THE LONDON MATHEMATICAL SOCIETY

NEWSLETTER No. 318 September 2003

Forthcoming Society Meetings

2003

Friday 24 October
Southampton
South West and South Wales Regional Meeting
Nonlinear Dynamics

Friday 21 November
London
L.C.G. Rogers,
M.H.A. Davis (Naylor Lecture)

2004

Friday 20 February
London
D. Schleicher,
S.M. Rees (Mary Cartwright Lecture)

COUNCIL DIARY 20 June 2003

Ursula Martin was present at the June Council meeting to report on the work of the Computer Science Committee, which she chairs. The committee is focusing on three initiatives. As MathFIT draws to an end, the question of succession is a natural one, and is under discussion. A meeting of past grantholders, planned for the Autumn, will allow consultation. Following the success of the e-Science meeting held at De Morgan House in March, a proposal for a mathematics programme scheme for e-Science similar to, but on a smaller scale than, MathFIT is also being debated. And Robert Leese's seminar at De Morgan House on the work of the Smith Institute, highlighting useful opportunities for collaboration with the industrial and commercial sectors, has raised some interesting questions on ways in which the Society might contribute.

Miles Reid initiated discussion on the recruitment and distribution of PhD students to UK mathematics departments. He asked if the LMS should consider helping with this. It was widely recognised that it was in students' best interests to move on from their first degree institutions for post-graduate study. Could the LMS establish a forum providing advice on PhD study? It was suggested that this might be a function of the planned Mathematics Promotion Unit, and that the Society might well play a coordinating role, and establish a web page.

The Treasurer reported on the meeting of the Finance Committee two weeks earlier. For the first time the specialist advisors had been present, who had agreed to supplement Finance Committee and join an Investment Advisory Committee. They had provided very valuable input to a broad-ranging discussion of the Society's investments and investment policies, and at a meeting with the Society's professional advisors. It was agreed that the Investment Advisory Committee would meet again in September.

The Treasurer presented the budget proposals for 2003/04, which are tougher than they have needed to be in the past, due in part to the poor performance of investments. We are lucky that publications income remains healthy, but it would be unwise to rely too heavily on this. The Administration, Computer Science Committee and Programme Committee have

had to accept lower budgets than were requested; Programme Committee needs to consider seriously ways in which it can tighten up its procedures in order to be more selective. The Treasurer commented that this year's projection figures are definitely pessimistic; the budget is a cautious one. The Society's membership subscription is due to increase to £30, but Council still considered it to be a good deal, considering the services the Society provides for members.

The meeting adjourned early to allow members of Council to attend the Society's very first Fröhlich lecture.

Sarah Rees

NEW LOOK NEWSLETTER

So, here it is: the New Look Newsletter. More attractive, easier to read, better organised, we hope, and of course in colour (which need not remain constant). We aim to widen the scope of material included, with more opinion, polemics, politics, pictures, poems, singing and dancing – well, perhaps that will come later – while maintaining the brief of the *Newsletter* to inform members of current events and news particularly relevant to the UK mathematics community. Let us know your opinions: my address is at the bottom of this page. Naturally we are unable to please everybody, and we apologise to those readers who will miss the handcrafted style of the old *Newsletter* with its sober monochrome and incongruous juxtapositions. As always, we welcome suggestions for articles and reviews, as well as news of conferences and meetings – especially of course those supported by the LMS.

And this isn't all ... the new web version of the *Newsletter* will also appear each month simultaneously with the printed version, complete with relevant links to conference sites, reports and other background documents, such as archives of more photographs of Council members and other mathematicians at various meetings than you (or they) could ever want. There isn't yet a webcam at De Morgan House, but as always the LMS is keen to innovate and is ready to embrace enthusiastically any realistic suggestions as to how we might advance to meet with creativity and panache the stimulating challenges of the twentieth century, or even the twenty-first.

David Chillingworth

LMS Newsletter

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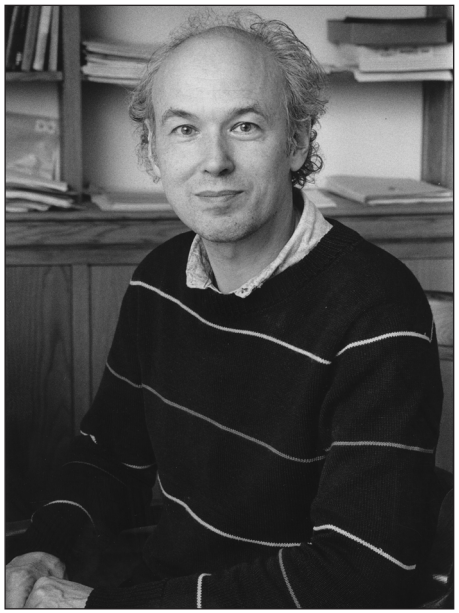
Designed by CHP Ltd (tel: 020 7240 0466, email: info@chpdesign.com, web:www.chpdesign.com).
Printed by: Armstrong Press Ltd, Southampton (tel: 023 8033 3132, email: info@armstrongpress.com)
Publication dates and deadlines: published monthly, except August.
Items and advertisements by first day of the month prior to publication.
Information in the *Newsletter* is free to be used elsewhere; attribution is requested when reproducing whole articles. The LMS cannot accept responsibility for the accuracy of information in the *Newsletter*.
Charity registration number: 252660

HONORARY MEMBERSHIP



The London Mathematical Society has elected Professor Pierre Deligne to Honorary Membership of the Society in recognition of his monumental contributions to algebraic geometry.

Viewed as a whole, Deligne's work concerns many different aspects of the cohomology of algebraic varieties. It has turned Grothendieck's philosophy of motives from a conjectural program into what is the driving force behind many of the most subtle areas of current algebraic geometry and arithmetic. Through an unparalleled blend of penetrating insights, fearless technical mastery and dazzling ingenuity, Deligne has single-handedly brought about a new understanding of the cohomology of varieties, both classical and in finite characteristic, with numerous applications to deep problems in geometry and number theory.

A tour of his achievements includes: his famous 1974 proof of the last of the Weil conjectures (the 'Riemann Hypothesis' for varieties over finite fields); his construction in 1968 of the ℓ-adic representation associated to a modular form, yielding the proof of the Ramanujan–Petersson conjecture, as well as providing substantial evidence for the Langlands program, and motivation for the solution by Wiles and others of the Taniyama–Shimura–Weil conjecture; the development of the theory of weights and mixed sheaves; the algebraic study of intersection cohomology (with Beilinson and Bernstein), perverse sheaves, *t*-structures and derived categories, and the decomposition theorem; the existence of mixed Hodge structures on the cohomology of varieties over the complex numbers; differential equations with regular singular points, and the solution of Hilbert's 21st problem; the theory of absolute Hodge cycles on Abelian varieties, and the identification of the Taniyama group with the Galois group of the category of CM motives; his ingenious proof of the existence of local ε-factors, a key ingredient of the Langlands program; his discovery of the motivic structure on the fundamental group of an algebraic variety, providing in the simplest case of the projective line minus three points a link between polylogarithms and mixed Tate motives, and (with Beilinson) giving a motivic interpretation of Zagier's conjecture on special values of the Dedekind zeta-function of a number field.

Professor Deligne is a member of the Paris Académie des Sciences, of the American Academy of Arts and Sciences, and of the Académie Royale de Belgique. He was awarded a Fields Medal in 1978, and the Crafoord Prize of the Swedish Academy in 1988. He is currently Professor at the Institute of Advanced Study in Princeton.

THE INTERNATIONAL REVIEW OF MATHEMATICS Report 6

Invitations have been sent to the eight institutions selected as venues for the Review Panel to visit during the Review Week, Monday 1 December to Saturday 6 December.

At each venue, key institutions of high standing in the region centred on the venue have been asked jointly to act as "hosts" to present the core material to the sub-Panel.

The eight venues, and institutions associated with preparing the programmes, are:

- Bristol University, with Bath, Cardiff, Exeter, Portsmouth, Southampton and Swansea
- Cambridge University (including the Isaac Newton Institute)
- Durham University, with Leeds, Newcastle and York
- Edinburgh University (including ICMS), with Aberdeen, Dundee, Glasgow, Heriot-Watt, St Andrews and Strathclyde
- Imperial College, with Brunel, Holloway, Kent, Kings, Queen Mary, Reading, Surrey, Sussex and UCL
- Manchester University, with Keele, Lancaster, Liverpool, Salford, Sheffield and UMIST
- Oxford University (including the Smith Institute)
- Warwick University, with Birmingham, Leicester, Nottingham and UEA

The eight venues have been selected for geographical spread, size, position, facilities, international standing, postdoc and postgrad community, etc. The venues and hosts have been asked to prepare a programme for the Review Panel that will include presentations demonstrative of the strengths of mathematics and statistics in the region. These presentations need to be subject-centred and highly selective. The Panel members will spend considerable time with mathematicians, having discussions with the academic staff and particularly meeting and interacting with young postgrad and postdoc research mathematicians.

Stephen Huggett, the Scientific Secretary to the Review, is in contact with the venues and hosts, discussing each of the programmes. It is recognised that the specific programmes will vary, drawing on the differing strengths and natures of the regions and their institutions.

There is a contact point on the Review website for feedback (irm@lms.ac.uk). Please use this to send in your own comments and suggestions.

FELLOWS OF THE ROYAL SOCIETY

In addition to the list of Mathematics FRSs elected earlier this year and recorded in the July *Newsletter*, we are glad to include also Professor Roger Fletcher, Dundee University, a numerical analyst and Professor Leon Simon, who is an Australian analyst based in the USA. Apologies for these omissions.

CHAIR OF ACME

Sir Chris Llewellyn Smith FRS, Chairman of ACME (the Advisory Committee on Mathematics Education), is to be the new Director of Culham, responsible for developing and implementing the strategy for the UK's fusion research programme.

Chris Llewellyn Smith spent much of his career at Oxford, where he merged five University Departments to form one of the UK's top rated physics departments. He was Director-General of CERN, the European Laboratory for Particle Physics, from 1994 to 1998, and was President and Provost of UCL (University College London) from 1998 to 2002. He has served on numerous advisory committees, including the Prime Minister's Advisory Committee on Science and Technology (ACOST) 1989-92.

LONDON MATHEMATICAL SOCIETY SOUTH WEST AND SOUTH WALES REGIONAL MEETING

Nonlinear Dynamics

University of Southampton, 24 October 2003

The South West and South Wales Regional Meeting of the London Mathematical Society will be held on Friday 24 October. There will be a reception and dinner afterwards.

3.30 - 4.30	**Marcelo Viana (IMPA, Brasil)**
4.30 - 5.00	**Tea/coffee**
5.00 - 6.00	**Philip Holmes (Princeton)** *Piecewise-holonomic mechanics, hybrid dynamical systems, and escaping cockroaches*

There are limited funds available to contribute in part to the expenses of members of the Society or research students to attend the meeting. Requests for support, including an estimate of expenses, may be addressed to the Programme Secretary at the Society (web: www.lms.ac.uk; email: grants@lms.ac.uk).

This will be followed by a **weekend workshop (25-26 October)** on "Nonlinear Dynamics and Life Sciences". The speakers are:

- Roman Borisyuk (Plymouth) *Dynamics of neural activity, synchronisation and information processing*
- Pietro-Luciano Buono (CRM, Montreal) *Analysis of delay-differential equation models in biological science*
- Tsuyoshi Chawanya (Osaka) *Attractive structures of saddles and exotic attractors in dynamical systems with forced invariant sets*
- Tomas Gedeon (Montana) *Symmetry breaking bifurcations, normalized cuts and the neural coding problem*
- Philip Holmes (Princeton) *Optimal decisions: From neural spikes, through stochastic differential equations, to behavior*
- Tim Lewis (NYU) *Dynamics of spiking neurons connected by inhibitory and electrical coupling*
- Stefano Luzzatto (Imperial) *Stability of dynamics under various kinds of perturbations*
- David Rand (Warwick) *Uncovering design principles underlying cellular systems: clocks, regulatory nets and signals*
- Ian Stewart (Warwick) *Patterns of synchrony in networks – the groupoid formalism*
- Marcelo Viana (IMPA) *TBA*

Some financial support is available for research students at UK institutions and for participants from countries other than North America, Western Europe and Australia. For further details contact David Chillingworth (tel: 02380 593677, email: drjc@maths.soton.ac.uk).

DAVID CRIGHTON MEDAL

The Councils of the London Mathematical Society and the Institute of Mathematics and its Applications have awarded the David Crighton Medal for 2003 for services to mathematics and to the mathematics community to Professor John Ball, FRS, Sedleian Professor of Natural Philosophy in the University of Oxford.

John Ball is an outstanding mathematician of international stature. At the same time he has exerted himself both nationally and internationally for the good of Mathematics and its community. In particular, his activity internationally has done much to raise the profile of UK Mathematics, especially of Applied Mathematics. He has an exceptional record of getting things done and making things happen – in this he demonstrates the qualities of David Crighton himself.

Nationally, he was very effective in helping to establish the International Centre for Mathematical Sciences in Scotland. Over the years it has been, and remains, a major national asset.

John Ball was President of the London Mathematical Society from 1996-1998, and led the Society's moves throughout that period to increase its activity and influence in its promotion of mathematics and its links with other bodies.

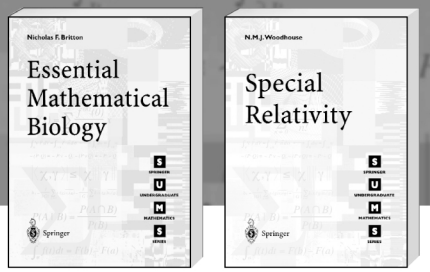
He has been a member of the Council of the EPSRC, acting as a liaison with the Royal Society and speaking up for mathematics as well as for the sciences and engineering. He chaired the 1998 EPSRC review of the Isaac Newton Institute.

Internationally, John Ball has been for some years prominent in the activities of the International Mathematical Union (IMU), in particular as a member of the Fields Medal Committee and of the Programme Committee for the 2002 Beijing International Congress. At the 2002 Shanghai IMU General Assembly he was elected President of the IMU for the next four years, bringing distinction to the UK mathematics community. He was one of the five members of the Abel Prize committee which awarded its first international prize in June 2003.

Much of John Ball's research focuses on the calculus of variations and its applications to solid mechanics, bringing to bear an armoury of knowledge and techniques of mathematical analysis and algebra. His papers illustrate in many ways his fine qualities in linking mathematics with mechanics.

At the EPSRC-IMA-LMS conference in 2001, on 'Connectivity between Mathematics and Engineering', Ball's contribution was a highlight, showing how the choice of the space of functions is of such importance in the construction of numerical/computational schemes that converge to physically relevant solutions.

The SUMS of mathematical teaching



N. F. Britton
Essential Mathematical Biology
Aimed primarily at 3rd and 4th year undergraduate students in mathematics this introductory text covers classical material but gives pointers to cutting-edge research.
2003. XV, 335 p. 92 illus. Softcover **€ 29,95**; sFr 51,50; £ 18,95 ISBN 1-85233-536-X

N.M.J. Woodhouse
Special Relativity
This text is designed to introduce 2nd and 3rd year mathematicians to the subject, giving them a firm grounding which will lead onto the more specialised mathematical physics texts. The approach here is to teach by using examples and exercises.
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J. M. Howie
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D. F. Parker
Fields, Flows and Waves
An Introduction to Continuum Models
This book introduces the undergraduate to the diversity and versatility of fundamental mathematics in the real world, without the need for multiple preparatory courses first.
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SYLVESTER MEDAL

The Royal Society has awarded the Sylvester Medal for 2003 to Professor Lennart Carleson, ForMemRS, for his deep and fundamental contributions to mathematics in the field of analysis and complex dynamics. His most spectacular achievement was the proof of the convergence almost everywhere of the Fourier Series of square integrable and continuous functions. Professor Carleson is an Honorary Member of the London Mathematical Society.

Other recipients of Royal Society Awards and Medals for 2003 are:

Royal Society GlaxoSmithKline Prize and Lecture – Dr Michael Neuberger, FRS
Royal Society Armourers and Brasiers' Company Award – Professor Derek Fray
Copley Medal – Sir John Gurdon, FRS
Gabor Medal – Professor Jean Beggs, FRS
Royal Medals – Sir Nicholas Shackleton, FRS, Sir John Skehel, FRS, and Professor Kenneth Johnson, FRS
Davy Medal – Professor Roger Parsons, FRS
Hughes Medal – Professor Peter Edwards, FRS

The winners of the awards will receive them at a ceremony during the Royal Society's Anniversary Day on 1 December 2003.

COLLINGWOOD MEMORIAL PRIZE

The 2003 Collingwood Memorial Prize has been awarded to Anna R. Lishman, University College, who will study for a PhD in Mathematical Physics at Durham University from October 2003. The Collingwood Memorial Prize, established in memory of Sir Edward Collingwood, FRS, President of the Society 1969-1970, is awarded to a final-year mathematics student at the University of Durham who intends to continue to a higher degree in mathematics at Durham or any other university.

VISIT OF PROFESSOR V.N. TOLSTOY

Professor Valery Tolstoy (Moscow State University) will be visiting the University of York from 12 September until 11 October. His visit is supported by an LMS Scheme 2 grant, and by a Royal Society FSU grant. During his visit he will give talks at the Universities of York (27 September), Durham (2 October) and Leeds (10 October). For further information contact Dr Maxim Nazarov (mln1@york.ac.uk).

VISIT OF PROFESSOR M-F. CHEN

Professor Mu-Fa Chen (Beijing Normal University, China) will be visiting the Department of Mathematical Sciences, Loughborough University, and the Department of Mathematics, University of Wales Swansea, in November. During his visit he will give three talks at Loughborough University from 5 – 14 November and two talks at the University of Wales Swansea from 15 – 22 November on "Ergodic Convergence Rates of Markov Processes and Spectrum Theory". During his visit to Loughborough University, he will give a talk at University of Oxford on 10 November and a talk at University of Hull on 12 November. His visit is funded by an LMS Scheme 5 grant. For further information contact Dr Huai Zhong Zhao (H.Zhao@lboro.ac.uk) or Dr Jiang-Lun Wu (J.L.Wu@swansea.ac.uk).

FUNCTION THEORY MEETING

A one-day Function Theory Meeting will be held on Monday 15 September from 10:30 – 5:30 at De Morgan House. The meeting will focus on all areas of current research in complex function theory. Speakers include R. Halburd, P. Rippon, A. Vassiliev, I. Markina, E. Crane and G. Kendall. Lectures begin at 11:00, with coffee available from 10:30.

The meeting is open to all members of the LMS and any other interested parties. PhD students are particularly encouraged to attend; some financial assistance is available. The meeting is supported by an LMS conference grant. For more information and a programme of the meeting contact Matthew M. Jones (m.m.jones@mdx.ac.uk).

JOHN WALLIS TERCENTENARY

The British Society for the History of Mathematics is holding a one-day meeting on Saturday 25 October at New College, Oxford, to celebrate the tercentenary of John Wallis (1616 – 1703). John Wallis was Savilian Professor of Geometry in Oxford for over fifty years. The speakers are: Philip Beeley, David Cram, Penelope Gouk, Noel Malcolm, Scott Mandelbrote and Jackie Stedall.

The registration fee of £25 includes tea and coffee and a buffet lunch at The Queen's College (next door to New College). To register for the meeting write to Tony Mann, Department of Mathematics, University of Greenwich, Old Royal Naval College, London SE10 9LS, giving your name and contact details and enclosing the registration fee (cheques payable to BSHM). Further details can be found at www.dcs.warwick.ac.uk/bshm/ or email Tony Mann (A.Mann@gre.ac.uk).

MEETING IN HONOUR OF SUSAN BROWN AND MICHAEL O'NEILL

An afternoon of seminars will be held at University College London on 19 September in honour of Professor Susan Brown and Professor Michael O'Neill to celebrate their 65th birthdays. The seminars will take place in the Sir Harrie Massey Lecture Theatre (25 Gordon Street). The schedule is as follows.

Ron Shail (Surrey)
Stokes flow at University College London
Norman Riley (UEA)
Laminar flow separation revisited
Peter Daniels (City)
Convection patterns in large containers
Anatoly Ruban (Manchester)
Boundary-layer separation and related phenomena
Howard Brenner (MIT)
Summers and sabbaticals with Michael. Low Reynolds number flows and the demise of the Navier-Stokes paradigm
Sidney Leibovich (Cornell)
Langmuir-Ekman patterns on the ocean surface

The whole session is open to all; graduate students, postdocs, *et al.* are particularly encouraged to attend the session, which involves six renowned experts in Applied Mathematics. The meeting is supported financially by an LMS conference grant.

MEASURE THEORY, TOPOLOGY AND SET THEORY

A one-day meeting on Measure Theory, Topology and Set Theory will be held in the Hardy Room of the London Mathematical Society on Thursday 25 September. The meeting marks the retirement from the

University of Essex in Colchester of David H. Fremlin, Reader at the University of Essex and Honorary Fellow at the University of East Anglia. It is particularly hoped that many of David's friends and colleagues will be able to attend. The topics chosen for the meeting reflect some of the areas in which David has made significant contributions over the many years he has worked at the University of Essex.

The speakers are:

- Mirna Dzamonja (University of East Anglia)
- Richard Haydon (Oxford University)
- Grzegorz Plebanek (University of Wroclaw)
- Juris Steprans (York University, Toronto)
- Stevo Todorcevic (CNRS, Paris)

Talks will take place from 11.30 am to 6.00 pm with coffee available from 11.00 am. After the meeting there will be a dinner at the Rasa Samudra Restaurant in Charlotte Street, London at 7:30.

The meeting is funded by the London Mathematical Society, and some funding is available to cover the expenses of postgraduate students at British universities and any participants from Eastern and Central Europe. According to the rules of the LMS grant that supports us there will be a registration fee. It is voluntary and its cost is £5 per person. It can be paid to Mirna Dzamonja at the meeting.

Please let Mirna Dzamonja know (m.dzamonja@uea.ac.uk) if you are interested in applying for the support funds or going to the dinner. It would also be helpful to know the approximate number of people coming to the meeting so even though you are more than welcome to just show up on the day, if you know you are coming please try to email Mirna to let her know. She can also give some advice about accommodation; the speakers will be staying at the Tavistock Hotel on Tavistock Square, London.

NEW FRONTIERS IN COMPUTATIONAL MATHEMATICS

A two-day workshop on the New Frontiers in Computational Mathematics will be held on Saturday 10 January – Sunday 11 January 2004 at the Chancellors Hotel and Conference Centre, University of Manchester. It will focus on the cutting edge research areas of computational mathematics that are of growing importance and interdisciplinary in nature. The aims are to bring together interested researchers for fruitful discussions of current challenges and future directions in computational mathematics, encompassing both mathematicians and computational scientists who make strong use of mathematics. There is no registration fee. Attendance is limited to at most 80 persons.

The four highlighted areas, and associated keynote speakers, are

- Jack Dongarra (University of Tennessee, Knoxville) *High performance computing trends, the grid, and numerical algorithms*
- Per Christian Hansen (Technical University of Denmark) *Inverse problems and ill-posed problems*
- Mark Chaplain (University of Dundee) *Mathematical biology*
- Tony F. Chan (UCLA) *Partial differential equation methods in image processing and computer vision*

The call for attendance and papers/posters is at www.maths.man.ac.uk/MCCM/frontiers.html. The organizing committee is: Nicholas J. Higham, Tony Shardlow, Francoise Tisseur (University of Manchester), David Silvester (UMIST).

The workshop is organized by the Manchester Centre for Computational Mathematics (MCCM), and forms part of the University of Manchester's Centenary Research Workshop series. Financial support for the workshop is provided by The University of Manchester, The London Mathematical Society, and the UK and Republic of Ireland SIAM section.

LONDON MATHEMATICAL SOCIETY
CECIL KING TRAVEL SCHOLARSHIP

The London Mathematical Society annually awards a Cecil King Travel Scholarship in Mathematics to the value of £5000, to a young mathematician of outstanding promise, to support a period of study or research abroad for a typical period of three months. Many mathematicians have found that such a visit has benefited both their mathematics and their career; the Society urges young mathematicians and their supervisors to consider seriously this opportunity.

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.

Applicants should be nationals of the UK or Republic of Ireland, under the age of 25 years, either registered for or having recently completed a doctoral degree at a UK University.

The initial application should include:

1. A completed application form.
2. A short proposal (4 pages maximum) indicating the proposed programme of study abroad, the benefit of such an opportunity in advancing the candidate's studies, and the Institution that the candidate wishes to visit.
3. A letter of support from the applicant's Head of Department, or from his or her Research Supervisor.

Candidates selected for interview will be asked to approach the intended research institution or research leader to be visited, to confirm that a visit would indeed be welcomed if an award were made.

At the end of the Scholarship, the student will be expected to write a short report indicating the activities and benefits gained from the visit.

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.

Application forms for the 2004 Scholarship are available on the Society's website (www.lms.ac.uk/activities/cecil_king/index.html) or from the Society. Closing date for applications: **4 February 2004.**

The London Mathematical Society (ref: Cecil King/FS), De Morgan House, 57-58 Russell Square, London WC1B 4HS (tel: 020 7637 3686; email: lms@lms.ac.uk).

Daphne Jackson Research Fellowship

Sponsored by the London Mathematical Society

Applicants are invited to apply for a half-time Research Fellowship under the auspices of the Daphne Jackson Trust*. The Fellowship will be sponsored by the London Mathematical Society. The Society urges readers to consider suitable applicants and to bring this advertisement to their attention.

The Daphne Jackson Trust helps talented women scientists, engineers and technology specialists to return to work after a career break by offering half-time, sponsored Fellowships in research laboratories throughout the UK. Since its inception, the Trust has appointed over 100 Fellows, most of whom have resumed a promising career in their chosen field.

Each Fellowship aims to provide advanced research and training opportunities for a well-qualified woman (research scientist, engineer or technology specialist) with a PhD or good honours degree, seeking to resume her career after a minimum three-year break to meet family commitments.

The Fellowship is tenable in a science, engineering or technology department or related institution at University of the applicant's choice. Applicants must prepare a proposal for a research project in conjunction with an accredited supervisor. The successful applicants will be elected to a Research Fellowship at their chosen institution for the tenure of their appointment.

The appointment will be for two years, half time. (The stipend will be pro rata on the RA1A scales for research staff, amounting to a minimum of £9,840 per annum plus £850 extraordinary expenses in the first year.) There is a facility for additional support from a special discretionary fund administered by the Daphne Jackson Trust.

For more information contact:

The Fellowship Administrator, The Daphne Jackson Trust,
Department of Physics, University of Surrey, Guildford, Surrey GU2 5XH.
Tel: 01483 689166
Email: djmft@surrey.ac.uk
Useful websites: www.daphnejackson.org and www.lucy-cav.cam.ac.uk

* Registered as the Daphne Jackson Memorial Fellowships Trust, Charity No. 1009605

SECANTS

SECANTS (South of England Computational and Algorithmic Number Theory Seminars) will hold its twenty-first meeting in Bristol on Monday 22 September. The speakers will be Lois Salveil (BRICS), Igor Shparlinski (Macquarie) and Peter Leadbitter (Bristol). Lois Salveil's talk will form part of a series of lectures on Quantum Information Processing and Cryptography which he is giving in Bristol on 18-26 September.

For more details of the programme and venue, as well as general information about SECANTS, and how to be put on the email mailing list, visit the website (www.maths.nott.ac.uk/personal/jec/secants/secants21.html). SECANTS is funded by an LMS Scheme 3 grant.

SYMMETRY AND PERTURBATION THEORY

The fifth conference on Symmetry and Perturbation Theory (SPT2004) will be held in Cala Gonone (Sardinia, Italy) from 30 May to 6 June 2004. The conference will focus in the topics mentioned in its title and cognate ones, such as classical and quantum dynamical systems, integrable systems, symmetry of differential equations, etc. The scientific committee is: S. Abenda (Bologna), D. Bambusi (Milano), G. Cicogna (Pisa), A. Degasperis (Roma), G. Gaeta (Milano), V. Kuznetsov (Leeds), G. Marmo (Napoli), P. Olver (Minneapolis), J.P. Ortega (Nice), S. Rauch (Linkoping), E. Sousa Dias (Lisboa), F. Verhulst (Utrecht), S. Walcher (Aachen), B. Zhilinskii (Dunquerque). For further information about the conference visit the website www.sptspt.it or email Giuseppe Gaeta (g.gaeta@tiscalinet.it).

STRUCTURAL MODELLING AND NONLINEAR MATHEMATICS

A colloquium on Structural Modelling and Nonlinear Mathematics, organized by Khurram Wadee and Andrew Bassom, will be held on 17 September in the School of Engineering, Computer Science and Mathematics at the University of Exeter. This event is supported by the LMS Scheme 3 DynaBUGS group. The theme of the day is a discussion of the use of modern nonlinear mathematics in structural mechanics.

The meeting will consider state-of-the-art applications to diverse topics in elastic buckling such as instabilities in struts, shells, tubes and layered materials (e.g. the study of geological folding and failure in composites).

Visit the website www.ex.ac.uk/~mkwadee/LMS.html if you are interested in attending or email m.k.wadee@ex.ac.uk or drew@maths.ex.ac.uk .

MODULAR INVARIANTS AND REPRESENTATIONS OF FINITE GROUPS

A conference on Modular Invariants and Representations of Finite Groups: Theory and Computation will be held on 11-12 September at the Institute of Mathematics and Statistics, University of Kent, Canterbury. The conference aims to bring together researchers in constructive invariant theory of finite groups and computational group theory. Recent advances in invariant theory deal with degree bounds and efficient construction procedures for sets of generating invariants. These procedures involve a dense interplay between techniques from computational commutative algebra and computational group theory.

Confirmed speakers:
- Emmanuel Briand (Marne-la-Vallé)
- David Green (Wuppertal)
- Gregor Kemper (Munich)
- Steve Linton (St Andrews)
- Nicolas Thiéry (Lyon)
- Chris Woodcock (Kent)

The conference is funded by the London Mathematical Society and some financial support is available for research students at UK universities. If you are interested in attending, please contact Dr R. James Shank (R.J.Shank@kent.ac.uk). For further information visit the website (http://www.kent.ac.uk/IMS/personal/rjs/ septemberconference.html).

EPSRC MATHEMATICS SAT MEETING

The third meeting of the EPSRC Mathematics Programme's Strategic Advisory Team (SAT) was held on 11 June. It was the first meeting for the new members Dr David Calderbank (Edinburgh), Dr Helen Byrne (Nottingham) and Dr Steve Brooks (Cambridge). The SAT was given an update on the preparation of potential bids for the next government spending review (SR 2004) and on progress to date towards the International Review of Mathematics and the Review of Operational Research in the UK. Ursula Martin presented the report of the Mathematics and e-Science meeting held at the LMS in March.

The SAT then turned its attention to the main business of the meeting - discussing the formulation of the Mathematics Programme Business Plan for 2004-06. The programme strategy has four elements:
- supporting excellence;
- greater connectivity with other disciplines and with users in industry, business and commerce;
- supporting training;
- promoting international activities.

No significant changes will be made to the Programme strategy in advance of the International Review of Mathematics and the Review of Operational Research in the UK. The SAT agreed that future priorities should include:
- the support of novel curiosity driven research through responsive mode;
- involvement with a wider industrial user base by engaging with the Industrial Mathematics and Systems Engineering Faraday Partnership; and
- establishing a longer-term funding arrangement for ICMS, in partnership with SHEFC.

The SAT also discussed a paper on adventure in mathematics research, suggesting ways by which the Programme could facilitate the submission of more radical research proposals. A paper on ensuring greater participation by the mathematics community in public awareness activities also stimulated a productive discussion. Further feedback on these issues from the wider mathematics community would be welcomed. The business plan will be finalised during July and will be published on the EPSRC website (www.epsrc.ac.uk) in late autumn following the October meeting of EPSRC's Council.

Annette Bramley
EPSRC Programme Manager, Mathematics
(annette.bramley@epsrc.ac.uk)

INDIAN SOCIETY FOR HISTORY OF MATHEMATICS

The Indian Society for History of Mathematics (ISHM) has launched its website during its Silver Jubilee year. The site www.indianshm.com was formally launched by the Society's President Professor G.S. Pandey in June. The site intends to cover information on all aspects of the history of mathematical sciences and includes links to some societies working in the area.

2003/2004 Warwick Symposium on Noncommutative Algebra and its Applications

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Ring Theory
8-12 September 2003
Organiser: C. R. Hajarnavis
Representations of Finite Dimensional Algebras
8-13 December 2003
Organisers: S. Konig & D. Rumynin

Geometric Methods in Algebra and Representation Theory
29 March - 3 April 2004
Organisers: K. Brown & D. Rumynin

Hopf Algebras
24-26 June 2004
to be held at the University of Wales at Swansea
Organisers: T. Brzezinski

Noncommutative Algebra
5-16 July 2004
Organisers: C. R. Hajarnavis & D. Rumynin

People are welcome to come for longer visits than a workshop.
PhD students are particularly encouraged to participate. Limited financial support is available.

The Symposium is supported by the EPSRC and also the London Mathematical Society via the Warwick British Visitors Fund.

For further information contact: Mathematics Research Centre, University of Warwick, Coventry CV4 7AL; email: peta@maths.warwick.ac.uk; tel: +44 (0)24 7652 4403; fax: +44 (0)24 7652 3548.

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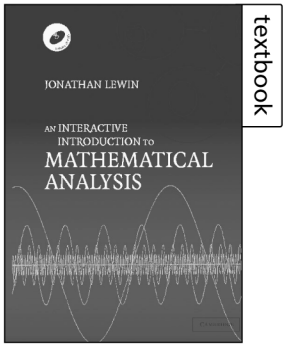

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FRENCH MATHEMATICAL SOCIETY

At its meeting on 15 June 2003 the French Mathematical Society elected a new board:
President: Michel Waldschmidt
Vice-Presidents: Jacques Wolfmann, Gilles Godefroy, Claude Sabbah
Treasurer: Alain Jacquemard
Treasurer adjointe: Martine Bellec
Secretary: Marc Chardin

Under the reciprocity agreement between the LMS and the French Mathematical Society the reciprocity membership fee for 2003/04 is €32. Information on the French Mathematical Society is available at www.emath.fr.

SWEDISH MATHEMATICAL SOCIETY

At its meeting in Uppsala on 23 May 2003 the Swedish Mathematical Society elected a new board:
Chairman: Sten Kaijser (Uppsala University)
Vice chairman: Olle Häggström (Chalmers University of Technology)
Secretary: Ming Fan (Dalarna University)
Treasurer: Milagros Izqierdo Barrios (Linköping University)
Fifth Member: Anette Jahnke (Hvitfeldtska Gymnasiet)

Under the reciprocity agreement between the LMS and the Swedish Mathematical Societies the membership fee for members of the LMS to join the Swedish Society is 100 Swedish Crowns per year. Information on the Swedish Mathematical Society is available at www.matematikersamfundet.org.se.

THE EUROPEAN MATHEMATICAL SOCIETY COUNCIL

The Council, which meets every two years, is the governing body of the European Mathematical Society. The EMS has two distinct categories of members. First there are the national mathematical societies, such as the LMS, IMA and E(dinburgh) MS, or academic institutes such as the Isaac Newton Institute and IHES. Then there are individual members, who generally join through the national societies. As more individual members join, the number of their representatives on Council increases, up to a limit of two-fifths. Currently, Council is composed of 19 delegates elected by the individual membership and 64 delegates of societies.

So much for the theoretical balance of power. In fact, Council delegates do not separate into groups according to the type of membership they represent. They mainly act as individuals, accepting or amending proposals from the Executive Committee, perhaps questioning some of the Society's activities or suggesting new ones. An example of the latter is the joint mathematical weekend the EMS is holding together with the Portuguese Mathematical Society this month.

The atmosphere in Council is generally friendly and constructive. Of course there are differences of approach arising from diverse national traditions, and these do enliven the proceedings from time to time. For instance, in Barcelona there was a debate about the early history of the Society: strong and contradictory views are held about what happened. In Oslo, there were passionate interventions in favour of reduced membership rates for young researchers, but Council was not persuaded. Also in Oslo, Council debated the Bologna process, but was unable to agree a statement acceptable to all delegates.

The next Council meeting will be held in Stockholm in June 2004, during the weekend before the fourth European Congress of Mathematics. There will be vacancies for delegates of the individual membership.

David Salinger
EMS Publicity Officer

ISAAC NEWTON INSTITUTE FOR MATHEMATICAL SCIENCES

GEOPHYSICAL GRANULAR & PARTICLE-LADEN FLOWS

27 – 31 October 2003

"@-Bristol", Harbourside, Bristol

Organisers: J.M.N.T. Gray (Manchester), A.J. Hogg (Bristol) & K. Hutter (Darmstadt).

Scientific committee: J.T. Jenkins (Cornell), C. Keylock (Leeds), T. Mullin (Manchester) & A. Woods (Cambridge).

Conference theme: Many large-scale natural hazards and geomorphic processes involve granular or particle-laden flows. Examples abound in our natural environment, ranging from avalanches, debris flows, rock-falls, pyroclastic flows and lahars, to turbidity currents, sediment transport in rivers and dune formation. This meeting will bring together environmental scientists, geographers, geologists and geophysicists, who observe these phenomena in the field, with mathematicians, physicists and engineers who are developing sophisticated mathematical models and laboratory based experiments to understand these complex and challenging flows. A group of leading mathematicians and scientists will be gathered at the Isaac Newton Institute for a four month programme on Granular and Particle-Laden Flow at this time, and this Satellite workshop provides an unparalleled opportunity for environmental scientists, theoreticians and experimentalists to meet, discuss and exchange ideas.

Speakers: C. Ancey (CEMAGREF), J. Best (Leeds), C.S. Campbell (USC), R.P. Denlinger (USGS), H. Huppert (Cambridge), D. Issler (NADESCOR), R. Iverson (USGS), K. Nishimura (Nagaoka), G. Parker (Minnesota), J. Rice (Harvard), S.B. Savage (McGill), R.S.J. Sparks (Bristol), J. Vallance (USGS), K. Whipple (MIT).

Location and costs: The conference will take place "@-Bristol", Harbourside, Bristol, and accommodation for participants will be provided in local hotels. The workshop package, costing £450, includes the conference fee, five nights' accommodation, breakfast and lunch. Partial financial support is available to all participants through generous grants from the NERC-EPSRC Environmental Mathematics & Statistics Programme, the London Mathematical Society, the NSF, the Office of Naval Research International Field Office and the Isaac Newton Institute. The overall number of participants is limited to 70. If you are interested in participating in this meeting, please complete the application form.

Further information and application: Forms are available from the web (www.newton.cam.ac.uk/programs/GPF/gpfw02.html). Completed application forms should be sent to Tracey Andrew, Programme and Conference Secretary, Isaac Newton Institute, 20 Clarkson Road, Cambridge BB3 0EH, or via email (t.andrew@newton.cam.ac.uk). Please email your enquiries to Tracey Andrew or one of the organisers.

Closing date: The closing date for the receipt of applications is 31 August 2003. Late registration until 7 September for LMS members.

RECORDS OF PROCEEDINGS AT MEETINGS

ORDINARY MEETING

held on *Friday 20 June 2003* at University College London. At least 47 members and visitors were present for all or part of the meeting.

The meeting began at 3.30 pm, with the President, Professor P. GODDARD, FRS, in the Chair.

The President announced the awards of the Polya Prize to Professor A.J. Macintyre, FRS, of the University of Edinburgh, the Berwick Prize to Dr T. Bridgeland of the University of Edinburgh, the Senior Whitehead Prize to Dr P. Neumann of Oxford University, and Whitehead Prizes to Dr N. Dorey of University of Wales, Swansea, to Dr T. Hall of Liverpool University, to Dr M. Lackenby of St. Catherine's College and the University of Oxford, and to Dr M. Nazarov of the University of York. The President read short versions of the citations, which would be published in full in the *Bulletin*.

The President, on Council's behalf, proposed that Professor Pierre Deligne be elected to Honorary Membership of the Society. This was approved by acclaim. The President read a short version of the citation, to be published in full in the *Bulletin*.

Seven people were elected to Ordinary Membership: M.G. Blyth, G. El, J. Mao, S.E. Mikhailov, J. Talabany, C. Yastremiz, A.S.I. Zinober; and three people were elected to Associate Membership: S. Hendren, K.J. Shackleton, I. Shah.

Three members signed the book and were admitted to the Society.

GENERAL MEETING

With Professor P. Goddard, FRS, in the Chair. On a recommendation from Council it was agreed to elect Dr D.J. Collins and Dr A.R. Camina to be appointed scrutineers in the forthcoming Council elections 2004.

The Ordinary Meeting then resumed.

The President announced, with regret, that Professor J.C. Rickard, of the University of Bristol, Senior Berwick Prizewinner for 2002, who was to have given the first lecture, had been unavoidably delayed. It was intended to reschedule his lecture for a later date.

The Fröhlich Lecture was then given by Professor M.J. Taylor, FRS, on 'Die Fröhliche Wissenschaft'.

JUNE SOCIETY MEETING

A meeting of the Society was held on Friday 20 June at University College London. It was chaired by the President, Professor Peter Goddard, who began by inviting new members to add their names to the original Membership Book which dates from the foundation of the Society in 1865. D. Cariolaro, P. Fleischmann and R.J. Shank duly signed, and were welcomed into the LMS. The President then read aloud citations for the 2003 LMS prizewinners, some of whom were present, and the audience acknowledged their fine achievements with enthusiastic clapping.

The first lecture, on 'The stable module category of a finite group algebra' was to have been delivered by Professor Jeremy Rickard, Senior Berwick prizewinner for 2002. Unfortunately, though, he fell victim to our endemic problems on the railways and was seriously delayed. Apparently a fire close to the line at Burnham had affected trains into Paddington. All was not lost, however, and Professor Martin Taylor stepped into the breach and gave an impromptu update on preparations for the forthcoming International Review of British Mathematics and Statistics.

Following tea, we had the first Fröhlich Lecture, in memory of Professor Albrecht Fröhlich, appropriately delivered by Martin Taylor who had been a research student of his at King's College and with whom he had subsequently produced several important number theoretic publications. Ali's widow, Dr Ruth Fröhlich, and their daughter, Sorrel, were present for the lecture, entitled 'Die Fröhliche Wissenschaft', but their son, Shaun, was able to come for the reception and dinner only. Martin Taylor's lecture was well received and enthusiastically applauded.

At this stage Jeremy Rickard arrived and the President made a presentation of the Senior Berwick Prize certificate. We were assured that the lecture would take place at a later date.

Following the lecture, there was a well-attended reception at De Morgan House and those attending took advantage of a balmy summer's evening to spill out into the attractive garden. More than thirty people then proceeded to Poon's Restaurant on Woburn Place to enjoy a pleasant Chinese meal and good company.

R.T. Curtis
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POINCARÉ CONJECTURE

On 23 July, the participants at the Hodge Centenary meeting (LMS Newsletter 310, pp 25) run by the International Centre for Mathematical Sciences at Edinburgh took time off from Hodge theory to hear about recent progress on the Poincaré conjecture. The focus of attention was the remarkable work of Grisha Perelman, which has appeared in a series of preprints dating from November 2002.

Professor Simon Donaldson, FRS, gave a lecture describing the Poincaré conjecture, Thurston's geometrization conjecture, and Richard Hamilton's approach via Ricci flow to these conjectures. He then explained, in outline, how Grisha Perelman appears to have overcome a major stumbling block in Hamilton's programme.

The geometrization conjecture is motivated by the well known fact that every closed surface admits Riemannian metrics of constant Gauss curvature. (This is closely related to the uniformization theorem of Riemann surface theory.) Two-dimensional Poincaré, the statement that every closed simply connected surface is the standard round sphere follows rather easily from this.

It is not the case that every closed 3-manifold admits metrics of constant curvature: but Thurston's geometrization conjecture asserts that every such manifold can be split into geometric pieces. These geometric pieces include spaces of constant curvature as well as 5 other standard types. As in the 2-dimensional case, the Poincaré conjecture would follow easily if the geometrization conjecture were true.

Perelman's work, which is aimed at proving the full geometrization conjecture, is based on the Ricci flow equation which was introduced by Hamilton in the early 1980s. This equation, $dg/dt = -2r$, $g(0) = g_0$ (where r is the Ricci curvature of g) defines a one-parameter family of Riemannian metrics $g(t)$ starting from an arbitrary initial metric g_0. In general terms, one hopes that this flow will improve the initial metric g_0: indeed Hamilton proved that if g_0 is a metric of positive Ricci curvature on a closed 3-manifold, then $g(t)$ tends to a metric of constant positive curvature as t increases. Since then, Hamilton and others have proved many further results which point towards a possible proof of the geometrization conjecture by a detailed analysis of the Ricci flow.

Before Perelman's work, the main problem in this approach can be explained, roughly, as follows. If one has no information about the initial metric g_0, the Ricci flow can usually not be extended beyond some critical finite time T: the solution blows up because of the nonlinearities in the equation. In order to understand the limiting behaviour of $g(t)$ as t approaches T, it is necessary to control the injectivity radius of $g(t)$. Perelman has solved this problem through the introduction of a new notion of 'entropy'. This behaves monotonically for a family of metrics evolving by the Ricci flow, and at the same time controls the injectivity radius. Taken together, these two properties of the entropy give information about the injectivity radius of $g(t)$ as t approaches T, just as required.

While it will take months or perhaps years for the mathematical commnity to agree on whether the Poincaré conjecture has finally been settled, it is clear that Perelman's work will have a great impact on future work in geometric flow equations, and will lead to a deeper understanding of the geometric meaning and significance of the Ricci flow itself.

Michael Singer
Edinburgh University

The ICMS is aware of the need to bring the latest and best developments in mathematics worldwide rapidly to the attention of the UK community and sees this as one of its roles. The initiative to hold this Poincaré Conjecture afternoon, which arose at very short notice, is a case in point.

John Toland
ICMS Scientific Director

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In 1903 Fredholm published his famous paper on integral equations. Since then linear integral operators have become an important tool in many areas, including the theory of Fourier series and Fourier integrals, approximation theory and summability theory, and the theory of integral and differential equations. Application to integral and differential equations were soon extended beyond linear operators. In approximation theory, however, applications were limited to linear operators since the notion of singularity of an integral operator was closely connected with its linearity.

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In a wider context, the material of this book represents a starting point for new areas of research in nonlinear analysis. For this reason the text is written in a style accessible not only to researchers but to advanced students as well.

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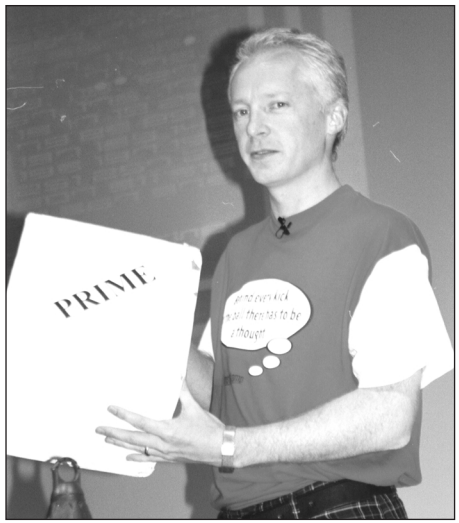
THE LMS POPULAR LECTURES

Well, follow that! In the last couple of years we have had double pendulums hanging vertically down, and performing tricks that no decent-minded pendulum ought to know about, and quadruple pendulums hanging upwards (?) and staying there, in spite of all our instincts that they should collapse and behave properly. So what will we get next year?

The LMS Popular Lectures have been running for 21 years, having been started in 1982 as a way of attempting to share with a large audience some of the delights and unravel for them some of the mysteries of our subject. I suspect, too, that many professionals have been pleased to have an insight into what some of their fellow mathematicians working in totally unrelated fields have been getting up to.

I first became aware of the lectures some fifteen years ago, and regularly turned up at Imperial College before they migrated to Bloomsbury, a move which came with that of the Society from Piccadilly to De Morgan House in Russell Square. Over the years we have tied ourselves in knots; floated, spun and tumbled; married, voted and chosen; stamped (through mathematics); hopped (mad, with probability); and juggled. When I first started to attend I sometimes attempted to make notes. This was usually in vain. Somehow the lectures did not lend themselves to that sort of attention. Much better to let it happen and enjoy them as a theatrical experience (which many of them were!) and then later hire the video to refresh one's memory of the trickier bits.

I have usually found the lectures to be pitched at what I thought was the right level – they should be accessible to someone at the end of the lower sixth (Year 12 in current jargon) but there should also be something further to puzzle them and to keep those with greater knowledge on their toes. The art of constructing such a lecture is not easily acquired, and the Society has been very fortunate (and skilled) in its selection of its lecturers. Inevitably one's visual memory is what dominates in thinking back to previous lectures. Colin Wright explaining the mathematics of juggling is a case in point (and how anyone can juggle while riding a unicycle is still beyond me – but I know he can because I've seen it).



And so to this year. Marcus du Sautoy investigated with us *The Music of the Primes*. There was some intriguing music being played as we entered the lecture hall, but no reference was made to it later. Was it relevant? Was it some strange piece in which the primes had been converted into musical notes? I know not. Marcus took us on a tour of the primes, reminded us that they were infinite (with proof), and that, perhaps, there was an infinite number of prime pairs. We investigated how often they occurred, and puzzled over trying to work out the next number in a sequence – only to dissolve in rather embarrassed laughter when it turned out to be the Lottery numbers from, was it, last September? We even had a dab at Fermat's Last Theorem.

And then David Acheson: *Mathematics, Music and the Electric Guitar*. David's recently published book, *1089 & all that*, furnished some of the material for this lecture, and highly entertaining it was. From the 'trick' that involves 1089, the divergence of the harmonic series and the intriguing convergence of

$$1+\frac{1}{2^2}+\frac{1}{3^2}+\frac{1}{4^2}+\ldots \text{ to } \frac{\pi^2}{6}$$

via some famous errors, such as Malfatti's problem, and finally to the oscillations of a six-legged spider (*sic*) and some weird simulations of the three-body problem we came to 'not the Indian Rope Trick': the stable oscillations of a series of upside-down pendulums. Common sense tells us that of course this is quite impossible, so there, ably assisted by the man who stood on the vibrating machine to stop it walking off the platform, he showed it happening. What was it Victor Meldrew used to say?

And to top it all off we had a duet between our two lecturers on trumpet and guitar – *Autumn Leaves.*

So what *will* we get next year?

Martin Perkins

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NEWS FROM ICSU

Visa information for the USA

The International Visitors Office (IVO) of the National Academies of the USA has launched a new website (www.nationalacademies.org/visas) to provide information on visas for visiting scientists and scholars and advice for organizers of international scientific meetings in the United States.

This site includes a questionnaire through which scientists, engineers, medical professionals, and scholars can report their difficulties with the visa process. The questionnaire is used by the IVO to collect statistical data, and, in some cases, to assist with the visa process. The IVO maintains a list of international scientific meetings held in the United States. It shares this list with the Department of State on a regular basis to help validate a visa applicant's purpose for visiting the United States. To register your meeting, send the IVO (visas@nas.edu) the following details: meeting name, location, date, and website link. The IVO site also has guidelines for organizing international scientific meetings in the United States. Please visit this site and share it with your colleagues. You are encouraged to add a link to the IVO site on your website. If you have any comments on how the IVO site can better inform and assist you and your colleagues on visa issues, please send your comments to International Visitors Office, The National Academies, Room 578, 500 Fifth Street, NW, Washington, DC 20001, USA (tel: 202-334-2602; email: visas@nas.edu).

African Institute for Mathematical Sciences (AIMS)

An application by Keith Moffatt on behalf of IUTAM to ICSU under the 2004 Grants programme for support for the project 'African Institute for Mathematical Sciences (AIMS)' has been successful, and $100K awarded. Part of the grant has been earmarked for the support of a Workshop on 'Capacity Building in the Mathematical Sciences'. This Workshop will be held at the newly refurbished AIMS building in Muizenburg, South Africa, 13-16 April 2004.

The Board of Directors of AIMS will meet on 16-17 September 2003, when AIMS will be officially launched.

ICSU Policy Committee on Developing Countries

The overall mandate of the Committee is to advise ICSU on ways and strategies to enhance scientific activities in developing countries. The primary goals must be:

- To provide a vision and advice to the ICSU Executive Board on its work relating to developing countries.
- To increase participation of scientists and scientific organizations from developing countries in ICSU programmes and activities.
- To assist ICSU in strengthening science and capacity building in developing countries through North-South and South-South co-operation.

To fulfil its mandate, the Committee must also meet the following objectives:

- To provide a platform within ICSU for policy discussions on science in and for developing countries.
- To alert ICSU on global trends and generic issues which influence the advancement of science in developing countries.
- To encourage ICSU scientists to recognize developing countries as an important source of science and local knowledge that is to be integrated into international science.
- To ensure that ICSU is cognizant of current debates on the importance of science for development and to interact with the developing communities in relation to the importance of science.
- To provide a forum for policy dialogue with major ICSU partners and others with a view to identifying critical science issues that are relevant and significant for developing countries.

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BOOK REVIEW

Mathematics - A Very Short Introduction by Timothy Gowers, Oxford University Press, pp 156, £6.99, US$9.95, ISBN 9-19-285361-9.

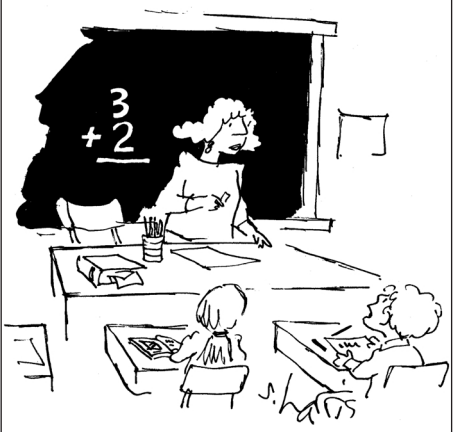
This is an odd little book, and not quite what I expected from the title. Tim Gowers has evidently decided not to aim for the popular science market. Instead, he has produced a rather serious book for the intellectually sophisticated mathematical virgin. His main purpose is to both motivate and explain the ground rules and basic modus operandi of (pure) mathematics. These are addressed at several different levels: one, the need for and advantages of abstraction, and the need for and meaning of proof; two, how one deals with infinity – or rather, with limits (e.g. what does it mean for two real numbers to be equal?): infinite sets, indeed sets in general, don't get a look in; three, a few selected topics of a more specific nature: 'advanced' geometry, which may be non-Euclidean or higher-dimensional, and 'estimates and approximations' as a method of obtaining precise results in, for example, analytic number theory. There is something pleasantly old fashioned about it: apart from a brief mention of manifolds, everything could have been written by G.H. Hardy a century ago (I hope Tim Gowers will take this as a compliment).

Every mathematician has his or her own mental folder labelled with something like the title of this book. No doubt, what is inside our various individual folders varies widely, but I think we would all agree that the issues Tim Gowers has chosen to focus on are fundamental and deserve to be included. We also all agree that the discoveries – or inventions – of Euclid, Wiles and the countless mathematicians before, between and after them collectively represent (or at least equal) the greatest achievement of the human intellect since civilization began. At the same time, we all know that most people, however well educated and intelligent, just don't see this: some are sympathetic but bemused, many just consider it bizarre.

The latter class of reader is not likely to be converted by this book. Those who are sympathetic but bemused will be wiser after reading what Gowers has to say; but I'm not sure they will be much closer to grasping the beauty, excitement and greatness of mathematics.

Tim Gowers sets himself some austere ground rules: " ... I do presuppose some interest on the part of the reader rather than trying to drum it up myself. For this reason I have done without anecdotes, cartoons, exclamation marks, jokey chapter titles or pictures of the Mandelbrot set." Nothing wrong with that: the ideas are quite exciting enough in themselves. But the author is perhaps a little too determined to avoid hype: there is a risk that instead of drumming up the reader's interest, he may extinguish it. There are two aspects to this. One is the concentration on foundational issues, at least to start with; the other is a sort of 'negative tendency' to begin things with a red herring, which is then knocked on the head before the real business of the chapter gets going. For example, Chapter 2 begins with a quixotic discussion of whether numbers exist, the only point of which is to emphasize that "mathematicians can, and even should, happily ignore this seemingly fundamental question". This is a good point, but hardly the thing to whet the novice's appetite. Nor is the advice (I paraphrase) "if you think this is pedantic, try reading Principia *Mathematica*."

Criticisms of this kind are easy to make. On reflection, I realised that they really amount to blaming the author for not having written the book I was expecting. Of course, Gowers is a first-rate mathematician, and he has produced a thoughtful and illuminating account of matters that are rarely spelt out. Understanding such matters is fundamental to grasping what mathematicians are about, and the (right sort of) reader will be much the wiser. Other readers might have preferred a bit less of the painstaking foundations, and more hints of the exciting rewards available at the end of all the work. But this was not the author's goal, and it is done in many other books. His goal is clearly signalled in the preface: "I have focused on a different barrier to mathematical communication. This one, which is more philosophical than technical, separates those who are happy with notions such as infinity, the square root of minus one, the twenty-sixth dimension and curved space from



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those who find them disturbingly paradoxical. It is possible to become comfortable with these ideas without immersing oneself in technicalities, and I shall try to show how". Not an easy thing to do in 138 small pages, and it is well done.

The final chapter, 'Some frequently asked questions', is not about the content of mathematics as such; it discusses several old chestnuts about mathematicians and the sociology and discipline of mathematics. It can safely be recommended to everyone. I did find the very last section, 'Why do mathematicians refer to some theorems and proofs as beautiful?', a bit disappointing; in keeping with the tone of the rest of the book, Gowers seems reluctant to discuss the mystery, excitement and sense of achievement that are surely the lifeblood of mathematics. It is arguable that these can only be appreciated by the practitioner, who jolly well has to slog through the definition of Hilbert space before getting to that point. But this is a harsh message to hit the interested newcomer with, and I'm not sure I agree with it.

Who should be given this book as a present? I envisage the ideal reader as a university lecturer in some non-mathematical subject (though a philosopher will find points to argue with), or an already dedicated mathematical sixth-former; the sixth-former who is considering mathematics among a range of possible subjects to study at university should be only be given this book in conjunction with one of Ian Stewart's (or Rudy Rucker's, or Keith Devlin's, or Marcus du Sautoy's) offerings, to provide that extra frisson of excitement. For someone who knows that mathematics is important, and doesn't need to be shown why it is exciting, there is a lot of insight to be gleaned from Tim Gowers's thoughtful explanations of the basic building-blocks.

Dan Segal
Oxford University

DIARY

The diary 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/meetings/ diary.html).

SEPTEMBER 2003

17 Virtual Learning Environments Course, Newcastle University (316)
28–1 July Differential and Functional Equations in the Complex Domain Meeting, Loughborough University (316)
1-3 Undergraduate Mathematics Teaching Conference, Birmingham University (317)
1-5 Derived Categories in Algebra and Geometry, LMS /EPSCR Short Course, Warwick University (317)
1-5 Computational Algebra, NETCA Instructional Workshop, St Andrews University (315)
3-6 British Logic Colloquium, St Andrews University (316)
11-12 Modular Invariants and Representations of Finite Groups: Theory and Computation Conference, University of Kent, Canterbury (318)
15 Function Theory Meeting, De Morgan House, London (318)
15-17 Mathematics of Surfaces X, IMA Conference, Leeds University (316)
15-18 Free Boundary Problems in Fluid Mechanics Colloquium, Nottingham University (316)
15-19 Topics in Algebraic Geometry, LMS/EPSRC Short Course, Bath University (317)
16-25 Singularity Theory and its Applications Meeting, Sapporo, Japan (314)
17 Structural Modelling and Nonlinear Mathematics Conference, University of Exeter (318)
17-19 Computational Modelling in Medicine Workshop, ICMS, Edinburgh (316)
19 Meeting in Honour of Susan Brown and Michael O'Neill, University College, London (318)
22 South of England Computational and Algorithmic Number Theory Seminar, Bristol University (318)
22 Jack, Hall-Littlewood & Macdonald Polynomials Workshop, ICMS, Edinburgh (317)
25 Measure Theory, Topology & Set Theory Meeting, De Morgan House, London (318)

OCTOBER 2003

2 Robert Hooke Commemoration Symposium, Oxford (311)
24 LMS South West & South Wales Regional Meeting, Nonlinear Dynamics, Southampton University (318)
25-26 Nonlinear Dynamics & Life Sciences Workshop, Southampton University (318)
25 John Wallis Tercentenary Meeting, New College, Oxford (318)
27-31 Geophysical Granular & Particle-Laden Flows, Satellite Meeting, INI, Cambridge (318)

NOVEMBER 2003

15 Belfast Functional Analysis Day, Queen's University Belfast (315)
21 LMS Annual General Meeting and Naylor Lecture, London
23-27 Remarkable Delta '03 Conference, Queenstown, New Zealand (314)

DECEMBER 2003

8-12 Stochastic Methods in Coagulation and Fragmentation EuroWorkshop, INI, Cambridge (314)
16-18 Cryptography and Coding IX, IMA Conference, Royal Agricultural College, Cirencester (316)

JANUARY 2004

9 UK & Republic of Ireland SIAM Section Annual Meeting, Sheffield University (316)
10-11 New Frontiers in Computational Mathematics Workshop, Manchester University (318)
20-23 Towards a Predictive Biology Conference, INI, Cambridge (316)

FEBRUARY 2004

20 LMS Mary Cartwright Lecture, London

MARCH 2004

30-1 Apr Modelling Permeable Rocks IV, IMA Conference, Southampton University (316)
31-2 Apr Quantitative Modelling in the Management of Healthcare IV, IMA Conference, Salford University (316)

APRIL 2004

5-7 Modelling in Industrial Maintenance and Reliability V, IMA Conference, Salford University (316)
5-8 British Mathematical Colloquium, Queen's University, Belfast (315)
19-22 British Applied Mathematics Colloquium, East Anglia University

MAY 2004

30-6 Jun Symmetry and Perturbation Theory Conference, Italy (318)

JUNE 2004

27-2 Jul Fourth European Congress of Mathematics, Stockholm (315)

JULY 2004

4-11 ICME10 – International Congress of Mathematical Education, Denmark (308)

SEPTEMBER 2004

1-6 Pan-African Congress of Mathematics, Tunisia (308)
14-18 Boundary Integral Methods III: Theory and Applications, IMA Conference, Brunel University (316)

HENRY FREDERICK BAKER
DE MORGAN MEDALLIST
1905

Professor Baker received the De Morgan Medal on 9 November 1905. Baker is remembered as the founder of a vigorous school of geometry and for his influential six-volume work Principles of Geometry published 1922-33. In fact his contributions to knowledge in that field, to which the second half of his life was devoted, came after the award of the De Morgan Medal and only represent about half of his mathematical work; the range which he covered goes far beyond the bounds of geometry. His contributions to the theory of functions, differential equations and continuous groups had in their day as much influence as his later work in geometry.