THE LONDON MATHEMATICAL SOCIETY

NEWSLETTER

No. 398 December 2010

Society Meetings and Events

2010

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2011

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NEWSLETTER ONLINE:

Go to www.lms.ac.uk/newsletter

LMS COUNCIL DIARY

8 October 2010

At its meeting on 8 October, Council noted with regret the resignation from Council with immediate effect of Simon Chandler-Wilde, due to pressure of work in his new role as Head of the School of Mathematical and Physical Sciences at Reading. Thus I am writing this Council Diary in his stead.

Among the substantial matters before Council was the job of considering and approving the annual accounts and trustees' report. This is perhaps our single most important legal duty as trustees, and Brian Stewart, the Treasurer, ably led us through the mass of figures, clearly pointing out to us where to find the real figures in amongst the accounting fictions. The overall picture is that the Society is in a healthy position financially, with a small recovery in invested capital, and a significantly greater profit from publications than expected this year. Nevertheless, the continued economic uncertainty means that constant vigilance is still required.

It is one of the jobs of Council to make decisions on policy and strategy, but there is never enough time at ordinary Council meetings to discuss these matters properly. We decided therefore to have a special Strategy Day in February. Among the issues to be discussed are the recommendations from the Membership Working Group led by Garth Dales. In particular, do we want to increase the membership of the LMS, and if so, in what way? How do we make membership of the LMS more attractive while staying within the charity law which states that the overall cost of members' benefits must not exceed the total subscriptions paid? Since any large change in membership may alter the character of the Society irrevocably, it is important to think carefully before making changes.

Ken Brown led a discussion on the three research policy documents (see article on page 2), which had been substantially updated since they were discussed by Council in July. They were generally agreed to be very helpful in arguing the case for mathematics, and they were formally approved by Council. These documents also fed into the LMS submission to the current International Review of Mathematics being undertaken by EPSRC. The LMS made a strong case that mathematics in the UK is highly successful, despite serious and chronic underfunding relative to both comparator countries and comparator disciplines.

John Greenlees reported on

the regular meeting between the CMS and EPSRC, which had little cheer for mathematics, as various nightmare scenarios were played out in front of us. In the event, the Government's Comprehensive Spending Review has protected the overall cash spent on research in STEM subjects, but it is too early to say what will happen to the share of this currently allocated to mathematics.

We then came to a discussion of policy on school education, which continues to generate great controversy. Numerous bodies with the word 'mathematics' in their title have widely differing views. After much discussion, Council decided that in representing its members, the LMS represents university mathematics, and that it was quite legitimate for us to have a different view from other bodies which have different constituencies. We therefore declined to support initiatives which we felt would be detrimental to university mathematics.

On a happier note, June Barrow-Green invited us to start thinking about the 150th anniversary of the founding of the LMS, which occurs in 2015. Stephen Huggett reported on the slow progress on the new website, but since the Council meeting there has been more movement, and there are signs that we might actually have at least a skeleton of a brand new website before long.

Robert Wilson

RESEARCH POLICY COMMITTEE

The Research Policy Committee, as a part of the LMS input into the International Review of Mathematics, has produced three papers. These are now available on the LMS website at www.lms.ac.uk/activities/research_policy. The statements are:

- *Research and Teaching in Symbiosis*
  This paper aims to set out the context in

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Editorial office: newsletter@lms.ac.uk; London Mathematical Society, De Morgan House, 57–58 Russell Square, London WC1B 4HS (t: 020 7637 3686; f: 020 7323 3655)

Events calendar: please send updates and corrections to calendar@lms.ac.uk

General Editor: Mr A.J.S. Mann (a.mann@gre.ac.uk)
Reports Editor: Dr S.A. Huggett (s.huggett@plymouth.ac.uk)
Reviews Editor: Dr C.M. Roney-Dougal (colva@mcs.st-and.ac.uk)
Administrative Editor: S.M. Oakes (newsletter@lms.ac.uk)

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LONDON MATHEMATICAL SOCIETY MEETING

Monday 6 December 2010

ICMS, 15 South College Street, Edinburgh EH8 9AA

Speakers:

Yujiro Kawamata (Tokyo)
Yum-Tong Siu (Harvard)

The LMS Meeting will take place on the first day of the conference *Birational Geometry*, to be held at the Institute of Geography, University of Edinburgh, from 6 to 10 December. Further information can be found at www.maths.ed.ac.uk/cheltsov/shokurov/index.html.

There are limited funds available to contribute in part to the expenses of members of the Society or research students to attend the meeting. Contact Isabelle Robinson (isabelle.robinson@lms.ac.uk) for further information.

All are welcome to attend.

which research and training in the mathematical sciences are currently carried out in UK higher education.

- *UK Government Funding for Mathematical Sciences Research*
  This paper sets out the methods by which research in the UK is financially supported.
- *Doctoral Training*
  This paper sets out the current issues surrounding doctoral training in the mathematical sciences in the UK.

Initial drafts of these statements were made available during the summer on the LMS website for comment. Seventy responses of a very high quality were received and the committee is grateful for the input provided by individual LMS members, their departments and other organisations in the mathematical sciences. There is no doubt that many people engaged constructively with the debate that the committee's work prompted.

Although these statements were prepared with the IRM panel in mind we hope that they will be of use to anyone concerned with the position of the mathematical sciences in UK higher education. Please feel free to print and distribute copies as you wish (while – of course – giving due acknowledgement to their provenance).

The Committee expects to revise the papers in the light of developments, so any comments, corrections, suggestions for updates, etc. are extremely welcome. Moreover, the Committee will be working on further papers in the coming months, and so suggestions for topics to be covered in future are very welcome. All such feedback should be sent to Duncan Turton at the LMS (lmspolicy@lms.ac.uk).

Ken Brown
LMS Vice President
Chair, Research Policy Committee

LMS SUBSCRIPTION

Reminder

Members are reminded that their annual subscription, including payment for publications, for the period November 2010 – October 2011 was due **on 1 November 2010**, and should be paid by **31 December 2010** at the latest. In the case of members who already have a Direct Debit set up, no action need be taken.

All members should now have received a reminder via email or letter, detailing how to pay their subscription. If you have not received a reminder, please contact the Membership department (email: membership@lms.ac.uk; tel. 020 7291 9973/7).

Rates

The annual subscription to the London Mathematical Society for 2010–11 is:

- Ordinary membership £51.50
- Concessions on Ordinary membership:
  - Reciprocity £25.75
  - Career break or part-time working £13.50
- Associate membership £13.50

Members also have the option to pay their European Mathematical Society subscription via the LMS (£23) and subscribe to the *Journal of the EMS* (£88).

The member prices of the Society's journals for 2011 are:

	Print	Online*	Print+Online*
Bulletin	£53.00	£42.00	£64.00
Journal	£101.00	£81.00	£121.00
Proceedings	£106.00	£85.00	£127.00
Nonlinearity	(except N. America) £72.00		(N. America) £93.00
JCM (electronic)	—	free	— (*inclusive of VAT)

Members now have the choice of taking an electronic subscription to the *Bulletin*, *Journal* or *Proceedings* of the LMS at a discount of 20% on the standard price for a print subscription. Alternatively, members may receive both the print and electronic versions for an additional 20% above the price of the print subscription. Once an order for an electronic version has been processed by the LMS, your email address will be passed to Oxford University Press who will contact you with details on how to access the journals.

Isabelle Robinson
Group Head (Society & Grants)

LMS PRIZES 2011

Call for Nominations

The London Mathematical Society welcomes nominations for the 2011 prizes to recognise and celebrate the achievements in and contributions to all aspects of mathematics, including applied mathematics, mathematical physics and mathematical aspects of computer science.

In 2011 the LMS Council expects to award:

- The **Pólya Prize** in recognition of outstanding creativity in, imaginative exposition of, or distinguished contribution to, mathematics within the United Kingdom
- The **Senior Whitehead Prize** for work in, influence on or service to mathematics, or recognition of lecturing gifts in the field of mathematics
- The **Naylor Prize and Lectureship in Applied Mathematics** for work in, and influence on, and contributions to applied mathematics and/or the applications of mathematics, and lecturing gifts
- The **Berwick Prize** in recognition of an outstanding piece of mathematical research by an LMS member and actually published by the Society during the eight years ending on 31 December 2010
- The **Whitehead Prizes** for work in and influence on mathematics

The closing date for nominations is **Friday 14 January 2011**.

For further information and nomination forms, visit the LMS website (www.lms.ac.uk) or contact Elizabeth Fisher, Secretary to the Prizes Committee at the Society (tel: 020 7927 0807, email: prizes@lms.ac.uk).

LMS SPECIAL COLLECTIONS PROJECT

With the help of two Library Science postgraduate students from City University, the Society's Library Committee has begun a project to catalogue two of the Society's Special Collections: the *Hardy Collection* and the *Philippa Fawcett Collection*. Housed in the Verblunsky Members' Room at De Morgan House, these collections offer two very different insights into current and past mathematics.

The **Hardy Collection** contains over 300 volumes from G.H. Hardy's personal library of books, which were used by him at various points throughout his career. As such, one can get a glimpse of the authors who influenced his thinking or caught his attention. Many of these volumes contain Hardy's signature and in some cases they also contain a dedication.

According to Hardy's will, the primary recipient of his collection following his death in 1947 was J.E. Littlewood, with the remainder going to New College Oxford. In 1971, a Cambridge book dealer, Galloway & Porter, bought most of the books from the Littlewood collection to sell on to the public. Aston University obtained a large part of the collection and in 1998, the Society bought some 300 volumes from Aston University to house at De Morgan House.

Since then, the Hardy Collection has been extended through various generous donations from members and through further acquisitions. However, the collection is not complete and the Society would like to build an overall picture of the whereabouts of as much of it as is possible. We would therefore welcome any further information that members may have on the current location of any books from Hardy's library (please email Janet Foster at archivist@lms.ac.uk).

Philippa Fawcett

The **Philippa Fawcett Collection** was generously donated in 2008 to the Society by Dr A.E.L. Davis. The collection is named in honour of Philippa Fawcett who, in 1890, was the first woman to come top of the final examinations of the Mathematical Tripos at Cambridge University. This feat would have earned her the title "Senior Wrangler" but as this was reserved for men only, Phillippa Fawcett was instead known as "above the Senior Wrangler".

The Philippa Fawcett Collection focuses on the lives and work of female mathematicians. From Hypatia through to Emmy Noether, the collection charts the significant contributions to mathematics made by women throughout the ages. In addition, there are books which examine the role of women in other related disciplines, such as astronomy and physics. The collection also includes a pamphlet by Philippa Fawcett herself which was published by the League of Nations in 1938. Among the more recent works is Caroline Series' co-authored book with David Mumford and David Wright, *Indra's Pearls: The Vision of Felix Klein*.

Both collections are important to the history of the LMS, and the project to catalogue them is part of the Library Committee's wider aim to build a complete database of the Society's archives and special collections.

Elizabeth Fisher
Grants & Activities Administrator

ETH

Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

Assistant Professor of Mathematics

The Department of Mathematics at ETH Zurich (www.math.ethz.ch) invites applications for an assistant professor position in Mathematics.

Duties of this position include, in addition to research, an active participation in the teaching of mathematics courses for students of mathematics, natural sciences, and engineering. Candidates should hold a PhD degree or equivalent and have demonstrated the ability to carry out independent research work. Willingness to teach at all university levels and to participate in collaborative work both within and outside the school is expected. The new professor will be expected to teach undergraduate level courses (German or English) and graduate level courses (English).

Assistant professorships have been established to promote the careers of younger scientists. The initial appointment is for four years with the possibility of renewal for an additional two year period.

Please submit your application together with a curriculum vitae and a list of publications **to the President of ETH Zurich, Prof. Dr. Ralph Eichler, ETH Zurich, Raemistrasse 101, 8092 Zurich, Switzerland (or via e-mail as one single PDF to faculty-recruiting@sl.ethz.ch), no later than January 15, 2011.**
With a view towards increasing the number of female professors, ETH Zurich specifically encourages qualified female candidates to apply.

ETH

Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

Assistant Professor of Applied Mathematics

The Department of Mathematics at ETH Zurich (www.math.ethz.ch) invites applications for an assistant professor position in applied mathematics. The vacant position is part of the Seminar for Applied Mathematics, SAM (www.sam.math.ethz.ch). The future professor should have an exceptional research potential in some area of applied mathematics. Particular attention will be given to numerical analysis and computational mathematics, preferably complementing current research directions at the SAM.

The prospective responsibilities of the successful candidate include research and teaching in numerical analysis and computational mathematics for students of mathematics, engineering and natural sciences on all levels. The new professor will be expected to teach undergraduate level courses (German or English) and graduate level courses (English). There is the possibility to lead his or her own research group within the SAM.

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Please submit your application together with a curriculum vitae and a list of publications **to the President of ETH Zurich, Prof. Dr. Ralph Eichler, ETH Zurich, Raemistrasse 101, 8092 Zurich, Switzerland (or via e-mail as one single PDF to faculty-recruiting@sl.ethz.ch), no later than February 15, 2011**. With a view towards increasing the number of female professors, ETH Zurich specifically encourages qualified female candidates to apply.

CHRISTOPHER ZEEMAN MEDAL FOR COMMUNICATION OF MATHEMATICS

Call for Nominations

The Councils of the London Mathematical Society and the Institute of Mathematics and its Applications are delighted to invite nominations for the 2011 award of the Christopher Zeeman Medal, which is the UK award dedicated to recognising excellence in the communication of mathematics.

The IMA and LMS wish to honour mathematicians who have excelled in promoting mathematics and engaging with the general public. They may be academic mathematicians based in universities, mathematics school teachers, industrial mathematicians, those working in the financial sector or indeed mathematicians from any number of other fields.

Most importantly, these mathematicians will have worked exceptionally to bring mathematics to a non-specialist audience, whether it is through giving public lectures, writing books, appearing on radio or television, organising events or through an entirely separate medium. The LMS and IMA want to celebrate the achievements of mathematicians who work to inspire others with their work.

The medal is awarded triennially. Nominations are now invited for the second award which will be made in 2011.

In a joint statement, the LMS and IMA said "We are delighted to be able to show how much we need and value mathematicians who can promote their subject successfully. This role is vital to inspiring the next generation of mathematicians as well as helping the wider public to enjoy mathematics."

The award is named after Professor Sir Christopher Zeeman, FRS, President of the LMS from 1986 to 1988. His notable career has been pioneering not only in the fields of topology and catastrophe theory but also because of his ground breaking work in bringing his beloved mathematics to the wider public.

Sir Christopher was the first mathematician to be asked to deliver the Royal Institution Christmas Lectures in 1978, a full 160 years since they began. His *Mathematics into pictures* lectures have been cited by many young UK mathematicians as their inspiration. They also led to the creation of the Ri's Mathematics Masterclasses, weekly lectures delivered to school children across the UK via a network of 50 centres.

Sir Christopher's skill as a communicator has long been recognised in the wider community. In 1988, he was the third recipient of the Royal Society's Faraday Prize, awarded annually to a scientist or engineer who has excelled in communicating science to public audiences. His award was made "for the contributions he has made to the popularization of mathematics". In recognition of both his work as a mathematician and his contribution to the UK mathematics community, Sir Christopher received the LMS–IMA David Crighton Medal in 2006.

The first award of the Christopher Zeeman Medal was made to Professor Ian Stewart, FRS.

To put someone forward for the medal, please contact the IMA for a nomination form by writing to The Secretary to the Christopher Zeeman Medal, The Institute of Mathematics and its Applications, Catherine Richards House, 16 Nelson Street, Southend-on-Sea, Essex SS1 1EF, or email lynn.webster@ima.org.uk. Forms should be returned by **Friday 11 February 2011**.

Cecil King Travel Scholarship

The London Mathematical Society

The London Mathematical Society annually awards a £5000 Cecil King Travel Scholarship in Mathematics to a young mathematician of outstanding promise. The Scholarship is awarded to support a period of study or research abroad, typically for a period of three months.

The award is competitive and based on a written proposal describing the intended programme of study or research abroad and the benefits to be gained from such a visit. A shortlist of applicants will be selected for interview.

Applicants should normally be nationals of the UK or Republic of Ireland, either registered for or having recently completed a doctoral degree at a UK University.

Applications should be made using the form available on the Society's website (www.lms.ac.uk/activities/cecil_king/index.html) or by contacting education@lms.ac.uk. The closing date for applications is **Friday 25 February 2011**. It is expected that interviews will take place in London in late April or early May.

The Cecil King Travel Scholarship was established in 2001 by the Cecil King Memorial Fund. The award is made by the Council of the London Mathematical Society on the recommendation of the Cecil King Prize Committee, nominated by the Society's Education Committee.

IMU VOLUNTEER LECTURER PROGRAM

The International Mathematical Union's Volunteer Lecturer Program (VLP) offers intensive 3–4 week courses in mathematics at the advanced undergraduate or master's level to universities in developing countries. Further details can be found at www.math.ohio-state.edu/~imu.cdc/vlp.

The London Mathematical Society has reached an agreement with the IMU whereby an LMS grant for an international short visit (Scheme 5) may be used to fund a Volunteer Lecturer, with matching funding coming from the IMU. This means that mathematicians from the UK may now take part in the VLP.

For further details on applying for an international short visit grant, please see the LMS website at www.lms.ac.uk/grants.

Dr Stephen Huggett
LMS Programme Secretary

ROYAL SOCIETY 2011 MEDALS AND AWARDS

Call for nominations

The Royal Society medals, awards and prize lectureships provide an opportunity to celebrate outstanding scientific achievement and are an important part of their work in recognising excellence in science across the disciplines.

- **Biological Sciences**
  Royal Medal, Buchanan Medal, Croonian Medal, Francis Crick Lecture, Kavli Lecture
- **Physical Sciences**
  Copley Medal, Rumford Medal, Royal Medal, Davy Medal, Sylvester Medal, Hughes Medal, Bakerian Lecture, Clifford Paterson Lecture
- **Interdisciplinary Sciences**
  Royal Medal, Gabor Medal
- **Women in Science**
  Rosalind Franklin Award
- **Science Communication**
  Michael Faraday Prize and Lecture, Royal Society Kohn Award
- **Philosophy and History of Science**
  Wilkins-Bernal-Medawar Lecture
- **International**
  Royal Society Pfizer Award

The closing date for nominations is **Monday 14 February 2011**. Prize lectures awarded in 2011 will be delivered in 2012. Full details of all awards can be found at http://royalsociety.org/awards. If you have any queries contact awards@royalsociety.org.

ROSALIND FRANKLIN AWARD 2011

Invitation to nominate

The Royal Society Rosalind Franklin Award is designed to promote women in Science, Technology, Engineering and Mathematics (STEM) and is funded by the Department for Business, Innovation and Skills (BIS).

The award, consisting of a medal and £30,000, is made annually to an individual for an outstanding contribution to any area of STEM. As part of the nomination process, nominees are asked to put forward a proposal for a project that would raise the profile of women in STEM in their host institution and/or field of expertise in the UK. The recipient of the award will be expected to spend a proportion of the £30,000 award fund on implementing their project. There are no restrictions on the age of nominees, but it is anticipated that the award will be made to someone in their mid-career, up to 20 years full time equivalent years in work since PhD and actively involved in scientific research. Nominations are welcomed for both women and men. For full details of the award and guidelines for nomination, including the online nomination forms, visit the website at http://royalsociety.org/franklin or email awards@royalsociety.org. Closing date for nominations is **Monday 14 February 2011**.

The winner of the 2010 Royal Society Rosalind Franklin Award is Professor Katherine Blundell, Professor of Astrophysics at the University of Oxford, on the basis of her scientific achievements, her suitability as a role model and her exciting proposals to promote women in STEM.

EUROPEAN CONGRESS OF MATHEMATICS

The *6th European Congress of Mathematics*, under the auspices of the European Mathematical Society, will take place in Kraków, Poland from 2 to 7 July 2012. For further information and to pre-register, visit the website at www.6ecm.pl.

ROYAL COMMISSION FOR THE EXHIBITION OF 1851

Research Fellowships

1851 Research Fellowships are intended to give young scientists or engineers of exceptional promise the opportunity to conduct a research project of their own instigation. Approximately eight awards are made each year. The awards are for a duration of three years, subject to annual renewal.

The Fellowships are open to candidates in any of the physical or biological sciences, in mathematics, in applied science, or in any branch of engineering. Candidates in science subjects must be in possession of a PhD degree or in the final stages of their PhD studies. These must be successfully completed before the award of a Fellowship can be confirmed. Candidates offering engineering and not in possession of a PhD must provide evidence of experience equivalent to PhD level.

The Research Fellowship stipend payable in 2011 is £30,000 for the first year, and £31,500 for the second and third years. In addition a London (Overseas) Weighting of £2,500 per annum is payable in appropriate cases. Final-year fellows are also sponsored to attend a Royal Society communication skills course. Stipends are reviewed annually. A candidate must be a citizen of the United Kingdom or the Commonwealth, or of the Republics of Ireland or of Pakistan.

Applications are made online via the website www.royalcommission1851.org and must include two references, together with a letter from the institution at which the Fellowship is to be held. Applications must be received by **5 pm Thursday 17 February 2011**. Appointments to the Fellowship will be made during June 2011. Fellowships commence at the beginning of October in the year of award.

THOMAS KÖVÁRI

Dr Thomas (Tamás) Kövári, who was elected a member of the London Mathematical Society on 20 February 1958, died on 12 September 2010, aged 80.

W.K. Hayman writes: Tamás was a rising star in the superheated world of Hungarian Mathematics and Science, winning national contests, Olympiads and accolades. He was in many ways happy in his beloved Budapest and the intellectual excitement he felt among the lifelong friends and colleagues he bonded with. However, he and his wife Judit left for England in 1957, where he spent the rest of his working life as lecturer and later Reader at Imperial College until his retirement in 1995.

Thomas's work was mainly in Complex Analysis. He made significant contributions to the growth of entire functions with gappy power series, extending to functions of infinite order results previously known only for finite order. He also worked on the distribution of Fekete points, which are n points on a continuum, the product of whose mutual distances is maximal. He was an excellent and popular lecturer, but not always patient with the less bright students. However, he was the life and soul of our seminars and always produced pertinent and interesting comments and questions.

He loved to travel in Israel, Turkey, Europe and North America but particularly back to his beloved Budapest, where he was a charming and thoughtful host. He loved classical music and films and built a library of 5,000 books in his house in Wimbledon. He was keen on sweets and would often have two desserts instead of a main course. He was also a member of a chocolate tasting club.

Thomas was a devoted and kind father, decent and honest to a fault. Even in his last and difficult year he showed surprising flashes of empathy. He is survived by his children, Michael and Esther, to whose eulogy at his funeral this memoir is greatly indebted, and four grandchildren.

PATRICK MARTINEAU

Dr R.P. Martineau, who was elected a member of the London Mathematical Society on 17 November 1966, died on 6 September 2010, aged 66.

Brian Stewart writes: Patrick's mathematical talent was nurtured at home (his father a wrangler as well as a bishop) and at school (Liverpool Institute). Elected a Scholar at Wadham College in 1962, he remained as Mathematics Fellow from 1968 until retirement.

After finals Patrick joined Higman's research group, writing a thesis under the supervision of Martin Powell, giving "odd characterisations" of the Janko group and of the Suzuki groups. This developed later into studies of the representations of the Suzuki groups, the splitting of group representations, and how groups of automorphisms affect the structure of a group.

Patrick's writing was clear and austere, at the right level of abstraction. (One reviewer notes that "the ideas used are so clear and simple that this paper could be read with benefit before the many other papers on this subject".) In his lecturing and teaching Patrick adopted the same clear style. But he brought also a real concern that all his students should make the transition to real mathematics, while tolerating no nonsense when he suspected that someone was in danger of squandering their talents.

Wadham chose Patrick as the University's Junior Proctor for 1975–76. His colleagues then elected him Estates Bursar in 1977; from then on he devoted his time and energy to strengthening the finances of the college. The wider university also benefitted, especially during his tenure of the secretaryship and then the chairmanship of the Estates Bursars Committee. Although inclined to play his cards close to his chest, fledgling bursars were assisted by frank (but unattributable) advice.

Patrick's last few years were dominated by the illness that had led to his retirement in 2004. But occasionally the old Patrick sparked into life: during a chance meeting last year on my way to lecture I was given a two minute tutorial on how to treat the adjoint "so that those in the Last Chance Saloon will understand you, Brian".

Patrick is survived by his wife Sylvia, and their twin children Karen and David.

PHILIP CHATWIN

Professor Philip Chatwin, who was a member of the London Mathematical Society from 2000 to 2008, died on 10 September 2010, aged 68.

Nils Mole writes: Philip made seminal contributions to research into environmental fluid mechanics. He will be particularly remembered for his extensions to the theory of longitudinal dispersion (originally due to G.I. Taylor), and for advances to the basic understanding of turbulent diffusion. In his research he made extensive use of probabilistic and statistical methods, and was particularly keen on fostering closer links between the fields of applied mathematics and statistics. He also placed great importance on the education of future mathematicians, and for many years was involved in the marking and setting of A-level papers.

Philip graduated from Trinity Hall, Cambridge with a degree in Mathematics, and then took Part III of the Mathematical Tripos. In 1967 he completed his PhD under the supervision of George Batchelor at Cambridge. Following a research fellowship at the University of Grenoble, he was Lecturer and then Senior Lecturer in the Department of Applied Mathematics and Theoretical Physics at the University of Liverpool (1968–85). Thereafter he became Professor of Mathematics at Brunel University (1985–90) and Professor of Applied Mathematics at the University of Sheffield (1991–2003), in both of which institutions he served as Head of Department. After retirement he continued to teach fluid mechanics at Sheffield.

Philip will be remembered by all who knew him for his outspoken enthusiasm. He is survived by his wife Luisella and daughters Diana and Simona.

BENOÎT MANDELBROT

Benoît Mandelbrot, the father of fractals, died on 14 October 2010 aged 85. He was a visionary mathematician, with the distinction of having a feature of mathematics that has become part of everyday life named after him – the Mandelbrot set. Mandelbrot worked in industry with IBM for over 30 years before retiring and taking a teaching position at Yale University. Mandelbrot put together his famous book *The fractal geometry of nature* in the early 1980s, which brought the idea of fractional dimensions to a wide audience and illustrated these fractals with spectacular graphics.

For more detailed obituaries visit the websites of *The Guardian* (http://tinyurl.com/25kyqwj), *The Daily Telegraph* (http://tinyurl.com/2angbtu) and the BBC (http://tinyurl.com/369blmy).

VISIT OF PROFESSOR V. SCHOMERUS

Professor Volker Schomerus (DESY, Hamburg, Germany) is visiting the UK from 1 November 2010 to 31 January 2011. Professor Schomerus' work addresses a wide range of topics in conformal field theory and string theory. He will give seminars at:

- Durham University, 10 December; contact Kasper Peeters (kasper.peeters@durham.ac.uk)
- Durham University, 13 December; contact Patrick E. Dorey (p.e.dorey@durham.ac.uk)
- Imperial College London, Triangular Seminar, 15 December; contact Sakura Schafer-Nameki (sakura.schafer-nameki@kcl.ac.uk)
- University of Edinburgh, 19 January; contact José Figueroa-O'Farrill (J.M.Figueroa@ed.ac.uk)

Professor Schomerus will be based in London during his stay, hosted by Andreas Recknagel (andreas.recknagel@kcl.ac.uk). The visit is supported by an LMS Scheme 2 grant.

MATHEMATICS POLICY ROUND UP

Browne Review on Higher Education

The Browne Review of England's higher education system, *Securing a sustainable future for higher education*, was published on 12 October and recommends sweeping changes to the university funding system. Some of the main recommendations are outlined below.

- Under the new Student Finance Plan, no students will pay anything until they graduate and are in work.
- Graduates will only begin repaying when they reach annual earnings of over £21,000 a year, up from £15,000 under the current system.
- The current cap on fees of £3,290 per year will be removed. A tapered levy on institutions charging more than £6,000 per year will ensure that those institutions that charge the most contribute more to supporting the poorest students. In addition, universities that wish to charge more will be required to demonstrate to the regulator and to their students both improved standards of teaching and fair admission.
- A 10% increase in student places will be factored into the system over the next four years.
- Careers advice is in need of a radical overhaul. Part of empowering our young people is ensuring they have the right information, advice and guidance to make the correct choice. This means careers advice in all schools of the kind currently being given in the private sector.

The full report is available at http://tinyurl.com/27ehsdo.

Comprehensive Spending Review

The Chancellor George Osborne presented the government's Comprehensive Spending Review on 20 October. The areas of particular interest are in higher education and research spending.

"In line with the Browne recommendations, the government is changing the way that higher

education is funded, moving away from the current model to one where those who benefit make a greater contribution to the cost.

This means the overall resource budget for higher education, excluding research funding, will reduce from £7.1 billion to £4.2 billion, a 40%, or £2.9 billion, reduction by 2014–15. The Department will continue to fund teaching for Science, Technology, Engineering and Mathematics (STEM) subjects.

The government will ensure the UK remains a world leader in science and research. To do this it will continue support for the highest-value scientific research, maintaining the science budget in cash terms over the Spending Review period with resource spending of £4.6 billion a year by 2014–15. A ring fence will be maintained by the Department for Business to ensure continuity of investment in science and research."

The exact breakdown has not yet been decided but the rough numbers would include:

- £2.75bn for research councils
- £1.6bn in 'QR' funding that is to go directly to universities based on the quality of their research
- £100m for national academies such as the Royal Academy of Engineering

The complete Spending Review is available at http://tinyurl.com/39a52bh.

Responses to the Comprehensive Spending Review

The freeze on science research funding was generally accepted by professional bodies and learned societies as being a positive result, with several organisations responding to the CSR. These include:

- The Royal Society at http://tinyurl.com/38afjfv
- The Royal Academy of Engineering at http://tinyurl.com/38nq2sb
- The Institute of Physics at http://tinyurl.com/36zoqg8
- The Royal Society of Chemistry at http://tinyurl.com/3aenyr7

Rise in Mathematics Students at University

The number of mathematics students in higher education has risen to 7259, a 5.1% increase on 2009, according to UCAS figures.

In other STEM subjects, chemistry saw a 10.4% increase to 4290, while the number of biology students increased by 6.6% to 4971 and physics increased 2.8% to 3657. More information is available at http://tinyurl.com/32237b9.

National HE STEM Programme

Former Economic Secretary to the Treasury and Science Minister Ian Pearson has been appointed Chair of the National Higher Education STEM Programme Advisory Forum. The National Higher Education STEM Programme works in partnership with higher education institutions, professional bodies and learned societies in England and Wales. It builds on existing achievements and encourages new approaches to recruiting students and delivering programmes of study within the science, technology, engineering and mathematics disciplines. The programme also aims to make a significant contribution to meeting the skills needs of local economies. The three-year £21 million programme is funded by the Higher Education Funding Councils for England and Wales and is hosted by the University of Birmingham.

Dr John Johnston
Mathematics Promotion Unit

EDUCATION & INNOVATION

Readers may be interested to note that Professor Chris Budd (University of Bath) recently took part in an online debate run by the *Economist* defending the motion:

"This house believes promoting maths and sciences education is the best way to stimulate future innovation."

To read Professor Budd's submissions visit www.economist.com/debate/debates/overview/183.

UNIVERSITY OF BIRMINGHAM

British Applied Mathematics Colloquium (BAMC) 2011

University of Birmingham 11th - 13th April 2011

Plenary Speakers

- Prof. Thomas J Bridges - *University of Surrey*
- Prof. Mark Chaplain - *University of Dundee*
- Prof. Darryl Holm - *Imperial College*
- Prof. Kumbakonam Rajagopal - *Texas A&M University*
- Prof. Sigurdur Thoroddsen - *King Abdullah University of Science and Technology, Saudi Arabia*

Minisymposia

- **Applied Analysis** (Dr. Fordyce Davidson – *Univ. of Dundee)*
- **Applied Numerical Analysis** (Dr. Daniel Loghin – *Univ. of Birmingham)*
- **Biological Fluid Mechanics** (Dr. Eamonn Gaffney – *Univ. of Oxford)*
- **Chemical Reacting Fluid Flows** (Prof. Serafim Kalliadasis - *Imperial College London*)
- **Industrial Mathematical Modelling** (Prof. John Billingham – *Univ. of Nottingham*)
- **Inverse Problems** (Prof. Daniel Lesnic – *Univ. of Leeds*)
- **Modelling Materials** (Prof. Iain Stewart - *University of Strathclyde*)
- **Oceanography** (Prof. David Stevens - *University of East Anglia*)
- **The Lighthill-Thwaites Prize Minisymposium**
- **Software Demonstration and Training Workshop**

Organising Committee

- Professor D J Needham (Chair)
- Dr B T Johansson (Coordinator)
- Mr M Grove
- Dr J Leach
- Dr D Leppinen
- Dr D Loghin
- Dr D Smith
- Dr J Uddin

Learn More

Email: bamc@maths.bham.ac.uk
Web: **http://www.bamc2011.org.uk/**

College of Engineering and Physical Sciences
School of Mathematics

British Mathematical Colloquium 2011

18 – 21 April
University of Leicester

Plenary Speakers

Timothy Gowers, University of Cambridge
Elon Lindenstrauss, Princeton and Hebrew Universities
Franz Pedit, Tübingen University and UMass Amherst
Raphaël Rouquier, University of Oxford
Karen Vogtmann, Cornell University

Morning speakers will include

John Greenlees
Martin Hyland
Niels Jacob
Konstanze Rietsch
Jim Shank
Tom Ward
Steve Hurder
Minhyong Kim
Dominic Joyce
Colva Roney-Dougal
Nadia Sidorova

In addition to the usual selection of splinter groups, there will be a programme of **research workshops** running throughout the Colloquium on

Harmonic Analysis
Algebraic Topology
Dynamical Systems
Differential Geometry
Representations of Algebras
Number Theory and Algebraic Geometry

Registration opens 1 December 2010
http://www.le.ac.uk/bmc2011
Enquires to BMC@mcs.le.ac.uk

THE NATIONAL MUSEUM OF COMPUTING

Bletchley Park Capital Partners (BPCP) and its associates have donated £100,000 to The National Museum of Computing (TNMOC) to help secure its future and enable its further development. Officially opened in 2008, TNMOC now ranks amongst the top three dedicated computer museums in the world. Visitors can see and sometimes even use rare or unique working exhibits spanning seven decades of computing development.

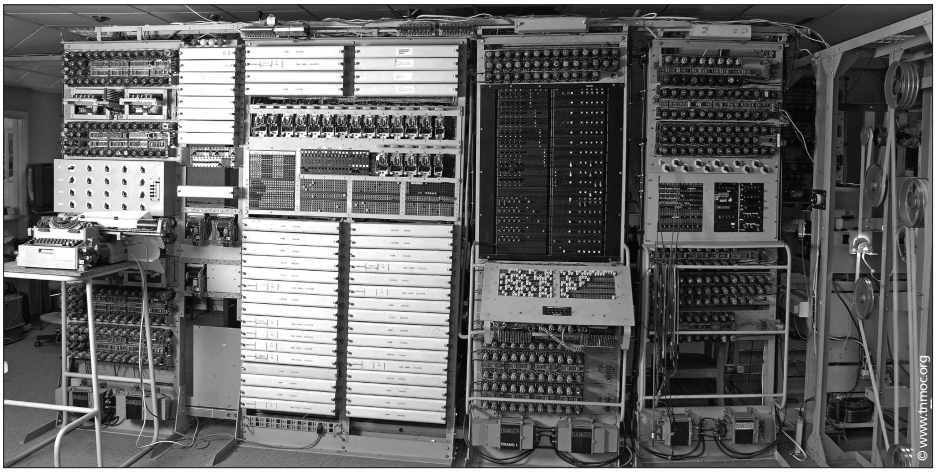
The BPCP funding will be used to help pay the Museum's running costs and to help secure its long-term future and independence. BPCP will also provide resources to redecorate the Museum building, the historic Block H which, as home to the war-time Colossus machines, was the world's first purpose-built computer centre. The growing range of displays at the Museum include a rebuild of Colossus Mk II acknowledged as the world's first modern computer, the ongoing restoration of the WITCH-Harwell computer of the 1950s, mainframes of the 1960s, the NPL Gallery on the Technology of the Internet, plus hands-on micros from the 1970s and 1980s and a retro-programming classroom.

BPCP established the Bletchley Park Science and Innovation Centre in 2004 in conjunction with the Bletchley Park Trust to foster the growth and development of dynamic knowledge-based businesses by providing serviced commercial offices and support on Bletchley Park.

For more information about BPCP visit the website at www.bpsic.com and for The National Museum of Computing at Bletchley Park visit the website www.tnmoc.org.

NEWS FROM ICMS

2010 has been a year of big changes at the International Centre for Mathematical Sciences (ICMS). In January, ICMS moved from its much-loved Georgian town house to larger and more practical premises just south of the city centre. Now situated in 15 South College Street, Edinburgh, ICMS shares this accommodation with the National e-Science Institute. A converted 19th century church,



The Colossus

the venue contains a 98-seat lecture theatre, break-out facilities, a large range of audio visual equipment and full disabled access for its workshop and research-in-groups activities.

With financial aid from EPSRC, the lecture theatre systems were upgraded in May. In addition to the traditional blackboards and other display equipment, we are now happy to be able to offer projection of two simultaneous presentations, a smart board and video conferencing via the internet. On 22 June the new facilities were put to the test. As part of the workshop *Mathematical challenges and modelling of hydroelasticity*, a talk was given by Professor Roger Hosking from a lecture room at his home institution of University of Waikato in New Zealand. Although the 11 hour time zone difference meant that Roger had to start his talk at 21.00 local time to fit with the 10.00 UK time slot, the lecture was successful and ICMS is delighted to have this new, flexible way of delivering talks.

The Atrium: one of the new ICMS break-out areas

Senior staff changes were also a feature of 2010. Jane Walker joined as Executive Secretary and Centre Manager in April, Keith Ball, Astor Professor of Mathematics at University College London took up his post as new ICMS Scientific Director in September and Dawn Wasley, the new Knowledge Transfer Officer, arrived in November. Now settled in its new home and under this new leadership, ICMS continues to expand and develop as can be seen from the forthcoming scientific programme.

ICMS Scientific Programme in 2011

The following have been approved by the programme committee. As it becomes available, information about these events, together with details of postgraduate training and public lectures, will be posted on the ICMS website at www.icms.org.uk.

- *Torsors: theory and applications*, 10–14 Jan
- *The Kervaire invariant and stable homotopy theory*, 25–29 Apr
- *Oscillatory integrals in harmonic analysis*, 6–10 Jun
- *Stabilization of dynamical systems and processes*, 13–17 Jun
- *Geometric analysis*, 20–24 Jun
- *New developments in non-commutative algebra and applications*, 26 Jun – 2 Jul
- *Signal processing with adaptive sparse structured representations*, 27 Jun – 1 Jul
- *Theories of infinity* (ICMS–ESF meeting), 4–8 Jul
- *Numerical relativity beyond astrophysics*, 11–15 Jul
- *Mathematical imaging in interaction with biomedicine*, 5–9 Sep
- *Networks: stochastic models for populations and epidemics*, 12–16 Sep
- *Hyperbolic conservation laws and related analysis with applications*, 19–23 Sep

LONDON MATHEMATICAL SOCIETY

MARY CARTWRIGHT MEETING

Friday 25 February 2011

Oxford University Museum of Natural History

Programme:

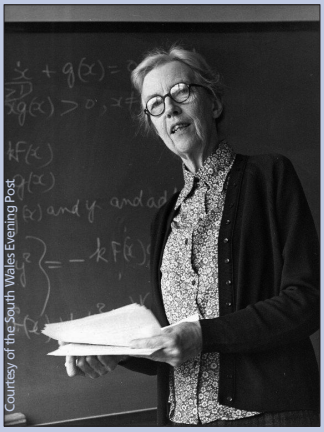
3.30 Opening of the meeting

Peter Donnelly (Oxford)
Modelling Genes

4.30 Tea

5.00 **Mary Cartwright Lecture**

Alison Etheridge (Oxford)
Evolution in a Spatial Continuum



Mary Cartwright

A reception will be held after the meeting at the Mathematics Institute followed by a dinner at the Ashmolean Museum at a cost of £30 per person, inclusive of wine. Contact Isabelle Robinson (isabelle.robinson@lms.ac.uk) by **Friday 18 February 2011** if you would like to attend.

There are limited funds available to contribute in part to the expenses of members of the Society or research students to attend the meeting. Contact Duncan Turton/Elizabeth Fisher (womeninmaths@lms.ac.uk) for further information.

WOMEN IN MATHEMATICS DAY 2011

The *Women in Mathematics Day* is an annual event organised by the London Mathematical Society. The 2011 event will be held at De Morgan House, Russell Square, on Friday 6 May. The invited speakers are:

- Claire Gilson (Glasgow)
- Joan Lasenby (Cambridge)
- Rowena Paget (Kent)

The day will include talks and posters by women mathematicians in a variety of appointments and at different career stages. Further details will follow in the January *Newsletter*.

LMS–GRESHAM COLLEGE LECTURES

Gresham College in London has been presenting mathematics lectures to the public since 1598, when Henry Briggs (co-inventor of logarithms) was appointed the first Gresham Professor of Geometry. Later holders of that Chair have included Isaac Barrow, Robert Hooke, and more recently Sir Christopher Zeeman, Ian Stewart and Sir Roger Penrose. The current position now covers all areas of mathematics, not just geometry.

In 2007, the London Mathematical Society and Gresham College established a yearly joint lecture with the Society providing the speakers while Gresham provides the attractive venue and covers the costs of the lecture and a reception. These events have proved highly popular.

The 2011 Lecture will be held on Tuesday 17 May given by Professor Angus Macintyre, FRS (Queen Mary University of London; LMS President) on *Undecidable and Decidable Problems in Mathematics: A survey and some reflections, for the centenary of Turing's birth.*

For further information about the lectures visit the website at www.lms.ac.uk/activities/education_com/gresham.html.

YOUNG RESEARCHERS IN MATHEMATICS CONFERENCE

Building on the success of the first two conferences held at Cambridge University in 2009 and 2010, the *Young Researchers in Mathematics Conference* (YRM) is moving to the University of Warwick in 2011 taking place from 14 to 16 April. Organised entirely by PhD students, this is a conference for doctoral and post-doctoral researchers, aiming to facilitate networking and collaboration between early career research mathematicians from different institutions. The main component of the conference will be student talks within parallel subject-specific tracks. Each track will also have a keynote talk. The tracks and associated keynote speakers (subject to change) are:

- *Algebra* – Martin Bridson (Oxford)
- *Algebraic Geometry* – Burt Totaro (Cambridge)
- *Analysis & PDEs* – John Ball (Oxford)
- *Combinatorics* – Peter Cameron (Queen Mary)
- *Complexity* – Jeff Johnson (Open University)
- *Differential Geometry* – Nigel Hitchin (Oxford)
- *Dynamical Systems* – Mary Rees (Liverpool)
- *Financial Mathematics* – David Hand (Imperial)
- *Mathematical Biology* – Raymond Goldstein (Cambridge)
- *MathsPhys* – Sandra Chapman (Warwick)
- *Number Theory* – Kevin Buzzard (Imperial)
- *Probability & Statistics* – Saul Jacka (Warwick)
- *Topology* – Caroline Series (Warwick)

The deadline for registration is **14 January 2011** for those requesting accommodation, and 31 January otherwise. Visit www.go.warwick.ac.uk/YRM2011 for further information and to register. For enquiries contact the organisers at youngresearchersinmaths@gmail.com. The conference is supported in part by an LMS Scheme 8 Postgraduate Research Conference grant.

BRITISH POSTGRADUATE MODEL THEORY CONFERENCE

The first *British Postgraduate Model Theory Conference* (BPMT) will take place from 19 to 21 January 2011 at the University of Leeds. The organisers aim to provide a platform for postgraduate students and postdocs working in and around model theory to meet and discuss their work in a relaxed environment. The organisers would like to encourage all participants to contribute a talk or bring a poster. Although BPMT is aimed at UK-based students, it is also open to those abroad.

There will be a short course given by John Truss (Leeds) and plenary talks will be given by Elisabeth Bouscaren (Université Paris-Sud 11) and Angus Macintyre (Queen Mary, London).

Further details and registration information are available at the conference website http://tinyurl.com/3xm5psz. Enquiries should be addressed to pgmodeltheory@gmail.com. The deadline for registration is **15 December 2010**. This conference is funded by an LMS Scheme 8 Postgraduate Research Conference grant and by the British Logic Colloquium.

PROSPECTS IN MATHEMATICS

The sixth *Prospects in Mathematics* Conference will take place at ICMS in Edinburgh from 17 to 18 December 2010. This is a symposium for potential research students with the goal to introduce high-quality mathematics students to the many and varied opportunities for research in mathematics that exist in universities in the UK.

There will be a dozen lectures, split over two half-days. Each will survey a different research area and highlight opportunities in the UK for potential research students. The speakers include:

- Pieter Blue (Edinburgh)
- Eugenia Cheng (Sheffield)
- Nema Dean (Glasgow)
- Jörg Fliege (Southampton)
- Meinolf Geck (Aberdeen)
- Nick Higham (Manchester)
- Roman Kotecky (Warwick)
- Andy Lewis (Leeds)
- Paul Sutcliffe (Durham)
- Corinna Ulcigrai (Bristol)
- Sarah Zerbes (Exeter)

The LMS and IMA have generously provided financial backing of this event, allowing the organisers to support approximately 50 final-year mathematics students from different universities in the UK. Application is open to students throughout the UK, but there is a deadline of **1 December** in order to be considered for support. Full details can be found at the conference's website http://ecos.maths.ed.ac.uk/Prospects2010.

PODE 2011

The *Progress on Difference Equations 2011* conference will take place at Dublin City University, Ireland from 22 to 27 May 2011. The topics of the conference are difference equations, discrete dynamical systems, and their applications in all fields; a special theme will be applications to financial mathematics. The confirmed plenary lecturers are:

- John Appleby (Dublin City)
- Christopher Baker (Chester & Manchester)
- Saber Elaydi (Trinity University, USA)
- István Győri (Pannonia, Hungary)
- Des Higham (Strathclyde)
- Gerry Ladas (Rhode Island University, USA)
- Eduardo Liz (Vigo, Spain)
- Xuerong Mao (Strathclyde)
- Milhály Pituk (Pannonia, Hungary)
- Christian Pötzsche (Munich University of Technology, Germany)

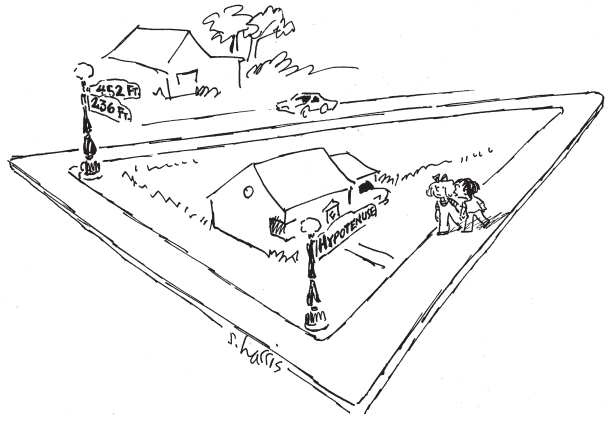
For further information visit the website www.dcu.ie/maths/pode2011.

YORKSHIRE AND DURHAM GEOMETRY DAYS

A *Yorkshire and Durham Geometry Day* will be held on Wednesday 8 December 2010 in Room CM 107, Department of Mathematical Sciences, University of Durham. The speakers are:

- Aram Karakhanyan (Edinburgh) *Reflector design problems*
- Ben Lambert (Durham) *Boundary value problems for mean curvature flow*
- Scott Thomson (Durham) *Systoles of hyperbolic manifolds*
- Giuseppe Tinaglia (KCL) *The geometry of constant mean curvature surfaces embedded in* $\mathbb{R}^3$
- Peter Hornung (Bath) *Regularity for minimizers of the Willmore functional*

Yorkshire and Durham Geometry Days are jointly organised by the Universities of Durham, Leeds and York, and occur at a frequency of three meetings per academic year. Financial support is provided by an LMS Scheme 3 grant, currently administered by the University of York. The local organisers are John Bolton (john.bolton@durham.ac.uk) and Wilhelm Klingenberg (wilhelm.klingenberg@durham.ac.uk). For further information visit the website http://maths.dur.ac.uk/~dma0wk/ydgd.html.



"I wish there was some way of finding out how long this street is."

FIFTH DE BRÚN WORKSHOP

The Fifth De Brún Workshop on *Groups, Combinatorics, Computing* will take place at The National University of Ireland, Galway from 11 to 16 April 2011. The primary aim of the workshop is to bring together experts in group theory and combinatorics, to discuss computational and algorithmic aspects that have recently emerged at the interface of both subjects.

Three short lecture courses will be delivered by leading experts and there will also be contributed research talks. The workshop will be beneficial and suitable both for early-stage researchers (including PhD students) and those who are more established. The principal lecturers are:

- Martin Liebeck (Imperial College London)
- Cheryl Praeger (University of Western Australia)
- Leonard Soicher (Queen Mary University of London)

For further information visit the website at http://larmor.nuigalway.ie/~detinko/DeBrun5. To indicate interest in attending the workshop, send an email to dane.flannery@nuigalway.ie. There is no registration fee nor formal registration process. The workshop is funded by the de Brún Centre for Computational Algebra at NUI Galway. The organizers are Alla Detinko, Dane Flannery and Eamonn O'Brien.

THE LEARNED SOCIETY OF WALES
CYMDEITHAS DDYSGEDIG CYMRU
CELEBRATING SCHOLARSHIP AND SERVING THE NATION
DATHLU YSGOLHEICTOD A GWASANAETHU'R GENEDL

Frontiers

Geometry and Physics: Past, Present and Future

Sir Michael Atiyah OM FRS FRSE
University of Edinburgh

Geometry and Physics have had a long and close association from Newton to Einstein and beyond. The strength of the interaction has varied as the disciplines evolved. At present we are living through a particularly exciting period, with a major impact on both sides. But what does the future hold in store for us? I will survey the scene and discuss current ideas and prospects.

17.00 Monday 17 January 2011
Wallace Lecture Theatre, Main Building, Cardiff University

The distinguished lecture is aimed at a broad spectrum of scientists interested in the frontiers of mathematical research with applications and roots in theoretical physics and the other sciences. The Founding President of the Society, Professor Sir John Cadogan CBE FRSE PLSW FRS will take the chair. The event is open to anyone, with a tea from 16.15 in the Council Chamber, and a wine reception in the Viriamu Jones Gallery following the lecture. For further information and to register for the event, contact Professor David Evans, EvansDE@cf.ac.uk, Cardiff School of Mathematics. The closing date for registration is Friday, 7 January 2011.

Frontiers is a lecture series organised by the Learned Society of Wales in which distinguished academics are invited to speak about the frontiers of research and to place their own contributions in context.

This lecture is funded by the European Research Training Network in Noncommutative Geometry. The event is hosted by the Wales Institute of Mathematical and Computational Sciences at Cardiff University.

CARDIFF UNIVERSITY
PRIFYSGOL CAERDYDD

ISAAC NEWTON INSTITUTE FOR MATHEMATICAL SCIENCES

REPRESENTATION OF SURFACE GROUPS AND HIGGS BUNDLES

14–18 March 2011
MATHEMATICAL INSTITUTE, OXFORD

in association with the Newton Institute programme entitled
Moduli Spaces
(4 January – 1 July 2011)

Organisers: O. García-Prada (CSIC, Madrid), W. Goldman (Maryland), P.E. Newstead (Liverpool), T. Hausel (Oxford), N. Hitchin (Oxford) and R. Thomas (Imperial College London)..

Theme of conference: The workshop will concentrate on the relationship of moduli spaces to topology, Teichmüller theory and hyperbolic geometry – this relationship takes place in the study of representations of a surface group in a real Lie group and involves Higgs bundle theory, bounded cohomology, Anosov systems, cluster varieties, tropical algebraic geometry; there is a very rich geometric structure and the various points of view are complementary, the relationship between them yet to be understood.

The event is also being sponsored by the Interactions of Low-Dimensional Topology and Geometry with Mathematical Physics (ITGP) network of the European Science Foundation and the London Mathematical Society.

Further information and application forms are available from the website at: www.newton.ac.uk/programmes/MOS/mosw02.html. Closing date for the receipt of applications is **17 December 2010**.

DISCRETE HARMONIC ANALYSIS

28 March –1 April 2011

in association with the Newton Institute programme entitled
Discrete Analysis
(10 January – 8 July 2011)

Organisers: I. Dinur (Weizmann), K. Oleszkiewicz (Warsaw), F. Barthe (Toulouse).

Theme of conference: The goal of this workshop is to bring together researchers who are interested in harmonic analysis in a discrete setting: in particular, properties of Fourier–Walsh expansions, influences of variables, Sobolev-type inequalities and isoperimetry or concentration estimates.

Such analysis plays a role in many fields and has applications to combinatorics, theoretical computer science, probability theory, statistics and number theory. Several talks will be devoted to the interplay between the continuous and discrete settings (for example the implementation of log-concavity or curvature methods in the discrete case, geometric properties of Gaussian measures and so on.)

Further information and application forms are available from the website at: www.newton.ac.uk/programmes/DAN/danw02.html. Closing date for the receipt of applications is **3 January 2011**.

CHAOS 2011

An international conference on *Chaotic Modeling, Simulation and Applications* (CHAOS 2011) will take place in Agios Nikolaos, Crete, Greece from 31 May to 3 June 2011. The general topics and the special sessions proposed for the conference include but are not limited to:

- Chaos and nonlinear dynamics
- Stochastic chaos
- Chemical chaos
- Data analysis and chaos
- Hydrodynamics, turbulence and plasmas
- Optics and chaos
- Chaotic oscillations and circuits
- Chaos in climate dynamics
- Geophysical flows
- Biology and chaos
- Neurophysiology and chaos
- Hamiltonian systems
- Chaos in astronomy and astrophysics
- Chaos and solitons
- Micro- and nano- electro-mechanical systems
- Neural networks and chaos
- Chaos, ecology and economy
- Algorithmic music composition

For more information, abstract/paper submission and special session proposals visit the conference website at www.cmsim.org.

TORIC METHODS IN HOMOTOPY THEORY

A conference on toric methods in homotopy theory and related subjects will be held in the Pure Mathematics Research Centre of Queen's University Belfast, from Monday 18 July to Wednesday 20 July 2011. Main speakers include:

- Jack Morava (Johns Hopkins University, USA)
- Taras Panov (Moscow State University, Russia)
- Sam Payne (Yale University, USA)
- Alex Suciu (Northeastern University, USA)

More information on the programme and registration procedure will appear on http://toricmethodsbelfast.110mb.com in due course.

The meeting is supported by an LMS Conference grant and by EPSRC research project EP/H018743/1.

NEW DEVELOPMENTS IN NONCOMMUTATIVE ALGEBRA AND ITS APPLICATIONS

A meeting honouring the 60th birthdays of Ken Brown and Toby Stafford will be held at Sabhal Mòr Ostaig, a Gaelic college in Sleat, the southern region of the Isle of Skye, from Sunday 26 June to Saturday 2 July 2011.

The meeting will focus on noncommutative algebra in its broadest sense, and will emphasise the most recent developments within the field as well as its most exciting interactions with other topics of mathematics including symplectic geometry, noncommutative geometry and representation theory.

Further details are available at the International Centre for Mathematical Sciences website (www.icms.org.uk/workshop.php?id=163).

HEREDITARILY JUST INFINITE GROUPS

A one-day meeting on *Hereditarily Just Infinite Groups* will be held on Friday 17 December 2010 at Royal Holloway, University of London. The classification of finite simple groups is one of the greatest achievements of 20th century mathematics. In the category of profinite (or subcategory of pro-*p* groups), the 'simple' objects are the so-called just infinite groups. Loosely speaking, the study of these groups reduces to the study of branch groups and hereditarily just-infinite groups. The meeting will focus on what is known

about the latter type, with particular emphasis on novel constructions of J.S. Wilson and of M. Ershov and A. Jaikin-Zapirain. Prospective speakers are:

- Benjamin Klopsch (Royal Holloway)
- John S. Wilson (Oxford)
- Colin D. Reid (Aachen)

The meeting is part of the *South England Profinite Groups Meetings* which are supported by an LMS Scheme 3 grant. Limited funds are available to reimburse travel expenses of UK-based students and young mathematicians.

For more details see www.ma.rhul.ac.uk/profinite_groups/meetings.html or contact B. Klopsch (Benjamin.Klopsch@rhul.ac.uk).

POPULAR LECTURES 2010

Report

On Wednesday 29 September 2010, Birmingham University welcomed Dr Dorothy Buck and Mr Matt Parker to give exciting lectures to mathematical students and teachers from the whole area.

Dr Dorothy Buck's lecture *Modelling the Circle of Life: How Maths Untangles Knotty Questions of DNA* introduced us to the fascinating subject of knot theory. She discussed the 'big questions' which still needed to be answered including a particular invariant which could apply to all knots when distinguishing between them. She also revealed the fantastic applications knot theory has to medicine, by explaining how circular bacterial DNA strands (which are knots) need an enzyme called Topoisomerase II to break the knot formed when bacterial DNA multiplies. She explained how this may replace antibiotics in the future since if you kill Topoisomerase II then bacterial DNA will not be able to multiply. Finally a question was raised as to how the Topoisomerase II knows how to unknot the DNA. Overall the talk really emphasised the application of maths to the real world in a fascinating manner and showed how there is much yet to be discovered.

Mr Matt Parker's lecture *Clutching at Random Straws* enlightened the theatre to the wonder of ubiquitous patterns and the dangers of human pattern seeking. Mr Parker initiated his talk by discussing an archaeological sites graph, where the arcs joining the historical sites seemed to form perfect equilateral triangles. However he then highlighted the inaccuracies of finding such patterns by comparing it with a Woolworth stores graph which also had perfect equilateral triangles with each Woolworths as a vertex. It became apparent that if one has enough data any pattern can be discovered. Next Mr Parker questioned the audience as to how many people would be needed in a room so that the probability of two of them sharing a birthday was over 50%. He proved our natural assumptions wrong because the number of people, 23, was much lower than expected. Throughout the talk, Mr Parker kept the content relevant to the audience by even involving pop culture. He demonstrated how if you played some songs backwards (one from Lady Gaga's *Paparazzi* and Freddie Mercury's *Another One Bites the Dust*) and indicating that if one was looking for certain words that were shown on the projector, then the brain would interpret the lyrics as a message whereas otherwise it would just sound like incoherent noise. Overall the talk was riveting and engaging through the use of comical references and excellent examples.

The talks were very much enjoyed by all those who attended and we would like to thank the LMS, the organisers, Birmingham University and the speakers Dr Dorothy Buck and Mr Matt Parker for enthralling the audience with the wonders of mathematics.

Aman Ubhi and Masarat Jilani
King Edwards VI Camp Hill
Grammar school for Girls, Birmingham

Editorial note: The lectures were recorded for subsequent release on DVD which will be available from the LMS: a useful purchase for school and university mathematics departments seeking resources that will stimulate their students.

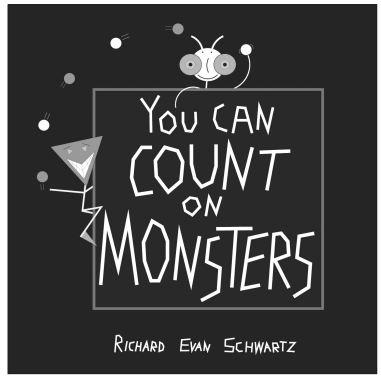
REVIEWS

You Can Count on Monsters by Richard Evan Schwartz, A.K. Peters Ltd, 2010, 244 pp, £20.00, US$24.95, ISBN 978-1-5688-578-7.

With the festive season approaching, many of us will be seeking a creative solution to the problem: what to give the small children in our lives, which isn't made of fluorescent plastic and doesn't emit incessant beeping noises? The mathematical children's book *You Can Count on Monsters* could be a promising candidate.

The author, Richard Evan Schwartz, is Professor of Mathematics at Brown University and is active in the area of geometry and topology. As well as research publications, he has written a few works inspired by his own children. *You Can Count on Monsters* was apparently produced to help teach his daughters about prime numbers and factorization. The publisher's suggested age-range is 4–8 years; more generally the back cover states that it should give "children (and even older audiences) an intuitive understanding of the building blocks of numbers and the basics of multiplication".

The basic premise is that each prime number is represented by a monster, which exhibits some property relating to its number (e.g. the 3-monster has a triangular face, etc). In the main part of the book, each number from 2 to 100 is represented as a scene in which the monsters from its prime factorization are intermingled and combined. This is preceded by a brief description of multiplication in more traditional terms, and a child-friendly definition of prime numbers; it is followed by a discussion of the Sieve of Eratosthenes and Euclid's proof that there are infinitely many primes.



The book is beautifully designed and produced, and is more stylish than the general run of children's books. The graphics are angular and brightly coloured (variously reminiscent of Picasso in the 1930s, 1950s advertising, and the work of Eduardo Paolozzi). My assistant reviewer, aged just below the suggested age-range, enjoyed looking at the monsters and working out which of their attributes related to their numbers. I also found it a good starting-point for discussions with him about various aspects of numbers, addition and multiplication.

However, I have a couple of reservations about the book. Firstly, I am not convinced that it genuinely gives an "intuitive understanding" of multiplication and prime decomposition. Putting several prime-monsters together in a picture does not seem really to capture the essence of multiplication; if anything, it seems closer to representing addition. There is an attempt to 'morph' the monsters together to address this, but overall I feel that that the 2×3 array of dots in the introductory page conveys more about multiplication than the picture of the 6-monster made up of the 2- and 3-monsters. My other reservation is the age-range: the age-range during which examining pictures of monsters appeals may not overlap very much with the age-range during which the concept of prime decomposition makes sense!

Overall though *You Can Count on Monsters* is an enjoyable and lively children's book, which is good as a starting point for discussions, and introduces key concepts in an unobtrusive way. Furthermore, it isn't made of plastic and doesn't make any noise!

Sophie Huczynska
University of St Andrews

Numbers Rule by George Spziro, 2010, Princeton University Press, 248 pp, £18.95, $26.95, ISBN 978-0-691-13994-4.

The author's intention is to present the relationship between mathematics and collective decision making, progressing from the earliest attempts to establish a 'fair' method of aggregating individual preferences, and indeed to establish what is meant by a 'fair' voting system.

Each chapter is presented as a history of a development in the mathematics of collective choice, and a personal biography of the key protagonists. Each chapter has an appendix providing extra details of the personalities involved, or explains some of the mathematics in more depth.

Chapter 1 describes Plato's discourse on government in Republic and Laws. This chapter is the exception of the book, as it describes Plato's preference for a well managed, but non-democratic society; other chapters describe the respective protagonists' search for a fairer democracy.

Chapter 2 covers Pliny's attempt to establish a fair method of decision making by juries, and introduces the problem of making a decision amongst more than two options. The problem of knowledge, or anticipation of the preferences of others, and strategic voting are also introduced.

Chapter 3 introduces Ramon Llull and his proposal for pairwise comparison of candidates (essentially what is known today as the Condorcet system).

Chapter 4 presents an early description of the Borda method for electing Popes, as proposed by Nikolaus Cusanus. Chapter 5 goes on to explain the work of Borda himself and his discussion of 'circular' rankings in aggregated group preferences. Chapter 6 introduces Condorcet and provides some background on his interactions with Borda.

Chapter 7 briefly describes Laplace's contribution to election theory and his proposal for run-off elections (used in many presidential elections).

Chapter 8 introduces a variant to the Borda count proposed by Dodgson, in which candidates can be awarded equal points if 'equally preferred'.

Chapters 9, 10 and 12 depart from election systems and instead cover debates over the fair apportionment of seats amongst a population in a representative assembly.

Chapter 11 describes the background to Kenneth Arrow's contribution, demonstrating the impossibility of obtaining a 'fair' voting system, without entering into too much of the mathematical detail. Finally, Chapter 13 illustrates the preceding chapters with a number of case studies.

The treatment of Arrow's Theorem is rather superficial, which is a little disappointing, given its importance to the material covered in the book. As I approached the chapter, I'd assumed the author was planning to spend some time working through the theorem in an accessible manner, and the absence of this does feel like an omission.

Curiously, the book also lacks a reflection on the importance of numbers to collective decision making, which is strange given the title. Chapter 8 touches on some of these issues, e.g. the way in which voters will act strategically based on the anticipated preferences of others and the 'rules of the game' to get the best realistic result for themselves. However, this 'social compensation' for the limitations of a voting system doesn't receive much attention in the book, which might benefit from a discussion of whether it is such a bad thing in the first place!

Having said that, the book is thoroughly entertaining. The writing style is lively and the social narrative adds much colour to what could otherwise be an extremely dry topic. I would happily recommend it either as an enjoyable holiday read or a great gift for a friend or relative.

Tim Storer
University of Glasgow

What's Luck Got to Do with It? The History, Mathematics, and Psychology of the Gambler's Illusion by Joseph Mazur, Princeton University Press, 2010, 296 pp, £20.95, $29.95, ISBN: 978-1-4008-3445-7.

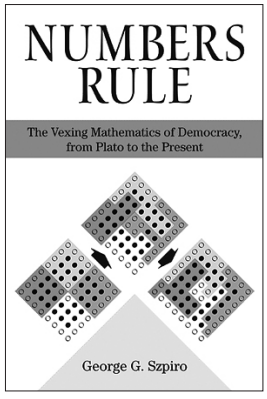
Gambling has long fascinated the human race, but at no time in history has it been more visible than now. Widespread internet access has resulted in an explosion of online gaming sites over the last decade. Televised poker, and shows such as *Deal or No Deal*, are increasingly popular. The lottery industry has shown an immunity to the global economic crisis, and it seems even to have grown in recent years.

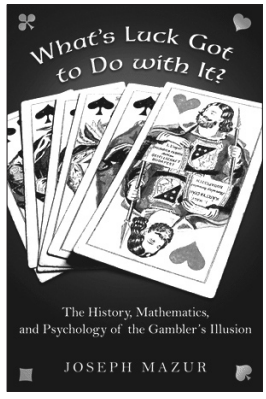
The book under review is a timely account of our obsession with gambling. Written in three (more or less independent) parts, the book examines the related questions of why we are willing to place bets that have negative expectation, and what makes us feel that we are in control of our own fortune. The first part is a brief history of gambling that begins (somewhat tenuously) in pre-historic times and continues all the way through to the aforementioned economic crisis. The second part presents a mathematical analysis of some of the popular games of chance. Part three is a discussion of the psychological aspects of gambling. The book as a whole is nicely written in a friendly, conversational style. The reader is furnished with a wealth of examples and anecdotes, and with many literary and historical references.

In the 'mathematics' part of the book, Mazur discusses at length the theory relating to Bernouilli's weak law of large numbers. He then analyzes the mathematics that govern various standard games of chance, such as roulette and blackjack. It is hard to say what a typical reader will gain from his analysis: the mathematically mature reader will not find too much of interest, while one not so fluent in mathematical notation will probably have rather a tough time of it.

The author acknowledges an original motive to "write about the follies of ambitious belief in windfall"; a desire to educate and caution. (Any mathematician who has observed the sad cases arrayed on endless banks of Las Vegas slot machines would surely share his desire!) Most adroitly he explains why those who bet against the house will lose (and lose big) if they continue to play for a long period of time. As Mazur observes, few gamblers have even heard of the law of large numbers, and fewer still interpret its meaning correctly; diligent readers of his book will no longer feel compelled to bet on red after seeing a long string of black!

Although Mazur claims ultimately not to sermonize in his book, by his choice of topics he convinces the reader that gambling is folly. This is clearly so for the various games he analyzes, but he misses opportunities to present a more balanced view. It is a shame, for example, that the book gives such short shrift to poker, the game that has done most to popularize gambling in recent years. There are legions of mathematically astute online poker players who are using their own "laws of large numbers" to devastating effect; in a meaningful sense, the best of these players actually are in control of their own fortune. Add to that the mysterious blend of mathematics and psychology that influence





the individual decisions of all good poker players and you have a wonderful setting for many of the themes in this book.

Minor criticisms aside, however, Mazur has written an enjoyable and very readable book. His diverse choice of perspectives provides something of interest for most readers, and makes the book quite unique.

Peter Brooksbank
Bucknell University

ZITO THE MAGICIAN

We have received the following responses to the *Zito the Magician* poem published in the November 2010 LMS *Newsletter*.

Complex matters

If $\alpha = \pi/2 + i\beta$, then $\sin \alpha = \cosh \beta$ which is greater than one for non-zero β.

Bruce Christianson
University of Hertfordshire

The student replies

Switching bottles is the easy part,
Magician; here, we want you to deceive.
We like the practised motions of your
shallow art,
tricks with insects, flowers up your sleeve,
and smile at willing courtiers well concealed
as hints of their true natures are revealed.

Thoughtless imaginings and carefree words,
seeming contradictions in the mental air,
are honest frauds, coherent and absurd.
But real imagination reaches deep,
and where
imaginary numbers, multiples of i,
replace the real their sines, by i divided,
permit us to reply:
sine is unbounded.
Spring from your nutshell,
quit your simple home,
and in the complex let your magic roam.

Jeremy Gray
The Open University

CALENDAR OF EVENTS

This calendar lists Society meetings and other mathematical events. Further information may be obtained from the appropriate LMS *Newsletter* whose number is given in brackets. A fuller list of meetings and events is given on the Society's website (www.lms.ac.uk/newsletter/calendar.html).

Please send updates and corrections to calendar@lms.ac.uk.

DECEMBER 2010

6 LMS Meeting, ICMS, Edinburgh (398)
6-10 Birational Geometry, ICMS Workshop, Edinburgh (396)
6-10 Uncertainty in Climate Modelling, INI, Cambridge (395)
6-10 Australian Statistical Conference 2010, Fremantle, Australia (383)
8 Yorkshire and Durham Geometry Day, Durham (398)
13-17 PDE Models for Quantum Fluids, INI, Cambridge (395)
17 Hereditarily Just Infinite Groups Meeting, Royal Holloway, University of London (398)
17-18 Prospects in Mathematics Conference, ICMS, Edinburgh (398)
18-20 New Trends in Spectral Theory and Applications Workshop, Cardiff (395)

JANUARY 2011

5-14 School on Moduli Spaces, INI, Cambridge (395)
10-13 UK–Japan Winter School, King's College London (396)
10-14 Embeddings, INI, Cambridge (395)
10-14 Torsors: Theory and Application ICMS Workshop, Edinburgh (398)
17 *Geometry and Physics: Past, Present and Future*, Cardiff University (398)
19-21 British Postgraduate Model Theory Conference, Leeds (398)

FEBRUARY 2011

14-16 Workshop on Mathematics Journals, MSRI, Berkeley, USA
25 LMS Mary Cartwright Lecture, Oxford (398)

MARCH 2011

14-18 Representations of Surface Groups and Higgs Bundles Workshop, Oxford (398)
16 One-Day Meeting in Combinatorics, Oxford
28 - 1 Apr Discrete Harmonic Analysis Workshop, INI, Cambridge (398)
29 The Symmetric Group: Representations and Combinatorics, Royal Holloway, University of London

APRIL 2011

4-5 Nonlinear Waves and Solitons on Lattices Workshop, ICMS, Edinburgh
4-8 Computational Challenges in Partial Differential Equations Meeting, Swansea (392)
11-13 BAMC 2011, Birmingham (398)
11-16 Groups, Combinatorics, Computing De Brún Workshop, Galway (398)
14-16 Young Researchers in Mathematics 2011 Conference, Warwick (398)
18-21 BMC 2011, Leicester (398)
25-29 The Kervaire Invariant and Stable Homotopy Theory ICMS Workshop, Edinburgh (398)

MAY 2011

6 Women in Mathematics Day, London (398)
17 LMS–Gresham Lecture, London (398)
22-27 Progress on Difference Equations 2011, Dublin (398)
31 - 3 Jun CHAOS 2011, Crete, Greece (398)

JUNE 2011

6-8 Nonlinear Diffusion: Algorithms, Analysis and Applications Workshop, Warwick (395)
6-10 Oscillatory Integrals in Harmonic Analysis ICMS Workshop, Edinburgh (398)
13-17 Stabilization of Dynamical Systems and Processes ICMS Workshop, Edinburgh (398)
20-24 Geometric Analysis ICMS Workshop, Edinburgh (398)
22-24 First British Conference on Mathematics of Filtering and Its Applications, Brunel
26-30 Signal Processing with Adaptive Sparse Structured Representations ICMS Workshop, Edinburgh (394)
26 - 2 Jul New Developments in Non-Commutative Algebra and Applications ICMS Workshop, Sabhal Mòr Ostaig, Isle of Skye (398)
27 - 1 Jul Signal Pocessing with Adaptive Sparse Structured Representation, ICMS Workshop, Edinburgh (398)

JULY 2011

1 LMS Meeting, London
4-8 Theories of Infinity ICMS–ESF Meeting, Edinburgh (398)
4-8 Gauge Theory and Complex Geometry, Leeds
11-15 Numerical Relativity Beyond Astro-physics ICMS Workshop, Edinburgh (398)
18-20 Toric Methods in Homotopy Theory Conference, Belfast (398)
18-22 ICIAM 2011, Vancouver, Canada (388)
19 LMS Northern Regional Meeting, Leeds
19-22 Homogeneous Structures Workshop, Leeds
21-22 Twistors in Geometry and Physics, Oxford

AUGUST 2011

29 - 1 Sep Algebra, Combinatorics, Dynamics and Applications, Queen's University, Belfast

G. SALMON

LMS member 1866–1903

Chancellor, Dublin

Rev. George Salmon, DD, DCL, LLD, FRS, FRSE
Regis Professor of Divinity, Trinity College, Dublin
Royal Medallist (1868), Copley Medallist (1889) of the Royal Society
Honorary Member of the Manchester Literary and Philosophical Society;
Provost of Trinity College Dublin
Corresponding member of the Institute of France, Academy of Sciences of Berlin, Royal Society of Göttingen;
Foreign Member of the Royal Society of Copenhagen; Foreign Associate in Mathematics of the Reale Accademia dei Lincei;