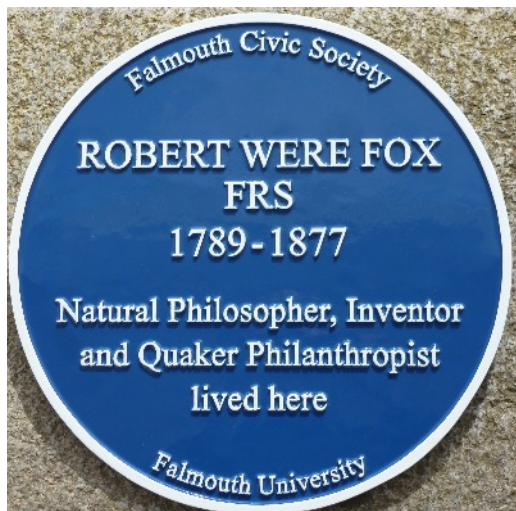


A blue plaque to Robert Were Fox by Mike Jenks

On the 13th October 2021 we celebrated the life of Robert Were Fox FRS (1789-1877), a Natural Philosopher, Inventor and Quaker Philanthropist. The event was organised jointly by our Society, Falmouth University and the Poly. The day started with the unveiling of a blue plaque at the main entrance to Falmouth University's Woodlane Campus, on the Rosehill building which was the house where he lived. Professor Ann Carlisle gave a warm welcome and Charles Fox unveiled the plaque.



The blue plaque, and Charles Fox giving the speech to unveil it. Photos: Mike Jenks

The unveiling was followed by a cream tea, a demonstration of one of his significant inventions – a dipping needle – and the Poly's Paul Smales lecture on the subject given by historian Dr Edward Gillin. Robert Were Fox was the principal partner in the family firm, G. C. Fox and Sons, shipping agents, 1780 – 1810, and also Honorary Consul of the United States of America, 1819 - 1854. As a distinguished scientist he was made Fellow of the Royal Society 1848. His earliest experiments were to improve the steam engines used to pump out the mines. In 1815 he investigated the internal temperature of the earth in Cornwall's deep mines and for the first time showed heat increased with depth; this was known as the geothermal gradient. In 1832, his work on magnetism led him to develop an improved form of compass, the deflector dipping needle compass.



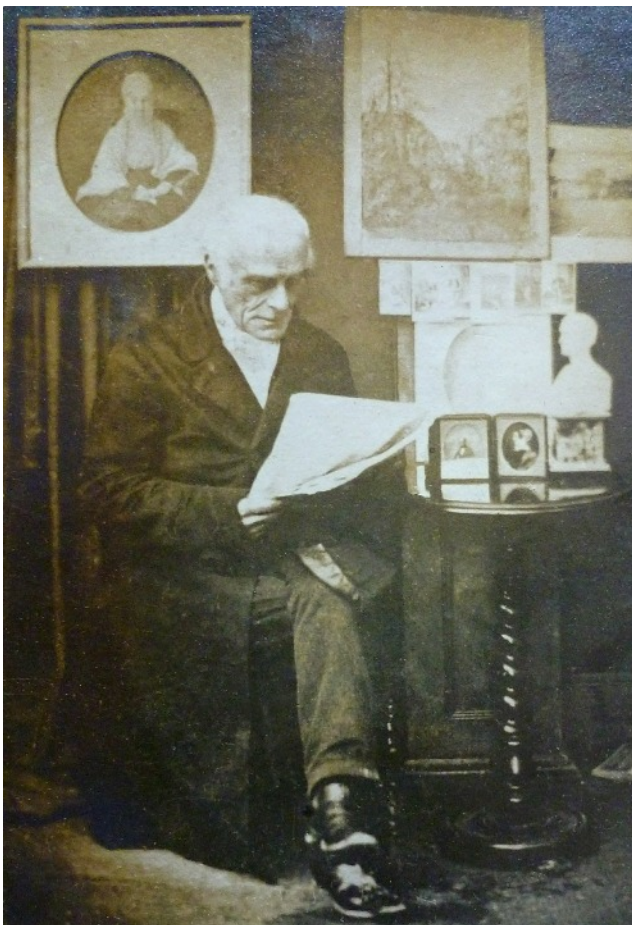
The Fox dipping needle, and Dr Edward Gillin demonstrating it at the Fox Cafe, Falmouth University. Photos: Edward Gillin and Mary Hesling

The dipping needle was a compass with a vertical needle used to measure the angle of the magnetic field. The 'normal' compass with a horizontal needle often gave unreliable readings due to magnetic variations, causing, in the early 19th century, many ships to be wrecked or simply disappear. The dipping needle made navigation reliable and saved many lives at sea. Historian Edward Gillin said that these needles 'were crucial devices in what was probably the single greatest scientific challenge in early Victorian Britain'. Recognising the importance to shipping and Britain's interests, the government of the day instigated a worldwide survey of the Earth's magnetic properties, known as the Magnetic Crusade.

Fox's design was the most sophisticated of the time and was robust and operated well in all conditions. Not surprisingly, 'almost every early Victorian exploration expedition took a set of Fox needles, including James Clerk Ross's voyage to the Antarctic between 1839 and 1843, the catastrophic Niger Expedition of 1841, the Franklin Expedition to discover the North West Passage in 1845, Edward Belcher's surveying of Hong Kong, Korea, Japan, and the Philippines, and the HMS *Rattlesnake's* mapping of northern Australia'(Gillin).

Very few of these instruments remain, just two at Greenwich. But the Poly had one hidden away, and more significantly it is the only one to work. The needle was made in Falmouth some time between 1841 and 1845 by the instrument maker William George. Edward Gillin arranged with the Poly to take the needle on an expedition to replicate and test readings taken in Victorian times. During January and February 2020 Edward travelled from Bristol to Cape Verde, Cape Town and St Helena.

This trip and the science behind it was the focus of Edward Gillin's stimulating Paul Smales Lecture entitled *The Last Journey of the Fox: Cornwall and the Magnetic Crusade*. This was a fitting end to the celebrations of Robert Were Fox's distinguished life.



Robert Were Fox, and an old photo of his home, Rosehill.

Sources: Jill Morison in Naomi Bassett Fox's photo album; Illustration in 'Caroline Fox' by Wilson Harris (1944), Constable & Co Ltd, London.