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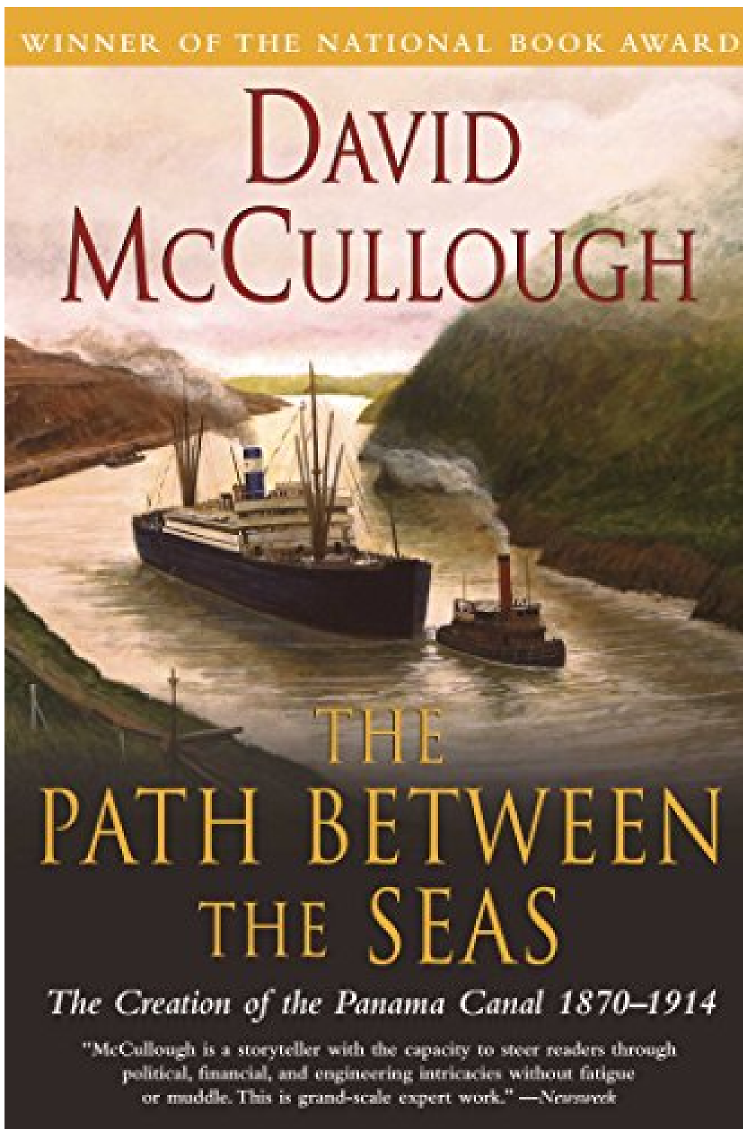
The Path Between the Seas: The Creation of the Panama Canal, 1870-1914 (English Edition)



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Par David McCullough : The Path Between the Seas: The Creation of the Panama Canal, 1870-1914 (English Edition) before purchasing it in order to gage whether or not it would be worth my time, and all praised The Path Between the Seas: The Creation of the Panama Canal, 1870-1914 (English Edition):

Description : Description du produit From the Pulitzer Prize-winning author of Truman, here is the national bestselling epic chronicle of the creation of the Panama Canal. In The Path Between the Seas, acclaimed historian David McCullough delivers a first-rate drama of the sweeping human undertaking that led to the creation of this grand enterprise. The Path Between the Seas tells the story of the men and women who fought against all odds to fulfill the 400-year-old dream of constructing an aquatic passageway between the Atlantic and Pacific oceans. It is a story of astonishing engineering feats, tremendous medical

accomplishments, political power plays, heroic successes, and tragic failures. Applying his remarkable gift for writing lucid, lively exposition, McCullough weaves the many strands of the momentous event into a comprehensive and captivating tale. Winner of the National Book Award for history, the Francis Parkman Prize, the Samuel Eliot Morison Award, and the Cornelius Ryan Award (for the best book of the year on international affairs), The Path Between the Seas is a must-read for anyone interested in American history, the history of technology, international intrigue, and human drama.

Prsentation de l'diteurThe National Book Awardwinning epic chronicle of the creation of the Panama Canal, a first-rate drama of the bold and brilliant engineering feat that was filled with both tragedy and triumph, told by master historian David McCullough.From the Pulitzer Prizewinning author of Truman, here is the national bestselling epic chronicle of the creation of the Panama Canal. In The Path Between the Seas, acclaimed historian David McCullough delivers a first-rate drama of the sweeping human undertaking that led to the creation of this grand enterprise. The Path Between the Seas tells the story of the men and women who fought against all odds to fulfill the 400-year-old dream of constructing an aquatic passageway between the Atlantic and Pacific oceans. It is a story of astonishing engineering feats, tremendous medical accomplishments, political power plays, heroic successes, and tragic failures. Applying his remarkable gift for writing lucid, lively exposition, McCullough weaves the many strands of the momentous event into a comprehensive and captivating tale. Winner of the National Book Award for history, the Francis Parkman Prize, the Samuel Eliot Morison Award, and the Cornelius Ryan Award (for the best book of the year on international affairs), The Path Between the Seas is a must-read for anyone interested in American history, the history of technology, international intrigue, and human drama..comOn December 31, 1999, after nearly a century of rule, the United States officially ceded ownership of the Panama Canal to the nation of Panama. That nation did not exist when, in the mid-19th century, Europeans first began to explore the possibilities of creating a link between the Atlantic and Pacific oceans through the narrow but mountainous isthmus; Panama was then a remote and overlooked part of Colombia. All that changed, writes David McCullough in his magisterial history of the Canal, in 1848, when prospectors struck gold in California. A wave of fortune seekers descended on Panama from Europe and the eastern United States, seeking quick passage on California-bound ships in the Pacific, and the Panama Railroad, built to serve that traffic, was soon the highest-priced stock listed on the New York Exchange. To build a 51-mile-long ship canal to replace that railroad seemed an easy matter to some investors. But, as McCullough notes, the construction project came to involve the efforts of thousands of workers from many nations over four decades; eventually those workers, laboring in oppressive heat in a vast malarial swamp, removed enough soil and rock to build a pyramid a mile high. In the early years, they toiled under the direction of French entrepreneur Ferdinand de Lesseps, who went bankrupt while pursuing his dream of extending France's empire in the Americas. The United States then entered the picture, with President Theodore Roosevelt orchestrating the purchase of the canal--but not before helping foment a revolution that removed Panama from Colombian rule and placed it squarely in the American camp. The story of the Panama Canal is complex, full of heroes, villains, and victims. McCullough's long, richly detailed, and eminently literate book pays homage to an immense undertaking. --Gregory McNameeExtraitChapter 1ThresholdThere is a charm of adventure about this new quest...The New York TimesIThe letter, several pages in length and signed by Secretary of the Navy George M. Robeson, was addressed to Commander Thomas O. Selfridge. It was an eminently clear, altogether formal document, as expected, and had a certain majesty of tone that Commander Selfridge thought quite fitting. That he and the Secretary were personally acquainted, that they had in fact become pleasantly drunk together on one past occasion and vowed eternal friendship as their carriage rolled through the dark capital, were in no way implied. Nor is it important, except that Selfridge, a serious and sober man on the whole, was to wonder for the rest of his days what influence the evening may have had on the way things turned out for him.His own planning and preparations had already occupied several extremely busy months. The letter was but the final official directive:Navy DepartmentWashington, January 10, 1870Sir: You are appointed to the command of an expedition to make a survey of the Isthmus of Darien, to ascertain the point at which to cut a canal from the Atlantic to the Pacific Ocean. The steam-sloop Nipsic and the store-ship Guard will be under your Command...The Department has entrusted to you a duty connected with the greatest enterprise of the present age; and upon your enterprise and your zeal will depend whether your name is honorably identified with one of the facts of the future...No matter how many surveys have been made, or how accurate they may have been, the people of this country will never be satisfied until every point of the Isthmus is

surveyed by some responsible authority, and by properly equipped parties, such as will be under your command, working on properly matured plans...So on January 22, 1870, a clear, bright abnormally mild Saturday, the Nipsic cast off at Brooklyn Navy Yard and commenced solemnly down the East River. The Guard, under Commander Edward P. Lull, followed four days later.In all, the expedition comprised nearly a hundred regular officers and men, two Navy doctors, five civilians from the Coast Survey (surveyors and draftsmen), two civilian geologists, three telegraphers from the Signal Corps, and a photographer, Timothy H. O'Sullivan, who had been Mathew Brady's assistant during the war.Stowed below on the Guard was the finest array of modern instruments yet assembled for such an undertaking -- engineers' transits, spirit levels, gradienters, surveyors' compasses and chains, delicate pocket aneroid barometers, mercurial mountain barometers, current meters -- all "for prosecuting the work vigorously and scientifically." (The Stackpole transits, made by the New York firm of Stackpole Sons, had their telescope axis mounted in double cone bearings, for example, which gave the instrument greater rigidity than older models, and the introduction of a simplified horizontal graduation reading allowed for faster readings and less chance of error.) There were rubber blankets and breech-loading rifles for every man, whiskey, quinine, an extra 600 pairs of shoes, and 100 miles of telegraph wire. Stores "in such shape as to be little liable to injury by exposure to rains" were sufficient for four months: 7,000 pounds of bacon, 10,000 pounds of bread, 6,000 pounds of tomato soup, 30 gallons of beans, 2,500 pounds of coffee, 100 bottles of pepper, 600 pounds of canned butter.The destination was the Darien wilderness on the Isthmus of Panama, more than two thousand miles from Brooklyn, within ten degrees of the equator, and, contrary to the mental picture most people had, east of the 80th meridian -- that is, east of Florida. They would land at Caledonia Bay, about 150 miles east of the Panama Railroad. It was the same point from which Balboa had begun his crossing in 1513, and where, at the end of the seventeenth century, William Paterson, founder of the Bank of England, had established the disastrous Scottish colony of New Edinburgh, because Caledonia Bay (as he named it) was to be the future "door of the seas." Harassed by the Spanish, decimated by disease, the little settlement had lasted scarcely more than a year. Every trace of it had long since vanished.Darien was known to be the narrowest point anywhere on the Central American isthmus, by which was meant the entire land bridge from lower Mexico to the continent of South America and which included the Isthmus of Tehuantepec, Guatemala, Honduras, British Honduras, El Salvador, Nicaragua, Costa Rica, and Panama, the last of which was still a province -- indeed a most prized province -- of Colombia. From Tehuantepec to the Atrato River in Colombia, the natural, easternmost boundary of Central America, was a distance of 1,350 miles as the crow flies, as far as from New York to Dallas, and there were not simply a few, but many points along that zigzagging land mass where, on the map at least, it appeared a canal could be cut. A few years before, Admiral Charles H. Davis had informed Congress that there were no fewer than nineteen possible locations for a Central American ship canal. But at Darien the distance from tidewater to tidewater on a straight line was known to be less than forty miles.Because of the particular configuration of the Isthmus of Panama -- with the land barrier running nearly horizontal between the oceans -- the expedition would be crossing down the map. The men would make their way from the Caribbean on the north to the Pacific on the south, just as Balboa had. (Hence Balboa's designation of the Pacific as the Sea of the South had been perfectly logical.) The Panama Railroad, the nearest sign of civilization on the map, also ran from north to south. Its faint, spidery red line looked like something added by a left-handed cartographer, with the starting point at Coln, on Limon Bay, actually somewhat farther west than the finish point at Panama City, on the Bay of Panama.They were to measure the heights of mountains and the depths of rivers and harbors. They were to gather botanical and geological specimens. They were to take astronomical observations, report on the climate, and observe the character of the Indians encountered. And they were to lose as little time as possible, since the rainy season -- the sickly season, Secretary Robeson called it -- would soon be upon them.Six other expeditions were to follow. A Presidential commission, the first Interoceanic Canal Commission, would be established to appraise all resulting surveys and reports and to declare which was the chosen path. The commission would include the chief of the Army Engineers, the head of the Coast Survey, and the chief of the Bureau of Navigation. Nothing even remotely so systematic, so elaborate or sensible, had ever been attempted before.But the Darien Expedition was the first, and the fact that it was to Darien, one of the wildest, least-known corners of the entire world, was a matter of extreme concern at the Navy Department. Sixteen years earlier, in 1854, well within the memory of most Americans, an expedition to Caledonia Bay had ended in a disaster that had the whole country talking and left the Navy with a profound respect for the terrors of a tropical wilderness. What had happened was this.In 1850, Dr. Edward Cullen, an Irish physician and member of the Royal

Geographical Society, had announced the discovery of a way across Darien by which he had walked from the Atlantic to the Pacific several times and quite effortlessly. He had been careful to mark the trail, Cullen said, and at no place had he found the elevation more than 150 feet above sea level. It was the miracle route everyone had been searching for and the story caused a sensation. A joint expedition to Darien was organized by England, France, Colombia (then known as New Granada), and the United States. But when the American ship, Cyane, reached Caledonia Bay ahead of the others, Navy Lieutenant Isaac Strain and a party of twenty-seven men started into the jungle without waiting, taking provisions enough for only a few days and fully expecting to pick up Cullen's trail. Balboa, when he started into this same jungle, had gone with a force of 190 heavily armed Spaniards and several hundred Indians, some of whom knew the way.Strain was not seen again for forty-nine days. His troubles had begun from the moment he set foot on shore. The Indians, impressed by the guns of the Cyane, agreed to let his party pass, but refused to serve as guides. Cullen's trail was nowhere to be found. Within days the expedition was hopelessly lost. Food ran out; rifles became so rusted as to be useless. Strain picked up a large river -- the Chucunaque -- which he thought would take him to the Pacific but which, in reality, was leading him on an endless looping course eastward, through the very center of the Isthmus. When a band of Indians warned him that it was the wrong way, he decided they were deliberately trying to mislead him.Verging on starvation, his men devoured anything they could lay hands on, including live toads and a variety of palm nut that burned the enamel from their teeth and caused excruciating stomach cramps. The smothering heat, the rains, the forbidding jungle twilight day after day, were unlike anything any of them had ever experienced. Seven men died; one other went temporarily out of his mind. That any survived was due mainly to the discipline enforced by Strain and Strain's own extraordinary fortitude. Leaving the others behind, he and three of the strongest men had pushed on in search of help. When they at last staggered into an Indian village near the Pacific side, Strain, who was torn and bleeding and virtually naked, turned around and led a rescue mission back to the others. A British doctor who examined the survivors described them as the most "wretched set of human beings" he had ever seen. "In nearly all, the intellect was in a slight degree affected, as evinced by childish and silly remarks, although their memory, and the recollection of their sufferings, were unimpaired...They were literally living skeletons, covered with foul ulcers..." Strain's weight was seventy-five pounds. A few years later, at Coln, having never fully recovered, Strain died at age thirty-six.Strain had found the mountains at Darien not less than one thousand feet. From what he had seen, Darien was "utterly impracticable" as the route for a canal. Just the same, others were not quite willing to abandon the idea. While Strain's ordeal was taken as a fearful object lesson at the Navy Department, there were some who were still willing to accept the possibility that Edward Cullen had been telling the truth after all.Cullen, who had come out with one of the British ships but then made a hasty retreat to Coln (and from there to New York) the moment it appeared something was amiss, turned up later as a surgeon with the British Army in the Crimean War. He also kept persistently to his story. The expedition had been deplorably misled, he argued. Strain had had no business proceeding without him or without his map, which by itself would have made all the difference.Admiral Davis, Commander Selfridge, and, most importantly, Admiral Daniel Ammen, chief of the Bureau of Navigation, were among those who considered the case still very much open. "It is to the isthmus of Darien that we are first to look for the solution to the great problem," Davis had informed Congress. "The statements of Dr. Cullen had been so severely criticized," Selfridge was to explain, "and so persistently advocated by him, that I was inclined to put some faith in his representations." To Admiral Ammen, who had pored over every recorded detail of the episode, the critical clue was in Strain's own report. Days after he had started inland, at a time when he should have been well beyond earshot of Caledonia Bay, Strain had written in his journal of hearing the evening gun on the Cyane, and this, Ammen believed, was evidence of a low-lying valley running inland from the bay; otherwise the sound would have been blocked by intervening hills.Interest in the new expedition was considerable in numerous quarters. The very times themselves seemed so immensely, so historically favorable. If there was one word to characterize the spirit of the moment, it was Confidence. Age-old blank spaces and mysteries were being supplanted on all sides. The summer before, the one-armed John Wesley Powell, in the interests of science, had led an expedition down the Colorado River into the Grand Canyon. The great geological and geographical surveys of the West had begun under the brilliant Clarence King. Poking about in godforsaken corners of the western desert, Othniel C. Marsh, of Yale, who was not yet forty and the country's first and only professor of paleontology, had unearthed the fossils needed to present the full evolution of the horse, the most dramatic demonstration yet of Darwin's theory.People were reading Jules Verne's Twenty Thousand Leagues under the Sea. The

Roeblings had begun their Brooklyn Bridge. Harvard had installed a chemist as its president. In Pittsburgh, experiments were being made with a new process developed by the English metallurgist Bessemer. And within the preceding nine months alone two of the most celebrated events of the century had occurred: the completion of the Union Pacific Railroad and the opening of the Suez Canal. All at once the planet had grown very much smaller. With the canal, the railroad, the new iron-screw ocean steamers, it was possible -- in theory anyway -- to travel around the world in a tenth of the time it would have taken a decade earlier, as Jules Verne would illustrate in his next voyage extraordinaire.The feeling was that the revealed powers of science, "the vast strides made in engineering and mechanical knowledge," as Commander Selfridge would say, had brought mankind to a threshold. It was said that the power generated by one steamship during a single Atlantic crossing would be sufficient to raise from the Nile and set in place every stone of the Great Pyramid. Men talked confidently of future systems of transport that would bring all peoples into contact with one another, spread knowledge, break down national divisions, and make a unified whole of humanity. "The barrier is down!" a French prelate proclaimed on the beaches of Port Said when Suez was opened. "One of the most formidable enemies of mankind and of civilization, which is distance, loses in a moment two thousand leagues of his empire. The two sides of the world approach to greet one another...The history of the world has reached one of its most glorious stages."There really seemed no limit to what man might do. While an official report of the kind Commander Selfridge was to submit might contain the expression "under Providence" (in conjunction with certain accomplishments), such terms seemed perfunctory. Man, modern man -- the scientist, the explorer, the builder of bridges and waterways and steam engines, the visionary entrepreneur -- had become the central creative force. In the summer of 1870, the summer Selfridge returned from Darien, thirty, perhaps forty, thousand people would fill London's Crystal Palace for a public reception that only a Nelson might have been accorded in an earlier day. Thousands of rockets would hurtle into the night and two hundred boys from the Lambeth Industrial Schools would wave four hundred colored flares in an "Egyptian Salute," all to honor the Frenchman Ferdinand de Lesseps, builder of the Suez Canal. This was jubilation of a kind not known before and, that future generations would have some trouble comprehending. De Lesseps' desert passage of 105 miles had brought Europe 5,800 miles closer to India. The Near East had been restored to its ancient position as a world crossroads. Africa had been made an island at a stroke. And the fact that the project had been denounced by men reputedly far wiser than de Lesseps -- most especially by Britain's own Robert Stephenson -- made the ultimate triumph all the more thrilling.Victoria, who was to give a name to the era, its elegance, its sense of purpose, its heavy, varnished furniture, its small and large hypocrisies, was very much in her prime at age fifty-one. Samuel Smiles, that most eminent Victorian, had published his Lives of the Engineers, wherein good and useful giants -- Brindley of the English canals, Rennie of the Waterloo Bridge, the genius Telford -- did good and useful work for the betterment of all. Paris was newly transformed by the brilliant Georges Haussmann, prefect of the Seine, and the picture-book troops of Napoleon III, in their kepis and pantalons rouges, were thought to be the most formidable on earth, the Franco-Prussian War being still over the horizon.Among the American tourists to be found strolling Baron Haussmann's magnificent boulevards as the Nipsic and the Guard sailed for Darien was an undersized eleven-year-old in the company of his parents, Theodore Roosevelt, whose ambition at the moment was to be a naturalist.The President of the United States at this juncture was Ulysses S. Grant and it was he, the year before, who had instructed Admiral Ammen to organize the series of expeditions -- "practical investigations," he called them. Grant, despite his subsequent reputation as a President of little vision or initiative, was more keenly interested in an isthmian canal than any of his predecessors had been. He was indeed the first President to address himself seriously to the subject. If there was to be a water corridor, he wanted it in the proper place -- as determined by civil engineers and naval authorities -- and he wanted it under American control. "To Europeans the benefits of and advantages of the proposed canal are great," he was to write, "to Americans they are incalculable."Grant's blind faith in old friends was to prove his greatest failing as time wore on, but in Admiral Ammen, a friend since boyhood, he had made an excellent choice. Ammen had been reassigned from sea duty and put at the head of the Bureau of Navigation almost the moment Grant became President. A picture of authority, Ammen was whiskered, grizzled, like Grant himself, but with a large, imposing nose and a permanent scowl. Once, while in command of a training cruise to Panama, he had settled a mutiny on the instant by calmly shooting the two leaders. He also had an agile and resourceful mind.The Navy was to provide the ships and most of the personnel. Ammen selected the officers. Thomas Oliver Selfridge, irrespective of any impression he may have made on Secretary Robeson, had been first in his class at Annapolis and distinguished himself as a commander of gunboats at

Vicksburg and on the Red River. En route to Darien he would celebrate his thirty-fourth birthday. Captain Robert Shufeldt, who would lead the Tehuantepec Expedition in the fall of 1870, had had thirty years at sea. He was a physical giant who appeared equal to any wilderness and he had, besides, considerable tact. (Though it had been more than twenty years since the Mexican War, there was much apprehension over the reception an American expedition might receive in Tehuantepec.) And the studious, likable Edward P. Lull, who was in charge of the Guard, and who was later to command both the Nicaragua and Panama expeditions, was as able a young officer as was to be found in the Navy.These particular officers, moreover, had been imbued with a star-spangled sense of American destiny in the Pacific Ocean. As a young lieutenant, Daniel Ammen had sailed on Commodore James Biddle's voyage to China and Japan, the voyage that resulted in 1846 in the first treaty between China and the United States. Selfridge also had begun his career with a South Pacific cruise and Shufeldt had been in command of the Wachusett in the Orient only the year before the Tehuantepec Expedition."Sufficient is it to add that advantageous as an interoceanic canal would be to the commercial welfare of the whole world, it is doubly so for the necessities of American interests," Selfridge was to write. "The Pacific is naturally our domain.""It may be the future of our country lies hidden in this problem," Shufeldt would address his crew when the Kansas sailed for Tehuantepec. And from the rail of a battered little river steamer laboring against the brown current of the San Juan, his eyes squinting against the hard glare of a Nicaragua morning, Edward Lull would envisage American ships of the line riding the same path to the Pacific.These were professional sailors, not remarkable men, or so they undoubtedly would have said. They were experienced in command, meticulous about details, physically very tough; but without airs or pretense. In the field, with their sun hats and field glasses, their blue northern eyes, they would look much like other English-speaking harbingers of civilization in other so-called "dark" corners of the world. But there was no overflowing ego among them, no Burton or Speke or Stanley possessed by visions of personal destiny. Nor were they great men in the way a Powell or a King was, intellectually and in orginality of purpose. Had they been asked, they undoubtedly would have said they were doing their job.IIThe seven Grant expeditions to Central America between 1870 and 1875 can be seen as a sharp, clean line through the whole long history of canal plans and proposals reaching back to an obscure reference concerning an obscure Spaniard, Alvaro de Saavedra, a kinsman of Cortez', who supposedly "meant to have opened the land of Castilla del Oro...from sea to sea." There had never been any serious possibility of a canal during Spanish times. "There are mountains, but there are also hands" was the lovely declaration of a Spanish priest of the sixteenth century, "and for a king of Castile, few things are impossible." The priest, Francisco Lpez de Gmara, was the first to raise the issue of location, naming Panama, Nicaragua, Darien, and Tehuantepec as the best choices, in a book published in 1552. But he was sadly deceiving himself. Not for another three hundred years, not until the nineteenth century, would a canal, even a very small canal, become a reasonable possibility. It required certain advances in hydraulic engineering, among other things; and it required the steam engine.The place most nineteenth-century North Americans expected to see the canal built, including the President, was Nicaragua. If not Darien, it would be through Lake Nicaragua; if not there, then probably it would have to be Panama. Tehuantepec had the virtue of being so much closer to the United States, but that was about all that could be said for Tehuantepec. The great overriding problem, however, was the extremely low level of reliable geographical information on Central America, and this despite more than fifty years of debate over where a canal ought to go, despite volumes of so-called geographical research, engineering surveys, perhaps a hundred articles in popular magazines and learned journals, promotional pamphlets, travel books, and the fact that Panama, Nicaragua, and Tehuantepec had all been heavily traveled shortcuts to the Pacific since the time of the California gold craze. As Admiral Davis had quite accurately stated, there were not in the libraries of the world the means to determine even approximately the most practicable route.The earliest authoritative study of the problem, or rather the first to be taken as authoritative, appeared in 1811 and designated Nicaragua as the route posing the fewest difficulties. The author of this rather tentative benediction was Alexander von Humboldt, the adventurous German-born naturalist and explorer, and Nicaragua thereafter had been "Humboldt's route." Humboldt, as it happens, had never set foot in Nicaragua, or in any of the four alternatives he named. He had built his theories wholly from hearsay, from old books and manuscripts, and the few pitiful maps then available, all of which he plainly acknowledged. The precise location of the City of Panama was not even known, he warned. Nor had anyone determined the elevation of the mountains at Panama, or at any other point along the spine of Central America.Panama he judged to be the worst possible choice, primarily because of the mountains, which he took to be three times as high as they actually are. Tehuantepec

appeared to be too broad, as well as mountainous, and he feared the "sinuosity" of the rivers. About the best that could be done at either Panama or Tehuantepec would be to build some good roads for camels.Humboldt was still comparatively unknown when he wrote his Political Essay on the Kingdom of New Spain, the book containing his long canal essay; his renown was limited still to scientific circles. No Peruvian current or glacier or river had been named for him; Humboldt, Kansas, and Humboldt, Iowa, were still unbroken prairie grass. His views, nonetheless, were to have more influence on the canal issue than everything that had been written previously taken together, for by mid-century he was to tower above all others as the beloved high priest of modern science, a university unto himself, as Goethe would say.Humboldt's Political Essay was the result of a five-year journey through Spanish America, the likes of which would never be equaled. He had been up the Orinoco and the Magdalena; he had been over the Andes on foot. In Ecuador he had climbed Chimborazo, then believed to be the highest mountain on earth, and though he failed to reach the top, he had gone to nineteen thousand feet, which was higher -- considerably higher -- than any human being had ever been before, even in a balloon. If he had not been in Nicaragua or Panama or Tehuantepec or anywhere along the drenched, green valley of the Atrato River, the location of his two other possible pathways to the Pacific, he had been almost everywhere else and no one was assumed to have more firsthand knowledge of the American jungle. The rather vital fact that his canal theories were almost wholly conjecture was generally ignored. Moreover, those who used his name to substantiate their own pet notions, those who would quote and misquote him endlessly, would find it convenient to forget that it was he who insisted that no canal should be considered until the comparative advantages and disadvantages of all possible routes were examined firsthand by experienced people and according to uniform standards.The Nicaragua canal he visualized was much along the lines of Thomas Telford's Caledonian Canal in Scotland, then the most ambitious thing of its kind. Lake Nicaragua, besides being navigable, would, like Telford's Scottish lakes, provide a natural and limitless source of water for the canal -- a vast "basin" -- at the very summit of the canal.Should Nicaragua be found unsatisfactory, then perhaps one of the two routes on the Atrato would serve best. The Napipi-Cupica route, as he named it and as it is still known, would follow the Napipi River, a tributary of the sprawling Atrato, to its headwaters, then continue down to the Pacific at Cupica Bay.The other Atrato scheme, the so-called "Lost Canal of the Raspadura," appealed mainly to his imagination. Years before, he had heard, a Spanish monk "of great activity" had induced some Indians to build a secret passage between the Atrato and the Pacific, a passage large enough only for small boats, but one that followed a near-perfect path for a canal of larger size, somewhere off the Raspadura River, another distant tributary. All one had to do was find it.How much of all this he may have discussed with Thomas Jefferson in the spring of 1804, at the end of the Spanish-American odyssey, is not known. But probably his stay at the White House marks the start of Presidential interest in the canal. It is known that Jefferson had shown prior curiosity on the subject while he was minister to France. Furthermore, the visit coincided with the departure of Lewis and Clark from St. Louis to seek, on Jefferson's orders, a northwest water passage to the Pacific. And Humboldt, a lean, deeply tanned, explosively energetic young man, had so enthralled Jefferson with accounts of his travels that Jefferson kept him on as a guest for two weeks. So it is difficult to imagine them not discussing a Central American corridor as they strolled the White House grounds or sat conversing, hours on end, at the big table in Jefferson's first-floor office, maps and charts all over one wall and Jefferson's pet mockingbird swinging in a cage overhead.Humboldt's Spanish-American travels had been the result of an unprecedented grant from the Spanish Crown to investigate wherever he wished in the cause of scientific progress. Until then explorations of any kind by foreigners within Spain's New World realm had been strenuously discouraged. But once Spanish rule began to dissolve in the 1820's the way was open to almost anyone. And almost anyone was what turned up. Engineers, naval officers, French, English, Dutch, Americans, promoters, journalists, many of whom expressed grand visions of a canal, in the event political permission could be obtained, in the event the necessary capital could be assembled. A few of these were able people, but very few had any technical competence. Many of them were also perfectly genuine in their aspirations and sincerely believed in their rainbow-hued promises, however inept or naive they may have been. Others, quite a good many others, were petty adventurers or outright crackpots.The canals they had in mind, regardless of specified location, were invariably feasible technically, within range financially, and destined to be bonanzas for all investors and for whichever impoverished little Central American republic was to be involved. Emissaries from Bogot and Managua and Mexico City were dispatched to the capitals of Europe and to Washington to enlist support. Even the Pope was approached. Special agreements and franchises were signed and sealed with appropriate

formality. The future was rich with possibilities.With the opening of Telford's canal and the Erie Canal, both in the 1820's, reasonable men also felt justified in projecting comparable works across the map of Central America. "Neptune's Staircase," the spectacular system of locks on the Caledonian Canal, could lift seagoing ships -- could lift a thirty-two-gun frigate, for example -- a hundred feet up from the level of the sea. The Erie Canal, though built for shallow-draft canal barges, was nonetheless the longest canal in the world, and its locks overcame an elevation en route of nearly seven hundred feet. So on paper a canal at Panama or Nicaragua or any other place in favor at the moment did not seem unrealistic. Telford in his last years was considering "a grand scheme" for Darien. DeWitt Clinton, "father" of the Erie Canal, had joined with Horatio Allen, builder of the Croton Aqueduct, to plan a water passage through Nicaragua.A skeptical or cautionary voice was the rare exception. The view of someone such as Colonel Charles Biddle, sent by President Andrew Jackson to appraise Panama and Nicaragua, stands in solitary contrast to almost everything else being written or said. Having made his way up the Chagres River by canoe, then overland to Panama City, a trek of four days, Biddle concluded that any talk of a Panama canal was utter foolishness and that this ought to be clear to all men, "whether of common or uncommon sense." (He did not bother to go see Nicaragua.)Far more representative were the views of John Lloyd Stephens, which appeared about the time John O'Sullivan, editor of the Democratic , was writing that "our manifest destiny is to overspread the continent allotted by Providence for the free development of our yearly multiplying millions."The task, declared Stephens, posed no major problems and ought not cost more than $25,000,000, a figure most people took to be absurdly high.Stephens was "the American traveler," an engaging, romantic, red-bearded lawyer and author of popular travel books who passed through Nicaragua on his way to the Mexican provinces of Chiapas and Yucatn in 1840. He was looking for the "lost" cities of the Maya, which he found, and the book describing those discoveries, Incidents of Travel in Central America, went through edition after edition. It was a classic, thrilling piece of work and can be seen now as the beginning of American archaeology. But Stephens had no more business issuing pronouncements on the feasibility of a Nicaragua canal from the little he had seen than had the engineer Horatio Allen from the comforts of his Manhattan office.A Nicaragua canal posed no major problems, Stephens declared. Here was an enchanting land of blue lakes and trade winds, towering volcanic mountains, rolling green savannas and grazing cattle. Nicaragua could become one of the finest resorts on earth were a canal to be built. Like Humboldt he had scaled a volcano -- Masaya -- then, to the horror of his guide, descended bravely into its silent crater. "At home, this volcano would be a fortune, with a good hotel on top, a railing to keep the children from falling in, a zigzagging staircase down the sides, and a glass of iced lemonade at the bottom." The mountain, he noted, could probably be purchased for ten dollars.The truth is that all the canal projects proposed, every cost estimated, irrespective of the individual or individuals responsible, were hopelessly unrealistic if not preposterous. Every supposed canal survey made by mid-century was patently flawed by bad assumptions or absurdly inadequate data. Assertions that the task would be simple were written by fools or by men who either had no appropriate competence or who, if they did, had never laid eyes on a rain forest.The one important step taken prior to the California gold rush was of another kind, but very little was made of it.On December 12, 1846, at Bogot, a new American charg d'affaires, Benjamin Alden Bidlack, of Wilkes-Barre, Pennsylvania, acting entirely on his own initiative, signed a treaty with the government of President Toms Cipriano de Mosquera. The critical agreement was contained in Article XXXV. New Granada guaranteed to the United States the exclusive right of transit across the Isthmus of Panama, "upon any modes of communication that now exist, or that may be, hereafter, constructed." In exchange the United States guaranteed "positively and efficaciously" both the "perfect neutrality" of the Isthmus and New Granada's rights of sovereignty there. (It was this agreement by which the Panama Railroad was to be made possible.)In Washington the news was greeted with only moderate interest since Bidlack had acted without instruction and since there was much old, deep-seated distrust of "entangling" alliances. Not for another year and a half did the Senate act on confirmation and not until the government of New Granada had sent a special envoy to Washington, the very able Pedro Alcntara Herrn, to lobby for the agreement.The Bidlack Treaty, as it was commonly called, was Bidlack's only diplomatic triumph. A small-town lawyer and newspaper editor, a congressman briefly before going to Bogot, he died seven months after the treaty was ratified.For three centuries the gold in the stream beds of the Sierra Nevada had gone undetected and for all the commotion over Central American canals in the first half of the new world-shaking nineteenth century, Central America remained a backwater. No canals, no railroads were built. There was not a single wagon road anywhere across the entire Isthmus. But in January of 1848 a carpenter from New Jersey saw

something shining at the bottom of a millrace at Coloma, California, and within a year Central America re-emerged from the shadows. Again, as in Spanish times, gold was the catalyst.There were three routes to the new El Dorado -- "the Plains across, the Horn around, or the Isthmus over" -- and for those thousands who chose "the Isthmus over," it was to be one of life's unforgettable experiences. The onslaught began first at Panama, early on the morning of January 7, 1849, when the little steamer Falcon anchored off the marshy lowlands at the mouth of the Chagres River and some two hundred North Americans -- mostly unshaven young men in red flannel shirts loaded down with rifles, pistols, bowie knives, bedrolls, pots and pans, picks, shovels -- came swarming ashore in one great noisy wave. To the scattering of native Panamanians who stood gaping, it must have seemed as if the buccaneer Morgan had returned after two hundred years to storm the Spanish bastion of San Lorenzo, the frowning brown walls of which still commanded the entire scene. The invaders shouted and gestured, trying to make themselves understood. Nobody seemed to have the least idea which way the Pacific lay and all were in an enormous hurry to get started.Amazingly, all of this first group survived the crossing. They came dragging into Panama City, rain-soaked, caked with mud, hollow-eyed from lack of sleep, and ravenously hungry. They had gone up the Chagres by native canoe, then overland on mule and on foot, as Charles Biddle had and as thousands more like them would, year after year, until the Panama Railroad was in service. Old letters and little leather-bound journals mention the broiling heat and sudden blinding rains. They speak of heavy green slime on the Chagres, of nights spent in vermin-infested native huts, epidemics of dysentery, mules struggling up to their haunches in the impossible blue-black Panama muck. A man from Troy, New York, counted forty dead mules along the Cruces Trail, the twisting jungle path, barely three feet wide, over which they all came from the river to Panama City. Others wrote of human companions dropping in their tracks with cholera or the dreaded Chagres fever."I have no time to give reasons," a Massachusetts man wrote home after crossing Panama, "but in saying it I utter the united sentiment of every passenger whom I have heard speak, it is this, and I say it in fear of God and the lore of man, to one and all, for no consideration come this route. I have nothing to say for the other routes but do not take this one."Yet the gain in time and distance was phenomenal. From New York to San Francisco around the Horn was a months-long voyage of thirteen thousand miles. From New York to San Francisco by way of Panama was five thousand miles, or a saving of eight thousand miles. From New Orleans to San Francisco by Panama, instead of around the Horn, the saving was more than nine thousand miles.Besides, how one responded to Panama depended often on the season of the year and one's own particular make-up. Many were thrilled by the lush, primeval spectacle of the jungle -- "overwhelmed with the thought that all these wonders have been from the beginning," as one man wrote. For wives and parents left behind they described as best they could those moments when magnificent multicolored birds burst into the sky; the swarms of blue butterflies -- "like blossoms blown away"; the brilliant green mountains, mountains to put Vermont to shame said a young man from Bennington who was having a splendid time traveling up the Chagres. "The weather was warm but we had a roof to our boat...and what was of more consequence still we had on board a box of claret wine, a bacon, bread, and a piece of ICE!"The little railroad was begun in 1850, with the idea that it could be finished in two years. It was finished five years later, and at a cost of $8,000,000, six times beyond anyone's estimate. For a generation of Americans there was something especially appealing about the picture of this line across Panama, of a steam locomotive highballing through the jungle, pulling a train of bright passenger cars, a steam whistle scattering monkeys to the treetops -- "ocean to ocean" in something over three hours. It was also the world's first transcontinental railroad-one track, five-foot (or broad) gauge, exactly forty-seven and one-half miles long -- and the most expensive line on earth on a dollar-per-mile basis, expensive to build and expensive to travel. A one-way ticket was $25 in gold.To its owners the railroad was the tiny but critical land link in the first all-steam overseas system to span the new continental United States. The Pacific Mail Steamship Company, with offices in New York, had been established just before the news of California gold reached the East, or when such an idea had looked dangerously, if not insanely, speculative. The ships operated to and from Panama on both oceans, providing regular passenger service and mail delivery to California. (A generous subsidy from the federal government to carry the mail had made it considerably less speculative.) William Henry Aspinwall, a wealthy New York merchant, was the founder and guiding spirit of the steamship line, and in the railroad venture he was joined by a banker named Henry Chauncey and by John Lloyd Stephens, who, in the time since his Nicaragua travels, had concluded that Panama was where the future lay. Stephens was the first president of the Panama Railroad Company and its driving force until his death at age forty-six. He was the one member of the threesome to stay with the actual construction effort in the jungle, and the result was

an attack of fever, a recurrence of which was fatal in the fall of 1852.Having, as it did, a monopoly on the Panama transit, the railroad was a bonanza. Profits in the first six years after it was finished were in excess of $7,000,000. Dividends were 15 percent on the average and went as high as 44 percent. Once, standing at $295 a share, Panama Railroad was the highest-priced stock listed on the New York Exchange.So dazzling a demonstration of the cash value of an ocean connection at Panama, even one so paltry as a little one-track railroad, was bound to draw attention. Matthew Fontaine Maury, the pioneer oceanographer, had told a Senate committee as early as 1849 that a Panama railroad would lead directly to a Panama canal "by showing to the world how immense this business is," but nobody had been prepared for success on such a scale. The volume of human traffic alone -- upward of 400,000 people between 1856 and 1866 -- gave Panama a kind of most-beaten-path status unmatched by any of the other canal routes talked of.Surveys for the railroad had also produced two pertinent pieces of information. The engineers had discovered a gap in the mountains twelve miles from Panama City, at a point called Culebra, where the elevation above sea level was only 275 feet. This was 200 feet less than what had been considered the lowest gap. Then, toward the close of their work, they had determined once and for all that there was no difference between the levels of the two oceans. The level of the Pacific was not twenty feet higher than that of the Atlantic, as had been the accepted view for centuries. Sea level was sea level, the same on both sides. The difference was in the size of their tides.(The tides on the Pacific are tremendous, eighteen to twenty feet, while on the Caribbean there is little or no tide, barely more than a foot. When Balboa stood at last on the Pacific shore, he had seen no rush of lordly breakers, but an ugly brown mud flat reaching away for a mile and more, because he had arrived when the tide was out.)Yet, ironically, it was the experience of the railroad builders that argued most forcibly for some different path, almost any other location, for the canal. If humane considerations were to be entered in the balance, then Panama was the worst possible place to send men to build anything.Panama had been known as a pesthole since the earliest Spanish settlement. But the horror stories to come out of Panama as the railroad was being pushed ahead mile by mile quite surpassed anything. The cost paid in human life for the minuscule bit of track was of the kind people associated with dark, barbaric times, before the age of steam and iron and the upward march of Progress. The common story, the one repeated up and down the California gold fields, the one carried home on the New York steamer, the claim that turns up time and again in the dim pages of old letters, is that there was a dead man for every railroad tie between Coln and Panama City. In some versions it was a dead Irishman; in others, a dead Chinese. The story was nonsense-there were some seventy-four thousand ties along the Panama line -- but that had not kept it from spreading, and from what many thousands of people had seen with their own eyes, it seemed believable enough.0 How many did actually die is not known. The company kept no systematic records, no body count, except for its white workers, who represented only a fraction of the total force employed over the five years of construction. (In 1853, for example, of some 1,590 men on the payroll, 1,200 were black.) However, the company's repeated assertion that in fact fewer than a thousand had died was patently absurd. A more reasonable estimate is six thousand, but it could very well have been twice that. No one will ever know, and the statistic is not so important as the ways in which they died -- of cholera, dysentery, fever, smallpox, all the scourges against which there was no known protection or any known cure.Laborers had been brought in by the boatload from every part of the world. White men, mostly Irish "navvies" who had built canals and railroads across England, "withered as cut plants in the sun." But of a thousand Chinese coolies, hundreds fell no less rapidly or died any less miserably of disease, and scores of Chinese workers were so stricken by "melancholia," an aftereffect of malaria, that they had committed suicide by hanging, drowning, or impaling themselves on sharpened bamboo poles.Simply disposing of dead bodies had been a problem the first year, before the line reached beyond the swamps and a regular cemetery could be established on high ground. And so many of those who died were without identity, other than a first name, without known address or next of kin, that a rather ghoulish but thriving trade developed in the shipping of cadavers, pickled in large barrels, to medical schools and hospitals all over the world. For years the Panama Railroad Company was a steady supplier of such merchandise, and the proceeds were enough to pay for the company's own small hospital at Coln.A reporter who visited this hospital in 1855, the year the railroad was finished, wrote of seeing "the melancholy rows" of sick and dying men, then of being escorted by the head physician to an adjoining piazza, "where, in conscious pride, he displayed to me his collection of well-picked skeletons and bones, bleaching and drying in the hot sun." It was the physician's intention, for the purposes of science, to assemble a complete "museum" representing all the racial types to be found among the railroad dead.The worst year had been 1852, the year of Stephens' death, when cholera swept across the Isthmus, starting at

Coln with the arrival of a steamer from New Orleans. Of the American technicians then employed -- some fifty engineers, surveyors, draftsmen -- all but two died. When a large military detachment, several hundred men of the American Fourth Infantry and their dependents, made the crossing in July en route to garrison duty in California, the tragic consequence was 150 dead -- men, women, and children. "The horrors of the road in the rainy season are beyond description," wrote the young officer in charge, Captain Ulysses S. Grant, whose memory of the experience was to be no less vivid years later when he sat in the White House.Nicaragua was different.The United States and Great Britain had come close to war over Nicaragua, in fact, at the beginning of the gold rush, so seriously was Nicaragua's importance as a canal site regarded on both sides of the Atlantic. The Caribbean entrance to a Nicaragua canal would be San Juan del Norte, at the mouth of the San Juan River, and a British gunboat had seized San Juan del Norte in 1848 and renamed it Greytown. A crisis was averted by a treaty specifically binding the United States and Great Britain to joint control of any canal at Nicaragua, or, by implication, any canal anywhere in Central America. This was the Clayton-Bulwer Treaty of 1850 -- after John Clayton, the American Secretary of State, and Sir Henry Lytton Bulwer, the special British envoy involved -- and it seemed a very good thing in Washington, in that it blocked a foothold for the British Empire in Central America and precluded any chance of a wholly British-owned and -operated canal in the Western Hemisphere. So important a document signed by the two powers had also put the Nicaragua canal in a class by itself.Nicaragua and Tehuantepec both competed with Panama for the California trade, and though the Tehuantepec transit never really amounted to much, the one at Nicaragua did and far more so than is generally appreciated. In 1853, for example, traffic in both directions across Panama was in the neighborhood of twenty-seven thousand people; that same year probably twenty thousand others took the Nicaragua route, going from ocean to ocean on an improvised hop-skip-and-jump system of shallow-draft steamers on the San Juan, large lake steamers, and sky-blue stagecoaches between the lake and the Pacific. The actual overland crossing at Panama was shorter and laster, but Nicaragua, being closer to the United States, was the shorter, laster route over all -- five hundred miles shorter and two days faster. A through ticket by way of Nicaragua also cost less and, perhaps as important as everything else, Nicaragua was not known as a deathtrap.The Nicaragua system was the creation of Cornelius Vanderbilt, who became seriously enough interested in a Nicaragua canal to hire Orville Childs, a highly qualified engineer, to survey the narrow neck of land between Lake Nicaragua and the Pacific. And in 1851 Orville Childs had the good fortune to hike into a pass that was only 153 feet above sea level. He had found a place, in other words, that was a full 122 feet lower than the summit of the Panama Railroad, and by 1870 no lower point had been discovered anywhere else.The impetus to resolve the canal question grew steadily as the steam engine transformed ocean travel on a global scale. In 1854 Commodore Matthew Perry with his "black ships" had forced Japan to open her ports to Western commerce. Seven years later the first Japanese delegation to the United States, eighteen lords wearing the swords and robes of samurai, passed through Panama on its way to Washington.A Wall Street man named Frederick Kelley calculated that a canal through Central America could mean an annual saving to American trade as a whole of no less than $36,000,000 -- in reduced insurance, interest on cargoes, wear and tear on ships, wages, provisions, crews -- and a total saving of all maritime nations of $48,000,000. This alone, he asserted, would be enough, irrespective of tolls, to pay for the entire canal in a few years, even if it were to cost as much as $100,000,000, a possibility almost no one foresaw.Darien had been tried several times again since Lieutenant Strain's tragedy, as had the Atrato headwaters, all without luck. Small French exploring parties had begun turning up in both areas in the 1860's, and Frederick Kelley, who became the most ingenuous canal booster of the day, expended a fortune backing several disappointing expeditions, including one in search of Humboldt's "Lost Canal of the Raspadura." The leader of that particular Kelley venture was a hard-bitten old jungle hand, John C. Trautwine, who had worked on the Panama Railroad surveys. There was no lost canal, he reported, at the conclusion of a search across hundreds of miles of Atrato wilderness. Perhaps a Spanish priest had induced his flock to make a "canoe slide," but it was never anything more than that. "I have crossed it [the Isthmus] both at the site of the Panama Railroad and at three other points more to the south," Trautwine wrote in a prominent scientific journal. "From all I could see, combined with all I have read on the subject, I cannot entertain the slightest hope that a ship canal will ever be found practicable across any part of it."But whose word was to be trusted? Which data were reliable?The information available had been gathered in such extremely different fashions by such a disparate assortment of individuals, even the best of whom found it impossible to remain objective about his own piece of work. The more difficult it was to obtain the data, the higher their cost in physical hardship, time, or one's own cash, the harder it was to

appraise them dispassionately. The conditions under which the field work had to be conducted were not only difficult in the extreme, but even the best-intentioned, most experienced men could be gravely misled if they allowed themselves to be influenced by the "feel" of the terrain, as nearly all of them had at one time or another.The French explorers and engineers had little faith in American surveys; the Americans had still less regard for any data attributed to a French source. The only surveys of consequence were that of the Panama Railroad and the Nicaragua survey by Childs. Only one of these had been made with a canal in mind and it was really far from adequate. The organized approach Humboldt insisted on had never once been tried, for all the talk and energies expended. Nor, it must be added, had any serious body or institution -- American, European, scientific, military -- addressed itself to the critical question of the kind of canal to be built; whether in the interests of commerce and of future generations, it ought to be a canal cut through at sea level, such as the Suez Canal, or whether one that would lift ships up and over the land barrier with a system of locks.IIILate in the afternoon of February 21, 1870, having made a stop at Coln to pick up a Colombian commissioner, Seor Don Blas Arosemena, who was to accompany the expedition, as well as a force of macheteros, the steam sloop Nipsic arrived at Caledonia Bay. The weather was delightful. The dry season at Darien is the time when trade winds blow fresh from the north and a heavy blue sea breaks all along the coast. Little rain falls, except in the mountains. Temperatures range in the low eighties; the sky is spotlessly clear day and night.The line of march was to be over the abrupt green mountains that rise only a few miles in from shore. Selfridge would head for the Caledonia gap, which, from the bay, appears lower than it is and might well be taken even by an experienced observer as the perfect place for a canal. It was what had attracted Dr. Edward Cullen originally.Selfridge issued strict orders concerning the Indians. Their property was to be "perfectly respected," no villages were to be entered without their consent. Any "outrage of their women" would be answered with the most severe punishment.Operations commenced February 22, the morning after arrival. Selfridge met on the beach with the chief of the Caledonia tribe. "When you give an order to one of your young men, do you expect him to obey?" Selfridge asked. "I am sent here by my great chief," he continued, "with orders to pass through the country and I must obey. I shall cross to the Pacific, peaceably if possible, but if not I have ample force at my command." The Indian said the white men could go at will but he professed no knowledge of the interior. Like the other Indians to be seen on the beach, he was quite small in stature, but muscular and quick, with bright, intelligent eyes. "I was not able to discover their ancient form of worship," Selfridge wrote. "They believe in evil spirits, and...they believe that God made the country as it is, and that He would be angry with them and kill them if they assisted in any work constructed by white men."Four days later, leaving a small party behind to organize a telegraph station and an astronomical observatory, Selfridge and a force of about eighty men, including Marines and macheteros, started inland to make a reconnaissance. In a week they were back, dirty, exhausted, and full of stories. They had found the Sucubti River, which flows to the Pacific, the river Strain should have followed. Once they had reached the mountains it had rained nearly the whole time, and in some places the trail had run along ridges only a few feet wide, with great gorges dropping off on both sides ("in the depths of which was heard the roaring of wild animals"). Some of the older men, veterans of the Civil War, said they had never experienced anything to equal the march. But they had crossed the divide.On March 8, a full-scale surveying party got under way, stringing a telegraph wire as it went in order to report its progress back to the base camp. Two weeks later, on March 22, the chief telegrapher with the party, W. H. Clarke, sent the following message:I am at the front. We are progressing finely through the worst country I ever saw, on our way to the Pacific; impossible to write; everybody is well and in good spirits.On March 30 came another message from Chief Telegrapher Clarke, this one to Commander Lull and the crew of the Guard.The entire column of the Surveying and Telegraphic Corps unite in sending you and all friends on board, a greeting from the summit of the dividing ridge. Looking to the westward we see the long-looked-for slope of the Pacific stretching far away, seemingly all an impenetrable forest; to the northeast Caledonia Bay and the Guard is plainly visible; immediately around me I see Lieutenant Schulze, Mr. J. A. Sullivan, Ensigns Collins and Eaton of the Guard, Messrs. H. L. Merinden, J. P. Carson, T. H. O'Sullivan and Calvin McDowell, and as I telegraph this message they are singing "Jordan is a hard road to travel."What was not reported, but already known by then, was that the lowest pass on the Sucubti was 553 feet above sea level, and that the mountains were indeed a thousand feet or more in elevation, just as Strain had reported. So Edward Cullen was a fraud after all.Still the expedition continued and under considerable hardship. The terrain was often such that it was impossible to do the chaining and leveling for the survey, detours had to be made, progress on the survey slowed to not more than a thousand feet a day. The cameras of Timothy O'Sullivan, the heavy glass plates

and the dark tent he had brought along, were just about useless because of the heat and humidity and the vegetation that shut out nearly all daylight.The standard attire was a big straw hat, blue flannel shirt, duck trousers, shoes with canvas leggings. The flannel shirt was to be worn next to the skin, and the day began with a tablespoon of whiskey and two grains of quinine per man. To such precautions -- "under Providence" -- Selfridge attributed the "wonderful good health" of the command the entire time in the jungle.Perhaps because of his preliminary orders, perhaps because of the conspicuous Marine guard, there were no troubles with the Indians of the interior, many more of whom were encountered than expected and none of whom had ever before seen a white man. Once on the Sucubti several Indians armed with poisoned arrows volunteered to serve as guides, then led the party along the most tortuous course possible. The Americans saw what was going on and said nothing, as "it was thought better not to offend them."A few entries from the field diary kept by Selfridge give an indication of their days:Thursday, April 7. -- Took up our March at 6:30 A.M., the Indian Jim and others with us...One of the Marines shot another private by accident in the arm, and he was left behind in camp. The Indians were very much surprised that the affair was taken so coolly, and two or three ran off to tell their chief. About 9 A.M. we struck the river again, and the Indians left us....At half past 2 o'clock we forded the La Paz; this was the deepest river we met, the water coming up to our armpits, and obliging us to carry out ammunition and provisions on our heads. Several bungo-trees full of monkeys were seen, as many as twenty or thirty in a tree; some were shot, and provided a pleasant and much-needed repast....Friday, April 8. -- ...Eugenio, the machetero, was bitten during the night by a scorpion or tarantula, and his leg and foot became so swelled that we were forced to leave him behind...Passed a miserable night, tormented by mosquitoes and sand-flies.Saturday, April 9. -- Started down the right bank of the river. Left behind nine men who were shoeless. Cut through 5,000 feet, a dense mangrove [swamp]...Sunday, April 10. -- Another sleepless night, on account of insects..."We were to find," he later wrote, "that in spite of the most careful preparations, the success of the expedition also depended upon extraordinary persistence and willingness to endure hardships." The torment inflicted by the sand flies and mosquitoes was indescribable -- "mosquitoes so thick I have seen them put out a lighted candle with their burnt bodies." There was no longer any mystery, he mused, why the secrets of the Isthmus had remained locked up for so many hundreds of years.At Caledonia Bay, a week later, Selfridge concluded that he had seen as much as needed of Cullen's route. So on April 20 the expedition packed up and steamed out of the bay for the Gulf of San Blas, another magnificent harbor on the Darien coast, approximately a hundred miles west, toward the Panama Railroad. Here again the mountains gave the appearance of a low pass, and from one of Frederick Kelley's expeditions it was known that the distance from tidewater to tidewater at this point was less than thirty miles. San Blas was a mere knife edge, where the two oceans came nearer to touching each other than at any other point in Darien or all of Central America.Selfridge took his men ashore to search the Mandinga, the one large river on the Atlantic slope between the Atrato and the Chagres. By now the rainy season had returned and the bottom lands were a vast pulsing swamp. Frequently the men were "obliged to pass the night in trees, the water rising so rapidly as to drive them from their beds." In a week of relentless effort they were able to survey a bare two miles, and it was a full month later still by the time they had measured the mountain gap that from the sea had seemed so near. The elevation was a disappointing three hundred feet.With provisions now runing low, his men worn out ("...and no longer kept up by the charm of novelty"), with their entire stock of shoes used up -- all six hundred pairs! -- Selfridge thought perhaps he ought to pull back and sail for home. But "...could we carry our levels over the divide, we should be able to decide upon the practicability of this route." So on he went with a picked crew, moving their cumbersome, delicate equipment from point to point, putting down stakes, filling notebooks with pages of computations, observations on plants and animals, and geological notations. On June 7, at the top of the ridge, at an altitude of 1,142 feet by the barometer, they hammered in stake No. 96,000.On the Pacific slope, the climate, the whole character of the country, changed. "Trees, soil, all different," Selfridge noted, "and the weather beautiful." They took their line to the point where it coincided with the one Kelley's people had mapped. Then, having followed the Kelley line far enough to be satisfied with its accuracy, they turned back, without going the whole way to the Pacific.The San Blas route, Selfridge now could report, was no more practicable than the one at Caledonia Bay. A tunnel would be required, and even if enough locks could be built to lift ships over the mountains -- to the preposterous altitude of a thousand feet -- there were no rivers at that level to supply water for the canal.Selfridge would return to Darien with a second expedition before the year ended, to search that section fronting on the Gulf of Urab where the Isthmus joins South America. He would, on this second expedition, sail far up the Atrato to the Napipi to explore the route Humboldt had

thought so promising. Later, in 1873, he would command a third expedition, this one to the Atrato headwaters. But none would compare to the Darien Expedition of 1870. It was the proudest accomplishment of his life. Nothing done before or after was so difficult or gave such personal satisfaction. It did not matter that they had failed to find the proper path, he would write near the end of a long life; they had led the way.In the official report he filed with Secretary Robeson, Selfridge said merely that the effort had served to simplify matters -- "the field of research is reduced and the problem narrowed." He was convinced that the determining factor must be the canal to be built. The canal "should partake of the nature of a strait, with no locks or impediments to prolong the passage..." It must be a "through-cut," at the level of the sea, he wrote, a canal like the canal at Suez, and, from what was known of Central America, the only feasible point for such a passage was Panama.Copyright 1977 by David McCullough