



CHAIRMAN
Dr Bob Giles

Lichfield Science & Engineering Society

PATRON
Ian Dudson CBE
H.M. Lord-Lieutenant of Staffordshire

PRESIDENT
Professor Peter Lambert
BSc, PhD, DSc.

Dear Member,

July 2019

Welcome to my Chairman's newsletter which comes with your Subscription Renewal Letter, and your Membership and programme Card for the 2019 to 2020 season. Also included are details of the LSES Dinner, the Autumn visits, and the Discussion Lunch with reply forms attached

AGM: 8th May 2019

The Calling Notice, Agenda and Minutes of the 2018 AGM and the Chairman's Report had been circulated prior to the meeting. The previous minutes were approved and signed, there were no matters arising

The Chairman reported that LSES had a very successful year and membership stood at 373. This year the Education Fund had increased spending to £1,890, supporting many activities for young people, and had overspent its allocation and for that reason it is necessary to change the constitution to allow us to maintain the increased spending in the future. (See later)

Next year our costs are going up for the lectures, Garrick studio will increase from £660 to £720 in Sept 2019. The Garrick main theatre will increase from £1,800 to £3,240 for the Darwin Lecture. (see Treasurers report)

The Treasurer's report showed that with an annual expenditure of £17,370 LSES had made a loss of £2,246. The largest cost was that incurred by our monthly lectures at £10,033, the Erasmus Darwin Memorial Lecture benefited LSES by £1,165. Thanks to the careful management of our finances over many years, we have slowly built up assets of £41,196 as of 31 March 2019.

To provide for the increase in meeting costs as announced by the Chairman the Treasurer proposed an increase in membership subscription to £30 and to charge visitors £7. This proposal was accepted on a majority show of hands.

There were no nominations prior to the meeting and none from the floor. Most of the present committee had agreed to stand for re-election and by a show of hands they were all re-elected as follows:-

Chairman & Membership Secretary:	Dr Bob Giles
Deputy Chairman & Publicity Secretary:	Mike Beeson
General Secretary:	Irene Ordidge
Treasurer:	Peter Stubbs (appointed since the AGM)
Visits Secretary:	Alan Hooper
Education Officer:	Jenny Arthur
Social Secretary:	Carol Hannam
Assistant Membership Secretary:	Claire Robinson
Technical Support:	Mark Richards

The Chairman thanked the committee for all their hard work in making the LSES the success it is. 117 members attended the AGM.

LECTURES:

Wednesday 8th May 2019: The Lovell Telescope and Jodrell Bank; Engineering the Science of Radio Astronomy given by Professor Simon Garrington from Jodrell Bank Centre for Astrophysics, University of Manchester.



The original Lecturer was unwell so Simon Garrington kindly agreed to give his lecture which dealt with the construction, maintenance and upgrades to the large dish which forms the main antenna at Jodrell Bank. It cost far more than its original designer Sir Bernard Lovell had estimated, the cost over runs were met after appeals from scientists round the world but when the Russians launched Sputnik it became an outstanding success as it was the only radio telescope capable of tracking its launcher

Since 1957 it has been at the forefront of research on quasars, pulsars and other objects which emit radio waves. Radio astronomy has provided us with a completely new vision of the universe, the same stars we see in the sky but behaving in new ways.

The networking of several radio telescopes is the basis of the e-MERLIN National Radio Astronomy Facility and increases the precision of our view, and bigger international arrays covering thousands of km will achieve even greater acuity. The questions revealed some of the clever techniques used in combining signals from different telescopes separated by large distances. 137 members, 3 students and 2 visitors attended this lecture.

Tuesday 11 June 2019 “The Brave New World of CRISPR Gene Editing” given by Professor Matthew Cox from The School of Biological Sciences, University of Manchester.

Matthew Cox outlined the precise cutting of DNA using what he called molecular scissors which enables exact removal and replacement of single letter within any DNA chain. This CRISPR technology has the ability to cure genetic disease in humans, to modify crops to increase their resistance to disease, and to target carriers of disease such as mosquitoes.

But use of this technology can have profound effects on the course of human evolution if misused, so far there has been only one attempt to edit the genes of a human embryo which resulted in the birth of twins in China, the medic involved is now under house arrest. Modification of the human genome is prohibited in UK and most other developed nations but there are rogue medics who say they will use the process. Scientists are most concerned about the proliferation of CRISPR in human kind and how can be controlled.

Similar concerns apply in the use of CRISPR in animals and plants and vectors which carry disease. In editing the genome of the mosquito by using gene drive it is possible to save the lives of 500,00 children who die each year from malaria but how does that change the ecosystem of the world? There have been many examples of unintended consequence where, for what seemed good reasons, there have been ecological disasters. There is no clear answer to how gene editing can be controlled and it is up to public opinion and governments to decide. 122 members, 2 students and 7 visitors attended this lecture.

Wednesday 19 June 2019, SUMMER SUPPER with a talk by Lucie Angus, Paper Conservator at The Library of Birmingham,

71 members and their guests enjoyed an excellent buffet meal at Curborough Hall Farm, this was followed by a short talk on the steps which need to be followed to ensure the historic paper records are kept in good order and to improve some of those which have deteriorated before they arrived at the Library.

VISITS:

Rolls Royce Heritage Centres, Tuesday 16 February and Thursday 21 February– due to strong interest from the members, the Centres were able to accommodate an additional visit. Over the two dates, 60 members were expertly guided through two collections of historic and modern aero engines.

The first collection in Osmaston Road, is managed by the Rolls Royce Heritage Trust, formed in 1981 by a group of Rolls Royce employees, to promote and preserve the history and engineering excellence of Rolls Royce. We were shown around a huge collection of engines, ranging from early propeller engines through to the latest Trent engines. Several iconic units were on display include the Merlin Engine, which powered Spitfires and Lancasters and Concorde’s Olympus Engine.



The second centre, based at Rolls Royce's Learning and Development Centre, Wilmore Road, contained a much smaller collection, but nevertheless some significantly important displays, including Rolls Royce's first aero engine, the 12 cylinder Eagle, built in 1915. Also on display was an example of the Griffon Engine, the Company's last piston aero engine.

Visit to Fillongley Spring Water Company, Tuesday 7 May – situated in leafy rural Warwickshire, this interesting visit offered the opportunity to see the operations of a highly automated spring water bottling plant. The visit, which was attended by 21 members, commenced with an excellent talk and explanation by Professional Hydrogeologist, Dr Philip Ham, on borehole technology, after which, Martin Whitehead, our host for the day and the Company's Group Quality Manager, gave some details on the history and ownership of the site. We were then given a guided tour of the new 19 litre bottle cleaning (using recycled bottles, average refill 40-50 times) and bottling line, which has a capacity to fill 1250 bottles per hour. We saw a fascinating use of a robot, which automatically picks up 4 full, 19 litre bottles at a time and accurately places them on a pallet for distribution. We were then shown the head plumbing of the current borehole and then taken to the construction site of the new borehole nearby, which is planned to be operational in early October 2019.

Visit to Lichfield Forensic Centre on Thursday 6 June – a small group of 15 members was given a thoroughly interesting tour by two highly experienced Forensic Coordinators. This facility, situated on the northern outskirts of Lichfield, is responsible for crime scene forensics for South Staffordshire, producing the "Key Evidence" methods of DNA, Fingerprinting and Footprints. We were shown the Kit Area, where the Forensic Investigators' dedicated Investigation Cases are stored. We were also shown the CCTV Investigation Area, where crime scene films are closely inspected, edited and prepared for evidence for the Crown Prosecution Service. The method of taking finger prints was also explained to the group. The Coordinators have agreed to further visits and these will be staggered every 6 months, until all interested members have been to the Centre.

Garrick Studio Theatre Changes: There is exciting news about remodelling of the Garrick Studio Theatre. We have been told that, taking place in mid-August, the Studio is to be changed to all front facing, tiered seating, capable of seating more than at present in more comfortable seats. Should all be ready for our first lecture in September. There will also be a new cinema quality projector and better screen and an improved sound system. Sounds like a big improvement for our Lecture Programme and will also be used for Live Performance transmissions from, for example, the National Theatre.

ADVANCE NOTICE for Next Session September 2019 to June 2020

1. Wednesday 16 October 2019, Annual Dinner at Aston Wood Golf Club. With a talk entitled "Bringing a slice of the oceans to the Midlands" given by Jonny Rudd from the Sealife Centre, Birmingham. We will also welcome our new President Professor Carolyn Roberts, and say thank you to our retiring one Professor Peter Lambert
2. Wednesday 13 November 2019, The ERASMUS DARWIN MEMORIAL LECTURE, entitled, "Thinking the Unthinkable: Influenza Pandemic Preparedness and Response". Presented by Professor Jonathan Van-Tam, Deputy Chief Medical Officer for England. Main Theatre, 8pm. This is a ticketed event and Members can purchase their own tickets at the reduced price of £11 from the Lichfield Garrick Box Office. Tickets are not yet available so we will contact you by email for our priority booking.

These are detailed in the full Programme Card which is included with this newsletter, together with your subscription renewal letter, and booking forms for the Annual Dinner, the list of forthcoming Visits and the Discussion Lunch.



Lichfield Science & Engineering Society

I look forward to welcoming you back in September to good lectures, interesting visits and enjoyable social functions. Enjoy your summer holidays.

Bob
Chairman and Membership Secretary