

## John Harrison (1693-1776)

In the eighteenth century John Harrison made a clock by which Longitude could be determined at sea, a development which was crucial in man's endeavours to master the oceans. I am sure you will be delighted to know that he is to be recognized in perpetuity in Westminster Abbey. The Memorial Tablet will be sited in the Abbey in a prime position in the floor near the grave of Thomas Tompion, 'The Father of English watchmakers' and George Graham FRS, the eminent clock, watch and scientific instrument maker. It will be unveiled by The Duke of Edinburgh at 11 am on Friday 24 March 2006 (Harrison's 313th birthday).



The longitude problem was eventually solved by a working class joiner from Lincolnshire with little formal education. John Harrison took on the scientific and academic establishment of his time and won the longitude prize through extraordinary mechanical insight, talent and determination. Harrison was born in Foulby, near Wakefield, in Yorkshire in 1693 but his family moved to Barrow, in Lincolnshire, when he was quite young. His father was a carpenter and John followed in the family trade. He built his first longcase clock in 1713, at the age of 20. The mechanism was made entirely from wood, which was not a curious choice of material for a joiner. Three of Harrison's early wooden clocks have survived; the first (1713) is in London, at the Worshipful Company of Clockmakers' Collection in Guildhall; the second (1715), is in the Science Museum; the third (1717) is at Nostell Priory in Yorkshire. He married his first wife, Elizabeth, in 1718. She died just eight years later and he remarried within six months, to another Elizabeth.

During the latter part of his early career, he worked with his younger brother James. Their first major project was a revolutionary turret clock for the stables at Brocklesby Park, seat of the Pelham family. The clock was revolutionary because it required no lubrication. 18th century clock oils were uniformly poor and one of the major causes of failure in clocks of the period. Rather than concentrating on improvements to the oil, Harrison designed a clock which didn't need it. It was radical thinking of this sort that would be important later on, when he tackled the problem of designing a marine timekeeper.

During the mid-1720s, John and James designed a series of remarkable precision longcase clocks, to see how far they could push the capabilities of the design. By inventing a pendulum rod made of alternate wires of brass and steel, Harrison eliminated the problem of the pendulum's effective length increasing in warmer weather, slowing the clock. As a result, Harrison's regulators from this period achieved an accuracy of one second in a month, a performance far exceeding the best London clocks of the day. To solve the longitude problem, Harrison would have to devise a portable clock which kept time to the same accuracy as these precision regulators...