Crossing the Line

Jeannette and Elaine were talking and giggling near the back of the group listening to my lecture on the prime meridian that defines the two hemispheres on earth. The more I tried to describe the importance of the line separating east from west, represented by a metal rail in the ground that goes through the floor of the observatory we were visiting, the louder they started laughing.

The group I was lecturing was part of a tour several of us from the Institute for Creation Research were guiding through southern England. The purpose of the tour was to understand why the British had so readily accepted Darwinism shortly after he published his book, "The Origin of Species." We determined it was because the Church of England had already lost confidence in the Bible as a reliable source of knowledge about origins and was looking for an alternative explanation. When his theory was published, the church and "educated intellectuals" readily adopted it.

We were currently waiting to visit the Royal Observatory in Greenwich, England. The observatory is located on a hill above the Thames only miles downstream from London, a fascinating tourist site for many reasons. It's the location where the prime meridian (zero degrees longitude) circles the globe from north to south and sets the baseline for locating one's position on the earth from east to west; it's the location where time is set for the Royal Navy each day by a descending red ball atop the observatory at one pm; and it's the location where a fifty-year battle was finally resolved in the 1700s between the elite scientific community of the Royal Society of London and a working class, country clockmaker, by the name of John Harrison, over the best method for the Royal Navy to use in locating longitude at sea.

Latitude (The angle north or south of the equator) is relatively easy for a sailor to determine. He only needs to use a sextant to measure the angle between the sun and the horizon at noon, and he knows the latitude. Longitude (The angle east or west around the globe from the prime meridian) however, is much more difficult to determine.

The Royal Society and scientific luminaries like Isaac Newton, its first president, were advocates of navigation by observing the position of the stars at night to determine longitude. However, the method didn't work when clouds obscured the sky. And, this happens frequently in winter at mid-latitudes and in some other locations for weeks on end. Naval ships can't travel safely without knowing their longitude when near shoals and shorelines.

This situation came to a head when a squadron of British ships returning home from a voyage in 1707 foundered off the southwestern coast of England, losing over a thousand sailors, because they couldn't determine their longitude and, consequently how far offshore they were. The Royal Society offered a prize of twenty thousand pounds to the first person who could develop a method for accurately finding longitude for naval navigation.

John Harrison, a clockmaker from southern England who built wooden clocks for church steeples, took on the challenge. He spent most of his adult life perfecting a series of sea-going clocks that could compensate for the extreme fluctuations in temperature, humidity, and motion experienced onboard ships. The Royal Society which was partial to an astronomical solution and had little respect for an uneducated clockmaker, refused to award him the prize for his invention until he was on his deathbed.

Harrison’s solution was simple. He developed a clock that was able to keep highly accurate time. It was used to compare the time of noon after a ship departed Greenwich, with the time of noon at the ship's position, somewhere else around the globe. Longitude was calculated using the fact that the earth turns in space, fifteen degrees of longitude every hour, relative to the fixed stars.

Two techniques seriously entertained for winning the prize, rather than Harrison's clock, were the "Powders of sympathy" and "Cannons Around the Globe." Powders of sympathy was a method offered by a competitor who claimed he had developed a chemical that would allow two dogs to be treated with the powder, separated large distances, even half way around the globe, to "sense" when its companion dog was suffering, and would whine or bark. So, the idea was to keep one dog in Greenwich, treated with the powder, and the other, also treated with the powder, onboard the ship. At noon each day, the dog in Greenwich would

be stabbed with a knife. At that same moment, the dog on the ship would supposedly whine or bark, so the ship would know when it was noon in Greenwich. By comparing local noon with Greenwich time, they could calculate their longitude!

"Cannons Around the World" was a less controversial method but didn't garner many advocates. The technique employed a series of ships anchored every fifty miles apart across the ocean. Each ship was expected to fire its cannons at local noon each day and the sound of gunfire would be tracked around the globe, allowing each ship to compute its longitude. Aside from the extravagant misuse of ships and manpower, the practicality of employing some sixty ships to determine longitude on a single line between England an America seemed like only "a drop in the bucket" for the needs of the Royal Navy. There were other technical problems as well, such as the difficulty of hearing cannons over fifty miles away and the boredom of crews assigned only to fire a few cannons once a day.

During our tour of the Royal Observatory, we were privileged to see the metal rail representing the prime meridian across the courtyard in which we were waiting; watch the red ball drop so the ships below us in the Thames could set their clocks to Greenwich time; and see a display of the timepieces Harrison had constructed to accurately measure time onboard British Navy ships in the 1700s.

As I completed my talk, informing the group that here at Greenwich, you could stand in two hemispheres at once by placing one foot on each side of the metal rail representing the prime meridian, Jeannette and Elaine began talking and giggling even more loudly. They became so animated and noisy that the entire group of about fifty listeners turned to observe why they were laughing. I was also curious about what had caught my wife's attention. So, I asked her and Elaine to explain to the group what they were doing. Jeannette happily replied, "We've found the prime meridian!"

"What," I asked, confused. "What are you talking about? " I noticed the two of them were standing near some bushes surrounded by a short, black, metal fence. They were standing, one behind the other, straddling the fencing for some shrubbery.

Elaine said, "Yes, we've got one foot in the Eastern Hemisphere and one foot in the Western. What should we do now!"

I was puzzled at first, then embarrassed, and finally amused. My wife and her cousin, my family members, had confused the fence of some shrubbery for the prime meridian at the Greenwich Observatory.

I finally explained to them, and for the benefit of the entire group, that, "No, that's not the prime meridian. It's about a hundred feet to your left, near another group about to enter the observatory ahead of us! It's now time to get in line to cross the prime meridian from one hemisphere to the other, watch the ball drop, and see the clocks that Captain Cook of the Royal Navy used on his ship to explore the world."

The memory of my wife and her cousin jostling each other to be the first to plant a foot in two hemispheres at once, still makes me laugh today, every time the image of the two of them in the bushes comes to mind.