

No. 389 February 2010

Society Meetings and Events

2010

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SW & South Wales Regional Meeting Cardiff

Friday 2 July

Hardy Lecture London

Monday 13 September

Midlands Regional Meeting, Nottingham

Friday 19 November Annual General Meeting and Naylor Lecture, London

INTERNATIONAL REVIEW OF MATHEMATICAL SCIENCES 2010

Invitation to nominate potential members of the International Panel

EPSRC are organising an International Review of Mathematical Sciences which will take place in December 2010. The review, which will be chaired by Professor Margaret H. Wright, New York University, will:

- assess and compare the quality of the UK research base in the Mathematical Sciences with the rest of the world
- assess the impact of the researchbase activities in the Mathematical Sciences internationally and on other disciplines nationally, on wealth creation and quality of life
- comment on progress since the 2004 International Review.

The International Review will cover the breadth and quality of all aspects of research in mathematics and its applications, encompassing all of pure and applied mathematics, statistics, mathematical physics and the mathematical underpinnings of Operational Research - it will also cover research excellence, knowledge exchange, people and research infrastructure. Following the review, the Panel's report will be presented to the research community, Research Councils and other key stakeholders to stimulate discussion of the findings and initiate development of an action plan to take the recommendations forward.

EPSRC now invite nominations of potential members of the International Panel. Nominations should be made via an online form at www. survey.bris.ac.uk/epsrc/msir-panom which will remain open until 5 February 2010. In order to obtain an independent view, EPSRC seek individuals working outside the UK. Nominees must be highly regarded by their peers, not only for the depth and breadth of their scientific knowledge, but also for their personal intearity and sound judgement. They should normally be active in their field and it is likely that they hold or have recently held senior positions; they should also be highly effective in team-working situations. Nominees may be UK nationals. The international panel will be chosen from the list of nominees by a UK Steering Committee chaired by Professor Tim Pedley and including representatives from the London Mathematical Society, the Edinburgh Mathematical Society, the Operational Research Society, the Royal Statistical Society, the Institute of Mathematics and its Applications, the Industrial Mathematics Knowledge Transfer Network and the Institute of Physics.

Nominations are being sought from the research community and other key stakeholders in the review. 1



NEWSLETTER

For reference the 2004 International Review is available from the CMS website at www.cms. ac.uk/irm/irm.pdf. If you have any questions please submit them to MathematicsIntReview@ epsrc.ac.uk.

NEW YEAR HONOURS LIST

• Professor John Holman, National Director of the Science, Technology, Engineering and Mathematics Programme (STEM), was awarded a knighthood for services to Education.

• Professor Valerie Beral, FRS, was awarded a DBE for services to Science.

• Professor Chris Skinner, FBA, Southampton Statistical Sciences Research Institute, University of Southampton, was awarded a CBE for services to Social Science.

• Professor Marcus du Sautoy, University of Oxford, was awarded an OBE for his services to Science.

PROPOSED BY-LAW CHANGES: WITHDRAWAL

A notice was served with the January *Newsletter* designating the Society Meeting of Friday 26 February 2010 as a Special General Meeting. This change was made in order to put to a vote a recommendation made by Council in October 2009 that certain amendments be made to the By-Laws.

A number of representations have been received concerning both the clarity of the proposed amendments themselves, and the wisdom of the proposed voting arrangements. Moreover, Council, following its recent Retreat, is minded to undertake a fuller review of the By-Laws over the coming year. l cid me ret sta pla sta

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LMS Newsletter

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Charity registration number: 252660.

In those circumstances, it has been decided to withdraw the proposed amendments for the immediate future, and to return the Durham meeting to its original status.

The Mary Cartwright Meeting will take place as originally scheduled, without the status of a Special General Meeting.

> Ivor Goddard Executive Secretary

HOME OFFICE CHIEF SCIENTIFIC ADVISER

Professor Bernard Silverman, FRS, has been appointed the new Chief Scientific Adviser to the Home Office. He will replace Professor Paul Wiles who is leaving Government service after holding the post for over ten years. Professor Silverman will stand down as President of the Royal Statistical Society.

LONDON MATHEMATICAL SOCIETY MARY CARTWRIGHT MEETING

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Friday 26 February 2010

Arthur Holmes Lecture Theatre, University of Durham

3.30 Opening of the Meeting

Ana Achúcarro (Leiden) Maths in the sky: the secret life of cosmic strings

- 4.30 Tea
- 5.00 Mary Cartwright Lecture

Ruth Gregory (Durham) Fun with extra dimensions

A dinner will be held after the meeting at the Lakeside Dining Room (Van Mildert College) at a cost of £25 per person, inclusive of wine. Contact Isabelle Robinson (isabelle.robinson@lms.ac.uk) by **19 February** 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 (womeninmaths@lms.ac.uk) for further information.

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NEWSLETTER

MATHEMATICS POLICY ROUND-UP

Social Sciences lacking mathematics teaching

The Times Higher Education (THE) reported research which shows that UK social sciences are at risk of losing their international reputation by failing to teach quantitative research methods adequately. The research was carried out by John Macinnes, professor of sociology at the University of Edinburgh, and a strategic adviser to the Economic and Social Research Council, who conducted the study. He said "The ability to digest and interpret quantitative evidence and apply quantitative-based reasoning to issues is a key skill. We don't just need more science and maths graduates who can do this - graduates from other disciplines are also required." The THE reported "A draft copy of Professor Macinnes' report to the ESRC, Proposals to Support and Improve the Teaching of Quantitative Research Methods at Undergraduate Level in the UK, describes the country's 'fragile' teaching base. The situation was better in psychology, economics and on some geography courses. However, in many departments, the teaching of quantitative methods is dependent on just a few staff members, and they are heavily involved in research. On average, students receive about 12 hours of teaching in guantitative methods across a three-year degree, and one third to a half of this teaching takes place in large classes. Less than one in ten student projects has a significant quantitative element."

General Election planning

The Campaign for Science and Engineering in the UK has been planning its activities in the run up to the 2010 General Election. These include: a debate between the three main parties' science spokespersons Lord Drayson (Labour), Adam Afriyie MP (Conservative) and Dr Evan Harris MP (Liberal Democrat) held in January, as well as writing to the party leaders at the start of 2010 to ask them to develop and communicate clear policies on science and engineering in the run up to the election, and identifying prospective parliamentary candidates with a science or engineering background or interest. CaSE has devised four challenges for the party leaders:

- to educate the next generation in science, engineering and mathematics
- to develop the UK's competitive strength in science and engineering research and development
- to enable science and engineering to create economic opportunities and respond to societal challenges.
- to put science and engineering at the heart of government

CaSE invites contributions to a blog which it is running at http://blog.sciencecampaign.org.uk. Caroline Davis

Mathematics Promotion Officer

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INTERNATIONAL CONGRESS OF MATHEMATICIANS 2010 LMS travel grants

The London Mathematical Society has set aside funds to be used for making grants to support the attendance of UK-based mathematicians at the ICM in Hyderabad from 19 to 27 August 2010 (www.icm2010.org.in). The Society would particularly like to support those mathematicians at an early stage in their career, including postdocs. You do not need to be an LMS member to apply.

Those who are eligible to apply to the Royal Society for an International Travel Grant (www. royalsociety.org/funding) are first expected to do so. Those who are not eligible for a Royal Society grant, or were unsuccessful in obtaining one, can apply to the London Mathematical Society for a grant to contribute to the costs of attending the ICM. Please contact Isabelle Robinson for an application form (isabelle.robinson@Ims.ac.uk, tel. 020 7291 9977) or download one from the LMS website (www.Ims.ac.uk). Applications should be submitted by **19 March 2010** and applicants will be informed of the outcome by mid-April.

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NEWSLETTER

LONDON MATHEMATICAL SOCIETY NORTHERN REGIONAL MEETING

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Wednesday 14 April 2010

Clement Stephenson Lecture Theatre, Agricultural Building, University of Newcastle

- 2.30 Opening of the meeting Michah Sageev (Technion)
- 3.45 Tea/Coffee
- 4.15 Benson Farb (Chicago)
- 6.00 Dinner at a local restaurant

These lectures are aimed at a general mathematical audience. All interested, whether LMS members or not, are most welcome to attend this event.

For further details, to register or to reserve a place at the dinner, email the organiser Professor Sarah Rees (sarah.rees@lms.ac.uk). The cost of the dinner will be approximately £30 including drinks.

The meeting will be preceded by a workshop on *Geometry, Analysis, and Logic of Groups*, from 12 to 14 April. For further details visit www.mas.ncl.ac.uk/~najd2/lmsnorth or contact the organiser.

There are funds available to contribute in part to the expenses of members of the Society or research students to attend the meeting and workshop. Requests for support, including an estimate of expenses, may be addressed to the organiser.

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INTERNATIONAL DIRECTORY OF MATHEMATICS EDUCATORS

Dr Peter Gates at Nottingham University created, and maintained for many years, a very useful International Directory of Mathematics Educators to help mathematics educators keep in touch world wide. The Directory consists of one Main File, containing all individual names in alphabetical order (more than 800 at present), and also 58 files listing individuals country by country. The Directory recently moved to a new home www.DirectoryMathsEd.net where it will be maintained and updated in future by Alan Rogerson.

How do names get on the Directory? In general, names are not solicited or nominated. Every entry is made only by the individual concerned, and on a voluntary basis. The Directory is open in the sense that there are no strict criteria or requirements for entry other than a personal involvement in innovation and/ or research in mathematics education, which could cover other areas in addition to school and university teaching. So it is basically up to each individual to nominate themselves if it is useful for them to know of, and to keep in touch with, others working in mathematics education globally.

We warmly invite people who are not yet on the list to enter, and for those on the list to encourage their colleagues to join us, so the Directory can hopefully expand and serve a wider audience world-wide. Please suggest to your international contacts that they also send in their entries, whether or not their country is represented yet. We can easily add new countries and in fact around a dozen new ones have been added in the past few months.

People who wish to be included in the Directory should send to alan@rogerson.

pol.pl their complete entry in standard format, and I will cut and paste it into the Directory so their entry will be 'owned' by them. The standard format in the Directory consists of the following items, all in one continuous line, separated by commas and spaces: surname or family name, given name(s), email address, postal address(es), telephone number(s) (and URL(s) if you wish). For example: Gates, Peter, peter.gates@ nottingham.ac.uk, Centre for the Study of Mathematics Education, School of Education, University of Nottingham, Jubilee Campus, Nottingham NG8 1BB, UK, tel: (+44) (0) 115 951 4432, fax: (+44) (0) 115 846 6600, web: www.nottingham. ac.uk/education/staff/pgates/htm.

Notice that personal titles are not included, but further personal and professional details, and research interests, can always be included in the webpage at the end of an entry.

We hope all those already on the list will verify that all their details are currently correct and their email addresses and URLs actually work. If not, they should send me their complete and updated entry formatted as above. Quite a few of the entries are fairly old now and some people may well have had several promotions since their entry was added! In the spring of 2010 we are planning a revamp of the whole webpage to make all the formatting consistent and to improve its appearance and functionality. We look forward to many more years of maintaining, expanding and improving the Directory and we hope it serves a useful purpose for the community of mathematics educators.

Dr Alan Rogerson, International Coordinator Mathematics Education into the 21st Century Project

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NEWSLETTER

Cecil King Travel Scholarship



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 19 February 2010. 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.

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VISIT OF PROFESSOR A. MARCUS

Professor Andrei Marcus (Babeş-Bolyai University, Romania) will be visiting the UK from 25 April to 8 May 2010. His principal research area is modular representation theory, especially in respect to derived categories and to Clifford theory. Professor Marcus will give talks at:

- Oxford Algebra Seminar, Tuesday 27 April; visiting 25–27 April, contact Raphaël Rouquier (rouquier@maths.ox.ac.uk)
- London Algebra Colloquium, Thursday 29 April; visiting City University 27–30 April,

contact Joe Chuang (j.chuang@city.ac.uk)

- Manchester Algebra Seminar, Tuesday
 4 May; visiting 30 April–5 May, contact
 Charles Eaton (charles.eaton@manchester. ac.uk)
- Aberdeen Algebra Seminar, Thursday 6 May; visiting 5–8 May, contact Radha Kessar (r.kessar@abdn.ac.uk)

For further information contact Charles Eaton (charles.eaton@manchester.ac.uk). This visit is supported by an LMS Scheme 2 grant.

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VISIT OF PROFESSOR M. SHRIKHANDE

Professor Mohan Shrikhande (Central Michigan University) is visiting the Institute of Mathematics and Physics, Aberystwyth University, from 20 January to 2 March 2010. Professor Shrikhande's main research interests are in Codes and Designs. During his visit he will give talks at:

- Aberystwyth, 11 February at 3 pm, contact Vassili Mavron (vcm@aber.ac.uk)
- Royal Holloway, 18 February, contact Peter Wild (P.Wild@rhul.ac.uk)
- Queen Mary, 19 February, contact Peter Cameron (p.j.cameron@qmul.ac.uk) For further information contact Vassili Mavron (vcm@aber.ac.uk) or Tom McDonough (tpd@aber.ac.uk). This visit is supported by an LMS Scheme 2 grant.

HARMONIC ANALYSIS AND PDE WORKSHOP

A one-day workshop on *Harmonic Analysis* and *PDE* will be held at the University of Glasgow on Tuesday 23 February 2010. The speakers will be:

- Véronique Fischer (SNS, Pisa)
- Anna Kirpichnikova (Glasgow)
- Detlef Müller (Kiel)
- Brett Wick (Georgia Tech)

The organisers are Neal Bez, Spyros Dendrinos and Sandra Pott. Limited support is available for young researchers. For further information contact Neal Bez (n.bez@maths.gla.ac.uk) or visit the website at www.maths.gla.ac.uk/~nbez/ Workshop.html. The workshop is funded in part by an LMS Scheme 3 grant and the Glasgow Mathematical Journal Trust.



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NEWSLETTER

THE SECRET MATHEMATICIANS

Professor Marcus du Sautoy (University of Oxford) will give The Royal Society Michael Faraday Prize Lecture on *The Secret Mathematicians* at 5.30 pm on 10 February 2010 at The Royal Society, London.

Abstract. Artists are constantly on the hunt for interesting new structures to frame their creative process. From composers to painters, writers to choreographers, the mathematician's palette of shapes, patterns and numbers has proved a powerful inspiration. Often subconsciously artists are drawn to the same structures that fascinate mathematicians. Through the work of artists like Borges and Dali, Messiaen and Laban, Professor du Sautoy will explore the hidden mathematical ideas that underpin their creative output but will also reveal that the work of the mathematician is sometimes no less driven by strong aesthetic values.

Admission is free - no ticket or advanced

booking required. Doors open at 4.45 pm and seats will be allocated on a first-come firstserved basis. This lecture will be webcast live at royalsociety.org/live.

CLIMATE MODELLING AND PREDICTION

The Isaac Newton Institute for Mathematical Sciences in Cambridge is hosting a residential research programme entitled *Mathematical and Statistical Approaches to Climate Modelling and Prediction* from 11 August to 22 December 2010. The programme aims to bring together mathematicians, statisticians and climate scientists to make progress towards solving some of the major issues currently facing climate prediction. Specific themes are the development of (a) improved sub-grid-scale physics models (b) a theoretically sound basis for probabilistic climate prediction. More detail, along with a list of invited participants who have confirmed their intention to attend, may be found at www.



newton.ac.uk/programmes/ CLP/index.html.

The organisers invite participation from anybody with relevant expertise. Participants will be expected to stay in Cambridge for a substantial period of time (usually at least a month in total), and to work constructively in a multidisciplinary environment. The Newton Institute can provide assistance with finding accommodation, as well as some financial support to cover living and travel expenses. However, financial resources are limited; participants are therefore asked to try to find at least partial support from elsewhere.

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ces nts try upTo express an interest in participating email Professor John Huthnance (jmh@pol.ac.uk) indicating briefly the relevance of your particular expertise to the programme objectives and attaching a CV of most two pages, including:

- the period(s) during which you would be available to stay in Cambridge
- the level of funding you would need, e.g. no funding needed, full funding required, some assistance with accommodation costs
- any further requirements that would be necessary for your stay, e.g. accommodation for accompanying persons

Due to financial and space constraints, it may not be possible to accommodate all requests to participate. However, a series of workshops will be held as part of the programme (see www. newton.ac.uk/programmes/CLP/ws.html). These workshops will be open to all, subject to limitations of space. Applicants will be notified of the outcome of their application as soon as possible.

To receive updates about the programme and associated workshops, join the mailing list at www.newton.ac.uk/programmes/CLP/ MailingList.html.

UK GRADUATE MODELLING CAMP

The Oxford Centre for Collaborative Applied Mathematics (OCCAM) is hosting the 2nd UK Graduate Modelling Camp which will take place from 6 to 9 April 2010 in Oxford. The Graduate Modelling Camp is a four-day workshop that aims to give participants hands-on experience of mathematical modelling under guidance of an experienced instructor. The Camp has been designed to promote a broad range of problem-solving skills, including mathematical modelling and analysis, scientific computation and critical assessment of solutions. Problems will be brought to the Camp by the following instructors:

- Maria Agualeres (U. de Girona, Spain)
- Dr Sean Bohun (UOIT, Canada)

- Magnus Fontes (Lund, Sweden)
- Colin Please (Southampton)
- Rebecca Shipley (Oxford)
- Tom Witelski (Duke, USA)

Please note:

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- there is no registration fee
- accommodation and meals during the camp will be provided for those coming from outside Oxford
- · reasonable travel costs may be reimbursed
- applicants must attend for the entire duration
- applicants will be expected to attend the 73rd European Study Group with Industry (ESGI) which will be held at the University of Warwick 12 to16 April 2010
- preference will be given to candidates who have not attended a modelling camp before

Full details, and the registration form, can be found at www.maths.ox.ac.uk/groups/ occam/forthcoming-events/occam-graduatemodelling-camp-2010.

HIGHLY OSCILLATORY PROBLEMS

A conference on *Highly Oscillatory Problems: From Theory to Applications* will take place from 12 to 17 September 2010 at the Isaac Newton Institute, Cambridge. The application form and programme are available from www.esf.org/conferences/10340. Applications received up until 2 April 2010 will be considered for grants. The deadline for all applications is **12 June 2010**.

The conference is chaired by Arieh Iserles (Cambridge University) and co-chaired by Claude Le Bris (ENPC, Champs-sur-Marne). This conference is organised by the European Science Foundation in partnership with the European Mathematical Society, the European Research Centres on Mathematics and the Isaac Newton Institute. The conference is part of the 2010 ESF Research Conferences Programme.

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NEWSLETTER

GEOMETRIC MODEL THEORY

A conference on *Geometric Model Theory* will be held at Lady Margaret Hall, Oxford, from 25 to 28 March 2010, in honour of the 60th birthday of Boris Zilber.

The long tradition of unfolding axioms for various kinds of geometry – Euclid, Descartes, non-Euclidean geometries, Tarski – had a highly influential revival in the development of the branch of model theory now known as geometric stability theory, by Zilber, Cherlin, Hrushovski, Pillay and others over the past 25 years. Stunning connections to arithmetic geometry, transcendental number theory, and even quantum mechanics have been found. The object of the conference is to bring together the key figures as well as young researchers in this booming branch of model theory, to present and discuss the latest developments in the field.

Thursday 25 March will be an introductory day, with the talks aimed mainly at graduate students. The conference proper runs from Friday to Sunday. The invited speakers are:

- John Baldwin (University of Illinois at Chicago)
- Martin Bays (University of Oxford)
- Oleg Belegradek (İstanbul Bilgi University)
- Elisabeth Bouscaren (Université Paris-Sud 11, Orsay)
- Zoe Chatzidakis (Université Paris 7)
- Gregory Cherlin (Rutgers University)
- David Evans (University of East Anglia)
- Mikhail Gavrilovich (St Petersburg)
- Assaf Hasson (Ben Gurion University)
- Ehud Hrushovski (Hebrew University)
- Piotr Kowalski (Wrocław University)
- Angus Macintyre (Queen Mary, University of London)
- Dugald Macpherson (University of Leeds)
- David Marker (University of Illinois at Chicago)
- Anand Pillay (University of Leeds)
- Bruno Poizat (Université Claude Bernard Lyon 1)

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- Vladimir Tolstykh (Yeditepe University)
- Alex Wilkie (University of Manchester)
- Boris Zilber (University of Oxford)

More information including registration details can be found on the conference website at www.maths.ox.ac.uk/node/11249. The conference is supported by the LMS, the British Logic Colloquium and the European network MALOA.

THE PARIS-LONDON ANALYSIS SEMINAR

A group of analysts working in London and Paris are organizing joint seminars, supported by an LMS Scheme 3 grant. These newly created *Paris–London Analysis Seminars* will meet four times a year: June in Paris, October in London, December in Paris, March in London, for a one-day seminar of four talks. The next session of the meeting will be held on Friday 19 March 2010 at Queen Mary, University of London. For further information visit the website at http://people.math.jussieu.fr/ ~lerner/index.plans.html.

ALGEBRAIC METHODS IN DYNAMICAL SYSTEMS

A conference on Algebraic Methods in Dynamical Systems will take place from 16 to 22 May 2010 at the Institute of Mathematics Conference Centre, Będlewo Poland. The application form and programme are available from www.esf.org/conferences/10320. The closing date for applications is **21 February 2010**.

The conference is chaired by Zbigniew Hajto (Jagiellonian University, Theoretical Computer Science, Poland) and Teresa Crespo (Universitat de Barcelona, Spain). This conference is organised by the European Science Foundation in partnership with the European Mathematical Society and the European Research Centres on Mathematics. The conference is part of the 2010 ESF Research Conferences Programme. ۲

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NEWSLETTER

RECORDS OF PROCEEDINGS AT MEETINGS

ANNUAL GENERAL MEETING

held on *Friday 20 November 2009* at The Institute of Education, London. About 120 members and visitors were present for all or part of the meeting.

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The meeting began at 3.00 pm, with the President, Sir John BALL, FRS, in the Chair. Members who had not yet voted were invited to hand their ballot papers to the Scrutineers, Professor P.T. Saunders and Professor R.A. Bailey.

The Treasurer, Professor W.B. Stewart, presented his report on the Society's finances during the 2008/09 financial year.

Messrs Kingston Smith were re-appointed as auditors for 2009/10.

Copies of the *Trustees' Report* for 2008/09 were made available and the President invited questions.

14 people were elected to Ordinary Membership: R. Bielawski, T.C. Burness, P.R. Crompton, F. Dragoni, A.N. Fletcher, J. Funke, E.H. Georgoulis, V. Lucarini, S.J.A. Malham, P.D. Mitchener, J.H. Tanner. H. Touchette, A. Vdovina, T. Wagenknecht; 11 were elected to Associate Membership: A. Abogatma, S. Abumaryam, N. Barker, G.E. Bellamy, M. Bugatma, H. Ghlaio, A. Holmstrom, A Kheniene, S-L.A. Lee, M.D.A. Malique, L. Matthiesen; and six were elected as Ordinary Members through reciprocal membership of an overseas mathematical society: S.C. Gupta, H. Kamarulhaili, A.C. Lewis, H. Lucas, D.E. McClure, M. Salman. Seven members signed the book and were admitted to the Society.

The President, on Council's behalf, presented certificates to the 2009 Society Prizewinners – Pólya Prize: Professor Roger Heath-Brown, FRS; Senior Whitehead Prize: Professor Vladimir Maz'ya, FRSE; Naylor Prize and Lectureship in Applied Mathematics: Professor Philip Maini; Berwick Prize: Professor Joseph Chuang and Dr Radha Kessar; Whitehead Prizes: Dr Cornelia Druţu, Professor Robert Marsh and Dr Markus Owen (Dr Mihalis Dafermos was unable to attend).

Professor Roger Heath-Brown (Pólya prize winner) gave a lecture on *The most* important problem in mathematics (?).

After tea, Professor Saunders announced the results of the ballot. The following Officers and Members of the Council were elected. President: A.J. Macintyre; Vice-Presidents: K.A. Brown, J.P.C. Greenlees; Treasurer: W.B. Stewart; General Secretary: J.M.E. Hyland; Publications Secretary: J.D.S. Jones; Programme Secretary: S.A. Huggett; Education Secretary: C.J. Budd; Members-at-Large of Council (for two years except where stated): J.E. Barrow-Green, S.N. Chandler-Wilde (one-year term); S.K. Donaldson,

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A. Laptev, G.B. Segal, B.J. Totaro, R.A. Wilson. Five Members-at-Large who were elected for two years in 2008 have a year left to serve: A.V. Borovik, D.E. Buck, H.G. Dales, U. Tillmann and A.J. Wilkie. The following were elected to the Nominating Committee: A. Etheridge, M.W. Liebeck.

The newly-elected President, Professor A.J. MACINTYRE, FRS FRSE, took the Chair.

Three talks then followed: Professor Leif Abrahamsson spoke on Support for mathematics in developing countries; Professor Rosemary Bailey spoke on Teaching mathematics: satnav or map; and finally Professor Ken Brown spoke on The Research Excellence Framework and issues arising from it.

After the meeting, a reception was held at De Morgan House, followed by the Annual Dinner, which was held at the Park Inn Hotel and attended by 91 people.

LMS ANNUAL GENERAL MEETING

20 November 2009

The Annual General Meeting of the Society this year took a non-standard format, reflecting these non-standard times for the Society itself. The Interim President Sir John Ball opened the proceedings with the customary invitation to those members who had not yet voted in the Elections to Council to bring forward their ballot papers at this last minute. The Scrutineers then departed behind the scenes to Scrutinise, while the meeting continued.

The Treasurer reported that the Society's investments had naturally lost value in the current global economic downturn but that we remained nevertheless in reasonably good shape. The Auditors for 2009/10 were duly appointed by acclamation (has anybody ever objected?), and a list of nominations for election to membership was likewise approved. Then came the usual and only piece of theatre to enliven regular LMS business meetings, namely the formal admission to the Society by the President of those members having paid a subscription but not yet having been admitted. This is the opportunity to sign the Book – not the celestial volume conjectured by Erdös to contain the most perfect proofs of key theorems, but the LMS *Membership Book* containing the signatures of Felix Klein, Henri Poincaré, David Hilbert and many other celebrities. On behalf of the London Mathematical Society the President then admitted each signatory as a member thereof. After announcing the next meeting (Durham, 26 February) he concluded the formal AGM by awarding certificates to the 2009 LMS prizewinners (see photograph on the next page).

The non-business part of the meeting then began with a talk by Roger Heath-Brown (Oxford) entitled The most important problem in mathematics (?). The talks scheduled for the afternoon generally addressed questions of support for mathematics research and teaching, so what could the speaker have in mind here? Increasing the gualifications of mathematics teachers? Convincing Government to support pure research? Raising public awareness of mathematics? It turned out after all to be precisely as advertised: a description of the most important mathematics problem, possibly. The story went something like this. The only important mathematical problems are clearly those which are neither (a) easy nor (b) impossible. Mathematics is about giving

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proofs. Finding a proof of a particular statement is known (by work of Matijasevich, Davis, Putnam and Robinson) to be equivalent to finding a solution of a corresponding Diophantine equation. We know how to solve linear and quadratic Diophantine equations; but we also know that there is no algorithm for solving those of degree 4 or higher. *Ergo* the most important problem is: the solution of cubic Diophantine equations. The talk was beautifully delivered in a well-paced, understated style, and imparted a good feeling of new and clear mathematical insight to many in the audience as we moved off to queue for tea and biscuits.

After tea came the next piece of drama: the announcement of the election results, reported in the January *News/etter*. It was gratifying to see that the effort to cast the net wide had resulted in the election of some candidates nominated by members, complementing those put forward by Nominating Committee. The Interim President then ceremoniously transferred the Presidential Badge of office to the new President, Angus Macintyre, who took charge of the second part of the meeting.

This section of proceedings consisted of three talks on mathematics-related questions. First, Leif Abrahamsson, Director of the Mathematics Programme of the International Science Programme (ISP) at Uppsala University (see www.isp.uu.se/IPMS.html) deluged us with acronyms (and not all of their translations) representing the many international channels of support for mathematics in developing countries. There is certainly plenty of funded support of various kinds available,



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R. Marsh, J. Chuang, C. Druţu, J. Ball, M. Owen, P. Maini, R. Kessar, R. Heath-Brown, V. Mazy'a The LMS President John Ball with the Prizewinners of 2009 (Absent: M. Dafermos)

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often for groups and networks rather than for individuals. UK mathematicians interested to widen their international horizons are encouraged to explore some of these initiatives.

Next, Rosemary Bailey warned us of the perils of the soundbite, her observation in June that current mathematics teaching in schools and universities is more like a satnav (a process for automatically getting you there) than a map (a guide which allows you to devise your own strategy and observe the country you pass through) having been seized upon by the press: try googling Bailey satnav. Through several disheartening examples, of the kind with which many lecturers will be all too familiar, she showed how students nowadays expect to be told the procedure for answering a question rather than try to understand the setting and devise a strategy. It is not their fault: it is how they are taught.

Finally, Ken Brown discussed the increasingly worrying issue of impact in mathematical research: what it means, and how the Government and Research Councils might be persuaded that it cannot be measured in terms of immediate economic benefit. The Council for Mathematical Sciences and other bodies are doing their best to modify the inappropriate demands of the forthcoming Research Excellence Framework, but with no Government Ministry now including Education in its name the prospects for pure mathematics do not look good.

So: an unusual AGM with plenty of food for thought about mathematics and its place in the world, as well as a new President, General Secretary, Treasurer and other Officers and Council Members. Let us hope the LMS can leave behind the difficulties of 2009 and (to parody Churchill) move forward into broad, sunlit uplands of 2010 – which, as LMS members will no doubt have grasped by now, is a 21-gonal number.

> David Chillingworth University of Southampton

REVIEWS

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Famous Puzzles of Great Mathematicians by Miodrag S. Petković, 2009, American Mathematical Society, 325 pp, £25.95, ISBN 978-0-8218-4814-2.

The author has published several collections of problems and puzzles in his native Serbian, and presents this compendium with considerable authority. After a brief account of the place of recreational mathematics in the subject's general development, nine chapters each offer a range of problems, most of them with solutions, under general headings such as Arithmetics, Combinatorics, Geometry. One chapter describes 'mathschess' problems, such as counting Knight's tours, or placing eight Queens on a board, none of which attack another. The final chapter contains a miscellaneous assortment of puzzles, then four appendices outline special topics, and the book ends with potted biographies of some sixty mathematicians, and almost 200 references.

Most of the puzzles are, of course, well known, but the presentation here adds historical interest, and offers less familiar variations. While Alcuin of York wrestled with transporting a wolf, a goat and a cabbage across a river, his Liberian counterpart had a leopard, a fowl and some rice for company. The neat proof that a chessboard, from which two squares in opposite corners have been removed, cannot be covered using dominoes each the size of two squares sits adjacent to the question: can we cover a 10 by 10 chessboard with L-shaped pieces, each the size of four squares? (No: and the proof is even more elegant.)

The diagrams, pictures and photographs enhance this book. And although the majority of the material has its source in western Europe, the contributions originating from India, China, Japan and the Arabic lands remind us of the wide appeal of puzzles whose solutions may involve subtle but enlightening

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arguments. In depth or difficulty, the topics range from the straightforward to the highly ingenious, including mention of the Hales-

Ferguson proof of Kepler's conjecture on packing spheres, and Rado's problem of whether a man can evade an equally fast lion within a circular arena.

Due homage is paid to Maurice Kraitchik, Martin Gardner and the Journal of Recreational Mathematics for their places in promoting this field. This is a very readable collection, frequently with a suitable gap between problem and solution to tempt the reader into making his or her own attempt. A

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mathematically curious student could dip into almost every page, and find some fascinating titbit to fasten on to immediately.

> John Haigh University of Sussex

The Strangest Man: The Hidden Life of Paul Dirac, Quantum Genius by Graham Farmelo, Faber & Faber, 2009, 539 pp, £22.50, ISBN 978-0-5712-2278-0 (hb); £9.99, ISBN 978-0-5712-2286-5 (pb).

Mathematicians and physicists are reqularly caricatured in the popular press as other-worldly, absent-minded people, who live strangely detached from the lives of the 'common man'. Of course, in some cases there are indeed eccentricities of character, or a certain carelessness about popular convention. One thinks of C.P. Snow's remark (in his Forward to A Mathematician's Apology) about G.H. Hardy: 'Underneath his shyness, he just didn't give a damn.' However, the reading of a few biographies - for example of J.J. Thomson, Lord Kelvin, Max Planck, Erwin Schrödinger or Niels Bohr - will prove the popular assertion false. Most scientists are guite normal, and have no more than their fair share of the foibles common to

high achievers in other walks of life. But occasionally there comes a scientist or mathematician who in lives up to the caricature,

and Paul Adrian Maurice Dirac was such a man.

The title of Graham Farmelo's biography of Paul Dirac (1902–1984) is a quote from Niels Bohr who said that of all the people who had visited his institute in Copenhagen, Dirac was 'the strangest man' (p. 120). It would be hard to come to the end of Farmelo's biography and not agree with Bohr's assessment.

The book opens with a remarkable prologue – telling

of a rare moment, in 1980, when Dirac 'opened up' and spoke about his childhood to Kurt Hofer, a colleague from Florida State University - the institution to which Dirac effectively retired after his time in Cambridge. Dirac told Hofer of a house dominated by a father who insisted that his children speak to him only in his native French. Dirac would sit petrified and silent at the dinner table. His delicate digestion, and a father who refused to let the young Paul leave the table if he made a linguistic error, resulted in him staying at the table and vomiting where he sat. This horrifying picture was not an isolated incident: it happened, repeatedly, for years, and it is an example of the motif of tragedy which occurred repeatedly throughout Dirac's life. Thus, in the 1920s Dirac's brother committed suicide – probably resulting from a combination of a father who insisted he study engineering rather than fulfil his ambitions in medicine, and of having a brother who outshone him academically by orders of magnitude. At the other end of his life, Dirac's stepdaughter, Judy, in serious need of psychiatric help, disappeared in 1968 and was never seen again. And in the midst of his life was the woman he married in

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ed 968 dst in 1937 – Manci Wigner, who after pursuing her quarry of a husband became increasingly imperious and volatile in later life.

The above are aspects of the tragedy of Paul Dirac's life, but there were also many brighter moments: He maintained a close friendship with Peter Kapitza. He enjoyed many contented trips, mixing academic work with relaxation, to North America, Europe and Russia. And of course Farmelo gives the reader a wealth of 'Dirac stories'. which show that his famous terseness of expression and literal mindedness could be highly amusing. It is hard to resist telling one such story: After Dirac has given a lecture at an American university the chairman asks if there are any guestions for their important quest. Someone in the lecture theatre says 'I don't understand the equation on the topright hand corner of the blackboard.' Dirac, looking blankly, says nothing. Members of the audience shuffle nervously as the moments tick by in silence. Finally the chairman asks Dirac if he is not going to reply, and Dirac responds 'That was not a question, it

was a comment.' Farmelo takes stories such as this along with other pieces of evidence from Dirac's life, and in a chapter entitled On Dirac's Brain and Persona confronts head on the question of whether Dirac was autistic. He marshals his evidence and concludes that Dirac was indeed autistic and, perhaps controversially, that his autism was 'crucial to his success as a theoretical physicist' (p. 425).

This remark brings us to Dirac's science. Of course he is most famously remembered

for the Dirac equation and the prediction of antimatter – a prediction which he initially botched, believing that the positively charged 'holes' predicted by his equation were protons, not electrons of positive charge. Next perhaps would be the Dirac delta function, which alas is one of the many misappropriations of the history of science – the pragmatic Fourier, not Dirac, is probably the first inventor. One surprise, at least to me, was Dirac's suggestion in the 1950s of the potential usefulness of a string theory of elementary particles. His ideas remained undeveloped, and they are different from those of contemporary string theorists, but it gives an example of the fecundity of a truly first-class mind. Dirac 'had a fundamentalist belief in beauty' (p. 380) as a guide to mathematical physics. This was a faith which worked spectacularly well in his melding of special relativity and quantum mechanics to produce the Dirac equation in 1927, but in later life it led to his rejection of guantum electrodynamics. It would be a mistake to say that Dirac's (or, for that matter. Einstein's) quest for mathematical beauty led him astray in the second part of his life. Rather it is better to observe, somewhat prosaically, that first-rate physics

and mathematics are fast games, and world-class work is usually done earlier, rather than later, in life. It is perhaps with Farmelo's treatment of Dirac's science that the mathematical reader will be a little disappointed. I counted only two equations in the whole book. I of course appreciate the publisher's rule of thumb that that book sales vary as $S = S_0 2^{-N}$, where N is the number of equations in the manuscript. Indeed I realize that writing down this single equation has perhaps halved my audience!

However, it is difficult not to be a little disappointed that some more of Dirac's mathematical beauty could not at least have made it into appendices or endnotes.

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The issue of equations aside, the question remains: Is this a worthy biography of Dirac? Yes, it certainly is. Farmelo deftly weaves together Dirac's personal life and scientific work with the work and personalities of the pantheon of physicists who were his contemporaries. He has created a highly readable narrative which retains scholarly weight. It is an excellent read, and I recommend it wholeheartedly to anyone with an interest in Dirac or the history of quantum mechanics.

It was announced on 4 January 2010 that The Strangest Man: The Hidden Life of Paul Dirac, Quantum Genius has won the Costa Book Award for Biography, 2009. The judges described it as 'the most compelling biography of the year'.

> Mark McCartney University of Ulster

THE AFTERNOON PLAY 'One in a million' by Peter Kesterton BBC Radio 4, 9 December 2009

One in a million is, according to the police in this play, the probability of a match between two random DNA samples. This convinces them that Jonathan, the play's protagonist, is guilty of assaulting a woman when his DNA, taken after an earlier drink-driving offence, matches that of her assailant. This illustrates the 'prosecutor's fallacy', that the probability of his innocence is therefore also one in a million. However, Jonathan teaches statistics, and uses his knowledge to chip away at the police arguments, pointing out that the UK must contain about 60 people with DNA matching the assailant's. He tells the police to study Bayes' Theorem, explaining that the relevant probability is the conditional probability of his guilt, given that his DNA matches the sample; the police are less than convinced.

After about 30 minutes in which probability theory seems to be gradually rescuing our protagonist, the author suddenly takes pity on the 99.9% of his audience who (probably) neither know nor care about the Rev. Thomas Bayes and his theorem: Jonathan suddenly confesses, only to have his confession demolished by a clever piece of detective work (noticing that a Chinese takeaway receipt indicates a meal for three, rather than two). Jonathan has been covering up all along for his dissolute younger brother, whose DNA the police unknowingly have.

The play is punctuated with brief soundbites from a lecture on forensic statistics, giving examples of the misuse of probabilities. Some of these are amusing, such as the centenarian who claims he no longer fears dying since most deaths involve younger people. Others are tragic, such as the case of Sally Clark, a solicitor convicted of murdering her children after flawed evidence on the probability of two cot-deaths in one family; the Royal Statistical Society challenged the prosecution case, Ray Hill wrote a paper [1] demolishing its arguments, and her conviction was eventually overturned. However, her life was ruined, and she died of acute alcohol intoxication a few years later.

This play is typical of the Radio 4 Afternoon Play in adequately relieving the boredom of 45 minutes driving or ironing, and it is certainly unusual in quoting (if neither precisely stating nor proving) a mathematical theorem. However it rather ducks an important issue by resorting to dramatic devices to resolve the plot. There is room here for a more challenging and emotionally engaging play or docudrama, perhaps for TV, on the serious consequences of statistical ignorance within the legal system and the public at large.

> Gareth Jones University of Southampton

Reference

1. R. Hill. 'Multiple sudden deaths – coincidence or beyond coincidence?', *Paediatric and Perinatal Epidemiology* 18 (2004), 320–326; www.cse.salford. ac.uk/staff/RHill/ppe_5601.pdf

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CALENDAR OF EVENTS

This calendar lists Society meetings and other events publicised in the *Newsletter*. Further information can 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).

FEBRUARY 2010

6 Undergraduate Mathematics Conference, London (387)

9 *Trains and Boats and Planes*, Gresham College Public Lecture, Museum of London (384)

10 The Secret Mathematicians, Michael

Faraday Prize Lecture, Royal Society, London (389)

23 Harmonic Analysis and PDE Workshop, Glasgow (389)

25-28 EUROMATH 2010 Student Conference, Bad Goisern, Austria (386)

26 LMS Mary Cartwright Lecture, Durham (389)

MARCH 2010

3-5 Mixture Estimation and Applications
ICMS Workshop, Edinburgh (386)
9 Maths and Sport, Gresham College Public Lecture, Museum of London (384)
19 Paris–London Analysis Seminar, London

(389) 22-26 Stochastic Networks Workshop, INI,

Cambridge (386)

25-28 Geometric Model Theory Conference, Oxford (389)

APRIL 2010

6-9 BMC/BAMC 2010, Edinburgh (387) 6-9 BCME7, Manchester (385) 6-9 Spatial Network Models for WirelessCommunications, INI, Cambridge (386)6-9 UK Graduate Modelling Camp, Oxford (389)

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12-14 Geometry, Analysis, and Logic of Groups Workshop, Newcastle (389) 12-14 Stochastics, Control and Finance Workshop, Imperial College London (387) 14 LMS Northern Regional Meeting, Newcastle (389)

14 Lecture Day, Durham (388)

19-21 Mathematical Neuroscience Conference, ICMS, Edinburgh (386)

MAY 2010

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4 Indra's Pearls: Geometry and Symmetry, LMS–Gresham College Lecture, London (389)

10-14 Numerical Solution of the Painlevé Equations ICMS Workshop, Edinburgh (386)

16-22 Algebraic Methods in Dynamical
Systems Conference, Będlewo, Poland (389)
24-28 Uncertainty Quantification ICMS
Workshop, Edinburgh (386)

JUNE 2010

7-11 Functional Analysis Meeting, Valencia, Spain (388)

14-18 Hodge-theoretic Reflections on the String Landscape ICMS Workshop, Edinburgh (386)

20-22 Geometry and Topology Conference, Durham (388)

21 LMS South-West and South Wales Regional Meeting, Cardiff

22-25 Group Representation Theory and Related Topics Conference, Lausanne, Switzerland (386)

22-25 Mathematical Challenges and Modelling of Hydroelasticity ICMS Workshop, Edinburgh (386)

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JULY 2010

2 LMS Meeting, Hardy Lecture, London

5-9 Symplectic Geometry and Transformation Groups ICMS Workshop, Edinburgh (386) 12-13 Reconstructing and Understanding Climate Change over the Last Few Millennia and the Holocene ICMS Workshop, Edinburgh (386)

19-20 Mathematics and the Arts, Paris, France (388)

AUGUST 2010

17-18 International Conference of Women Mathematicians 2010, Hyderabad, India (386)

19-27 International Congress of Mathematicians 2010, Hyderabad, India (386)

SEPTEMBER 2010

6-10 Multivariate Approximation and Interpolation with Applications ICMS Workshop, Edinburgh (386)
12-17 Highly Oscillatory Problems: From Theory to Applications, INI, Cambridge (389)
13 LMS Midlands Regional Meeting, Nottingham

NOVEMBER 2010

19 LMS Annual General Meeting, Naylor Lecture, London

DECEMBER 2010

6-10 Australian Statistical Conference 2010, Fremantle, Australia (383)

JULY 2011

18-22 ICIAM 2011, Vancouver, Canada (388)
 25-29 Oscillatory Integrals in Harmonic
 Analysis ICMS Workshop, Edinburgh (386)

Doctoral College 'Discrete Mathematics' in Graz, Austria

The newly founded Doctoral College in Discrete Mathematics (understood in a very broad sense) offers a competitive research environment and English language PhD program which is run jointly by three local universities. We offer 10 PhD positions from October 2010. Applications are accepted until all positions are filled, but priority is given to those received by **19 April 2010**. Please visit http://www.math.tugraz.at/ discrete/ for details. Prior enquiries are welcome: discrete@tugraz.at.

ADVERTISING IN THE LMS NEWSLETTER

The LMS *Newsletter* is circulated to its 2,500 members (1,650 UK, 350 Europe, 500 rest of the world). The advertising prices are:

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Centre fold	£824	£644
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A discount is offered for six bookings or more (within a one year period). There is no agency commission. Please note the LMS does not sell or rent the mailing list. For further information contact Susan Oakes (susan.oakes@ Ims.ac.uk).

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C.J. MONRO LMS member 1871–1882



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Cecil James Monro, MA Fellow of Trinity College, Cambridge

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