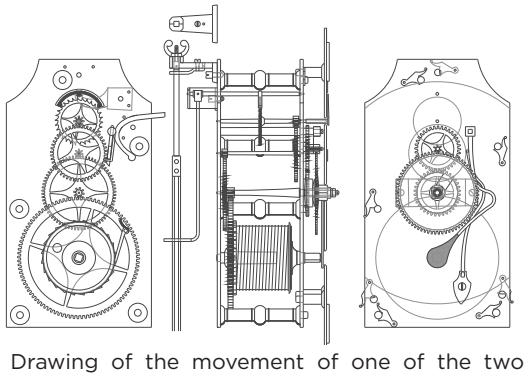
AHS London Lecture Thursday 20 September 2018

John Redfern, **The Knibb Clocks of the University of St Andrews and the Origins of the Tic-Tac Escapement**

On 19 July 1673 James Gregory, professor of 'mathematick' at the University of St Andrews and the inventor of the reflecting telescope, wrote to John Flamsteed, soon to be Astronomer Royal, telling him of his plans to set up an observatory at St Andrews. He set out in great detail his proposed instruments including an 8 foot radius quadrant, the construction of a platform to mount the quadrant on top of the library ('very cold', responded Flamsteed) and added:

> *I have 2 pendulum clocks makinge, with longe swinges, vibratinge seconds, and pointinge houres, minits and seconds, without strikinge; and also one little pendulum clock with a short pendulum, vibratinge 4 times in a second, alsoe without strikinge; for discerninge small intervalls, when there may be a pointe of a seconde in question*.



Drawing of the movement of one of the two Knibb longcase clocks at St Andrews.

These three clocks are the subject of this talk. The fact that they can be accurately dated and that they remained within a few yards of their original position makes them significant documents of horological history. Their commission predates that of the two great clocks by Tompion at the Greenwich Observatory which itself wasn't built then.

The longcase clocks have survived their almost 350 years in wonderful condition with very little interference, particularly the cases but also the movements with only the expected repairs and alterations to the escapements.

It is the small 'Fractional Seconds' wall clock that has some mystery and technical interest, albeit getting lost in a cul-de-sac—but these are sometimes the greatest fun in horology. This beautiful and unique little timepiece has what is commonly known as a tic-tac escapement, but the tic-tac as we know it is entirely unsuited to providing the information that Gregory required. This talk explores the geometry of the tic-tac escapement and covers the research to resolve the conundrum and the subsequent restoration of this little clock.

John Redfern is an antiquarian horologist, animator and film-maker, with more than 40 years experience as a restorer, and 25 years animating and filming clocks and watches. He pioneered the use of CAD and animation in antiquarian horological research and recording, its first use being for the clocks that are the subject of this talk.

TICKETS

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