

Through the Panama Canal



Most ships that circumnavigate the globe today pass through the Panama Canal. Before the canal was built, ships had to round Cape Horn at the southern tip of South America. That continent is so large that a trip from Boston to San Francisco could take several months at the time of the Gold Rush in 1849. A canal cutting across Central America would take weeks off the voyage.

Work on the canal began in 1904. It took ten years to complete and cost 387 million dollars. (It would cost much more today.) Over 5600 workers died during construction, many from malaria, a disease caused by mosquitoes. The canal was built by the United States, which handed over control to the country of Panama in 1999.

Parts of a Lock

A lock is a section of a canal. Locks are rectangular pools of water in a row. Gates at either end of each lock can be closed to hold water or opened to allow boats to move through the canal, one lock at a time. A sluice is a waterway in which water flows into or out of a lock. Upper and lower valves open to let water pass through a sluice.

How a Lock Works

Ships can't climb steps. If they could, locks would not be needed to help ships pass through some canals. Canals, like rivers, follow the elevation of the land where they run. Even if a ship begins and ends a canal crossing at sea level, it may need to change elevation if the land along the waterway rises or falls. A man-made canal may have a series of locks for this purpose.

This is how locks in a canal work: Water rushes into a pond (lock) to raise or lower the level of a ship or smaller vessel. If a ship is heading from a higher point to a lower point, the lower valve opens, letting water rush through sluices into a second lock. This lowers the water level in the lock that contains the ship. At the same time, it raises the water level in the next lock. When the level of water is the same in both locks, the gate opens and the ship passes to the next lock. These steps repeat until the ship exits the locks.

To go upstream, the process is reversed. Water is pumped into the lock. This raises the water level—and the ship—to the water level in the next lock. The gate opens and the ship moves to the next lock.