

The Family Heritage Series

A weekly discussion of Americanist truths and traditions for those "heirs of all the ages" who will have to preserve that most important inheritance of all — freedom. Produced by the Movement To Restore Decency.



Volume II

Lesson Fifty-Four

Completing The Canal

LESSON IDEA

To describe the gigantic engineering tasks that were required to finish building the Panama Canal; and to show why it is vital for the United States to retain control of this waterway.

PREPARATION

Collect some newspaper stories and magazine articles about current efforts to surrender control of the Canal, and plan to conclude this lesson with a discussion of the need to retain U.S. sovereignty over the Panama Canal.

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AT THE BEGINNING of his third year in Panama, John Stevens could boast that yellow fever and malaria were on the way to being totally eliminated. But the Chief of Engineers was still having his problems with the Isthmian Canal Commission. And although almost two years had passed since the first American steam shovel bit into Panamanian soil, a decision had not even been made on whether to build a sea-level canal or a lock canal. Can any of you explain how locks on a canal work?

Before arriving in Panama, Stevens favored a sea-level canal. But once he had surveyed the proposed canal route, he realized that a lock canal would be cheaper to build and take less time to complete. Unfortunately, Stevens had no say in the type of canal to be built. That decision would be made in Washington.

In the summer of 1905, President Theodore Roosevelt appointed a Board of Consulting Engineers to study the various proposals. The Board met nearly forty times through the fall and winter,

and finally in January of 1906 it issued a report in favor of a sea-level canal. But the decision was far from being unanimous, and the board members who favored a lock canal invited Stevens to Washington to testify. Stevens told the board members that a lock canal "will provide a safe and a quicker passage for ships, and therefore be of greater capacity. It will provide, beyond question, the best solution of the vital problem of how safely to care for the flood waters of the Chagres and other streams . . . Its cost of operation, maintenance, and fixed charges will be very much less than any sea-level canal." To almost everyone's surprise, Stevens' presentation won the approval of the Isthmian Canal Commission, which rejected the decision by the Board of Consulting Engineers favoring a sea-level canal.

Stevens had the support of the Isthmian Canal Commission, the Secretary of War, and the President. But there was one more hurdle to pass — the U.S. Congress. Days became weeks as a Senate subcommittee debated the canal question. Stevens didn't wait in Washington for a decision, however, but returned to Panama to get ready to start construction. Then the subcommittee voted in favor of a sea-level canal, and Stevens hurriedly returned to Washington and spent the next two months pleading for approval of a lock canal.

One point of debate was the proposed Gatun Dam, which would be needed for a lock canal. When one Senator told Stevens, "I suggest to you that this dam ought to be made stronger," Stevens retorted, "The dam is strong enough. This is like killing a duck; when you kill him he is dead;

there is no use trying to kill him deader.”

Stevens' efforts paid off, and the Senate voted 36 to 31 in favor of a lock canal. A few days later, the House of Representatives approved the legislation, and the President signed it into law on June 29, 1906.

John Stevens should have been elated, but mysteriously, three weeks after he returned to Panama, he resigned as Chief Engineer. He never explained why he quit, except to say it was for personal reasons. Stevens was certainly fed up with politics and politicians; at one point he wrote, “If I have to mix and mingle with every politician in the United States, the sooner I drop [this project] the better I will be satisfied.” So perhaps he had had enough of the bureaucrats.

COLONEL GEORGE Washington Goethals was President Roosevelt's next choice as Chief Engineer. An efficient engineer, Goethals was practically unknown except to others in the Army. Unfortunately, he lacked the sense of humor Stevens possessed. At first the workers in Panama distrusted him, and there were mutterings that he would turn the Canal Zone into a gigantic Army base, with himself as supreme ruler. But these fears were unfounded, and Goethals' men soon learned to respect him.

Colonel Goethals recognized the immensity of his job, and the wonders Stevens had already performed. In a letter to his son a week after arriving he said:

The magnitude of the work grows on me. It seems to get bigger all the time, but Mr. Stevens has perfected such an organization . . . that there is nothing left for us to do but just have the organization continue in the good work it has done and is doing . . . Mr. Stevens has done an amount of work for which he will never get any credit, or, if he gets any, will not get enough.

Colonel Goethals had good reason to be awed at the size of the job ahead of him. He was responsible for coordinating the activities of some 40,000 men, from forty-five different countries; their task was to dig a huge trench that would

average 45 feet deep and 500 feet wide for a distance of almost 50 miles. It would cut through mucky swamps, winding rivers and rugged mountain ranges.

The three major construction projects were to dam the rivers on both sides of the Isthmus, to blast through the mountainous continental divide at the Culebra Cut, and finally to build the intricate system of locks. Once these three were accomplished, everything else would be easy!

Goethals decided to divide the labor into three sections. The Atlantic Division would handle the construction of the Gatun Dam and locks; the Central Division would tackle the Culebra Cut; and the Pacific Division would build the dams and locks for that side of the Isthmus.

THE BIGGEST CHALLENGE facing Goethals and his men was the Culebra Cut. This was a mountainous region nine miles long, and some of the mountains in it were as high as a twenty-story building. But the canal could not go around the range; it had to go through. Working in the Cut was especially dangerous because so much of it was composed of gooey clay. Every time men set off a dynamite charge they feared a landslide would bury them. More than once slides did bury men and machines under tons of earth, and it often took weeks to uncover the bodies.

While men and machines were gnawing their way through the Culebra Cut, others were working on the Gatun Dam. Hundreds of acres of land had to be cleared, and whole villages moved to higher ground. Some three million cubic yards of clay and

FOR SERIOUS STUDENTS

There are sound reasons why the United States should not surrender control of the Panama Canal. Some are discussed in *Panama – Part of America's Security*, by Jon Speller, available for \$5.95 from your local American Opinion Bookstore or directly from American Opinion, Belmont, Massachusetts 02178. We recommend reading it, and other works about Panama. In addition, it would certainly be worthwhile to have students write the Senators and Representatives for your area and ask for their opinions of the importance of maintaining American control of the Panama Canal.

sand were used to construct an earthen dam 135-feet high and one and one-half miles wide. As the waters began backing up behind the Gatun Dam, it created a man-made lake that covered 164 square miles.

Hundreds of other men were just as busy building the molds to make the walls of the locks. These alone required millions of pounds of concrete, rock and sand. Each one was six stories high, several feet thick, and almost one thousand feet long. Can any of you describe how something is made from a mold? [*Have someone describe the process.*] Here is how it was done on the Panama Canal:

First, the engineers built box-like walls out of wood and metal, each box as large as the wall of the lock. Then, this mold was filled with wet concrete. Just pouring this much concrete was no easy task. The men erected towers 85-feet high on each side of the canal. Then they strung several steel cables from one tower to the other to carry bucket loads of concrete to the molds. From a distance, this contraption of wires, hoists, and webs of metal girders looked like a giant clothesline with a huge clothespin moving slowly back and forth on it.

ON THE PACIFIC side of the Isthmus, at the site of the Pedro Miguel and Miraflores Locks, engineers used another method to pour the concrete into the molds. First, railroad tracks were laid in the middle of the channel the canal would follow. Then giant cranes were built onto railroad cars right in the channel. Each crane had two large metal arms stretching to the sides of the lock. Conveyor belts running to the end of each arm were built into the crane. When the mammoth metal machines were finished, the concrete could be mixed right on the crane, carried up the conveyor, and dumped directly into the mold. As soon as enough concrete had been poured in one position, the railroad car could be pushed forward a few feet, to fill another part of the mold.

Though the walls for the locks were built on the spot, the metal gates for each lock had to be made to order at the largest steel mills in the world. So an order for forty-six pairs of gates was sent to Pittsburgh, Pennsylvania. The biggest gate was sixty-five feet wide, eighty-two feet high, and seven

feet thick. It weighed 730 tons, or nearly one and one-half million pounds. The entire shipment of gates weighed more than sixty thousand tons.

Work on the Panama Canal continued relentlessly, day after day and year after year. Until finally, in September, 1913, it was all but finished. After ten years the giant steam shovels were silenced; along the Culebra Cut, where dynamite blasts had echoed every day, only quiet reigned. Hammers, wrenches, sledges, shovels, picks, crowbars — tools by the thousands and tens of thousands were laid down, as an army of laborers finished its job.

On September 26, 1913, the sluices at Gatun Lake were opened, and water rushed into the locks. Special trains, filled with visiting officials, had been run into the area; the walls of the concrete locks were filled with engineers and workers, watching expectantly. Slowly but steadily the water filled the locks, rising inch by inch and foot by foot, until it was on a level with the Atlantic Ocean. Then the order was given and the locks swung open. A mighty cheer split the air as the canal's first ship, the tug *Gatun*, steamed into the lock, hooting and blowing her whistle.

It would be another ten months, however, before the Canal could be officially opened to ocean-going vessels. Just weeks before the Canal was to have been opened, the greatest mud slide of all occurred at the Culebra Cut. The Cucaracha Slide had dumped millions of tons of mud and clay into the Canal. Men had been working for months to open a channel through the slide, but without success. Engineers finally decided to flood the entire area and dig out the rest with dredges. Immediately after the water rushed through the Cut, three of the largest dredges in the world were sent in to finish the job, and day and night they tore into the sluggish mass.

Finally, on August 15, 1914, the Panama Canal was officially opened to the commerce of all nations. The *S.S. Ancon* made the historic first voyage, loaded with engineers, Army officers, and officials from Panama and the United States.

Entering the Canal from the Atlantic side, the ship sailed for seven miles through a sea-level canal before it reached the three Gatun Locks. There it entered the first lock; the gates were closed; and as water was added, the ship gradually rose to the

level of the second lock. The process was repeated two more times, until the ship was eighty-five feet above sea level. Then it left the locks and for thirty-two miles it weaved its way across the Isthmus. At the Pedro Miguel Lock, it was lowered thirty feet to the level of the Miraflores Lake. It sailed serenely across the lake and through the two Miraflores Locks, which lowered it to the level of the Pacific. From there it was just eight and one-half miles through another sea-level channel until it reached the ocean. The centuries-old dream of a sea route across Central America had been realized!

IN THE PAST sixty years, more than 40,000 ships have used the Panama Canal to save thousands of miles in the trip from one ocean to the other. The Canal's importance to the United States is indicated by the fact that some seventy percent of these shipments are either exports from or imports to this country. Although the Canal represents an investment of more than five billion dollars by the United States, there is no question but that it has been — and is — worth every cent.

Moreover, the military value of the Canal to the United States is incalculable. First, because it has made it possible for our Navy to move ships from one ocean to another, without losing weeks of time by traveling around South America. And second, because of the very real threat it would present to our economy if some other nation or authority ever seized control of the Canal.

Of course, the Communists have also recognized the importance of the Panama Canal. Practically from the moment it was built, they have schemed to seize control of it. One of their first efforts occurred nearly thirty years ago, when a State Department employee named Alger Hiss proposed that we surrender the Panama Canal to the new international organization called the United Nations. Even though Alger Hiss was an American, do you think he had the best interests of this country in mind?

Recently, however, the Communists adopted a different strategy to wrest control of the Panama Canal from the United States. They have launched a worldwide campaign demanding that Panama should have exclusive rights over the Canal — while

at the same time Communist strength has increased so much within Panama that they virtually control the government there.

In February of this year, our Secretary of State, Henry A. Kissinger, signed an agreement in principle to surrender our sovereignty over the U.S. Canal Zone. This would give control of this vital waterway to the military dictatorship that now rules Panama — which is definitely *not* friendly to the United States. In the past three weeks we have seen that if it were not for the United States, there would be no Panama Canal. We built it, we own it, and we certainly need it. Protection of the Panama Canal is vital to American interests.

Looking Ahead

Next week, we will begin a series of lessons on some of the heroic Americans who helped settle, develop, and protect America's western frontiers. We'll start our study with a look at the life of a buckskinned frontiersman, congressman, and pioneer named Davy Crockett.

DURING THE WEEK

This concludes our three-part series on the Panama Canal. Along the way we've met some intriguing characters, including Ferdinand de Lessups, who succeeded in building the Suez Canal but failed in Panama; Colonel William Gorgas, whose dedication to saving lives made it possible to complete the Canal; John F. Stevens, who fought successfully for a lock canal system, then resigned after his victory; and Colonel George Washington Goethals, who replaced Stevens and completed the mammoth project. Your library should have books which chronicle their lives. Why did some of these men succeed while others failed?

The **Family Heritage Series** is an outstanding series of weekly lessons for the home, written to stimulate interest and spark discussion about the legacy we have received.

The **Family Heritage Series** is for all parents with school-age children. It is sure to be valued by all Americans who participate in its Heritage Hour discussions, and would be especially welcomed as a gift.

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