

## **“Unpredictability and Chance in Science & Technology”**

### **Sir John Meurig Thomas.**

The Society's 6<sup>th</sup> Annual public lecture was a veritable tour de force and the audience was completely enthralled with Sir John Thomas's enthusiasm and the number and range of the examples he used to demonstrate his thesis. Sir John claimed that in most branches of science, expert practitioners are often no better than their junior colleagues in foreseeing the scientific and technological future. Both Kelvin and Rayleigh declared that “heavier-than-air flying machines were impossible”. In 1920 the *Scientific American*, confidently predicted that “steam planes were the way to fly in future” but within 9 years Whittle had made the breakthrough that led to the jet engine. A commission set up by Roosevelt in 1937 to advise on future technology, missed many imminent breakthroughs like radar and lasers, fax machines, antibiotics, fuel cells and jet planes, despite the fact that all of them were known, at least in the text books. The fax machine was discovered in 1840 and the fuel cell in 1842! In 1934 Rutherford predicted that anyone who expected to generate power from the transformation of atoms was “talking moonshine”.

Sir John proposed that chance, together with the interplay of political, societal, individual personalities, commercial and military influences, often leads to major scientific breakthroughs, “Sometimes “it is just a case of being in the right place at the right time, and making the right decision”.

A customer gave Michael Faraday, then a bookkeeper, tickets to lectures by Humphrey Davy. These inspired him to study science and eventually led to his groundbreaking work on electromagnetism. His laws of electrolysis which include the statement “matter is electrical in nature” were, claimed Sir Thomas, one of the most significant discoveries ever.

Lloyd George created the Medical Research Council, which promoted long term research. Janski's discovered deep space radio waves when trying to improve wireless reception. Other examples included genetic fingerprinting, the use of lithium to treat depression, cis-platins used in the treatment of cancer and charged coupled devices that enable us to see both the very small and also the very distant. The use of plastic lenses for cataracts developed from the treatment of WWII pilot who had fragments of a Perspex canopy in his eye. The Internet was originally developed by the US military to defend its data systems from a nuclear attack. However who could have predicted the increase in nodes on the network from just four in 1969, to 23 two years later and billions today?

The general view of most members was that this was one of the best lectures they had heard.

*Given on Wednesday 8 October 2008 at the Sundial Theatre*