led by bands of foreign mercenaries or soldiers of fortune. These were the barons, and the overlord was the federal government at Bogotá, which exercised absentee tyranny of the worst kind.

As the Panamanians were not strong enough to win independence, nor the Bogotá government to keep good order, every revolution either degenerated into brigandage, or was stopped by American intervention. For the burden of this disorder fell not so heavily on the in-
habitants of a region where there are no industries, and a poor man can gather a week’s food in half an hour’s walk through the jungle, as on the foreign merchants and traders, particularly the American-owned Panama Railroad. This company organized a police force of its own, called the Isthmus Guard, in 1855, and these fifty or so men, led by Ran Runnels, a Texas ranger, cleared the country of outlaws so thoroughly that in a few months they had abolished their own jobs. But only two years later, a dispute over the price of a slice of watermelon started a riot in which several American travelers were killed and hundreds of others, including many women, terrorized and plundered by the mob, the police and troops making no effort to stop the looting, but, instead, preventing the Americans from defending themselves.

Again and again our intervention was called for, and not always to defend our own people. Ferdinand de Lesseps brought fresh millions for the hungry, and his company was robbed by the local authorities almost as enthusiastically as by its own employees. During the scramble, revolutionists seized and burned Colon, with a great quantity of French canal stores. American marines were landed, restored order, and set the Colombian Humpty Dumpty up on his wall again. This was in 1885, and the successful general who made himself president that year proclaimed a new constitution which deprived Panama of all its rights as a sovereign state, and made it a mere province under the direct control of the federal government at Bogotá. Naturally there was great indignation on the Isthmus, and from
then until the end there was an almost constant series of attempts to gain freedom.

The enforced dash of the battle-ship Oregon around South America in the Spanish-American War woke up the United States to its need of a quicker naval route between the two coasts. Congress authorized the purchase of the rights and property of the New French Canal Company for $40,000,000,¹ an offer which that company was only too glad to accept, for, in 1903, its ten-year concession had nearly expired, and in another twelve months it might have no rights left to sell. We then offered the government of Colombia $10,000,000 for its permission to the Canal Company to make the sale, and for a new concession to the United States, allowing us to build and maintain the Canal.

The government of the so-called Republic of Colombia consisted, at this time, of one man, who had been elected vice-president but had kidnapped the president with a troop of cavalry and shut him up in an unsanitary dungeon, where he soon died. This interesting brigand had ruled ever since as president, without bothering about a congress, until he called one for the sole purpose of considering this offer of the United States. Hoping to get a higher price, and making no secret of their intention to wait until the French concession should run out and then demand some or all of the forty millions for themselves, the Colombian congress rejected our offer. They forgot what it meant to Panama.

Every inhabitant of the Isthmus knew that if the United States were not allowed to build the Canal there,

¹ See Appendix, valuation of this purchase.
it would build one across Nicaragua, where an American company already had a concession. If that were done, not only would Panama lose all its hoped-for prosperity, but even the railroad would cease to be operated, and the Isthmus would have as little trade or importance as in the eighteenth century. Naturally the Panamanians watched the Colombian congress anxiously, and, as soon as they saw the American treaty was doomed, began to prepare for a revolution.

Everything was in their favor. The garrison had been left unpaid so long and had so many friends and sweethearts among the citizens that it was easily won over. Companies of men were organized, ostensibly as a fire-department, and rifles for them were smuggled in from New York. (There is as much romance and wickedness in the secret gun-trade of that city to-day as there ever was in bucaneeering). Soon every prominent man on the Isthmus was in the plot, except the governor, who shut his eyes to it. Instead of the usual carpet-bagger from Bogotá, the newly appointed governor was Señor José Domingo de Obaldia, a man whose family have lived on the Isthmus for centuries, and he frankly told the Colombians that if the treaty were rejected, Panama would revolt, and he would do nothing to prevent it.

The treaty was rejected, and a date was at once set for the uprising. But the day before, a Colombian gun-boat steamed into the harbor of Colon, with four hundred and seventy-four conscripts and a few generals, who landed and demanded a train to take them to Panama City. The Bogotá government had at last become aware of the unsettled state of affairs on the Isthmus, which the
American newspapers had been discussing openly for a month, and had sent this force to put an end to it—which it did, but not in the way they expected.

The Panama Railroad officials, whose sympathies were all with the revolutionists, sternly refused to let the army ride without paying cash fare. So the generals and their staff went on alone to Panama, to take command of the troops there. The revolutionists, warned by telegraph, hastened their preparations and when the generals entered the barrack square, the soldiers, instead of presenting arms, seized them and locked them up. At once the flag of the new Republic of Panama was run up over the city, and on two of the three gunboats in the harbor. The third fired a few shells, killing one Chinaman, and then sailed back to Colombia.

Colonel Torres, who had been left in command of the Colombian troops at Colon, angrily declared that if the generals were not released and the new flags hauled down within an hour, he would kill every American in Colon. The women and children at once took refuge on two steamers, and the men gathered in the stone freight-house of the Panama Railroad, which had been strongly built for just such emergencies. But there was a small American gunboat, the Nashville, at Colon, and her captain landed forty-two sailors and marines. Torres then declared his great love for Americans, and a few days later he and his conscripts were bought up by the Panamanians for about twenty dollars apiece, and shipped back to where they came from.
The Isthmus was now entirely in the hands of its own people, as it had been three times before; and three lines of action were open to the United States. The first was to intervene and force the Panamanians back under the rule of Bogotá, the second was to let the two sides fight it out to a finish. But we had tried both of these remedies again and again for over fifty years, and neither had availed to stop the endless bloodshed and destruction of property. The third course was to recognize the independence of the Republic of Panama, and forbid Colombia, now a foreign power, to land troops on the Isthmus. That was what President Roosevelt did, and the judgment of the American people was summed up in a remark made by a western congressman: “When that jack-rabbit jumped, I’m glad we did n’t have a bow-legged man for President.”

To any one acquainted with the history of the Isthmus, the Revolution of 1903, though almost equally sudden, appears no less natural than the jump of a startled jackrabbit; and indeed there was fifty times as much reason for it as for any of the fifty or more revolts that preceded it. Much as we wanted Panama, the Panamanians wanted us more, and if there was one thing experience had taught them it was how to organize a revolution. The charge that our government had “conspired” to bring it about was brought by persons utterly ignorant of
the facts, flatly denied by President Roosevelt and his Secretary of State, John Hay; and the most rigid investigations by Congress have failed to reveal the slightest evidence either of the existence of such a conspiracy, or of the need of any external incentive for the Isthmus to revolt.

The same orders were given the commanders of our war-ships as in several previous revolutions: to allow neither belligerent to land men or arms within fifty miles of either Panama or Colon. Colombia talked much of marching an army overland to the Isthmus, but that trail runs through the land of the San Blas Indians, and it would take a very strong army of white men to fight their way through that region, either then or to-day. Certain San Blas chiefs who had been made colonels in the Colombian army refused to fight the Panamanians; and the country of these Indians, though nominally in one or the other of the two republics, has been really an independent buffer state between them ever since 1903.

The Republic of Panama was quickly organized, with a constitution modeled on that of the United States, and a treaty was made between the two countries, by which the United States received the perpetual right to build and maintain a canal across the Isthmus, in return for the payment of $10,000,000. It also acquired possession of the Canal Zone, a strip of land five miles wide on either side of the Canal, and this bit of Central America is now as much United States territory as the parade-ground at West Point. The two cities of Panama and Colon, however, were scalloped out of either end of the Zone and left part of the republic; but their ports, Balboa
and Cristobal, became American, and the United States Government obtained the right to keep Panama and Colon clean, and to interfere whenever it thinks the native authorities cannot keep good order. For Uncle Sam was determined to make an end of filth and fever and petty warfare on the Isthmus, and get to work.
CHAPTER XII

HOW THE Isthmus WAS MADE HEALTHY

The New French Canal Company lost no time in accepting the $40,000,000, and its representative on the Isthmus formally turned over possession to the United States on May eighth, 1904. At this time, only about six hundred West Indians were working in the Cut, with a few side-excavators and trains of four-wheeled dump-cars, and an impatient call went up from the American people for their government to "make the dirt fly!". But for the next two and a half years, there was very little digging and a great deal of preparation.

Instead of hurrying thousands of laborers to the Isthmus to have them die there, as they did in the fifties and eighties, of fever and insufficient food, we cleaned house before we moved in. Clearings were made in the jungle, swamps were drained, old French houses were repaired and new ones were built. A line of steamers fitted with cold storage brought food from New York, and hotels or mess-houses served it to the men. The French hospitals at Ancon and Colon were enlarged, and the dirty little cities of Panama and Colon were cleaned and made sanitary. But though the filth was gone the fever remained.

In the same way, Havana and Santiago de Cuba, cities which old shipmasters declared they could smell ten miles
COLONEL WILLIAM C. GORGIAS.
to sea in an offshore breeze, had been thoroughly cleaned by our army as soon as the Spaniards evacuated Cuba in 1898, but still our soldiers had kept dying of yellow fever there. Everything that medical science could suggest was done to stop the spread of the disease, but without effect. Thousands sickened and hundreds died, while the doctors stood by, as one of them declared, “in utter perplexity and wonder.”

No one knew how yellow fever was spread, though its ravages had been only too well known for two centuries and more. It had killed over thirty-six thousand people in Havana and a hundred and thirty thousand in Spain; it had swept our coast from Massachusetts to Florida, killing one person out of every ten in Philadelphia in 1793, and over forty thousand in New Orleans between then and the end of the nineteenth century. Though other diseases, notably tuberculosis, have caused and still are causing much more direct suffering and loss of life, they were less feared because they lacked the terror of the unknown. When yellow fever broke out in a city, it was as if the very Angel of Death had come, walking invisible and slaying without cause. Then followed wild stampedes, brutally checked by “shotgun quarantines,” looting, debauchery, and a wide-spread paralysis of business, causing altogether a loss of life and property impossible to compute.

Two things held yellow fever in check; frost stopped it, and those that recovered from the first attack were immune for the rest of their lives. Several regiments of these “immunes” were raised during the Spanish-American War, but there were not enough of them to garrison
all Cuba, and the disease soon broke out among the other troops sent there. Among non-immunes, and below the frost-line, what hope was there of stopping the spread of yellow fever? Only that some hero might strip this giant of his invisible coat, and, by showing what path he followed from death-bed to death-bed, enable us to guard and close it. That hero came, and in all our history there is no nobler story than that of his triumphant sacrifice.

It had long been suspected by several doctors that the germs of yellow fever were carried to fresh victims, neither by contact nor in infected clothing, but by certain species of mosquitos. Dr. Carlos Finlay, an old Havana physician, had declared this belief as early as 1883. But no one could say for certain, because yellow fever is a disease that attacks only human beings, and to make the necessary experiments there were required, not mice or guinea-pigs, but living men.

One night in July, 1900, four surgeons of the United States Army Medical Corps met in Havana, where they had been sent as a Yellow-Fever Commission, and decided that the time had come when these experiments must be made. With full knowledge of the fearful nature of the disease, these doctors agreed that before they called for others to volunteer, they would make the first experiments on their own bodies.

But one of the four, Dr. Aristides Agramonte, a Cuban, was an immune and therefore could take no part in the tests; and another, Major Walter Reed, was almost immediately recalled to Washington. The two others, Jesse William Lazear, an American, and James
SANITARY SQUAD CLEANING PANAMA CITY.
The Isthmus Made Healthy

Carroll, an Englishman, let themselves be bitten by mosquitoes that had sucked the blood of yellow-fever patients. The experiment was but too successful. Both took the disease, Carroll recovered, but Lazear died. "Greater love hath no man than this, that a man lay down his life for his friends."

A tablet, erected to the memory of Lazear, in Johns Hopkins Hospital at Baltimore, bears this inscription, written by President Eliot of Harvard University:

"With more than the courage and the devotion of the soldier, he risked and lost his life to show how a fearful pestilence is communicated and how its ravages may be prevented."

Volunteers were called for, that further experiments might be made, and General Leonard Wood, then military governor of Cuba, offered to pay each a reward of $200. When this was explained to the first men who came forward, two young soldiers from Ohio, John R. Kissinger and John J. Moran, both refused to accept it, declaring that they had volunteered "solely in the interest of humanity and the cause of science." Major Reed, to whom this declaration was made, rose to his feet, raised his hand to his forehead as if in the presence of his superior officer and said to these humble enlisted men, "Gentlemen, I salute you." When Major Reed told of this incident, not long afterwards, he declared, "In my opinion, this exhibition of moral courage has never been surpassed in the annals of the army of the United States."

Thanks to the skill of Major Reed, none of the thirteen men who followed the splendid example of Carroll and
Lazear lost their lives; though some permitted themselves to be bitten by infected mosquitoes and so took the fever, while their comrades entered a little room as dark and airless as the Black Hole of Calcutta, and slept there for three weeks, between blankets taken from the beds where yellow-fever patients had died. These last suffered nothing worse than discomfort, and it was conclusively proved that yellow fever is carried by the bite of a single species of mosquito; the *Stegomyia fasciata*, and by nothing else. This discovery, which has been truly said to be worth more than the entire cost of the Spanish War, gave the doctors something tangible to fight. Reed and Carroll drew up a complete program for protecting patients and killing off the mosquitoes, and by putting it vigorously into effect, freed Cuba from yellow fever within a year.

Among Major Reed's assistants in Havana was Dr. William C. Gorgas, who was made chief sanitary officer of the Canal Zone shortly after the Americans came to Panama. Here he was confronted with a problem almost exactly like that which he had already seen solved in Cuba. All that was required was the intelligent and vigorous application of the principles discovered by the sacrifice of Lazear and elaborated by Carroll and Reed. Unfortunately, Dr. Gorgas was badly handicapped at the start by the failure of the United States Government to supply him with the force and funds necessary to do this.

The natural result was an outbreak of yellow fever, in Panama, in the spring and summer of 1905. Thirty-five of the American employees died, and hundreds more
The Isthmus Made Healthy

fled north as fast as they could find deck-room on the crowded ships. There they filled the newspapers with panic-stricken interviews and doleful prophecies that the Canal would never be built, and fervidly quoted this well-known stanza from the works of Gilbert, the poet of Colon.

Beyond the Chagres River,
'T is said (the story's old)
Are paths that lead to mountains
Of purest virgin gold;
But 't is my firm conviction,
Whate'er the tales they tell,
That beyond the Chagres River,
All paths lead straight to Hell!

"There are three diseases in Panama," declared Mr. John L. Stevens, who became chief engineer at this time. "They are yellow fever, malaria, and cold feet; and the greatest of these is cold feet."

But now Dr. Gorgas was given his long-delayed medical supplies, his water-pipes, porch-screens, and plenty of money. Thousands of men were taken from the excavating force to swell the sanitary-squad. Best of all, the new governor of the Canal Zone—to whom the head of the Department of Sanitation was then subordinate—was Mr. Charles E. Magoon, who helped Dr. Gorgas with the greatest good-will and energy.

The first thing was to establish a rigid quarantine at both ports, to prevent new cases being brought in from other countries by sea. Every ship that came from a yellow-fever port was thoroughly fumigated to kill any infected mosquitos that might be on board, and all the
passengers were kept in a screened house, where no local mosquitos could get at them, until long after the time required for the development and discovery of any possible fever-case among them. Without sick people to bite, the mosquitos could get no germs to carry, and, contrariwise, without the Stegomyia mosquito, the germs could not be carried from one person to another. Dr. Gorgas and his little army attacked the enemy from both directions at once.

The two great strongholds of the disease were the cities of Panama and Colon. Here the sanitary control which we had obtained by treaty-right was greatly helped by the fortunate fact that the first President of the Republic of Panama was Dr. Manuel Amador Guerrero, a well-trained physician and an authority on tropical diseases. At his suggestion, native doctors were appointed sanitary inspectors, and they did their work far more tactfully and with less friction than American inspectors could possibly have done, among a Spanish-speaking population, virtually all of whom were immune to yellow fever and had no idea of sanitation. They submitted with the greatest good-nature to having their houses entered and searched for yellow-fever patients, and during the worst of the epidemic, every house in Panama City was visited every day. As soon as a new case was discovered, the sick man was carried to the hospital in a screened ambulance, and his house and those of his neighbors were tightly sealed up with strips of paper and fumigated with sulphur, after which the dead mosquitoes were carefully swept up and burned. Then detective work would begin in two different directions: watching
for new cases caused by mosquitoes that might have bitten this man; and tracing back the source of his infection to some earlier and perhaps hitherto undiscovered case.

This would have been a well-nigh impossible task if the yellow-fever mosquito had been as strong on the wing as the more harmless species we know so well at home, most of whom can fly for miles with a favorable breeze. Fortunately, the Stegomyia is a feeble creature, usually living in or about houses, and rarely flying more than a hundred yards from its birthplace in some stagnant pool. The favorite breeding-places of these insects in Panama City were the rain-water barrels and cisterns, which were first screened and afterwards destroyed when the new waterworks were finished.

The old waterworks consisted of two or three large Spanish wells, that received most of the drainage from the graveyard, and a few carts, from which the man who owned the graveyard used to peddle this water through the streets, for five cents a gallon. It was much better for his business than for the people who drank it. The Americans stopped this, and piped in good water from a reservoir made by damming the Rio Grande. There was a great celebration on the Fourth of July, 1905, when the water was turned on in the Cathedral Plaza. The President, and the Governor, and all the other dignitaries, both Panamanian and American, attended a solemn high Mass in the cathedral, and at the elevation of the Host and the stroke of noon, the water was sent spurting into the air outside, and the Panamanian Republican Band struck up what it thought was the American national
anthem. It was a popular tune of the period, called "Mr. Dooley"!

Sewers were laid at the same time as the water-pipes, and the big clumsy cobblestones were ground up in portable rock-crushers to make a concrete bed for the smooth new pavements of vitrified brick. Formerly, garbage of all sorts was thrown out into the streets to rot there or be eaten by the hundreds of vultures that were the only street-cleaning department. But now the streets are swept every night by gangs of negroes, employed by the Panamanian Government, under American supervision.

In sanitation as in politics, we found Panama a city of the Middle Ages. Our doctors discovered a few wretched lunatics chained to the damp walls of the seventeenth-century dungeons, hewn out of the rock beneath the sea-wall; and lepers, who lived on the beach outside the city wall, and dared not come too near, lest people call out, "Unclean! Unclean!" and stone them, exactly as they did in Old Testament times. Though these un-
fortunates had no claim on our charity, our government at once built a modern insane asylum, first at Miraflores, and later at the Ancon hospital, and moved the lepers to a very beautiful little settlement called Palo Seco. There they are so well cared for that one man, whom our army doctors cured of a slight case of the disease, begged to be allowed to stay in that place for the rest of his life, and was made a hospital orderly there.

Driven out of the two cities, the harried Stegomyia found no refuge in the Canal Zone. There Dr. Gorgas's men cut down hundreds of acres of sheltering brush and high grass, dug miles of drainage ditches and covered all undrained pools and swamps with heavy oil that killed the mosquito larvae whenever they came to the surface to breathe. Holes were blown in old French dump-cars to keep them from holding water. To throw an empty tin can where it might become a breeding-place for mosquitoes was made a finable offense.

The epidemic of 1905 came to an end in September and the panic stopped with it. The last case of yellow fever on the Isthmus was in November, 1906. To-day, the Stegomyia mosquito is virtually extinct there, and so long as it is kept down and all foreign cases of the disease kept out, there will never be any more danger of an epidemic of yellow fever at Panama than at the North Pole. There is still a certain amount of "Chagres fever," which is nothing more or less than malaria. For the Anopheles mosquito, that carries the germ of this disease — a fact discovered by Dr. Ronald Ross of the British Army, in India in 1898 — is a much stronger andhardier insect than the Stegomyia, and it is almost im-
possible to destroy it completely, especially round the
smaller construction camps in the jungle. But there is
much less malaria in Panama than in most parts of the
United States.

One of the greatest and least-known triumphs of Dr.
Gorgas and his organization was keeping the Isthmus
free from the bubonic plague, at a time when this terrible
disease, the "Black Death" that swept through Europe
in the fourteenth century, was raging in the other Pacific
ports both north and south of Panama. There it was
confined to the three original cases brought in by sea,
all of which proved fatal. This disease is carried, not
by mosquitos, but by fleas, that travel on the backs of
rats. A reward of ten cents was promptly offered for
every rat tail brought in, and the rat is now a very scarce
animal in Panama.

Dr. Gorgas was promoted to the rank of colonel in the
United States Army Medical Corps, and made a mem-
ber of the Isthmian Canal Commission in 1907. Though
he has turned Panama from a pest-hole into a health re-
sort, there is still no lack of work there for him and for
those who will come after him, for only by constant
vigilance and costly sanitation can large bodies of
Northern white men be kept healthy in the tropics.
Moreover, if yellow fever or any other dangerous disease
were ever again allowed to break out there, after Panama
has become one of the great highways of the world, the
Canal might easily prove as great a curse to humanity as
it promises to be a blessing, for then ships would carry
the sickness all too swiftly to all parts of the earth.
Few physicians have ever had laid upon them a heavier
The Isthmus Made Healthy

burden or a more sacred trust than that of the chief sanitary officer of the Canal Zone, and all the world knows how well Colonel Gorgas has discharged it. His name will go down in history as that of the man who freed the Isthmus from its most terrible enemy.

But Colonel Gorgas would be the last man to deny that if it had not been for the work of his old chief and associates in Cuba in 1900–01, neither he nor any other man would have known how to fight yellow fever on the Isthmus in 1905. And if ever a fitting monument is raised, either in Panama or in the United States, to celebrate the building of the Canal and the victory of mankind over yellow fever, there should be graven high upon it the names of Reed and Carroll and Lazear.
CHAPTER XIII

HOW WE ARE BUILDING THE CANAL

To give a complete history of the building of the Canal, from the arrival of the first American steam-shovel to the final merging of the construction into the operating force, would take a library of little books like this. The best I can hope for is to give the reader some slight idea of what we might have seen, had we crossed the Isthmus together, in the days of the canal-builders. Let us imagine that we are taking such a trip.

As we steam into Limon Bay, after a two-thousand-mile voyage from New York, you will notice the long breakwater that is being built out from Toro Point, to make this a safe harbor, and also to keep storms and tides from washing the mud back into the four miles of canal that run under the sea to deep water. Down this channel comes something that looks like a very fat ocean steamer, and when it reaches the end it rises several feet in the water, turns round, and waddles back again. This is the sea-going dredge Caribbean, busy sucking up the bottom into its insides, and carrying it away. This craft is painted white, with a buff super-

1 The greater part of this chapter originally appeared in St. Nicholas, in February, 1912, and no better time could have been chosen for a trip to Panama, either in the flesh or in print. Then the great work, though so near completion that it was possible to see in it the finished design, was still being pushed with undiminished vigor.
structure, as our warships used to be, and when it first came to the Isthmus, the quarantine officer put on his best suit of white duck, and went out to take breakfast on board the "battleship." Many other smaller dredges are dipping up rock into barges or pumping mud through long pipes to the land, all the way to the shore, and up the four miles of sea-level canal to where the Gatun Locks loom in the distance. All this you can see as we cross the bay to the ugly town of Colon, and its pretty suburb of Cristobal, which last is in the American Canal Zone, and the place where the steamers dock.

Now that you have seen what these dredges can do, you will ask me why we do not dig the rest of the Canal that way, instead of bothering with locks and dams, and I can give you the answer in five words: because of the Chagres River. This troublesome stream, as you can see by the map on page 4, comes down from the San Blas hills, strikes the line of the Canal at a place called "Bas Obispo," and zigzags across it to Gatun. And though we can dredge a channel up to Gatun, or scoop out the Culebra Cut, which is an artificial cañon nine miles long through the hills between Bas Obispo and Pedro Miguel, on the Pacific side of the divide, we could not dig below the bed of the Chagres without having a lot of waterfalls pouring into the Canal, washing down the banks and silting up the channel. And as the Chagres is a sizable river that has been known to rise more than twenty-five feet in a night — for the rainfall at Panama is very severe — you can see that it is no easy problem to control it. But we have solved that problem by means of the Gatun Dam.
At Gatun, the valley of the Chagres is only about a mile and a quarter wide, and by closing the gap between the hills on either side with an artificial hill — for that is what the Gatun Dam really is — we accomplish two things: first, by backing up the river behind the dam, we form a deep lake that will float our ships up against the side of the hills at Bas Obispo, and make so much less digging in the Culebra Cut; and, second, a flood that would cause a rise of twenty-five feet in the river would not cause one of a quarter of an inch in the big lake, that will have an area of nearly two hundred square miles.

In building the dam that is to hold back all this water, two trestles were driven across the valley, and from them were dumped many train-loads of hard rock from the Culebra Cut, to form what the engineers call the "toes" of the dam. To fill the space between them, dredges pump in muddy water that filters away between the cracks of the toes, leaving the sediment it carried to settle and form a solid core of hard-packed clay, over a quarter of a mile thick. When the dam is finished, the side toward the lake will be thoroughly riprapped with stone to prevent washing by the waves, and so gentle will be the slope that you could ride over it on a bicycle without rising on the pedals.

To keep the water from running over the top of the dam, the engineers have cut a new channel for the Chagres through a natural hill of rock that stands in the center of the valley, and this, lined with concrete and fitted with regulating works, is what they call the "spillway." When the dam is finished, the spillway will be
FINISHED SECTION OF CULEBRA CUT, AT BAS OBISPO.
The water in the drainage ditch is four feet below the level of the completed canal.
Gatun Dam, Spillway and Locks.

From Official Handbook.
closed, and then the tremendously heavy rainfall — from ten to fifteen feet a year — will fill the lake in less than a twelvemonth. All the surplus water will run off through the spillway, and as it runs it will pass through turbines and turn dynamos to generate electricity for operating the machinery of the Gatun Locks that will lift ships over the dam.

These locks are in pairs, like the two tracks of a railroad, so that ships can go up and down at the same time; three pairs, like a double stairway, of great concrete tanks each big enough for a ship a thousand feet long, a hundred and ten feet wide, and forty-two feet deep to float in it like a toy boat in a bath-tub. You can get some idea of their size when you remember that the *Titanic* was only eight hundred and fifty-two feet long. Or, to put it another way: every one of these six locks (and there are six more on the Pacific side) contains more concrete than there is stone in the biggest pyramid in Egypt.¹ The American people have been able to do more in half a dozen years than the Pharaohs in a century, for our machinery has given us the power of many myriads of slaves.

And wonderful machinery it is at Gatun, both human and mechanical. It is not easy for a visitor, standing on one of the lock walls — which, as you can see from the diagram, is as high as a six-story house — and looking down into the swarming, clanging lock-pits, to see any system, but if he look closely, he can trace its main

¹ In the construction of the locks, it is estimated that there will be used approximately four million, two hundred thousand cubic yards of concrete, requiring about the same number of barrels of cement. — Official Handbook of the Panama Canal.
GATUN LOCKS.

Steel form for casting a section of the square centre wall.
How We Are Building the Canal

Outlines. Up the straight four-mile channel from Limon Bay come many barges, towed either by sturdy sea-going tugs or an outlandish-looking, stern-wheel steamer called the *Exotic*. Some of these barges are laden with Portland cement from the United States, others with sand from the beaches of Nombre de Dios, or crushed stone from the quarries of Porto Bello. (For both of these old Spanish ports are now alive again, helping in the building of the Canal, and every now and then one of our dredges strikes the hull of a sunken galleon, or brings up cannon-balls or pieces-of-eight.)

The cargoes of all

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1 See Appendix.
these barges are snatched up by giant unloader-crane
and put into storehouses, out of which, like chicks from
a brooder, run intelligent little electric cars that need no
motormen, but climb of themselves up into the top story
of the dusty mixing-house. Here, eight huge rotary
mixers churn the three elements, cement, sand, and stone,
into concrete, and drop it wetly into great skips or
buckets, two of which sit on each car of a somewhat
larger-sized system of electric trains, whose tracks run
along one side of the lock-pits. Presently those skips
rise in the air and go sailing across the lock-pit in the
grip of a carrier traveling on a steel cable stretched be-
tween two of the tall skeleton towers that stand on either
side of the lock-site. When the skip is squarely above
the one of the high steel molds it is to help fill, it is tilted
up, and there is so much more concrete in place.

When the last cubic yard has been set, the gates hung,
and the water turned in, a ship coming from the Atlantic
will stop in the forebay or vestibule of the lowest right-
hand locks, and make fast to electric towing-locomotives
running along the top of the lock-walls. No vessel will
be allowed to enter a lock under her own power, for fear
of her ramming a gate and letting the water out, as a
steamer did a few years ago in the “Soo” Locks, be-
tween Lake Huron and Lake Superior. Every possible
precaution has been taken to prevent such an accident at
Gatun. Any ship that tried to steam into one of the
locks there, for any reason whatsoever, would first have
to carry away a heavy steel chain, that will always be
raised from the bottom as a vessel approaches, and never
lowered until she has come to a full stop. Then the
PEDRO MIGUEL LOCKS.

Arches for carrying the touring locomotive tracks from level to level.
runaway ship would crash, not into the gates that hold back the water, but a pair of massive “Guard gates,” placed below the others for this very purpose.

“The lock gates will be steel structures seven feet thick, sixty-five feet long, and from forty-seven to eighty-two high. They will weigh from three hundred

A BIRD'S-EYE VIEW OF ONE OF THE NINETY-TWO PANAMA “BULL-WHEELS.”

This wheel was invented by Mr. Edward Schildhauer of the Isthmian Canal Commission. The wheel revolves horizontally and thrusts out from the side of each lock-wall a long steel arm that opens and closes one of the huge lock-gates. These gates are of the “miter” pattern, so called because, when closed, they make a blunt wedge pointing up-stream, like the slope of a bishop's miter. Observe the curved and hollowed recesses in the lock-walls into which the open gates fold back, like the blades of a knife into the handle. There are, of course, two “bull-wheels”; one for each of the gates.

to six hundred tons each. Ninety-two leaves will be required for the entire Canal, the total weighing fifty-seven thousand tons. Intermediate gates will be used in the locks, in order to save water and time, if desired, in locking small vessels through, the gates being so placed as to divide the locks into chambers six hundred and four hundred feet long, respectively. Ninety-five per
cent. of the vessels navigating the high seas are less than six hundred feet long.” ¹

You will notice that each leaf of a pair of these gates is sixty-five feet long, instead of fifty-five or half the width of a lock. When they are closed, they form a blunt wedge pointing upstream, and the pressure of the water only keeps them tighter shut. Finally, if all the gates were swept away, there would still remain the "emergency dam" at the head of each flight of locks, ready to be swung round and dropped into position like a portcullis.

Once a ship is inside, the lower gates will be closed behind her by machinery hidden in the square center-pier, valves will be opened, and water from the lake will rush down the conduits in the walls and flow quietly in from below, until it has reached the level of the lock above. Then the upper gates will open, and the electric locomotives,—there will be four of them to handle every big ship, one at each corner,—will go clicking and scrambling up the cog-tracks carried on broad, graceful arches

¹ Official Handbook.
from level to level, and then pull the ship through after them. In like manner will she pass through the two upper locks, and out on the wide waters of Gatun Lake, eighty-five feet above the level of the sea.

The average time of filling and emptying a lock will be about fifteen minutes, without opening the valves so suddenly as to create disturbing currents in the locks or approaches. The time required to pass a vessel through all the locks is estimated at three hours; one hour and a half in the three locks at Gatun, and about the same time in the three locks on the Pacific side. The time of passage of a vessel through the entire canal (about fifty miles from deep water in one ocean to deep water in the other; forty from beach to beach), is estimated as ranging from ten to twelve hours, according to the size of the ship, and the rate of speed at which it can travel.”

The time spent by a ship in the locks at Panama will be more than made up by the much greater ease and speed with which she will be able to navigate the rest of the Canal there, as compared with that at Suez, where steamers must crawl at a snail’s pace, or the wash from their propellors will bring down the sandy banks; and two large liners cannot meet and pass without one of them having to stop and tie up to the shore. At no place on the Panama Canal will this be necessary, for even at its narrowest part — the nine miles through the Culebra Cut — the channel will be three hundred feet wide at the bottom, giving plenty of elbow-room for the largest ships, and lined with concrete where it is not hewn out of solid rock. The under-water and sea-level sections

1 Official Handbook.
at either entrance will be five hundred feet wide, and through the greater part of the Gatun Lake, a ship will steam at full speed down a magnificent channel one thousand feet broad, with no more danger of washing the banks than if she were in the middle of the lower Amazon.

To help night navigation, there will be long rows of acetylene buoys, so ingeniously made that the difference of a few degrees of heat regularly caused on the Isthmus by the rising and setting of the sun, will serve to turn their light off and on, by expanding and contracting a little copper rod. This device, invented by one of the American canal employees, has been thoroughly tested, and found to work perfectly. Everywhere trim little concrete lighthouses, looking strange enough in the jungle, are being built, or, rather, cast in one piece, on wooded hilltops that will soon be islands.

Already the yellow water is rapidly backing up, as the dam and the spillway gates are being raised. You can mark the spread of the lake by the gray of the dying, drowned-out trees against the green of the living jungle. Only in the channel and the anchorage basin has Gatun Lake been cleared of timber, and the greater part of it will be a mass of stumps and snags. The centuries-old trade-route down the Chagres has been wiped out, and more than a dozen little towns and villages, Ahorca, Lagarto, Frijoles, San Pablo, Matachin,¹ have been moved to new sites on higher ground. It was not easy to make the natives believe that these places that had been inhabited for hundreds of years would soon be un-

¹ See Appendix.
RELOCATING THE PANAMA RAILROAD.
der forty feet of water. Some thought the Americans were prophesying a second deluge. "Ah, no, Señores," protested one old Spaniard, "the good God destroyed the world that way once, but He will never do so again."

The Panama Railroad, too, has been relocated for its entire length, except for two miles or so out of Panama City, and a little over four miles between Colon and Gatun. Both the former station and the old village at Gatun (which is the place where Morgan's bucanneers and the Forty-niners, and all the other travelers up-river spent the first night) are now buried under the huge mass of the Gatun Dam. The former line of the Panama Railroad through the lake-bed, though double-tracked and modernized only a few years ago, has been completely abandoned. The new, permanent, single-track road swings to the east at Gatun, and runs on high ground round the shore of the lake to a bridge across the Chagres at Gamboa, a little above Bas Obispo. It was originally planned that the railroad should run from here through the Culebra Cut on a "berm" or shelf, ten feet above the surface of the water, but the many slides caused this to be abandoned, and the line was built through the hills on the eastern side of the Cut. At Miraflores it runs through the only tunnel on the Isthmus. Because of the very heavy cuts and fills, the relocation of the Panama Railroad has cost $9,000,000, or $1,000,000 more than building the original road, although the new line is about a mile shorter. It is very solidly built, with steel bridges, concrete culverts, steel telegraph poles, made of lengths of old French rails bolted together and set up on end, and embankments
filled with several million cubic yards of rock from the Cut.

Only a little rock was taken out of the Culebra Cut by the French, most of their digging being what the engineers call "soft-ground work." But the deeper part of the great nine-mile trench, which they left for the Americans to dig, is almost entirely a "hard-rock job." From Bas Obispo to Pedro Miguel (which every American on the Isthmus calls "Peter Magill") it must be hewn and blasted out of solid stone. Row above row of steam or compressed-air drills are boring deep holes in the terraces beneath them, and gangs of men are kept busy filling these holes with dynamite. As much as twenty-six tons were used in one blast, when an entire hillside was blown to pieces, and twice every day, when the men have left the Cut for lunch or to go home, hundreds of reports go rattling off like a bombardment.

Then they move up the great steam-shovels to dig out the shattered rock with their sharp-toothed steel "dippers" that can pick up five cubic yards or eight tons, at a time. Think how bulky a ton of coal looks in the cellar, and then imagine eight times that much being lifted in the air; swung across a railroad track, and dropped on a flat-car, as easily as a grocer's clerk would scoop up a pound of sugar and pour it into a paper bag. Boulders too large to handle conveniently are broken up with "dobey shots," small charges of dynamite stuck into crevices, and tamped down with adobe clay. So skilful are the steam-shovel men (all Americans), that they will make one of their huge machines pick up a little pebble rolling down the side of the Cut as easily as
you could with your hand; and every one of them is racing the others, and trying to beat the last man's record for a day's excavation. The present record was made on March twenty-second, 1910, when four thousand, eight hundred and twenty-three cubic yards of rock, or eight thousand, three hundred and ninety-five tons were excavated in eight hours by one machine. There are one hundred of these steam-shovels on the Isthmus, and more than fifty of them in the Culebra Cut, and to see them all puffing and rooting together, more like a herd of living monsters than a collection of machinery, is one of the most wonderful spectacles in the world.

Sometimes steam-shovels will be caught and buried by a "slide," an avalanche of rock or a river of mud brought down by some weakness in the banks. Wrecking trains and powerful railroad-crane are always kept ready to go to their rescue. The worst place is across the Cut from the town of Culebra, where forty-seven acres of hillside are crawling down like a glacier. This is the famous Cucaracha Slide, that began to trouble the French as long ago as 1884; and though two million cubic yards of it have been dug away, there is half as much more to come. Altogether, this slide and the twenty others will have brought twenty million cubic yards of extra material to be taken out of the Cut, by the time the Canal is finished. But our engineers have learned how to stop them, by cutting away the weight at the top of each slide, and that, and the pressure of the water in the finished canal, should keep the banks at rest.

To carry away the rock and earth dug out by the steam-shovels, there is an elaborate railroad system of
several hundred miles of track, so ingeniously arranged that the loaded trains travel down-grade and only empty cars have to be hauled up hill. Much rock is used on the Gatun Dam, and also on the breakwaters at either end of the Canal, but most of the material excavated from the Cut is disposed of by filling up swamps and valleys. Every dirt-train (they would call it that on the Isthmus even if it carried nothing but lumps of rock as big as grand pianos), travels an average distance of ten miles to the dumps and has the right of way over passenger trains, specials, and even mail trains. Only for the President of the United States has the line ever been cleared.

At the dumping-ground, each dirt-train is run out on a trestle, and unloaded in one of two ways. If it is composed of steel dump-cars, they are tipped up either by hand or compressed air. Most of the trains, however, are of big wooden flat-cars, raised on one side, and connected by steel flaps or "aprons," so that a heavy steel wedge, like a snow-plow, can be drawn from one end of the train to the other by a windlass and cable, thus clearing all the cars in a jiffy. (It is great fun to ride on the big wedge when they are "plowing-off.") When the dirt begins to rise above the edge of the trestle, a locomotive pushes up a machine called the "spreader," that smooths it out into a level embankment, and then another machine, the "track-shifter," picks up the ties and rails bodily, and swings them over to the edge of the new ground. Each of these machines does the work of hundreds of laborers.

Two large machine shops, now at Gorgona and Em-
LIDGERWOOD FLATS BEING UNLOADED
Balboa Dumps, low tide, March, 1908.

A SPREADER
Balboa Dumps, low tide, March, 1908.
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pire, but soon to be moved to Balboa, at the Pacific end of the Canal, are kept busy assembling new machinery brought down from the United States, and repairing the worn parts of the steam-shovels, the hundreds of locomotives and thousands of cars. At Mount Hope, near Colon, is a shipyard for the tugs and dredges of the Atlantic division, and a huge general storage yard and warehouse for everything from a ten-ton casting for a lock-gate to a box of thumb-tacks for fastening a blueprint of that gate to a drawing-board. Every necessary article is there and in its proper place; and the same is
true of the tool-box of the smallest switch-engine. From the top to the bottom there is neither skimping nor waste, but an efficiency like that of a Japanese army in the field.

At Pedro Miguel a ship from the Atlantic will begin the descent on the other side of the divide. The locks on the Pacific side are exactly like those at Gatun, except that instead of having all three pairs together, there is one pair here and two at Miraflores, with a little lake between. From Miraflores, the Canal is being dredged out at sea-level to its Pacific terminus at Balboa, where there will be great docks and warehouses and shipyards on land that has been made by filling in tidal marshes with dirt from the Culebra Cut. As on the Atlantic side, the Canal will run four miles out under the sea to deep water; and to protect it from storms, a breakwater is being built from the shore to Naos Island, in the Bay of Panama. It is both strange and appropriate that the Panama Canal should have one of its entrances at this island, whose name, the Spanish word for "ship," reminds us that three hundred and fifty years ago it was the port of the city of Old Panama.
CHAPTER XIV

HOW WE LIVE ON THE Isthmus To-Day

WHEN Bill Smith, steam-shovelman, went to Panama in 1904, he wrote to his wife in Kansas City that it looked to him like a pretty tough camp. The food was bad and the water was worse, and there was n't enough of either. His quarters were in an old French house full of scorpions, and the only mirror he could find to shave himself in was a broken piece of window-glass tilted back against the wall. Some of the boys were living in tents, and others in native shacks with mud floors, thatched roofs full of snakes, and walls you could throw a cat through. There was no place for a man to go after he finished his day's work but a saloon full of bad liquor or a crooked gambling-house. Two of the men who came down with him had died of fever, and three more had gone back on the next boat north. But Bill Smith thought he would stick it out a little longer. It took more than a little courage to make that resolution in 1904.

In 1912, Bill is still on the Isthmus, and Mrs. Smith and the children are there too. They are living rent-free in a "Type 17 House," a neat little cottage that Uncle Sam has not only built for them, but also furnished, from the concrete piles it stands on, to the ventilator in the galvanized-iron roof. Grass rugs, mission
furniture, silverware, bed linen, coal for the kitchen range, all are provided by the United States Government, to say nothing of free electric light, and a free government telephone. The wide veranda is screened with copper netting (iron would rust too quickly) to keep out the few mosquitos that have escaped Colonel Gorgas. The garden is planted with flowers provided by the quartermaster's department, and a cement walk leads to the macadamized and electric-lighted street that eight years ago was covered with primeval jungle.

They dine well at the Smiths', though virtually every mouthful of their food has to be brought by sea from New York or New Orleans, in ships fitted with cold-storage. From the great storehouse at Mount Hope, every morning a long train of refrigerator-cars crosses the Isthmus, and brings fresh supplies to the hotels and local commissaries in all the camps and towns. A bachelor, quartered in a hotel, comes down from his comfortably furnished room that costs him nothing, to a meal that costs him thirty cents, and which he would be lucky to get in New York for less than a dollar. Mrs. Smith buys her meat and groceries at the commissary store at wholesale prices. But in neither case is anything sold for money. Everything is paid for with checks torn out of booklets issued to employees and charged against their salaries, and with these you can buy anything from a pair of khaki trousers to an ice-cream soda. For Uncle Sam began by supplying frontier necessities, and ended by providing every luxury that you would expect to find in a thriving community of ten thousand Americans.
STREET OF MARRIED QUARTERS AT PEDRO MIGUEL.

TYPICAL DINING ROOM IN ISTHMIAN CANAL COMMISSION HOTEL.
How We Live on the Isthmus

The life of the five thousand American engineers and clerks and foremen, and that of their wives and children, is very much like what it would be at home. Though it is summer all the year round, the temperature seldom rises above eighty-six, and it is always cool and pleasant at night. There are band concerts, and firemen's tournaments,—there is a well-equipped and efficient fire department,—and women's clubs, and church societies, and a Panama Canal baseball league.

Hundreds of sturdy, sunburned American children (for though the English cannot raise healthy white children in India, we can in Panama) go galloping about on little native ponies, or study in the Canal Zone public schools. The pupils of the high school publish a monthly paper called the Zonian. Several patrols of boy-scouts have been organized, and they have the advantage of a real jungle to scout in.

Uncle Sam had no intention of becoming a benevolent landlord and caterer when he went to Panama to dig the Canal. But in order to get the best class of American workingmen, and keep them fit to do their best work, he had to keep adding one thing after another, until now there are government laundries, bakeries with automatic pie, cake, and breadmaking machines, electric-light plants, ice factories, plants for roasting coffee and freezing ice cream; a harness shop, livery stables, printing-press, and an official newspaper, the Canal Record.

If Bill Smith were struck by a flying fragment of rock after a too-heavy blast in the Cut, he would find a first-aid package beside his seat on the steam-shovel, receive free treatment at Ancon or Colon Hospital, and spend
his convalescence at the comfortable rest-home on the beautiful island of Taboga in Panama Bay. Instead of losing his pay in gambling, which is strictly forbidden and effectively kept out of the Zone, he and the other employees send home over a quarter of a million dollars worth of postal money-orders every month. He no longer spends his noon hours and evenings at a saloon, but at one of the Government club-houses or recreation-buildings, reading, bowling, playing basket-ball, and otherwise enjoying himself. Or he can drop into the lodge-room of his fraternal order,—as an "old Canal man" of 1904, Bill Smith would certainly belong either to the "Incas," or the "Society of the Chagres." He works for union hours for better than union pay, and every year he and his family are given first-class passages at reduced rates to New York and back on one of the Government-owned ships of the Panama Railroad Steamship Line, and a six-weeks' vacation in the United States.

Bill Smith is not a real man, but his name is the only thing about him that is "make-believe." He is a typical example of the employees on the "gold roll," virtually all of whom are American citizens. But even with such housing and treatment and an annual trip to colder and more bracing air, a northern white man could not do good pick-and-shovel work in the tropics. So the great bulk of the force, below the grade of foreman, is drawn from the warmer parts of the world. Because they were at first paid in Panamanian silver, whose face value is worth only half that of American gold, they are known as the "silver roll men."

Of the thirty thousand and more common laborers,
SHIFTING TRACK BY HAND.

TRACK SHIFTING MACHINE.
the great majority are negroes from Jamaica or Barbados, or other parts of the British West Indies. They are very peaceable and law-abiding fellows, but exceedingly lazy, and unbelievably stupid. There is room in their heads for exactly one idea at a time, and no more. One of them was given a red flag by the foreman of a section-gang on the Panama Railroad, and told to go round the curve and stop any train that might come along, while they replaced a rail. He went to his post, and just as they had taken up the rail, a switch-engine came sailing round the corner, flew off the track, and nearly killed two men. When they asked the Jamaican why he had failed to flag it, he replied, "You told me to stop trains. That was n't a train, it was a locomotive."

When the Irish-American foreman started to say what he thought of him, the Jamaican ran away to the British consul, and complained that he was being called names.

These big, strong, black men have to be looked after like so many children. Before we stopped them, they used to sleep in their rain-soaked clothes, waste their lunch-money on perfumery or lottery-tickets, and come to their work half-starved and sickly. Now they get three good hot meals a day, besides better pay and quarters than they ever dreamed of in Jamaica. Besides, they have learned that if they do not work, we can get other men to fill their places.

To stimulate the Jamaicans by competition, we have brought over several thousand peasants from Galicia, in the north of Spain, and these men, being strong and healthy and used to labor in a hot climate for a fraction of what they earn on the Isthmus, do very good work.
Each of them gets twice as much as a Jamaican, and more than earns it. Many of the Gallegos stick to their picturesque flat velvet caps and gay sashes. Then there are Italians, and Greeks, and Armenians, and Turks, and French-speaking negroes from Martinique, and turbaned coolies from India, and ever so many more besides. There are no Chinese or Japanese coolies, because the Republic of Panama excludes them by law, as does the United States. But almost everywhere in the two cities and the Zone, you can find a prosperous Chinese store-keeper, who was a coolie in the days of de Lesseps.

It is a motley and interesting crowd that throngs round the pay-car when it goes over the line twice a month. At every stop the men file up steps on one side of the car and down the other, past open counters piled high with silver and gold. (Several times the springs of the pay-car have been broken by the weight of its load of coin.) The men are paid, not by name, because most of them cannot write, and many of them often change their names whenever a new one strikes their fancy, but by the number on the brass check which every employee carries at his belt. There has never been any attempt to "hold up" the pay-train, though it is only guarded by half a dozen policemen. But they are very bad men to start a fight with, these tall, bronzed ex-troopers of the United States Cavalry, in the smart olive-green uniform of the Zone Police. They are the men who have made brigand-age a lost art on the Isthmus, and taught the Panamanians to vote with ballots instead of machetes and Mauser rifles. About two hundred and fifty of this efficient little military constabulary, much resembling the Ca-
nadian Northwest Mounted Police, keep the four hundred square miles of the Canal Zone as peaceful as a New England village on Sunday morning. All the officers and first-class troopers of this force are Americans, and about seventy-five second-class troopers are Jamaican negroes, who have served in the British West Indian Constabulary, or the British West Indian Regiment. These are very fine, soldierly men, far more intelligent than the average Jamaican. They are used to police their own countrymen on the Isthmus, which they do with much more tact and less friction than an American could.

Any one who mistakes the Canal Zone of to-day for a lawless frontier community is more than likely to find himself making roads with the rest of the chain-gang.

There are three United States Circuit Courts on the Isthmus, and the three justices sit together as the Supreme Court of the Canal Zone. As a rule, they sit without a jury, for most of the laborers come from countries where jury trials are unknown. Interpreters skilled in many tongues are as much needed as in the police courts of New York. A code of laws has been put in force, to take the place of the clumsy and cruel old Spanish laws we found when we came to the Isthmus. A penitentiary at Culebra contains such prisoners as are not working on the roads. If a convict breaks jail, there is no place for him to run to, for on each side of the
Canal Zone stretches almost unbroken jungle, and there is a Zone policeman standing at the gangway of every steamer.

Roads were an unknown luxury on the Isthmus in 1904, except for the muddy streets of the towns and a few rough trails through the jungle. Now there are many miles of macadamized highway, with concrete drains and bridges, and some day these will be connected to form an automobile speedway from ocean to ocean. One of the first-built and best-known bits of road is the three-mile drive from Panama City out over the beautiful rolling plain of Las Sabanas, to where the red-roofed haciendas, or summer bungalows, of the native aristocracy stand under the palm-trees. Here the rich citizens of Panama City spend the dry season, in primitive shacks, all doors and no windows, that an American dry-goods clerk would turn up his nose at for a week-end camp. But even the poorest of them has plenty of grounds round it and a more or less elaborate gateway, and if you do not go near enough to notice the sickly chickens peeking round the touring-car in the drive, and the fat women in loose wrappers shading themselves on the veranda, the effect is not so bad.

When I was writing this book at my father's house in Ancon, in the dry season of 1912, we used frequently to take a gallop on Las Sabanas in the afternoons. Very varied and interesting were the people we met on the road: pretty American trained-nurses riding astride, and rice-powdered señoritas leaning back in victorias; a farmer from the hills, with rude sandals on his feet and a three-foot machete thrust through his red sash, driving
three tiny donkeys laden with yams and cocoanuts; a string of motor-cars full of American tourists, bound for the ruins of Old Panama (they'll be going there in trolley-cars before the Canal is opened); a big Zone Police trooper saluting the President of Panama in his heavy carriage, painted with the arms of the republic; and two black-robed priests talking to a sturdy negro boy, whose only covering was the water running down his back from the five-gallon Standard Oil tin he was carrying on his shoulder, by way of a bucket. Often, when we cantered home through the swarming negro suburb of Calidonia, and up over the high-arched bridge across the tracks at the Panama Railroad station, I thought how for a hundred yards that road had been covered with dead and dying men, when a charging column of revolutionists was raked by a machine-gun placed on that bridge and operated by an American soldier of fortune in the Colombian service. That was in the unsuccessful revolution of 1901. To-day that soldier of fortune is a drill-foreman in the Cut.

At the Panama Railroad station (they are building a handsome new one of terra-cotta and concrete), you can take a "spickety" cab to any part of Panama City, or the American suburb of Ancon for ten cents, American, or twenty cents, spickety. What is "spickety"? When the Americans first came to the Isthmus, the drivers of the native cabs (rickety little two-seated buggies drawn by ponies as big as rabbits) used to cry, "Me speak it, the English!" which meant "I speak English," but sounded like "Me spickety English." So our men began to call their speech "spickety English," and their
cabs "spickety cabs," and now everything Panamanian is spickety.

On the side of Ancon Hill, a small volcano, extinct since prehistoric times, between the port of Balboa and the city of Panama, is the American settlement of Ancon. It is a very beautiful town, that has no named or numbered streets, but is like a garden laid out in terraces with pretty little houses here and there, and a big red-tiled administration building for the Governor, and the Canal Commissioners. Here, too, is the Ancon Hospital, built by the French, and a large hotel, called the Tivoli, that is run by the United States Government through the War Department. It was built as a social center for the Americans on the canal force, and they are charged two-thirds as much as the tourists that stop there. The Tivoli would be considered a very good summer hotel anywhere in the United States, and if you want to engage a room there during the dry season, when the flood of visitors is at its height, you had better cable in advance.

Two white posts on either side of the road from the Tivoli to the railroad station mark the Zone line, and the place where a President of the United States first entered foreign territory. That was in 1906, when Theodore Roosevelt drove down the Avenida Central, and made a speech from the steps of the cathedral.

The Avenida Central or Central Avenue—a hundred years ago they called it the Calle Real or the Royal Road—is the great thoroughfare of Panama City. It runs from the railroad station to the Cathedral Plaza. For the first mile or so it passes through the tawdry new
How We Live on the Isthmus

quarter that has shot up like a Western boom-town since 1904, round what used to be the little suburb of Santa Anna, outside the city wall. The old church of Santa Anna — once the family chapel of a Spanish grandee — still stands on the plaza of that name, with a dance-hall on one side, a vaudeville theater on the other, and saloons all round it.

A few blocks beyond Santa Anna Plaza, you pass a street-shrine with ever-lighted candles that marks the site of the landward gate, and enter the old part of the town. Here the houses have walls three feet thick, and narrow windows with very stout shutters, for, in the disorderly old days, it was frequently necessary to turn them into fortresses on short notice. Even the churches were loopholed for musketry, and they are still connected by underground passages with the cathedral in the center of the town. When you walk down one of the narrow streets at night, under the long double row of Spanish balconies, you half expect to see a file of halberdiers go clanking past in the moonlight, or to hear the "clink and fall of swords." But all you hear is a cheap phonograph playing an American popular song of the year before last, and the only armed men you meet are self-important little native policemen, about four and a half feet high. It takes several of them to arrest one drunken Canal laborer.

This national police is the nearest approach to an army they have in Panama. On the site of the old Colombian barracks, the Panamanians have built a handsome Government Palace, that is a combination White House, Treasury Building, and National Theater. Whenever
the President wishes to go to the theater, all he has to do is to walk down a short corridor running directly from his apartments to his official box.

Over on the other side of the city, just across the street from Ancon, stands the new National Institute, that is to be the university and normal school of Panama. At present, its pupils have not advanced beyond the primary grades, which speaks eloquently of the lack of public education under the old régime, and the determination of the Panamanians that their children shall not grow up in ignorance.

Some of the other "improvements" the Panamanians have made are, unfortunately, in much worse taste. They have painted the time-mellowed cathedral and most of the churches—the oldest of which was built in 1688—until they look like brand-new suburban villas; they have clapped a tin roof over the moss-grown tiles of the lovely little chapel on Taboga Island, turned the ruined Jesuit monastery into an apartment-house, and are now proposing to tear down what is left of the Church of San Domingo, with its famous earthquake-defying "flat arch," that is the wonder of every visiting engineer and architect. Even if they care nothing for the monuments of their own past, any European hotel-keeper could tell the Panamanians that they would make more money by exhibiting their ruins to American tourists than by tearing them down.

Almost everybody you meet on the streets of Panama wears American ready-made clothing, and there is almost nothing in the stores but cheap American goods. Every year a few ship loads of German-made curios and im-
The imitation Panama hats are imported to sell to the tourists. The finest and softest of the so-called "Panama" hats — the kind you can fold up and put in an envelope without cracking them — are made in Ecuador, and a coarser sort in Peru. No Panama hats are made in Panama. In fact, there are no manufactures there of any sort, and therefore, as everything must be imported, there is only a low tariff. As a result, you can sometimes buy Chinese silks or European novelties for less than you would pay in the United States, and there are one or two little shops where genuine Ecuador hats are sold for a quarter of what they would bring in New York. Or, if you are very lucky, you may be able to pick up a necklace of old Spanish goldsmith's work, but there are not many of those left. Most of the things that are shown you on the Isthmus as "old Spanish" are about as genuine as the "old Spanish gun" on that part of the sea-wall called Las Bovedas, not far from where the fishermen beach their boats at low tide, and the townspeople walk out and hold a market on the sea-bottom. This cannon — which they will tell you was used against the buccaneers — is a Parrott rifle of the type used in our Civil War, and has stamped on one of its trunnions the date "1864."

From the founding of the city to the present day, the heart and soul of Panama has been the Cathedral Plaza. Here the Isthmus declared its independence from Spain, and, later, from Colombia. After the latter event, an attempt was made to change the name of the square to "Independence Plaza," but the new name has failed to stick. The cathedral was built about the middle of the eighteenth century by a negro, who, though born the son
of a poor charcoal burner, was the first of his race to become the bishop of this, the oldest diocese on the American continent. It is a bit startling to American eyes to see, in the ground-floor of the episcopal palace, the offices of the National Lottery. The drawing takes place every Sunday, between mass and the bull-fight.

PARROTT RIFLE, ON THE SEA WALL, PANAMA CITY.
Relic of American Civil War, usually mistaken for an old Spanish gun.

Needless to say, there is much more taken in during the week from the many who buy tickets, than is paid out to the few who win prizes. This lottery is a shame and a curse to the Republic of Panama, but if our neighbors see fit to tolerate it, it is no affair of ours. Selling lottery-tickets or holding any such cruel sports as bull-fight-
NATIONAL INSTITUTE OR UNIVERSITY OF THE REPUBLIC OF PANAMA.
American Administration Building in background.
How We Live on the Isthmus

...ing or cock-fighting, is strictly forbidden in the Canal Zone. The worst you can say of our Sundays there is that we let our wives and sisters go to church for us in the morning, and go ourselves to baseball games in the afternoon.

The Panamanian Republican Band plays in the little park in the center of the Cathedral Plaza, every Sunday evening from eight to ten. Everybody from the President to the boot-black turns out in his best, to walk round and round the space in front of the bandstand and look at the pretty girls, or sit and sip iced drinks at a table outside one of the cafés, and criticize the music. Like all Latins, they are born musicians, those little brown bandsmen, and they play well.

But no music of theirs can stir an American’s heart like that which he can hear at the camp of the Tenth United States Infantry at Empire, or of the Marines at Camp Elliott, when the men stand at attention as the flag comes slowly down, at the end of evening parade. Then you know what music means, when you hear a regimental band play “The Star-Spangled Banner,” at sunset, down there in the jungle, two thousand miles from Home.
CHAPTER XV

HOW COLONEL GOETHALS HAS MADE GOOD

The task of building the Canal and governing the Canal Zone was placed, by an act of Congress in March, 1904, in the hands of the Isthmian Canal Commission, a board of seven men, appointed by the President, and responsible to him through the Secretary of War. Rear-Admiral John G. Walker, an officer on the retired list of the United States Navy, who had already been at the head of two earlier commissions appointed to study and compare the Panama and Nicaragua canal-routes, was made the chairman. Major-General George W. Davis was made the Governor of the Canal Zone. The other five members of the Commission were expert engineers, and, in July, John F. Wallace became the Chief Engineer.

The Walker Commission held office for a little more than a year. Under its leadership, law and order were firmly established in the Zone, many valuable surveys were made, a little dirt dug, the nucleus of an operating force collected, and the fight against fever begun by Dr. Gorgas. Under the circumstances, it was a very creditable year's work. For, instead of being given plenty of money and left undisturbed to organize its campaign against the jungle, the Isthmian Canal Commission was expected to make bricks, not only without
straw, but almost without clay. Instead of realizing that millions of dollars’ worth of machinery must be bought, the dirt and disease of four centuries scrubbed away, and a great army of men enlisted, drilled, housed, and fed, Congress could think of nothing but the danger of another scandal like that of the de Lesseps Company, and so doled out money in grudging driblets, while the American people kept crying, “Make the dirt fly!” with the same thoughtless impatience with which the people of the North cried, “On to Richmond!” before Bull Run. The Walker Commission gave it up in the spring of 1905.

The second Isthmian Canal Commission had for a chairman Mr. Theodore P. Shonts, a railroad president; but most of the active work was left to the Chief Engineer, Mr. John L. Stevens. To his skill as a practical, self-taught railroad-builder is due the scientific, labor-saving arrangement of the hundreds of miles of construction tracks over which the dirt-trains run to the dumps. Under Mr. Stevens—“Big Smoke Stevens” they called him, for he burned up cigars like Grant in the Wilderness—the record for a month’s excavation was brought up to a million cubic yards, the type of canal was finally settled on, and Colonel Gorgas finished his fight against
yellow fever. But in the spring of 1907, Mr. Shonts and Mr. Stevens both resigned.

Handling a large working force, especially one doing rough work in the open, is very much like commanding an army in the field. And an army commanded by a commission of seven men has exactly six generals too many. Realizing this, President Roosevelt decided to make the head of the third Isthmian Canal Commission not only its chairman, but also the Chief Engineer, the President of the Panama Railroad and the Governor of the Canal Zone. One man was made commander-in-chief, a man who would stay there until he had finished the job. That man was Lieutenant-Colonel George Washington Goethals,¹ United States Army Engineering Corps.

Born in Brooklyn, New York, in 1858, of a family that came from Holland to America when New York was New Amsterdam, he graduated second in his class from the United States Military Academy at West Point in 1880. This placed him among the honored few at the head of each class that are appointed to the engineering corps. Since then, Colonel Goethals has spent his time in building locks and dams and irrigation ditches in the West, and coast-fortifications in the East, as instructor in engineering at West Point, chief engineer of the First Army Corps in the war with Spain, and as a member of the general staff in Washington, before he was sent to Panama.

The new commissioners were ordered to make their

¹ Pronounced “Gō'-thāls,” with a broad a and the accent on the first syllable.
headquarters on the Isthmus and live there ten months in the year, instead of trying to dig the Canal from a comfortable office-building in Washington, D. C. There is no room here either for a full list of the many different commissioners — mostly officers of the engineering corps — who were appointed at this time or later, or for the barest outline of the good work that each has done. Colonel Sibert at Gatun, Colonel Gaillard in the Culebra Cut, Civil Engineer Rousseau U. S. N, Colonel Hodges, Colonel Devol, and Mr. Williamson are among the many who have made their names honored on the Isthmus and among the fellow-members of their profession. But the man whose name will go down to history as the builder of the Panama Canal is Colonel Goethals.

Soon after the Colonel came to the Isthmus, an employee complained that almost no work was being done on his new house, although it was very far from completed, and he had been promised that it would be ready for his family in six weeks. Next morning Colonel Goethals went there himself, and spoke to the carpenter-foreman in charge.

"You will have this house ready for use in six weeks."

"I'll try my best, sir, but —"

"That was not my order. You will have this house ready, for use, in six weeks. Do you understand?"

Six weeks later the family moved in.

That is Colonel Goethals's way, both in big things and little. He goes to the spot, sees what is needed, gives a plain, direct order, and gets results instead of excuses. Every morning in the week he goes out on the line, not as his French predecessor did, in a private car drawn by
a locomotive, but in a swift automobile mounted on flanged wheels, that looks like a taxicab disguised as a switch-engine. This motor-car is painted the regulation light yellow of Panama Railroad passenger-coaches, and you can scare a shirker out of a wet-season's growth by yelling, "Here comes the Yellow Peril!" But when the

THE BRAIN WAGON.
Also known as the "Yellow Peril" to the canal employees.

Yellow Peril — also known as the "Brain Wagon"— does come by, as likely as not it is empty; for the Colonel frequently drops off to take a closer look at a steam-shovel, or a group of compressed-air drills, or a new drainage-ditch, or anything else that has attracted his interest. Presently he will come past, perched on top of a loaded dirt train, or walking at a good swinging pace over rough railroad ties and slippery fragments of
COLONEL GEORGE WASHINGTON GOETHALS.
splintered rock. In the afternoon he does his office work, and it is often late at night when he switches off the light over his desk.

The time to see Colonel Goethals at his best is on Sunday morning, when he sits in his dingy office at Culebra to give justice to all who come and ask for it. It is a scene as simple and as impressive as that of the good King Haroun-al-Raschid hearing his people's troubles, and judging between them, by the gate of Bagdad. Every man or woman who has a complaint of ill-treatment, or a suggestion for the improvement of the work, can walk in and tell it to the man at the top. Where else in the world could a laborer's wife, who is tired of getting tough meat from the butcher, say so to the head of a great business—a business so great that its monthly pay-roll is over $2,000,000—and have him not only listen to her courteously, but also attend to the matter himself?

Colonel Goethals considers it part of his duty to make sixty-five thousand men, women and children satisfied with their houses, the furniture and plumbing therein, their food as supplied by the commissary or served at the hotels and messes, their washing as done by the government laundry, their amusements at the baseball parks, club-houses and band concerts, their chapels and lodges, the railroad and steamship service, the electric-light meters, the dentists, and even the icemen,—in the tropics at that. Everything, from the building and fortifying of the Canal, to explaining to Mrs. Jones why Mrs. Smith, whose husband gets twenty dollars less salary a month than hers, has received two more salt-cellars and
an extra rocking-chair from the district quartermaster, rests on his shoulders, and he bears it all with a smile.

He watches and cares for his men as a trainer cares for his athletes, he has coached and drilled them till the forty thousand move together with the smooth team-play of a champion team; and he has breathed into the whole great organization the fighting spirit of its captain. He has proved himself a born fighter and leader of men, not by the number of lives he has taken — for he has never been to war — but by the battles he has won against the desert and the jungle. He has not worn his uniform since he came to Panama. But in spite of snow-white hair and civilian clothes, and more than thirty years’ absence from the parade-ground, Colonel Goethals is no shapeless, desk-chair warrior, but a man to inspire the words of Bret Harte’s priest:

1Now, by the firm grip of the hand on the bridle,
   By the straight line from the heel to the shoulder,
   By the curt speech,— nay, nay, no offense, son,—
   You are a soldier.

President Lowell, of Harvard University, in conferring on Colonel Goethals the honorary degree of doctor of laws, spoke of him as follows:

“George Washington Goethals, a soldier who has set a standard for the conduct of civic works; an administrator who has maintained security and order among a multitude of workmen in the tropics; an engineer who is completing the vast design of uniting two oceans through a peak in Darien.”