

THE LONDON MATHEMATICAL SOCIETY NEWSLETTER

No. 312

February 2003

FORTHCOMING SOCIETY MEETINGS

Friday 28 February 2003 - Edinburgh

Mary Cartwright Lecture

B. Bollobás, J. Chayes

Tuesday 11 March 2003 – Manchester

Northern Regional Meeting

Geometric Representation and Invariant Theory

Wednesday 14 May 2003 – Coventry

Midlands Regional Meeting

Uncertainty Modelling

Friday 20 June 2003 – London

J.C. Rickard, M.J. Taylor

COUNCIL RETREAT 2003

Council of the London Mathematical Society will be holding a retreat during the weekend of 7-9 March 2003, in order to discuss matters of policy more fully than can be done at usual Council meetings. The theme of the meeting will be to look at threats to the future of the mathematics base in the UK, and possible actions by the Society, with sessions on: aspects of the school-university transition; courses, students and staff in university mathematics departments; and research in mathematics. Council would be pleased to hear from members of the key topics that they feel should be addressed in these areas. Please send them to the Executive Secretary at De Morgan House (cooper@lms.ac.uk), preferably by **10 February**.

THE LIBRARY OF THE LONDON MATHEMATICAL SOCIETY

As many members will be aware, the Society possesses a substantial library of its own, consisting of a large collection of periodicals obtained in exchange for the Society's publications, copies of books and journals published by the Society and items acquired by the Society as review copies or gifts.

The Library is housed by University College London and is integrated with the UCL library; so LMS members have access to the combined resources of UCL and the LMS, and may use all the material available in the reading rooms and stores of the UCL Library. The Library's online catalogue (eUCLid) is available via the internet. The insert enclosed with this month's *Newsletter* provides detailed information about this valuable resource and the map shows that it is within easy walking distance of De Morgan House.

Members wishing to use the Library should register to obtain a UCL Library card. Unregistered members will not be refused postal photocopying services but registration is essential before items can be borrowed. This entails filling in a form and providing a passport-size photograph. For personal users, library cards will be provided on the spot at the Issue Desk of the Science Library. Alternatively, members may register by post. You may request the relevant form by post, email, fax or telephone (mentioning membership of the Society) from UCL Library's Admissions Officer. You may also download a Library application form from the Library's website (www.ucl.ac.uk/Library).

R.T. Curtis
LMS Librarian

COLOUR SECTION

With its customary and proper distaste for intemperate action, the Society is proceeding cautiously but steadily toward the aim of redesigning the Newsletter. Meetings with professional design consultants are planned shortly, although traditionalists can be assured that it will be some months before the familiar monochrome A5 leaflet undergoes any startling change.

David Chillingworth
General Editor

WILL LIGHT

Professor W.A. Light, who was elected a member of the London Mathematical Society on 15 November 1985, died on the 8 December, aged 52. He had been Professor of Mathematics in Leicester since 1991, having held posts previously at Lancaster University. Will Light was a Pro Vice Chancellor of the University of Leicester and an editor of the *Journal of Approximation Theory*.

LAST NEWSLETTER

This will be the last Newsletter you will receive if you have not yet paid your 2002/03 LMS subscription, which was due on 1 November 2002. If you have misplaced your renewal of subscription form, which was included with your October 2002 Newsletter, either contact the LMS Office (email: membership@lms.ac.uk; tel: 020 7637 3686; fax: 020 7323 3655) or download the form from the LMS website (www.lms.ac.uk/contact/subscriptions.html).

FRANK SMITHIES

There will be a memorial meeting for Dr Frank Smithies at 12 noon on Saturday 1 March at St John's College Cambridge, followed by a reception. All are welcome. Would you please let Dr Garling (djg1001@cus.cam.ac.uk) know if you intend to be present.

NEW YEARS HONOURS LIST

Congratulations to Toni Beardon, senior teaching and research associate, Cambridge University School of Education, for services to mathematical education, and to Clifford Beavers, Professor of Mathematics, Heriot-Watt University, for services to higher education, who both received OBEs.

NORTH BRITISH FUNCTIONAL ANALYSIS SEMINAR

A meeting of the North British Functional Analysis Seminar (NBFAS) will be held in Fylde College, Lecture Room 2, at the University of Lancaster from 12 noon – 5 pm on Saturday 1 March, with a sandwich lunch available in the Fylde Senior Common Room. There will be two talks by Professor Françoise Lust-Piquard of the Université de Cergy-Pontoise, France, who will be speaking on “Examples of L^p bounds for the square function of Riesz transforms, (1) in non-discrete settings (Gaussian measure on \mathbf{R}^n , Heisenberg groups) and (2) in discrete settings (the Cantor group, \mathbf{Z}^n): the Stinespring factorization method”. In addition there will be several other speakers, including Professor Alan Hopenwasser of the University of Alabama, USA. For further information please contact the NBFAS secretary Dr Michael Dritschel (m.a.dritschel@ncl.ac.uk).

VISIT OF PROFESSOR D.M. KLIMOV

Professor D.M. Klimov (Russian Academy of Sciences) will be visiting the University of Keele supported by an LMS Scheme 2 grant. He will give the following talks

- 26 February, 1:45 pm, University of Manchester *Asymptotic methods in nonlinear mechanics*
- 27 February, 2:00 pm, University of Salford *Mechanics of mixing of viscoplastic media*
- 5 March, 4:00 pm, University of Keele *Asymptotic methods in nonlinear mechanics*

For further information contact Professor Yibin Fu, Department of Mathematics, Keele University, Staffordshire ST5 5BG (tel: 01782 583650, fax: 01782 584268, email: y.fu@keele.ac.uk).

GAZA LIBRARY PROJECT

The GLP (sponsored by Sir Eric Ash FRS, Sir Michael Atiyah FRS, H.H. Rosenbrock FRS and Sir Magdi Yacoub FRCS) is a UK charity which collects and dispatches books and periodicals to academic and professional libraries in Gaza and the West Bank. Accordingly the GLP is asking for books, continuous long runs of journals and money to help shipment costs. This notice is to urge mathematicians to organise collections in their departments. (Books should be in fairly good condition and can range from A-level to research level. Please do not use this as an opportunity to get rid of books which nobody will read.) Donors should pack books in strong cardboard boxes (university main libraries or bookshops usually have plenty) and then seal them with parcel tape.

It would also be helpful if colleagues could identify individuals in other departments who may be willing to organise collections in their own subjects.

When boxes are ready for dispatch you should contact Michael Payne (secretary to the trustees) at the following email address: 106141.2003@compuserve.com, who will arrange for collection and transport. Further information about the GLP can be found at its website (www.brunel.ac.uk/~emstksh/gaza).

To encourage you, at Warwick more than 500 books (not including journals) have been collected and packed in less than three weeks.

Bill Parry
Warwick University

SIXTH INTERNATIONAL CONFERENCE ON INFORMATION FUSION

The sixth International Conference on Information Fusion will be held from 8-11 July 2003 at the Radisson Hotel, Cairns, Queensland, Australia. FUSION is an annual conference aimed at scientists and engineers working in all aspects of information and data fusion. Authors are requested to submit contributions on both the theory and application of information fusion, with submissions on non-traditional topics being encouraged. At least two reviewers will review all submitted papers. Accepted papers will be published in the conference proceedings, to be available at the conference site. The conference will also feature plenary talks and tutorials on topics of interest.

Further information can be obtained from the Chair, Dr Jean Dezert (Jean.Dezert@onera.fr), or the Co-Chair, Professor Florentin Smarandache (smarand@unm.edu). Information is also available from the website (www.fusion2003.org).

STRUCTURAL THEORY OF AUTOMATA, SEMIGROUPS, AND UNIVERSAL ALGEBRA CONFERENCE

A conference on Structural Theory of Automata, Semigroups, and Universal Algebra (SMS-NATO ISI) will be held at the Université de Montréal, Canada, from 7 – 18 July 2003.

Main speakers to include: J. Almeida (Porto), J. Dassow (Magdeburg), R. Freivalds (Riga), J. Jezek (Prague), A. Krokhnin (Oxford), V.B. Kudryavtsev (Acad. Sci. Moscow), A. Letichevsky (Acad. Sci. Kiev), R. McKenzie (Vanderbilt), I. Rosenberg (Montreal), L.N. Shevrin (Ural State), M. Steinby (Turku), M.V. Volkov (Ural State).

The application deadline is **21 February 2003**. Further information and an application form can be obtained from the website (www.dms.umontreal.ca/sms) or email (sms@dms.umontreal.ca).

THE BOLOGNA PROCESS

On 19 June 1999, twenty-nine European education ministers signed up to the 'Bologna Declaration'. This envisaged the creation of a 'European Higher Education Area' to improve the employability and mobility of European citizens and to increase the attractiveness of European higher education to students coming from outside the area.

To achieve this, ministers (including the UK minister) signed up to a common framework for comparable degrees, including a standardization of degree lengths, and to a credit transfer system. The countries involved agreed to introduce any necessary changes by 2010.

The reason that such a far-reaching change has had little publicity in England and Wales is that the Bologna Declaration decided to call the first degree a 'Bachelor' and to specify that the length of study should normally be three to four years. But, as things progress – and in many countries in Europe things have indeed progressed – it becomes clear that the Bologna process will pose problems.

First of all, the official number of hours that UK students study in a year is 1,200, which lies below the 1,400-1,600 range which is official in most European countries. (I do not pretend to know what correspondence there is between official hours and actual study time.) This matters if credit transfer is to be based on hours of study. Universities UK is arguing for credit transfer to be based on 'learning outcomes', but I am not sure whether it is wise to lend any more credence to currently fashionable measures of quality control. I expect that such a course would increase pressure for convergence of curricula.

It is also now clear that the title 'Master' will have to be reserved for postgraduate qualifications, so, by 2010, if not long before, we shall have to reconsider at least the title of our undergraduate Masters degrees. Further, it is likely that an MSc or MA will have to take two years of study after the Bachelor degree (certainly if the qualification is based on length of study).

But, I hear you say, our universities are independent and don't need to agree to any of this. Even setting aside examples of lemming-like behaviour by our institutions, there is reason to believe that there won't be much choice. To sign up to the European Credit Transfer System (and, probably, to keep our degrees recognised as professional qualifications throughout Europe), universities will have to agree to sign up to the Bologna Declaration and the methods by which it will be implemented.

David Salinger
Publicity Secretary
European Mathematical Society

REFLECTIONS OF A FORMER PRESIDENT

I became President in late November 2000. As it happened, I was away in South Africa for 10 or 12 days in early December and had to miss the important annual meeting of IMA, LMS, RSS and ORS representatives with the EPSRC Chief Executive and several of his colleagues who had responsibility for mathematics. The LMS was well represented by four members of the LMS Council and by the Executive Secretary. This was an early object lesson for me in the strong support given to the LMS President by the Honorary Officers, by other members of Council and by the Executive Secretary. To them I will firmly add the Administrator, the Publisher and all the staff of De Morgan House, all of whom helped to make my responsibilities far less onerous; in fact they helped to make life at De Morgan House a real pleasure!

You may well ask, but what does a President do? What are the priorities? The President does chair Council, the General Purposes Committee (GPC), the Programme Committee, ... such activities start in January. However there was something that seemed to raise its head almost immediately: the new President is required to give attention to the choice of a successor, a President-designate to take up office some two years later! After much thought, and discussion with senior colleagues, a choice emerged. Happily for the LMS Peter Goddard accepted!

A second early matter to engage me was that of the Retreat, which was held at the Isle of Thorns in February and during which several topics of policy were discussed and will be touched upon in this article.

A third item was my contact with the IMU over the 2002 Beijing Congress. But over the long term, my two-year term, what were the topics that engaged my attention? Let me discuss several of them in turn.

- (i) Over recent years a collaborative relationship has been developing between the IMA, which was formed some 40 or more years ago, and the LMS, which dates from 1865. The then President of the IMA, Steve Reid, attended the Retreat of February 2001, and from then onwards our two Societies produced Statements of Aims and developed policies of collaboration. Regular meetings are held between the Presidents and two or three officers of each Society. Some aspects of our collaboration will be discussed later.
- (ii) The LMS has been keen to foster relations with the European Mathematical Society (EMS), one example being the LMS Sponsorship of a mini-symposium at the EMS-SMF-SMAI conference to be held in Nice in February 2003, but there have been others.
- (iii) Discussions with the Royal Statistical Society (RSS) have taken place at meetings of the Council for the Mathematical Sciences (CMS), a joint body of the IMA, LMS and RSS.
- (iv) Collaboration with the EPSRC has been good, that Council being the major supporter of mathematical research in the UK. "Connectivity", the utilisation of mathematics in other fields, such as Engineering, has been one source of collaboration; short courses for research students and post-docs has been another. At the regular December meetings with the EPSRC Chief Executive, many aspects of their policies, such as "success rates", have been discussed frankly with representatives of the four societies.
- (v) What has been called "The Erosion of the Mathematics Base" became a major pre-occupation during 2001-2002. Mathematical education is all important in our modern society, but some bodies, some universities, seem to forget this when driven by short-term financial needs. As President, I wrote to half a dozen Vice-Chancellors about closures, constraints on Mathematics Departments, and about the transfer of service teaching for financial, non-academic reasons. The topic was taken up also at a large

cross-disciplinary meeting held under the sponsorship of the Science Council, following pressure from the LMS and the IMA. A meeting has now been arranged between the Presidents and Executive Secretaries of the LMS and IMA, and the Chairman of HEFCE to discuss the place of mathematics in UK universities. (Actually I, as former President, will represent Peter Goddard and the LMS at the Meeting). Developments are awaited with interest.

- (vi) The LMS has been fostering relations with our USA counterparts, the AMS and SIAM, and it is hoped that joint meetings will emerge.
- (vii) A taxing, time-consuming but very interesting and enjoyable part of the President's duties has been chairing the Prizes Committee; it has been a pleasure to decide on prizes for many fine mathematicians, but also to realise the great strength of the competition, many talented candidates being nominated.
- (viii) During the last few years members of the LMS have worked hard to improve the position of Women in Mathematics, a number of developments having been reported in the *LMS Newsletter*: the Oxford Brookes Mentoring Scheme and the Susan Greenfield Report are two examples.
- (ix) During 2002, the IMA and LMS resolved to institute a David Crighton Medal in memory of the late President of the IMA and President-designate of the LMS. The first recipient will be announced in 2003.
- (x) Following the wishes of her late husband, Ali Fröhlich, Dr Ruth Fröhlich made a very generous and substantial donation to the LMS for a Fröhlich Prize and Fröhlich Lecture to be given in alternate years; the first lecture will be in June 2003.
- (xi) Of concern to the LMS in the last year or more has been the fall in the Society's assets, due to the state of the stock market. Even so, and with support from our publishing arm, successive Treasurers have ensured that we have been able to continue our LMS support for Mathematics, such as through the LMS Programme and Conference Fund. We are indebted to our Treasurers for their careful Stewardship.
- (xii) On the publishing side, the LMS resolved to take on the publishing of *Compositio* and this will come into effect in 2004. There have been other on-going developments. The LMS has benefited enormously from the substantial revenue produced by our publishing arm, not least in these days of falling share prices!

Finally I would like to reiterate my gratitude to the Officers and many other members of the LMS, to the Executive Secretaries, to the Administrator and the Publisher and all the staff at De Morgan House for their kindness and helpfulness during my Presidency.

Trevor Stuart

CENTRE FOR THE POPULARISATION OF MATHEMATICS
University of Wales, Bangor

Supported by an EPSRC popularisation grant, and continued advice and support of John Robinson and his Patrons, Mike Yates of SUMIT software has made a radical reorganisation of the Centre's website (www.cpm.informatics.bangor.ac.uk/) to improve navigation and coherence, and to add new sculptures and new animations. We have added soft links to the new url, and apologise for any problems in this respect, but cannot cover all links.

The aims are as before: to show a wide culture for mathematics, to associate mathematics with objects of beauty, and to try to explain some methods of mathematics to the general public. This it is hoped will also suggest that mathematics needs to be properly supported for its own sake even in order to obtain the expected and hoped for applications in science and high technology.

Ronnie Brown

BRITISH WOMEN IN MATHEMATICS DAY

The 2003 British Woman in Mathematics Day will be held on Tuesday 6 May at De Morgan House. Talks will begin at 11 am, after half an hour of coffee, and end at 4.30 pm, followed by an excursion to a nearby restaurant for an early supper. While this is an occasion particularly for women active in mathematics to get together, men are certainly not excluded. Sessions will include talks by practising women mathematicians in a variety of appointments and at different career stages.

One aim of the day is to encourage women approaching the various interfaces - undergraduate/postgraduate, PhD/Postdoc and so on - at which the proportion of women who stay in mathematics drops significantly; we hope that an opportunity to see women who are active and successful in mathematics, and to meet with them informally over lunch, tea, etc., will have a positive effect on this problem. The organisers would be very grateful if all members could encourage women mathematicians, particularly students (including final year undergraduates) and those at an early stage in their career, to attend this meeting. British Women in Mathematics are very grateful for the support given to this event by the London Mathematical Society. For further information contact Isabelle Robinson at the Society (tel: 020 7927 0800, email: robinson@lms.ac.uk).

INTERNATIONAL REVIEW OF MATHEMATICS Scientific Secretary

EPSRC has proposed to the Council for the Mathematical Sciences (CMS) that an International Review of UK Mathematics Research should be conducted in 2003.

An International Panel of Experts will be assembled to undertake the Review. The International Panel will be guided by a UK based Steering Group.

The International Panel and the Steering Group will be supported by a Scientific Secretary. It is envisaged that this will be a part-time appointment equivalent to six months work during 2003. Details of the vacancy will be posted imminently on the CMS website (www.cms.ac.uk).

The Scientific Secretary will lead the organisation of the Review under the direction of the Steering Group. The project will include preparation for the visits of the International Panel to selected UK universities, provision of background information and production of the report. Candidates will ideally be well versed in the UK mathematics scene.

EUROMECH FLUID MECHANICS CONFERENCE

The next European Fluid Mechanics Conference will be held in Toulouse (France) from 24 – 28 August 2003. This conference, organised under the auspices of EUROMECH by the Institut de Mécanique des Fluides de Toulouse, will be the fifth in the series started in Cambridge in 1991 and continued in Warsaw (1994), Göttingen (1997) and Eindhoven (2000). The conference will cover the whole field of Fluid Dynamics, ranging from very fundamental aspects to recent applications. This conference will provide a unique opportunity for fluid dynamicists to see what is going on in this very active field in Europe and to exchange views on recent developments. The conference will comprise invited lectures, oral presentations, poster sessions, and three mini-symposia dealing with selected topics. Selection of papers will be made on the basis of a one-page abstract. All correspondence can be directed to the EFMC2003 Conference Office, Institut de Mécanique des Fluides de

Toulouse, Allée Camille Soula, 31400 Toulouse, France (fax: + 33 (0)5 61 28 59 42, email: efmc2003@imft.fr, web: www.imft.fr/efmc2003).

GROUPS AND MODEL THEORY CONFERENCE
Preliminary Announcement

There will be a two-day meeting at the University of Leeds from 11 - 12 April 2003 on Groups and Model Theory. There will be up to eight main lectures, and up to four contributed talks from postgraduates. Speakers will include:

- John Wilson (Birmingham)
- Ian Chiswell (Queen Mary, University of London)
- Tristram de Piro (Edinburgh)
- Ivan Tomasic (Leeds)
- Katrin Tent (Würzburg)
- Eric Jaligot (Paris)

The first lecture will start at 11 am on 11 April, and the meeting will end about tea-time on 12 April. There will be a registration fee of £10. Some reasonably priced accommodation will be available in Devonshire Hall, or in cheap hotels fairly close to the university. The organisers are able to offer some support for UK-based research students to attend from the London Mathematical Society grant.

There will be a display of posters, and current or recent PhD students are encouraged to submit posters at the meeting. They should let the organisers know beforehand. (pmtjkt@leeds.ac.uk). Note that the British Mathematical Colloquium will be held immediately before this meeting, on 7 – 10 April (www.mat.bham.ac.uk/bmc/). The conference is supported by the London Mathematical Society and the British Logic Colloquium.

CENTRE DE RECERCA MATEMATICA
Activities 2003-2004

Complex Systems and Computer Science in Sports 14 – 18 May 2003, Barcelona, Co-ordinator: Natàlia Balagué, www-ma1.upc.es/comcom/

Advanced Course on Polynomial Identity Rings 1- 10 July 2003, Barcelona, Co-ordinator: Ferran Cedó, www.crm.es/PI-rings

Barcelona Conference on Asymptotic Statistics 2 – 6 September 2003, Barcelona, Co-ordinator: Vladimir Zaiats, www.crm.es/bas2003

Barcelona Conference on Set Theory 16 – 20 September 2003, Barcelona, Co-ordinator: Joan Bagaria, www.crm.es/set-theory

Advanced Course on Ramsey Methods in Analysis 21 – 30 January 2004, Barcelona, Co-ordinator: Joan Bagaria, www.crm.es/RamseyMethods

Advanced Course on Contemporary Cryptology 2 – 13 February 2004, Barcelona, Co-ordinator: Paz Morillo, www.crm.es/ContemporaryCryptology

Advanced Course on Automata Groups 5 – 16 July 2004, Barcelona, Co-ordinator: Warren Dicks, www.crm.es/AutomataGroups

Mathematical Foundations of Learning Theory, June 2004, Barcelona, Co-ordinator: Gábor Lugosi, www.crm.es/MathematicalFoundations

For further information see the websites listed above, or contact Centre de Recerca Matemàtica, Apartat 50, E-08193 Bellaterra, Spain (tel: 34 935811081, fax: 34 935912202, email: crm@crm.es).

DYNAMICAL SYSTEMS WITH DELAY AND/OR DISCONTINUITIES

The Dynamics, Bifurcations and Unfoldings Group in the South (DynaBUGS) is holding a meeting on *Dynamical systems with delay and/or discontinuities* on Friday 7 February at the Department of Engineering Mathematics, University of Bristol. Speakers include Chris Budd (Bath), David Chillingworth (Southampton) and researchers at Bristol. For further details contact Bernd Krauskopf (B.Krauskopf@bristol.ac.uk). DynaBUGS gratefully acknowledges financial support from the LMS under Scheme 3, providing some travel and subsistence expenses for participants. Research students are particularly encouraged to attend.

REPORT ON THE LMS MEETING ON 22 NOVEMBER 2002

The two lectures had as their theme the possibility of the emergence of singularities in inviscid fluid flows from given initial conditions.

Professor J.D. Gibbon began his lecture on ‘Singularity formation in the 3D Euler equations’ with a review of results on the three-dimensional incompressible Euler equations which govern inviscid fluid flow. It is still an open question whether these equations develop a singularity in a finite time; the pre-eminent result belongs to Beale, Kato and Majda (1984) whose theorem says that the time integral of the maximum norm of the vorticity must control any singularity that might develop in any Euler variable, even in arbitrarily high derivatives. This criterion is used by computational fluid dynamicists to check their results. While the general singularity problem remains open, Professor Gibbon showed that a more modest approach can be taken which restricts the analysis to a class of three-dimensional solutions where the third velocity component is linear in z but whose coefficient (and other variables) are functions of x , y and t . The resulting two-dimensional equations were analysed; numerical and other results found by the speaker, in collaboration with K. Ohkitani of RIMS (Kyoto), indicated that a finite time singularity does indeed form. This has been confirmed analytically by P. Constantin (Chicago). The physical manifestation of this class of solutions is a vortex, of infinite energy, with a rich internal structure, which breaks down at the singular time.

Following Professor Gibbon’s lecture, the outgoing President, Professor Trevor Stuart lectured on ‘Hydrodynamic stability and singularities’. After a brief discussion of the relation of his subject to the problem of turbulence, especially the occurrence of “puffs”, “slugs” and “spots” of turbulence, he introduced the idea that fluid flows can be described in two different ways; they are (i) by motion of individual particles (Lagrangian scheme) and (ii) by the velocity and other fields at a point (Eulerian scheme). The utilization of these two descriptions is rather important in the discussion of the emergence of singularities, a phenomenon most easily described by the use of the method of characteristics for the relevant hyperbolic equations. A class of exact solutions with singular behaviour was shown to emerge in this way, a member of which had independently been discovered analytically and computationally by J.D. Gibbon and D.R. Moore. Professor Stuart outlined a generic structure for incompressible or compressible flows one which showed the strong possibility of a singularity occurring from smooth initial conditions when the flow has vorticity.

Both lectures were much appreciated and attracted substantial discussions. A reception at De Morgan House and the Annual Dinner, at The British Museum, then followed.

Dan Moore
Imperial College

RECORDS OF PROCEEDINGS AT MEETINGS

ANNUAL GENERAL MEETING

held on *Friday 22 November 2002* at University College London. About 55 members and visitors were present for all or part of the meeting.

The meeting began at 3:15 pm with Professor J.T. STUART, FRS, in the Chair. Dr A.R. Pears and Dr D.J. Collins, Scrutineers, collected ballot papers.

The Treasurer, Professor N.M.J. Woodhouse, presented his annual report, which is published in the January issue of the *Newsletter*. Messrs Baker Tilly were appointed as auditors.

Thirteen people were elected to Ordinary Membership: M. Angelova, C.D. Coman, G. Davis, M. Glendza, L. Gregory, J.B. Griffiths, H. Krause, M. Matthew, G. Röhrle, S.A.R. Stevens, C.F. Townsend, H. Ugail, B.S. Webb; and forty were elected to Associate Membership: R.F. Bailey, P.C. Bartlett, D.L. Bennett, M. Benson, B. Boettcher, R.A. Brownlee, S.G.F. Bushell, C.A.S. Carvalho, E. Clifford, M.D. Cook, S.R. Cowell, C.S.M. Currie, K.K. Dhinsa, N.M. Donaldson, S.C. Edwards, M.D. Finn, C.A. Goldschmidt, J.E. Grabowski, B.K.A. Hoolash, C.L. Irving, H. King, R.H. Levene, V. Lioudaki, M. Johnson, J. Munding, G.P. Oliver, E.J. Park, N.H. Powell, M.M. Rahman, S. Rout, R.J. Samworth, N.J.S.N. da Silva, R. Simons, R.E. Thorn, A. Tsygvintsev, A.G. Turner, R.J. Waters, R.J. Whittaker, J.P. Wunderle, S. Zerbes. One member signed the book and was admitted to the Society.

The President, on Council's behalf, presented certificates to the 2002 Society Prizewinners: Polya Prize: Professor N.J. Hitchin, FRS; Naylor Prize: Professor M.H.A. Davis; Whitehead Prizes: Dr A. Corti, Dr M. Csörnyei, Dr C. Telean. The President announced that Dr K.M. Buzzard was unable to attend the meeting to collect his Whitehead Prize and Professor J.C. Rickard was unable to attend the meeting to collect his Senior Berwick Prize.

Professor J.D. Gibbon gave a lecture entitled 'Singularity Formation in the 3D Euler Equations'.

After tea, the Scrutineers announced the election results. The following Officers and Members of Council were elected: President: P. Goddard, FRS; Vice-Presidents: A.G. Chetwynd, A.J. Scholl; Treasurer: N.M.J. Woodhouse; General Secretary: N.L. Biggs; Programme Secretary: S.A. Huggett; Publications Secretary: E.C. Lance; Education Secretary: W.B. Stewart; Members-at-Large for two years: I.D. Abrahams, M.R. Bridson, M.M. Dodson, K.J. Falconer, FRSE, S.E. Rees, F.A. Rogers. The members elected to the Nominating Committee for 2002 were: C.A. Hobbs, D.M. Sloan. Council membership is completed by the following who were elected for two-year terms in 2001: R.T. Curtis, J. Howie, FRSE, M.A.H. MacCallum, M. Mathieu, M.A. Reid, FRS, I.A. Stewart.

The newly-elected President, Professor P. GODDARD, FRS, took the Chair. The retiring President, Professor J.T. Stuart, FRS, then gave his Presidential Address on 'Hydrodynamic Stability and Singularities'.

After the meeting a reception was held at De Morgan House, followed by the Annual Dinner, which was held at The British Museum and attended by 75 people.

LMS INVITED LECTURES SERIES

The Society's Invited Lectures series consists of meetings at which a single speaker gives a course of about ten expository lectures, examining some subject in depth, over a five day period (Monday to Friday) during a University vacation. The meetings are residential and open to all interested. It is intended that the texts of the lectures given in the series shall be published. In addition to full expenses, the lecturer is offered a fee of £1250 for giving the course and a further fee of £1500 on delivery of the text in a form suitable for publication. Recent lecturers in the series have been P.F. Baum (1995), F.J. Almgren (1996), J. Alperin (1997), D. Zagier (1998), A. Mielke (1999), B. Dubrovin (2000), T. Goodwillie (2001), P. van Moerbeke (2002).

The 2003 Invited Lectures Series will be given at the University of Wales Swansea by M. Fukushima.

For the 2004 meeting, proposals are now invited from any member who, in addition to suggesting a topic and lecturer, would be prepared to organize the meeting at the member's own institution or a suitable conference centre. Enquiries about this series should be directed to the Executive Secretary, Mr Peter Cooper at the Society (web: www.lms.ac.uk; email: cooper@lms.ac.uk; tel: 020 7637 3686, fax: 020 7323 3655). Programme Committee expects to make a decision on Friday 20 June 2003.



Professor of Pure Mathematics

Applications are invited for a Chair in Pure Mathematics, tenable from 1 October 2003, or as soon as possible thereafter, in the Department of Mathematical Sciences. The successful candidate will have an outstanding research record in a branch of Pure Mathematics. The salary will be by negotiation within the professorial range.

The department's pure mathematics group was graded 5 in the last research assessment and the group's research interests include number theory, arithmetic and algebraic geometry, topology, and differential and hyperbolic geometry.

For informal discussion of the post, please contact: Professor W.J. Zakrzewski (Chairman), tel: +44 (0)191 374 2382, email: w.j.zakrzewski@durham.ac.uk or Professor R.S. Ward, tel: +44 (0)191 374 2378, email: Richard.Ward@durham.ac.uk.

Further details and an application form may be obtained from the Director of Personnel, Old Shire Hall, Durham DH1 3HP, or by phone: +44 (0)191-374 3140, fax: +44 (0)191-374 7253 or email: I.a.cook@durham.ac.uk; see also <http://maths.dur.ac.uk/pure/>.

Applications (5 copies), including the names of three referees, should be submitted to the Director of Personnel by Tuesday, **15 April 2003**, quoting reference C2064. (Candidates outside the British Isles need submit one copy only.)

55th British Mathematical Colloquium

University of Birmingham

7 – 10 April 2003

Plenary speakers

Jonathan Alperin (Chicago), George Andrews (Penn State), John Conway (Princeton), Tim Gowers (Cambridge), Michael Harris (Paris VII).

Special Lecture

There will be a special lecture presented by Simon Singh on Wednesday 9 April before the conference dinner.

Morning Speakers

Vladimir Bavula (Sheffield), Tom Bridgeland (Edinburgh), Martin Bridson (Imperial), Joseph Chuang (Bristol), Marianna Csörnyei (UCL), Karin Erdmann (Oxford), Roderick Gow (Dublin), Ian Grojnowski (Cambridge), Tom Körner (Cambridge), David Preiss (UCL), Caroline Series (Warwick), Ted Slaman (Berkeley), Neil Strickland (Sheffield), Alex Wilkie (Oxford), George Willis (Newcastle, NSW).

Special Sessions

- Groups and their applications
- Analytical topology
- Mathematics education and university mathematics

There are at least ten splinter groups covering the spectrum of pure mathematics and there is a prize sponsored by Princeton University Press for the best talk presented at one of these sessions by a postgraduate student (see the webpages for regulations).

We are operating an on-line registration form for BMC2003 registration at

<http://www.mat.bham.ac.uk/bmc/>

If you would prefer to register by post, then please print out a copy of the on-line form, fill it in, and send it to the organisers at BMC2003, School of Mathematics and Statistics, University of Birmingham, Edgbaston, Birmingham B15 2TT.

Registration for BMC2003 is £50 and the final date for registration is **24 March 2003**. It is also possible to register on a daily basis at £20 per day. Students and unwaged participants do not need to pay the registration fee.

There are two satellite meetings:

The Galway Topology Colloquium (in Birmingham) starting 9 am Monday 7 April then using a special session and a splinter group of the BMC. For further details of this meeting and to reserve accommodation please contact Chris Good (c.good@bham.ac.uk).

A Groups and Model Theory Conference, University of Leeds, 11 - 12 April. For further details of this meeting please contact John Truss (pmtjkt@leeds.ac.uk).

All enquiries about BMC2003 should be directed to Chris Parker at

BMC2003@maths.bham.ac.uk

The British Mathematical Colloquium is supported by The London Mathematical Society and the Edinburgh Mathematical Society.

LONDON MATHEMATICAL SOCIETY

MARY CARTWRIGHT LECTURE

Friday 28 February 2003

National e-Science Centre,
15 South College Street, Edinburgh

- 3.30 – 4.00** **Béla Bollobás (Memphis/Cambridge)**
Models of Large-Scale Real-World Networks
- 4.30 – 5.00** **Tea/Coffee**
- 5.00 – 6.00** **Mary Cartwright Lecture**
Jennifer Chayes (Microsoft Research)
A Model of Directed Scale-Free Graphs
- 6.00 – 7.00** **Reception**
- 7.00 - 9.00** **Dinner**

Immediately following this event, there will be a dinner at the Chapterhouse Restaurant, to which participants are invited. The cost will be approximately £23, to be paid at the restaurant.

If you would like to attend this meeting, please register online (<http://umbriel.dcs.gla.ac.uk/NeSC/general/esi/events/154/index.html>). On-line registration will close on **21 February**. Thereafter registration enquiries should be made direct to the conference administrator (adminteam@nesc.ac.uk).

The e-Science Institute is less than 15 minutes' walk from Waverley rail station, and from St Andrews Square bus station. It is approximately 20 minutes by taxi from Edinburgh airport (40 minutes by bus). Visit the website for a map of the area (www.nesc.ac.uk).

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 may be addressed to the Programme Secretary at the Society (<http://www.lms.ac.uk>; email: grants@lms.ac.uk). Requests should include an estimate of expenses and a very brief *curriculum vitae*; research students should include brief letters of endorsement from their supervisors.

LONDON MATHEMATICAL SOCIETY MARY CARTWRIGHT LECTURE

Friday 28 February 2003

National e-Science Centre,
15 South College Street, Edinburgh

ABSTRACTS

MODELS OF LARGE-SCALE REAL-WORLD NETWORKS

Béla Bollobás (Memphis/Cambridge)

In 1998, Watts and Strogatz observed that many large-scale real-world networks, including neural networks, power grids, collaboration graphs, and the internet, have numerous common features that resemble properties of random graphs. It was also realized that the standard mean-field and lattice-based random graphs are not appropriate models of these large-scale networks, so we should look for other classes of random graphs. One of the main features demanded of these new random graphs is that they should be scale-free. The first such model was introduced by Barabási and Albert in 1999; by now, numerous models of scale-free random graphs have been proposed and studied, mostly by computer simulations and heuristic analysis.

In the talk we shall review a number of these models, and present several recent rigorous results obtained jointly with Oliver Riordan.

MATHEMATICAL MODELS OF THE INTERNET AND WORLD WIDE WEB

Jennifer Chayes (Microsoft Research)

During the past decade, complex networks have been increasingly important in communication and information technology. In particular, the internet — a complex network of routers and computers linked by hard wires or wireless connections — is now a principal means of worldwide communication. The world wide web (WWW) — a huge collection of pages connected by directed hyperlinks — is rapidly becoming our principal repository of information and misinformation, as well as a medium for social and economic interaction. Although the internet and the WWW have many distinct features, both complex networks have a self-organized, rather than an engineered, architecture. As a consequence of this self-organization, the internet and the WWW have a host of properties which are different from those encountered in engineered structures: a broad ("power-law") distribution of connections, short paths between two given points ("small world phenomenon"), robustness to random errors, vulnerability to malicious attack, etc. In this talk, I will first review some of the distinguishing observed features of these networks, and then review the recent models which have been devised to explain these features. The basic models have their origins in statistical physics, probability theory, graph theory and game theory. All models explain some observed features, but so far no single model explains all of them. I will also present our own recent model, introduced and studied in collaboration with Béla Bollobás, Christian Borgs, and Oliver Riordan, which is the first model with directed hyperlinks to give the observed power-law connection distribution of the WWW.



National University of Ireland Galway

Junior Lectureship in Mathematics

Applications are invited for the above full-time permanent post.

The Department of Mathematics runs full degree programmes in the Arts and Science Faculties and is a major contributor to both the denominated degree in Computer Science/Mathematical Science and to the denominated degree in Financial Mathematics & Economics. Service courses in Mathematics are additionally given in the Engineering, Commerce and Medical Faculties. There are active and on-going Masters' and PhD programmes.

The vacancy originally arose as a result of additional students into the computing area. Preference will be given to applicants with an interest in the interactions between Mathematics and Computer Science and the successful applicant will be expected to lecture in this area.

Further information on the Department and its many commitments may be obtained at its home page (www.maths.nuigalway.ie).

For informal information contact Professor Ted Hurley (tel: 353-91-750442; fax: 353-91-750542; email: ted.hurley@nuigalway.ie).

Further information is available on the HR Department website (www.nuigalway.ie/news).

Candidates should submit six copies of their *curriculum vitae* to The Human Resources Department, National University of Ireland, Galway (tel: 353-91-512069; fax: 353-91-750523; email: personnel@mis.nuigalway.ie).

Closing date for completed applications is **Friday 21 February 2003**.

National University of Ireland Galway is an equal opportunities employer.

LONDON MATHEMATICAL SOCIETY MIDLANDS REGIONAL MEETING AND WORKSHOP

Uncertainty Modelling

Meeting 14 May – Workshop 15-17 May 2003

Room AS130, Armstrong-Siddleley Building,
Priory Street, University of Coventry

The Midlands Regional Meeting of the London Mathematical Society will be held on the afternoon of Wednesday 14 May. There will be a reception afterwards and a dinner in the Lanchester Restaurant at 7.00 pm.

3.30 – 4.30 **Olaf Wolkenhauer (UMIST)**
Mathematical Modelling of Cellular Dynamics

4.30 – 5.00 **Tea/coffee**

5.00 – 6.00 **Robert Babuska (Delft)**
Fuzzy Systems

This will be followed by a Workshop on ‘Uncertainty Modelling’ from 15-17 March inclusive. It is intended that there will be two strands to the workshop, one oriented to control engineering/systems theory and one towards applications in the biological domain. Both events should be of interest to mathematicians working in the field of fuzzy logic. Invited speakers who have accepted include:

R. Babuska (Delft)	D. Pearson (St. Etienne)
M. French (Southampton)	S. Townley (Exeter)
E. Ryan (Bath)	A. Zinober (Sheffield)

For further details, including opportunities to contribute to the workshop, please contact the organiser, Dr Helen Robinson (tel: 024 7688 8586, email: Robinson@coventry.ac.uk). Coventry University is about 10 minutes’ walk from the station.

Both of the above events are supported by the London Mathematical Society.

There are limited funds available to contribute in part to the expenses of members of the Society or research students to attend the Society Meeting on 14 May. Requests for support may be addressed to the Programme Secretary at the Society (web: www.lms.ac.uk; email: grants@lms.ac.uk). Requests should include an estimate of expenses and a very brief *curriculum vitae*; research students should include brief letters of endorsement from their supervisors.

LONDON MATHEMATICAL SOCIETY NORTHERN REGIONAL MEETING AND WORKSHOP

Geometric Representation and Invariant Theory

University of Manchester
Meeting 11 March – Workshop 12-15 March 2003

The Northern Regional Meeting of the London Mathematical Society meeting will be held on the afternoon of Tuesday 11 March. There will be a reception and dinner afterwards.

3.00 – 4.00 **Jens Carsten Jantzen (Aarhus)**
4.00 – 4.30 **Tea/coffee**
4.30 – 5.30 **Victor Ginzburg (University of Chicago)**

This will be followed by a Workshop from 12 - 15 March inclusive on 'Geometric Representation Theory'. Expected speakers include:

Jacques Alev (Reims)	George McNinch (Notre Dame)
Henning Haar Andersen (Aarhus)	Ivan Mirkovic (UMASS)
Ivan Arzhantsev (Moscow State)	Dan Nakano (Georgia/Oxford)
Ken Brown (Glasgow)	Dmitri Panyushev (Moscow)
Ranee Brylinski (Penn State)	Patrick Polo (Paris)
Bill Crawley-Boevey (Leeds)	Claus Michael Ringel (Bielefeld)
Alexander Elashvili (Tbilisi)	Serge Skryabin (Kazan/Hamburg)
Iain Gordon (Glasgow)	Helmut Strade (Hamburg)
Ian Grojnowski (Cambridge)	Donna Testerman (EPFL, Lausanne)
Steffen Koenig (Leicester)	Michel Van den Berg (Limburgs)

The scientific organiser is Alexander Premet (University of Manchester, email: sashap@maths.man.ac.uk). The organising committee consists of the scientific organiser and the LMS regional organisers, Mike Prest (University of Manchester, email: mprest@maths.man.ac.uk) and Ted Voronov (UMIST, email: voronov@ma.umist.ac.uk). The conference secretary is Francesca Moss (tel: 0161 275 5899, email: francesca@maths.man.ac.uk).

Some funds available to contribute in part to the expenses of members of the Society or research students who wish to attend the Society Meeting on 11 March. Requests for support should be addressed to the Programme Secretary at the Society (web: www.lms.ac.uk, email: grants@lms.ac.uk). Requests should include an estimate of expenses and a very brief *curriculum vitae*; research students should include brief letters of endorsement from their supervisors.

The workshop is supported by the London Mathematical Society and EPSRC.

For further information visit the conference website (www.ma.man.ac.uk/lmsconf).

LONDON MATHEMATICAL SOCIETY

in association with the Isaac Newton Institute

Spitalfields Day

MONDAY 10 FEBRUARY 2003

Mathematical Aspects of the Dynamics of Phase Transitions

Organiser: C.M. Dafermos (Providence)
and P.G. LeFloch (Ecole Polytechnique)

- | | |
|----------------------|--|
| 10:30 – 11:00 | Coffee |
| 11:00 – 12:00 | J. Knowles (Pasadena)
<i>Some applications of continuum-mechanical
kinetic relations</i> |
| 12:30 – 13:30 | Lunch |
| 14:00 – 15:00 | T.J. Pence (East Lansing)
<i>Dynamics of shear induced phase
boundary motion</i> |
| 15:00 – 15:30 | Tea |
| 15:30 – 16:30 | L. Truskinovsky (Minneapolis)
<i>Kinetic relations generated by lattice models</i> |
| 17:00 – 18:00 | Wine Reception |

Anyone interested is welcome to attend. Please advise Tracey Andrew at the Institute immediately if you intend to come, to help us plan for lunch (tel: 01223 335984; fax: 01223 330508; email: t.andrew@newton.cam.ac.uk).

There are limited funds available to assist research students to attend, please apply immediately to Tracey Andrew at the Institute. Scientific enquiries may be addressed to Professor P.G. LeFloch (email: lefloch@cmap.polytechnique.fr).

PHOTOGRAPH OF SYLVESTER

**JAMES JOSEPH SYLVESTER
DE MORGAN MEDALLIST 1887**

Extract from the President's address on 10 November 1887: "This award is a just recognition of those vast mathematical attainments and discoveries which will make Professor Sylvester's name immortal. To detail achievements so varied is impracticable. This mere phrase 'Modern Algebra' is suggestive enough. But in every department of pure mathematics the marks of his strong hand are seen. This presentation on the part of the Society is, after all, only the expression of an admiration which is felt in all civilised lands, and which will be felt in after times, so long at least as men continue to admire grand powers nobly employed."

DIARY

FEBRUARY 2003

7 Dynamical Systems with Delay and/or Discontinuities Meeting, Bristol University (312)

MARCH 2003

1 North British Functional Analysis Seminar, Lancaster University (312)

APRIL 2003

11-12 Groups and Model Theory Conference, Leeds University (312)

MAY 2003

6 British Women in Mathematics Day, De Morgan House (312)

JUNE 2003

20 LMS Meeting, London

JULY 2003

8-11 Information Fusion Conference, Queensland, Australia (312)

7-18 Structural Theory of Automata, Semigroups, and Universal Algebra Conference, Montreal University, Canada (312)

AUGUST 2003

24-28 Euromech Fluid Mechanics Conference, Toulouse, France (312)

Change Newsletter number from (311) to (312)

FEBRUARY 2003

10 Mathematical Aspects of the Dynamics of Phase Transitions LMS Spitalfields Day, INI, Cambridge (312)

28 LMS Mary Cartwright Lecture, Edinburgh (312)

Change Newsletter number from (311) to (312)

MARCH 2003

11-15 LMS Northern Regional Meeting & Workshop, Geometric Representation and Invariant Theory, Manchester University (312)

Change Newsletter number from (296) to (312)

APRIL 2003

7-10 BMC 2003, Birmingham University (312)

Change Newsletter number from (311) to (312)

MAY 2003

14-17 LMS Midlands Regional Meeting & Workshop, Uncertainty Modelling, Coventry University (312)

CHANGE OF NAME OF CONFERENCE

AUGUST 2003

28-5 Sep (*replace New Horizons...*) Non-commutative Aspects of Number Theory Conference, Durham University (307)