for testing railway tracks include the use of ultrasound, and Dr Rachel Edwards (University of Warwick) explained some of the drawbacks to these techniques, such as the fact that testing trains need to travel slowly along the tracks. An exciting new approach being developed at Warwick is the use of Rayleigh Waves and the talk showed pictures of current testing being carried out on the mainline rail network. These new techniques will enable tests to be carried out at full speed, which is an exciting development both for passengers and the railway industry.

Mathematical modelling of biological soft tissues

When a footballer ruptures their cruciate ligament, it is usually all over the news. What few people realise is that surgeons will then take a replacement tendon from a different part of the footballer's leg, usually from the knee. The ultimate dream would be to grow a replacement tendon in lab conditions, but in order to move towards this, the mechanical properties of tendons need to be better understood. Dr Tom Shearer (University of Manchester) explained about how the micro-structure of a tendon affects its mechanical properties particularly in the way this micro-structure has a 'crimp'. He explained how the geometrical arrangement of the collagen fibres which make up a tissue can give rise to surprising non-linear phenomena, even if the fibres themselves are behaving linearly.

IMA in 2018 strategy

The conference ended with a short talk by Professor Alistair Fitt, Vice-Chancellor at Oxford Brookes University and current IMA President. He reflected on IMA strategy and highlighted three main areas of focus: marketing, communications and membership growth. It was interesting to hear an overview of what the IMA is doing, as it is often easy to forget about all the different areas that it is active in.

Hazel Lewis AMIMA

Joan E. Walsh FIMA (1932–2017)

Joan Eileen Walsh was born on 7 October 1932 and passed away on 30 December 2017 at the age of 85.

Joan obtained a First Class BA honours degree in Mathematics from the University of Oxford in 1954. She then spent three years working as an Assistant Mistress at Howell's School in Denbigh, North Wales. In 1957 Joan left teaching and enrolled at the University of Cambridge to study for a Diploma in Numerical Analysis, which was awarded, with Distinction, in 1958. She then returned to the University of Oxford Computing Laboratory to study for a DPhil under the supervision of Professor Leslie Fox. She was Fox's first doctoral student. Her DPhil was awarded in 1961.

After working as a Mathematical Programmer for the CEGB (Central Electricity Generating Board) Computing Department in London, Joan was appointed in 1963 to a Lectureship in the Department of Mathematics at the University of Manchester. She progressed through the positions of Senior Lecturer (1966) and Reader (1971) before being appointed as Professor of Numerical Analysis in 1974.

Joan led the Numerical Analysis group at the University of Manchester until 1985 and oversaw a period of expansion for the group that helped establish it as one of the leading Numerical Analysis research centres in the United Kingdom (with eight permanent staff by 1987) – a position that is maintained to the present day.

Joan was Head of the Department of Mathematics between 1986 and 1989, and subsequently became Pro-Vice Chancellor of the University of Manchester in 1990. She held the latter role for four years, and was responsible for undergraduate affairs across the University. Joan's tenure as Pro-Vice Chancellor coincided with substantial, and sometimes controversial, changes in undergraduate teaching – for example, the introduction of semesterisation and of credit-based degree programmes; Joan managed these major changes across the University with her customary tact, energy and determination. She was an efficient and effective administrator at a time when relatively few women occupied senior management roles in universities.

In 1970, Joan was one of a group of four academics who founded the Nottingham Algorithms Group with the aim of developing a comprehensive mathematical software library for use by the group of universities that were running ICL 1906A mainframe computers. Subsequently, the Nottingham Algorithms Group moved from the University of Nottingham to the University of Oxford and the project was incorporated as the Numerical Algorithms Group Ltd. Joan became the Founding Chairman of NAG Ltd. in 1976, a position she held for the next ten years. She was subsequently a member of the Council of NAG Ltd. from 1992 until 1996. In recognition of her contribution to the NAG project Joan was elected as a Founding Member of the NAG Life Service Recognition Award in 2011.

Joan's research interests focused on the numerical solution of ordinary differential equation boundary value problems and the numerical solution of partial differential equations. She conducted much of her research in collaboration with PhD students at the University of Manchester.

Joan served leadership roles nationally, as well as in the University. She was Vice President of the Institute of Mathematics and its Applications (1992–1993) and a member of the Council of the IMA (1990–1991 and 1994–1995). She was elected as a Fellow of the IMA in 1984. She was also a member of the Computer Board for Universities and Research Councils, President of the National Conference of University Professors, and a member of the Board of Governors at Withington Girls' School, a leading independent school.

After 35 years' service, Joan retired from the University in 1998 and was appointed Professor Emeritus.

In retirement, Joan returned to her studies; between 2000 and 2003 she studied for an MA in 'Contemporary Theology in the Catholic Tradition' at Heythrop College of the University of London.

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