



Message from our President Dr Andy Pearson

We are now well into February and the planning of next year's session is underway. We have drafted out a programme of excellent speakers with a broad international reach and covering a wide range of engineering topics. Final details are still to be confirmed but we hope to have the full programme in place before the AGM, which is scheduled for the end of April.

Council have decided that the AGM will be an on-line event because it seems likely that restrictions on public gatherings will not yet have been lifted at that time, but we are very hopeful that it will be possible to hold all of our Session 2021-2022 lectures in person, starting in September. One of the benefits of having been forced onto Zoom for our meetings throughout the Session 2020-2021 is that it has enabled a far more widespread audience to join us. We are determined to retain something good and worthwhile from the experience of the last twelve months and we hope that we will be able to run the papers as Zoom meetings to enable our wider audience to remain in close contact with the Institution beyond the end of restrictions. We also hope to widen the geographical reach of the meetings and to encourage more students to attend and

to engage with the Institution during their studies.

Nothing will replace the chance to meet old friends and mingle before and after a lecture - we will still be pleased to see as many of you as are able to come along on the evenings.

All members, including students, are encouraged to submit short papers or articles for publication on the Institution's website, www.engineers.scot or in the News Bulletin or the Journal. This is the ideal way to gain some practice in writing for a wider audience, if that's what you require, or to share news of an interesting or unusual project, or to share some anecdotes from your working life. We have already received several pieces covering a wide range of topics, so please connect with your muse and send in your copy. Pieces do not need to follow any particular format (they will be adjusted to suit).

Thinking about writing leads me neatly to reading. We have a new section in the Bulletin this month called Bookshelf. If you'd like to share a review of a book you have read recently, or one which has been a favourite for years which you think other members might enjoy, then please drop a note to Laura



at secretary@engineers.scot and she will add your recommendation to the shelf. I recently read Sally Magnusson's second novel, *The Ninth Child*, which is an intriguing blend of Scottish folklore and mystery set against the backdrop of the construction of the Loch Katrine to Milngavie aquaduct and featuring cameo appearances from historical figures including William Rankine, John Bateman, Joseph Lister and Queen Victoria. The attention to detail in the portrayal of these characters and the engineering of the waterworks is remarkable but it doesn't in any way diminish the growing sense of impending dread as the story builds to its tragic climax. I recommend buying two copies; one to keep and one to pass on to a friend, as you will undoubtedly want to share the tale when you have finished it.

Cuppa and Chat – Meet the Council

During Covid we recognise that although we use Zoom for lectures and Council meetings, we have little contact with members of the Institution in general. We are in the process of 're-branding' our Institution including the change in name and a new website and we are keen to find out your views on these changes and your thoughts on our way forward. The idea is that we have an informal 'cuppa and chat' for an hour via Zoom with one of the Office bearers and another member of the Council on a monthly basis on the last Tuesday of the month at 5pm over

the next few months starting this month. We will limit the total number of people at each session so that would mean eight members.

There will be no agenda for the meetings but we would ask each person to give a brief introduction (2 mins max) covering their background. This will follow with discussion in general and key issues you would like to be addressed by the Institution. If this is successful, we will consider more sessions in the autumn on specific topics e.g. environmental

sustainability, STEM in schools, etc with invites to those with particular interests. The dates for the first sessions are 23 February*, 23 March, 27 April, 25 May, 29 June

If you would like to participate in this initiative please advise Laura the date you would like to join in – you will have to bring your own cuppa !!!

*The first 'Cuppa' has been held and was very successful – please let Laura know if you would like to join in

James Watt Dinner

We are hopeful of hosting the James Watt Dinner on Friday October 8th 2021, but we will make a considered judgement around Easter based on the latest government advice and predictions. If we feel we can go ahead we will make a formal (and very joyful) announcement around that time.



IES and COP 26

COP26 will be one of the biggest events in Glasgow for many years. It will also be one of the most important environmental events since the Paris Agreement reached at COP21 in 2015. The COP meetings (Conference of the Parties to the 1992 United Nations Framework Convention on Climate Change) have been held every year since 1995 when the parties met in Berlin to start negotiating the terms of the Kyoto Protocol. Last year's scheduled COP, the 26th, was postponed by a year due to the pandemic but is now planned to convene in Glasgow this coming November.

The representatives from many countries will try to reach agreement on Nationally Determined Contributions (NDCs) to extend the original scope of the Paris agreement, a realignment that is intended to take place every five years. Further details of the process, and the expectations for the Glasgow meeting, can

be found at

<https://eciu.net/analysis/infographics/un-climate-summits>

As the oldest established engineering institution in Scotland you may be wondering what we will do to reflect this momentous event.

We have planned two environmental themed lectures to be held during the period of the conference. Plans are at an early stage but we hope that not only will you be pleased with our efforts but will be able to support the events. We also plan to offer local support to engineering organisations who plan to be in Glasgow for the event, including The International Institute of Refrigeration and The Institute of Marine Engineering, Science and Technology. If you would like to offer to help with this, or if you know of another engineering body that is looking for support, please contact the Secretary.

An appeal for membership

Having reframed and simplified our membership structure we are now looking to grow! In particular we are seeking applicants in the member and associate categories. A simple way to look at the revised membership categories would be to see Members as people looking for support in the development of their careers in engineering and Fellows as those who are willing and able to provide that support. Associates are both people not (yet) qualified to be members and those with an interest in engineering, both groups are keen to contribute to the work of the Institution and to develop engineering as a career path for a broad range of young people. The key benefits of being a Member or an Associate of the Institution are the opportunities to meet and exchange views with senior members of the profession on an equal footing and to broaden horizons through interaction with other facets of engineering that are beyond the scope of routine daily work.

We know from past experience that most members join the Institution because they received a personal invitation, from a senior colleague or older family member. Please take a moment to think of one person you know who is qualified to be a Member of the Institution but has not yet joined and then send them a link to the membership page of the website, <https://www.engineers.scot/membership/benefits>. Then make a note to follow up with them in two weeks' time. Research shows that you will have to do this at least four times before you get a result so please be patient and persevere. In that spirit, you will see this appeal repeated in a variety of formats over the next few months. It's a good time to be an engineer, and membership of the Institution of Engineers in Scotland can make it even better.

Bookshelf - Good reads for engineers

Sitting together on my bookshelf are Slide Rule by Neville Shute and Not much of an engineer by Stanley Hooker - inspiring stories about what engineers do. In his early career, Neville Shute, a popular mid-twentieth century novelist, was a very successful aeronautical engineer. Slide Rule recounts his experiences in that role. His main story is about the design and development of the R100 and R101 airships that were commissioned by the UK Government in the 1920s. The R100, designed by an Air Ministry team, crashed on its maiden flight. Lessons can be learned today from Shute's inside information on the causes of the R100 disaster (he was a lead designer for the R101).

In 1937, Rolls Royce appointed mathematician Stanley Hooker to help them develop their aero engines. Using some fairly basic physics, he transformed the approach to carburettor design for their Merlin Engine and went on to having a central role in the development of jet engines up to his retirement in 1978. His final mission was to save Rolls Royce from bankruptcy by being brought back to RR to mastermind the redesign of the RB 211 engine that had been underperforming. The story is about world changing events in technology, has drama for Hooker's departure from RR and comes to a magnificent climax when he returns to save them. Why has there not been made into a movie?

The original design for the Brooklyn Bridge in New York, opened in 1883, was by John Roebling who died just before construction started. His role as Engineer was taken by his son, Washington Roebling, who suffered serious health problems due to working under compressed air in the caissons for the foundations. Unable to leave his home, his wife, Emily, acted very ably on his behalf. It is one of these 'you could not make it up' stories - innovative engineering, political skulduggery, medical breakthrough (about controlling 'the bends'), a woman saves the day. Read all about it in The Great Bridge by David McCullough.

In Engineers for Victory, The problem solvers who turned the tide in the second world war, Paul Kennedy tells some great stories about the role of engineering innovation on both sides of the conflict. Germany led the field in rocketry; Russia developed the very successful T-34 tank.

The Americans excelled in logistics. While radar was essential for defence of the UK it was also developed for attack. By late 1943, Allied planes could locate submarines at night in the North Atlantic due to the invention of the cavity magnetron by two young researchers working in a shed at Birmingham University. Ironically their breakthrough concept came from papers written in Germany in the 1930s. They got the parts from a scrap metal dealer; it worked and became one of the most important new devices in the conflict.

These are stories about engineers but what about good reads about non-engineering contexts. In Upstream, Dan Heath's Big Idea is that instead of solving problems as they arise one should seek to prevent them from arising or at least prepare to deal with them when they emerge. Any resonance with present events? His story about the 2005 flooding in New Orleans caught my imagination. At that time, we heard all the bad news about how the city was unprepared for the catastrophe and how government had neglected to fund better flood defences. Lost in the reporting was a very good example of upstream thinking. The city had prepared for evacuation in the event of a flood. They implemented a rehearsed plan to change the lane directions for the main highway out of the city so as to vastly increase the traffic flow in that direction - saving thousands of lives.

Some of Heath's stories are about measures to alleviate inequality in society. For example, he explains how the mayor of Rockford in Illinois decided to seek to eliminate homelessness in the city (pop. 150,000). Techniques that he and his colleagues used included: seeking to first get the homeless housed before starting to address the underlying reasons for their predicament; maintaining up-to-date data on those that they sought to assist; getting all support organisations in the community working together: police, fire service, health services, social services, volunteers. The process they used significantly reduced homelessness. Inequality is a major global problem that needs an engineered approach. It is important to search widely for ideas as to how it may be alleviated. Upstream is one of the places to search.

Iain MacLeod



Remaining lectures in our 2020-2021 programme



IES
A MULTI-DISCIPLINARY
ENGINEERING INSTITUTION

Tuesday 9th March 2021, online 18.30pm

Nanotechnology

Prof Doug Paul, Professor of Semiconductor Devices, University of Glasgow

Nanotechnology is now a technology used in many items that are around the home and used in everyday life. This talk will present some of the present areas of nanotechnology and in particular quantum technologies that are being researched to help improve communications and the internet, to improve the resilience of navigation and through magnetic imaging of the brain aid the understanding and treatment of dementia. The potential impacts to society will be discussed along with the timescales for the technologies to become available. The talk will also highlight many of the companies working in Scotland and the UK that are delivering nanotechnology products to users around the globe.



Tuesday 20th April 2021, online 18.30pm

Why Civil Society Needs Engineers - especially Naval Architects, Marine & Ocean Engineers!

Mr Peter Noble, President and Principal Advisor, Noble Associates Inc.

As can be deduced from the title of his presentation Peter has a passion for promoting a better understanding of how engineering and technology are fundamental to developing and supporting civil society. In the developed world we live generally, safe, comfortable and rewarding lives due to the availability of technology, while in the developing world engineering has dramatically improved the overall progress of humanity, and is improving both life expectancy and quality of life.

Please visit www.engineers.scot for further information and registration details
CPD certificates will be available on application

**We are pleased to announce that the date for
our AGM will be Tuesday 27th April**

It will be an online meeting. Full details will be sent to members in due course



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