

AHS London Lecture Thursday 16 January 2014

David Read, 'Observatory Time by Radio'

The development of railways in the second half of the nineteenth century, together with the rise of industrialization and the movement of workers from the land into cities and factories, made it necessary for everyone to have access to the same time. These causes for bringing about Standard Time are generally well understood. However, the steps they brought about were only the first of many taken in the following decades in which Standard Time within individual nations would be transformed into a single Standard Time for the world as a whole; at first as GMT and then as Universal Coordinated Time (UTC).

It took many decades to move from local time to world time. This was not caused by a failure of vision; it was simply the period during which the enabling technologies were being invented, developed and perfected. On 12 December 1901, Guglielmo Marconi succeeded in transmitting a Morse signal across the Atlantic Ocean, a feat

regarded as impossible by the scientific establishment at that time.

In November 1913, the Paris Observatory, using the Eiffel Tower as an antenna, exchanged time signals with the United States Naval Observatory to determine the exact difference of longitude between the two institutions.

Before long, the pendulum as a frequency standard gave way to quartz which in turn gave way to the caesium atom, whilst the means for distributing time moved from wire telegraphy to the transmission of time signals by radio, leading eventually to clocks controlled by radio.

The scientific, commercial, and political events leading to how all this came about are much less well known than the initial influence of the railways. It is these events, together with the details of how the world's major observatories were enabled to fix their position on the globe, and then compare and coordinate time internationally, that form the subject of this lecture.



David Read is a professional accountant and Humanities graduate from London University. Electrical engineering has always been a major interest, leading after retirement to active membership of the British Wireless Society and the AHS.



The Tempus time signal receiver, here shown with its instruction manual, was manufactured specifically for time signal reception from the Eiffel Tower.

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