

## U3A Explores Science at the Royal Institute

Daylight, Magic and Particle Physics were the three lectures that kept some 400 members of the U3A enthralled for three hours at the Ri lectures on October 7<sup>th</sup>.

Our first lecture by Linda Geddes 'Chasing the Sun' explained how for millennia man successfully lived with a circadian rhythm of day and night. We worked in daylight and rested in the dark until, that is, the invention of the light bulb when darkness was banished! Linda then explained how by spending more time both in natural light and the open air we could improve both our mental and physical health. We were also advised to organise a routine at bedtime so our body gets the appropriate signals that it is time to 'wind' down and rest and also to ensure that there are no devices in the bedroom that emit blue light which interferes with the sleep-inducing hormone melatonin. Finally, you will be pleased to know that yes some people are 'Larks' and some are 'Owls'.

Magicians, don't they just create illusions? What's scientific about that? More than you think as the lecture by Gustav Kuhn explained. He first asked us if we were aware that for about four hours a day we are blind\*. He also told us that we have a 'blind spot' in our eyes. He demonstrated the 'blind spot' by giving us a piece of paper which had a cross and a rabbit drawn about five inches apart. We closed one eye and holding the paper about a foot in front of our face we slowly moved the paper towards us until the rabbit disappeared thus finding our blind spot. He told us how he had used MMRI scans to see what areas of the brain are activated when watching a Magician. Two sections of the brain were activated, one that monitors conflict and one that tries to resolve conflict. We were shown a picture. Was it the head of a duck or a rabbit? You must decide. Perhaps the answer to what is magic is slowly, scientifically being discovered but that for me doesn't take away its fascination.

Finally, after the tea break, our third speaker, Harry Cliff, gave us the most simple and clear explanation of Particle Physics that you could want without an advanced knowledge of mathematics. He went on to explain what happens within the Large Hadron Collider. Two particles traveling in opposite directions at tremendous speed collide and produce new particles. You may recall that in 2012 the Higgs Boson particle was detected.

The current Collider is 27km in circumference but in the future they hope to build another subterranean Collider with a circumference of 100km. The Collider only operates for eight months of the year due to excessive use of power. One of the spin-offs that many of us use is the Internet, first devised to make communication between the many scientists working on the project convenient and straightforward.

Judith Boniface

\* This gap in visual sensory information results from our eye movements. Each time we move our eyes, the visual system shuts down for about 100ms, to suppress the blurry images. We move our eyes around three times per second, which accounts for about 150,000 eye movements per day. This means our visual system is blind around four hours per day. More details in 'Experiencing the Impossible - The Science of Magic'

by Gustav Kuhn <https://mitpress.mit.edu/books/experiencing-impossible>