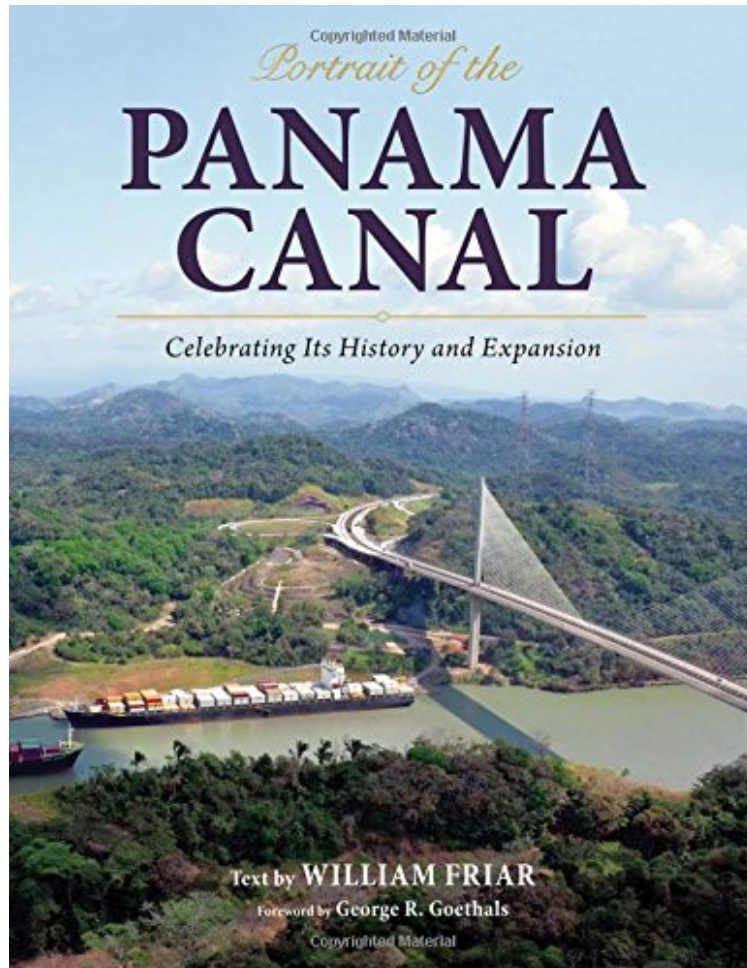


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# Portrait of the Panama Canal: Celebrating Its History and Expansion

William Friar

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**William Friar : Portrait of the Panama Canal: Celebrating Its History and Expansion** before purchasing it in order to gage whether or not it would be worth my time, and all praised Portrait of the Panama Canal: Celebrating Its History and Expansion:

0 of 0 people found the following review helpful. Not really a book about anything other than glossing over the great feat that it is.By DVDThis is not a book that goes into even the surface details of Panama Canal. Nice pictures, not much text, and not really anything other than a casual read.0 of 0 people found the following review helpful. Good background information!By sk888888Having just visited the Canal Zone, I am trying to fill in some of this historical pieces. This book has some great shots in it, and definitely helped to fill in the gaps.0 of 0 people found the following review helpful. Good choice.By richard j millsvery general, but concise book. Gave it as a gift to an engineering friend, he buried his head in it immediately. Good choice.

This classic from William Friar about the Panama Canal has been completely updated and revised in time for the opening of the expanded locks. This engaging collection of contemporary and archival photographs is illuminated by Friars lively and informative text. Though the dream began as early as 1513 when Vasco Nuez de Balboa first crossed the isthmus and saw the Pacific Ocean, it was not until 1914 that the Panama Canal became a reality. The French had started excavation for the Canal in 1869, but the work was beset by earthquakes and landslides; disease malaria, yellow fever, cholera, beriberi, smallpox, and typhoid fever; and wild animals from pumas and jaguars to a whole menagerie of poisonous snakes. By 1889, the money ran out and the whole enterprise collapsed in a cloud of scandal and bankruptcy that drove the French government from power. Some fifteen years later, on November 12, 1904, after much debate and political maneuvering, the first Americans arrived, and the work began again. The Canal opened less than ten years later, on August 15, 1914. For sixty-five years, the United States operated the Canal, but 1979 saw the start of a twenty-year transition. On December 31, 1999, control and day-to-day operations were turned fully over to the Republic of Panama. In the past fifteen years, the following changes have taken place in the Canal: widening the Gaillard Cut so two PANAMAX ships can pass each other; deepening the navigational channel in Gatun Lake to increase the capacity of the water reservoir; adding a new vessel traffic-management system that uses satellite Global Positioning System technology; the construction of two new sets of single-lane, three-step locks one set at the Atlantic entrance and one at the Pacific; and adding two new navigational channels to connect the new locks to existing channels. In words and in photographs both historical and contemporary Portrait of the Panama Canal traces the story of the Canal from its beginnings as just a dream to its present reality as one of the wonders of the world.

About the Author William Friar grew up near the banks of the Panama Canal. Though an American citizen, he has lived most of his life overseas. Besides Panama and the United States, he has called Denmark, India, and the United Kingdom home, and he spends as much time as possible traveling. He is the author of two other Panama-related books: all four editions of the Moon Handbooks guidebook to Panama, and an eco-tourist guide, *Adventures in Nature: Panama*. He also has written about the UK, San Francisco, and various bits of South America. Bill began his writing career as a stringer for the metro desk of the New York Times. He has also worked as a rock music critic, technology journalist, human biology instructor, writing coach, fund-raiser, and reporter for three daily newspapers in the San Francisco Bay Area. Bill's work has appeared in the Los Angeles Times, Miami Herald, Arizona Republic, Neuen Zrcher Zeitung, San Jose Mercury News, Orange County Register, and Houston Chronicle, among other publications. He is now head of fund-raising at the London School of Hygiene and Tropical Medicine, an international research institution at the University of London. Bill holds undergraduate and graduate degrees from Stanford University and a master's degree in journalism from Columbia University. He lives in London with his wife, Karen, and their cat, Wookie. More information is available through his website, [www.panamaguidebooks.com](http://www.panamaguidebooks.com), or follow him on Twitter at [www.twitter.com/PanamaGuide](http://www.twitter.com/PanamaGuide). Foreword writer George R. Goethals, great-grandson of George W. Goethals, chief engineer of the Panama Canal from 1907 until its completion in 1914, is professor of psychology at Williams College in Williamstown, Massachusetts. Excerpt. Reprinted by permission. All rights reserved. Panamas answer to the question of how to stay viable in the face of all this competition has been the most ambitious engineering project on the isthmus since the Canal was first built: the building of a third, much larger set of locks alongside the existing ones. This was an exceptionally bold and expensive plan. The idea was to build absolutely gargantuan lock chambers capable of handling post-PANAMAX size ships. It would be a third lane for the Canal that would parallel and dwarf the existing lock complexes. The original lock chambers are 1000 feet long by 110 feet wide. They can handle ships loaded with up to 5,000 standard 20-foot shipping containers. The new locks are 1,400 feet long by 180 feet wide. The biggest vessels which can go through these locks, dubbed New Panamax ships, can carry up to 13,000 containers. The cost of the project was nearly as staggering: an estimated \$5.25 billion, a nail-bitingly large sum for a middle-income country which in 2014 had a GDP of \$46.2 billion. The project also required digging a new, nearly four-mile-long channel on the Pacific side of the isthmus, allowing the giant ships to bypass the old Miraflores Locks, which open right onto the Pacific Ocean. Existing navigational channels had to be deepened through dredging. And the freshwater supply feeding the Canal had to be increased enough to raise the level of Gatun Lake by nearly eighteen inches to accommodate these colossal, heavy ships. The extra water was also needed to supply the new chambers. The system for raising and lowering ships in the new chambers is impressive, if arguably not as simple and elegant a solution as that used in the original lock chambers. Like the original locks, the new ones use no pumps to raise and lower ships, relying instead on gravity to fill and empty the lock chambers. To conserve water, the locks water system was designed to reuse 60 percent of the water used in every transit. Alongside each of the new lock chambers is a series of three water basins, arranged in tiers. Each of these basins is the same length as the lock chamber it parallels, and is nearly 230 feet wide and about 18 feet deep. When a ship is lowered during a lockage, water flows successively into each water basin tier and into the next-lower lock chamber until the water level equalizes. The water thus recaptured can be used for the next lockage. The process is reversed for ships which are being raised. This system reduces the amount of water that is lost to the sea. The new design aims to use 7 percent less water than the original, much smaller locks. The lock gates are a different design as well. Where the original gates have two leaves which

open and close like French doors, the new gates use just one leaf, which rolls in and out straight across the lock chamber, like a sliding door. The new gates were made in Italy and shipped on giant barges to Panama. Each gate is approximately 190 feet long and 30 feet thick. The heaviest ones weigh 4,200 tons. The original locks raised and lowered ships in stages at lock complexes located at three points along the Canal: Miraflores at the Pacific entrance, Cristobal on the Atlantic entrance, and Pedro Miguel in between. There are only two new lock complexes: one on the Pacific side and one on the Atlantic side. Controversy dogged the project from the moment it was conceived. For a start, critics pointed out that even the existing Canal can run short of freshwater during a protracted dry season or unusually dry rainy season. This can force the Canal to limit the size of ships allowed to transit, as the lake level gets too low for the heaviest ships. Even with the expansion of the water supply, would there be enough water to supply three sets of locks? Others worried about the environmental impact of such a massive construction project, particularly at a time when Panamas ecosystems were already under huge pressure from deforestation and development. Still others questioned whether the project was needed at all. Some analysts claimed that the trans-isthmian route had peaked, and the case for increased capacity depended too heavily on a volume of trade between the Far East and the US East Coast that could not be counted on to last. There were also accusations of corruption in the awarding of contracts, which some claimed went to contractors who were not competent to perform the work or had not submitted realistic bids. A particular concern was the quality of the concrete used in the new chambers. While the concrete in the original locks has held up for more than 100 years so far, the walls of new chambers sprang leaks from the moment they were filled. Tests performed on the concrete found it to be riddled with air pockets. At the time of writing, this problem had not been resolved. As if all this weren't enough, work stoppages, clashes with contractors over money, a strike, and ongoing labor disputes pushed the expected completion date far past its original deadline. It will be years before it becomes clear if Panamas gamble has paid off. But many far beyond the isthmus are betting it will: sea ports, particularly on the East Coast of the US, have been deepening their own channels in anticipation of the massive ship traffic they expect to come their way. So what of the future? Even as the third locks were being built, the ACP was already talking about the possibility of a fourth, even bigger set of locks. These would be capable of handling ships weighed down with 18,000 containers. And some still bring up the age-old dream of a sea-level canal at Panama. It appears the Panama Canal dream is not over yet.