**U3A Science and Technology Meeting 13th March 2024**

Location: Margaret’s House

Present: 13 members

The main business consisted of a presentation by John DeFries on “Undersea Cables”, particularly those used for communication. John had his own business in this area and contributed to the development of high voltage switches for repeater units used in cables, so was well qualified to talk on this important subject.

John took us through the historical development of the undersea cable industry for telegraphic messaging by Morse code. It was a surprise to hear that it all began as long ago as 1837 with the first cable under the Rhine (Siemens), and then in 1850 under the Channel, then a 1886 a transatlantic cable laid by the SS Great Eastern steamship. It was followed in 1902 by the first Pacific Ocean cable.

The development of cables suitable for the transmission of telephone messages began after WW2 when in 1951 a transatlantic cable was laid with repeater units (amplifiers) at regular distances. The repeaters were run on up to 20Kvolts DC. In 1963, during the cold war, came the so called “Hot Line” between Moscow and Washington which was in fact Telex not telephone. It was followed a year later by a Pacific Ocean telephone cable.

Glass fibre cables replaced the traditional copper core cables in the 1980s and now carry more than 50Tbytes/s of information. Repeater units now consist of high intensity lasers laid every 50 miles or so. The last copper cable was laid in 1986.

Today there are over 1.4 million Km of undersea cable in the world, using 485 systems and 2400 landings with 60 cable- laying ships sailing the seas.

John spent some time discussing the importance of the undersea cable site at Greenwich. This site was originally used for rope manufacture and was ideally situated with nearby works producing the coal tar for cable protection. STC manufactured cables on the site and loaded them directly onto the cable-laying ships anchored on the Thames. At the time Greenwich was the centre of the British subsea cable industry and led the world in its development. However, the business was allowed to be sold to Alcatel, a French company, in 1993 and the site was eventually closed. Globally, there are now only four remaining companies in this industrial sector.

Finally, John spent some time discussing the security issues surrounding subsea cables; there was only recently a report of cables being cut in the Red Sea with huge implications for communication between Europe and Asia. Major incidences have, however, been rare. An earthquake damaged a cable in Newfoundland in 1929, in 2008 cables in the Middle East were accidently cut by fishermen, and there were serious incidences in the Shetlands in 2022 and the Congo in 2023.

The group would like to thank John for a well-researched and fascinating presentation on an area of technology often taken for granted and which remains hidden in the depths of the ocean ..…. until, of course, something goes seriously wrong with it!

The next meeting will be on the 10th of April when Tony Moffatt will be giving us the “Buzz” on “Cannabis – Friend or Foe?”