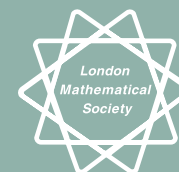


THE LONDON MATHEMATICAL SOCIETY



NEWSLETTER

No. 322 January 2004

Forthcoming Society Meetings

2004

Friday 20 February
London

D. Schleicher
S.M. Rees
(Mary Cartwright
Lecture)
[page 5]

Wednesday 12 May
Nottingham
Midlands Regional
Meeting

Friday 18 June
London
Hardy Lecture

Friday 2 July
Newcastle
Northern Regional
Meeting

Friday 17 September
Exeter
South West & South
Wales Regional
Meeting

Friday 19 November
London
Annual General
Meeting

COUNCIL DIARY 21 November 2003

The first substantial item at the November meeting was the Treasurer's business. Council approved his report for the Annual General Meeting. It reported a (small) rise this year in the Society's fixed assets, in line with a general rise in UK equities; welcome news after last year's falls, but the Society continues to review its investment policy. As has been the case in each of the last few years, the Society's fortunes have been significantly boosted by revenue from its publishing activities. The Society also receives income from rent of surplus space in De Morgan House, and is looking for new tenants as the current tenants are terminating their agreement. A number of possibilities are under consideration, including some with organisations with which we have some common cause.

The relaunch of the journal *Compositio Mathematica* is going full steam ahead, advertised at a recent very successful meeting in Amsterdam, and at the AMS meeting in Phoenix in January. The Publisher reported on her recent investiga-

tions for a possible further new venture for LMS Publications, in the area of Mathematical Biology.

Stephen Huggett reported on arrangements for the then very imminent International Review of Mathematics. All the background documentation was now with the International Panel, and many of the venues had had dry runs.

The President reported on the production of the medal for the joint IMA-LMS David Crighton award; he showed Council a plaster cast, which was agreed to be a very good likeness of David.

The Society welcomed a powerful 'statement of concern' that the Education Secretary had prepared, based on the Society's response to the HEFCE consultation on Funding Mathematics in universities.

Council received reports from a number of its representatives on other bodies. Ken Brown reported from the Scientific Committee of the British Mathematical Colloquium, on plans to hold further joint meetings with the BAMC, on the increasingly important problem of the cost of accommodation, and on how a liability for VAT complicated the issue of a BMC

reserve fund. Tom Körner, our representative at the British Association for the Advancement of Science, reported that the Mathematics Section was in need of some boosting. It was recognised that the British Association provides a massive opportunity for media attention, and agreed that this would be an appropriate job for the new Mathematics Promotion Unit.

The report of the General Secretary sparked off an extensive discussion on the aims of the Society and its relationship with the IMA; a joint LMS/IMA working group has been considering this relationship, and it is now proposed that we should step up a gear and embark on a more thorough investigation of the ways in which the two societies might work together on issues which are relevant to both. As a starting point we would need to examine in detail the aims of the LMS. In recent years much has changed. The LMS has been going through a period of evolution, during which the acquisition of De Morgan House and the appointment of an Executive Secretary have been key

moves. As it nears the end of this phase, the Society is more conscious than before of the relationship between its income stream and the schemes it has to support; it needs to be, as the mechanisms for support of our main activity, namely research, are changing at many levels.

As the meeting moved towards its end, it was time for the President to thank those members of Council whose last meeting it was, and especially Chris Lance, who had been Publications Secretary since 1996 during a period of major expansion the Society's publishing activity. Then Tony Scholl closed the meeting with his thanks to the President. He had only been in office for one year, leaving early to take up his new appointment at the Institute for Advanced Study in Princeton, but, as Tony put it, rather than take time to get up to speed as President, he had started his post with us with rocket boosters on, and so had more than made up for his short tenure.

Sarah Rees

LONDON MATHEMATICAL SOCIETY 2003-2004 COUNCIL

As a result of the annual election, membership of the Council is the following:

President:	Professor F.C. Kirwan FRS (Oxford)
Vice-Presidents:	Professor A.G. Chetwynd (Lancaster) Professor A.J. Scholl (Cambridge)
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TREASURER'S REPORT TO THE ANNUAL GENERAL MEETING 2003

In the financial year 1 September 2002 to 31 August 2003 the Fixed Assets of the Society rose in value from £9,556,871 to £9,819,351. The rise is welcome after the sharp fall last year, and reflects a general rise in UK equities.

The Building and Development Reserve Fund was unchanged over the year, and stands at £500,000. The Printing and Publication Reserve Fund fell by £55,413 to £1,144,587, after a planned withdrawal to meet the start-up costs of the journal *Compositio*. Two new reserve funds were established, the Grants Payable Fund

(£68,900) to cover grants that have been awarded but which will not be claimed immediately; and the Special Activities Reserve (£23,222) to hold gifts and bequests. The level of reserve funds, and their purpose, will be reviewed in January.

It has been another good year for the Society's publishing activities, which generated a welcome surplus of £558,560, the drop from last year being almost entirely due to the start-up costs of *Compositio*. The surplus is the result of good management rather than excessive profit taking, but provides an essential contribution to the resources needed to pursue the Society's charitable objects.

The total expenditure of the Programme Committee, Research Meetings Committee, Computer Science Committee, Women in Mathematics Committee, and Education

LMS Newsletter

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Reviews Editor: Professor M.P.F. du Sautoy (dusautoy@maths.ox.ac.uk)

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email: oakes@lms.ac.uk, web: www.lms.ac.uk)

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Committee was very much the same as last year at £296,895, but other grants and expenditure in furtherance of the objects of the Society fell back some £40K to the level of 2000-01, having increased by roughly this amount last year as a result of grants for the Mathematical Olympiad and for the ICM in Beijing.

Total ordinary membership increased marginally by 5; there was a sharp increase in associate membership from 43 to 138, reflecting the success of the EPSRC scheme to pay the cost of membership for EPSRC-funded research students. Subscription income rose from £47,070 to £52,406; expenditure on direct services to members was steady.

Management and Administration costs rose from £503,472 to £541,677. The rise reflects an increase in salary costs, other smaller changes largely cancelling out (a rise in IT costs, a fall in electricity costs, and a fall in travel costs for officers, Council, and committees). Last year, travel costs were inflated by the ICM in Beijing.

Overall, the news is positive, certainly in contrast to last year. There are no dramatic changes to report, but Council is aware of the Society's reliance on its publications surplus, and is concerned about future developments in this area as electronic publishing becomes more widespread and efficient. I would like to thank Ephrem Belay, Susan Oakes and Peter Cooper for their tireless work and support.

N.M.J. Woodhouse
Treasurer

ROYAL GOLD MEDAL

The Royal Society of Edinburgh awards the Royal Gold Medal in recognition of intellectual endeavour which has had a profound influence on people's lives, world-wide. Amongst those recently awarded the Royal Gold Medal was Sir Michael Atiyah, OM, FRS, for his profound and beneficial effect in the development of mathematics and science in the UK and Europe.

ANDREI BOLIBRUKH

Academician Andrei Bolibrukh died on 11 November 2003 after a long illness, at the age of 53. Professor Bolibrukh was appointed as the Editor of *Izvestiya Mathematics* in 2002 and he was a very welcome newcomer to the collaboration that the Society has with the Russian Academy of Sciences on the translation of this journal. His contribution to the management meetings that took place this summer in Moscow was clear and incisive and gave an indication of his value to Russian mathematics as one of the internationally distinguished mathematicians who chose to work in Russia. He was Deputy Director of the Steklov Institute. Bolibrukh applied modern methods of complex analytic geometry to classical problems about ordinary differential equations and was a leading expert on Hilbert's 21st problem. After doubts had been raised in the 1970s about J. Plemelj's 1908 solution, Bolibrukh published the first counterexample in 1989; his work also gave correct proofs in many cases.

LMS-IMA WORKING GROUP

Representatives of the LMS and IMA now meet regularly to discuss ways in which the two organisations can co-operate for the good of the mathematical community. A meeting took place on 19 September 2003 and this joint report, the second in the series, is provided for the membership of both societies.

1. It was reported that the design and striking of the David Crighton Medal was proceeding via Fattorini's; a plaster cast would be available for viewing by Johanna Crighton, and others representing the two organisations. It was proposed that the award be presented to the 2003 recipient, John Ball, at the IMA Presidential Address on 23 June 2004, an open event, followed by a reception.

LONDON MATHEMATICAL SOCIETY MARY CARTWRIGHT LECTURE

Friday 20 February 2004, University College London

3.30 – 4.30 **Professor Dierk Schleicher (Bremen)**
Understanding Complex Dynamical Systems and their Parameter Spaces

4.30 – 5.00 **Tea**

5.00 – 6.00 **Mary Cartwright Lecture**
Professor Mary Rees (Liverpool)
The Topographer's View of Parameter Spaces

The two talks by Mary Rees and Dierk Schleicher will discuss parameter spaces which arise in complex dynamical systems: each point in such a parameter space represents a different dynamical system, and different parameters are distinguished by the different features which the corresponding dynamical systems might have. This gives interesting structure to parameter spaces. One often finds that a relatively small class of dynamical features yields a good understanding of the entire parameter space.

The first talk, *Understanding Complex Dynamical Systems and their Parameter Spaces* by Dierk Schleicher, will provide some examples of parameter spaces, of different dynamical features and how they help to distinguish different dynamical systems. The rigidity given by complex differentiability of the maps allows us to translate many questions into the realm of symbolic dynamics. We will illustrate the rich interplay between complex dynamical systems, symbolic dynamics, and combinatorial models in a number of cases.

In the second talk, Mary Rees will concentrate on some parameter spaces of quadratic rational maps, and will describe the *topographer's view* of these spaces, one of the subjects in a forthcoming *Astérisque* volume (288). This is essentially a geometrization theorem for a larger space of maps. It is a recurring theme in dynamics that purely topological information has a considerable bearing on dynamical behaviour, not only on the level of individual maps, but also on the level of parameter spaces. The large influence of critical points in complex dynamics is related to this.

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. 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).

2. In discussion of the roles played by the IMA and the LMS in support of conferences several points were made, including:

- Unlike the LMS, the IMA processes conferences to recover all costs and this policy can lead to perceptions that the IMA is less 'charitable' than the LMS.
- Groups of IMA members run conferences from their own organisations and often receive support from the LMS. It was noted that the IMA had recently introduced a modest conference grant scheme aimed at addressing the same need.
- The LMS feels the need for smaller low-cost meetings and sees no reasons to amend the basis of its support.
- Outside the academic sector, it was less easy for members to draw on their own organisations to facilitate low-cost meetings. However in many cases the higher registration fee was accepted by the membership as reasonable.
- Further opportunities for collaboration between the two societies exist, separate from their role in facilitating meetings organised by the mathematics community itself. For example there is a wide range of meetings being arranged across mathematics for different participants. The two societies, in attempting to support meetings in different parts of this multidimensional spectrum, were broadly complementary.

3. Links with overseas and international organisations and mathematicians were discussed.

- Both organisations have overseas members and their journals are distributed throughout the world. The LMS has reciprocity agreements with some equivalent societies overseas. Other opportunities for international collaboration exist. For instance, neither body at present has formal links with Australia.

- The LMS Council is considering proposals to establish an International Affairs Committee, to bring together the Society's international activities. The IMA will be asked to nominate a member to the new committee, as it had for the former IMU Advisory Committee.

4. Future strategy for LMS-IMA relations was discussed, and the following points were made:

- It was undoubtedly beneficial for the mathematics community that the two organisations were meeting to discuss issues of common interest. No matter what longer-term outcome, it was agreed this level of communication should be maintained.
- There are clearly strong reasons for looking at closer collaboration, not least in terms of external perceptions of mathematics and our ability to influence policy-formers.

The meeting agreed to propose that:

- the Councils should aim to establish, by discussion among their members, a view within two years on the direction and speed of change in long-term relations between the two bodies;
- a group (or two linked groups) should be established to draw up a consultation paper, looking at the ways the two organisations could best benefit mathematics by various structural arrangements;
- no matter what the outcome, the links between the LMS and IMA should be maintained and enhanced.

Norman Biggs
Charles Evans

NOTE FROM THE GENERAL SECRETARY

On 21 November 2003 the LMS Council discussed the proposal referred to in Item 4 of the report printed above. Council agreed to the proposal in principle, and the details are currently under discussion with the IMA.

Norman Biggs

New textbooks from Springer

L. Lovász, J. Pelikán, K. Vesztegombi
Discrete Mathematics
Elementary and Beyond
The authors discuss a number of selected results and methods of discrete mathematics, mostly from the areas of combinatorics and graph theory, with a little number theory, probability, and combinatorial geometry.
2003. IX, 298 p., 95 illus.
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Softcover € 39.95; sf 66.50; £ 30.50
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6th ed., 2003. XXIV, 960 p., 14 illus. (Universitext)
Softcover € 34.95; sf 65.00; £ 27.00
ISBN 3-540-04158-1

O. Moeschlin, E. Grycko, C. Poppinga, F. Steinert
Discrete Stochastics
This (electronic) textbook is based on courses on probability theory developed by O. Moeschlin. The aim is to describe the typical ways of thinking and the working methods of stochastics on an intermediate level. The text is accompanied by several exercises as well as solutions and comes on a fully linked CD-ROM together with fifteen so-called experiments.
2003. CD-ROM with booklet: III, 184 p.
€ 49.95; sf 95.00; £ 38.50
ISBN 3-540-14913-9

P. Knabner, L. Angewan
Numerical Methods for Elliptic and Parabolic Partial Differential Equations
This book covers numerical methods for partial differential equations: discretisation methods such as finite difference, finite volume and finite element methods; solution methods for linear and nonlinear systems of equations and grid generation.
2003. IV, 624 p., 67 illus. (Texts in Applied Mathematics, Vol. 44)
Hardcover € 79.95; sf 133.00; £ 61.50
ISBN 3-540-91549-X

O. Moeschlin, E. Grycko, C. Pohl, F. Steinert
Experimental Stochastics
Version 2.0
From the reviews of the first edition: "... In summary, I think that this unique package can be used very successfully in courses to motivate students for problems in probability theory and statistics in a lucid way ..."
J. Voit, *Tübingen in Metrika*
2003. CD-ROM with booklet: XX, 288 p., 52 illus. and an Installation Manual
€ 79.95; sf 144.00; £ 66.50
ISBN 3-540-14028-1

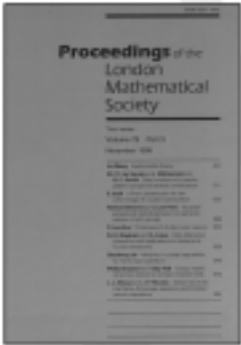
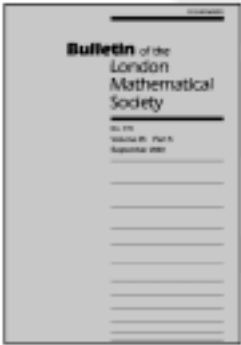
J. Blowey, A. Craig, T. Shardlow (Eds.)
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ANNUAL LMS SUBSCRIPTION 2003-04

The Society is appreciative of those members who have paid their 2003-04 subscriptions. May we remind those who have not yet paid that subscriptions were due on 1 November 2003. Prompt payment ensures continuity of publications and avoids the need for time-consuming reminders. The Society reserves the right

to discontinue the supply of periodicals and the *Newsletter* to members whose subscription remains unpaid by **31 January 2004**. The methods of payment are either by a sterling cheque drawn on a UK bank; a US\$ cheque drawn on a US bank, direct debit or credit card. If you have misplaced your renewal of subscription form, contact the LMS office (email: membership@lms.ac.uk; tel: 020 7637 3686; fax: 020 7323 3655).

Individual members 2003-04 rates

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<i>Bulletin</i> Volume 36	30.00	60.00
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<i>Proceedings</i> Volumes 88 & 89	60.00	120.00
<i>JCM</i> (electronic) Volume 7	free	free
<i>Nonlinearity</i> Volume 17 – except North America – North America	44.00	110.00
<i>Journal of Applied Probability</i> Volume 41	43.00	86.00
<i>Quarterly Journal of Mathematics</i> Volume 55	90.00	165.00
<i>Math. Proc. Camb. Phil. Society</i> Volumes 135 & 136	82.75	165.50
<i>Glasgow Mathematical Journal</i> Volume 46	45.00	90.00
<i>Journal of the European Mathematical Society</i> Volume 6	30.00	60.00

SCHEME 7 LMS COMPUTER SCIENCE SMALL GRANTS

The aim of the scheme is to provide small grants to individual LMS members within the United Kingdom to help support a visit for collaborative research at the interface of Mathematics and Computer Science, either by the grantee to another institution within the UK or abroad, or by a named Computer Scientist or Mathematician from within the UK or abroad to the home base of the grantee. A visit to investigate the potential for a research grant proposal to an interdisciplinary initiative would also be a legitimate request. The time available for joint research arising from the grant is expected to be several working days. The maximum sum available is £500 and, where necessary, grantees will have to cover further costs from other sources such as departmental or personal funds.

The intention is to provide sufficient funds so that the call on other sources is held within manageable bounds. Applications should be in the form of a letter setting out the proposed academic case for the visit, including a description of a specific project, an explanation of how the proposed research lies at the interface of Mathematics and Computer Science, the standing of the collaborator and an estimate of costs. Whilst a reasonable level of detail is desirable, an application should not be excessively long, and the documentation should run to at most three A4 pages. Applicants should bear in mind that the purpose of the Scheme is to support specific projects with named collaborators and not, for example, simply to contribute to the costs of a sabbatical visit.

A brief report on the use of the grant is expected: this should describe the academic outcome of the visit, together with very brief financial details. Grants will be awarded three times annually, in October, February and June, with respective deadlines for appli-

cations of 30 September, 31 January and 31 May. Awards will be restricted to one award in any given academic year (September to August) and in the event of oversubscriptions in any particular round, applicants who receive an award in the previous academic year will not be considered. Please send the grant application to Frances Spoor, Administrative Officer, London Mathematical Society (email: spoor@lms.ac.uk, tel: 020 7291 9979, fax: 020 7291 9978).

EPSRC MATHEMATICS PROGRAMME STRATEGIC ADVISORY TEAM

The Maths SAT met for the fourth time on 12 November at Polaris House, Swindon. The team received an update on the Balance of Portfolio exercise following the September meetings of Council's advisory panels TOP (Technical Opportunities Panel) and UP (User Panel). There is a biennial planning cycle that focuses, on alternate years, on programme assurance and on longer-term programme strategy. 2003 is a strategy year during which TOP and UP provide advice to the Chief Executive and Council on financial priorities and provide guidance to Programme Managers on future strategic directions.

In September, TOP and UP considered the fit between the core portfolio and Council's strategic objectives as set out in the EPSRC Strategic Plan. They also reviewed a number of cross-programme proposals to build on the core portfolio and optimise the allocation of resources within the current baseline.

The feedback on the quality of research being supported by the Mathematics Programme was very positive and the views of the International Reviews of Mathematics and of Operational Research are awaited with interest. The panels endorsed the work that the programme has done to encourage connectivity between mathematicians and users of

research in other disciplines and industry/business. However, they felt that there was still a need to continue to improve these interactions and this will remain a priority for the programme. The panels were concerned about the demographics of the academic community, particularly in statistics, where the shortage of researchers is beginning to impact on other disciplines. More generally, TOP and UP were keen that EPSRC should continue to find ways to overcome the conservatism of applicants and peer review, that all programmes should give more attention to public engagement activities and that universities should be encouraged to make full use of the flexibility afforded by doctoral training accounts.

At its October meeting, Council considered the advice from TOP and UP. It also discussed a preliminary proposal from the office for reallocating resources based on the cross-programme bids. Following these discussions, the office will present a full proposal to Council in December, detailing suggested resource allocations to individual programmes for 2004-05 and 2005-06. This will be accompanied by an analysis of the new activities these allocations will enable and the impact of the proposed allocations on existing activities.

Once the resource allocations and the business plans have been finalised and approved by Council they will be published on the EPSRC website.

The SAT had an interesting discussion on the issue of scientific ethics and public trust. EPSRC needs to take appropriate steps to ensure that research proposals are assessed fairly and without bias and that funding is distributed in accordance with clearly articulated principles. The scientific community also should address ethical concerns about its research to retain the support of society and the freedom to explore and develop new areas of science. We would be happy to receive suggestions of any areas of research within EPSRC's remit where ethical concerns may arise. The SAT also suggested that EPSRC should have the equivalent of a Corporate

Social Responsibility statement setting out our policy on these types of issues.

The next item on the agenda was EPSRC's funding of Statistics. The resources that have been included within the doctoral training accounts to enhance the stipends of PhD students in statistics and operational research were welcomed. In 2004, additional resources will be provided to the Mathematics Programme to continue to provide enhanced stipends in these shortage areas. Some suggestions for novel forms of doctoral training in statistics were made. The SAT suggested that the International Review should provide some indication of the quality of statistics research in the UK compared with international standards. It felt that both EPSRC and the Royal Statistical Society have a role to play in engaging with the research community and encouraging internationally leading statisticians to participate in EPSRC's responsive mode and its peer review process.

The head of EPSRC's international section, Jane Sykes, joined the SAT meeting for a discussion of EPSRC's International Strategy and the UK requirements for Framework Programme 7. Some data on the uptake of EPSRC schemes to support international collaborations was provided – not surprisingly, the Mathematics community is one of the largest users of the overseas travel grant and visiting fellowship schemes.

The final item on the agenda was dissemination of research grant outcomes and knowledge transfer. The SAT provided some feedback on the schemes that were most useful for these types of activities and suggested ways that knowledge transfer could be made more effective.

Finally, the SAT endorsed the change of name of the programme to the Mathematical Sciences Programme from 1 January 2004.

As always, the Mathematics Programme would be happy to receive feedback from the wider mathematics community on any of the issues that were discussed.

Dr Annette Bramley
EPSRC Programme Manager, Mathematics

MATHEMATICAL SCIENCES

The New Name for EPSRC's Mathematics Programme

On 1 January 2004, the Mathematics Programme became the Mathematical Sciences Programme. 'The aim of the change', said the programme manager, Dr Annette Bramley, 'is to reflect better the breadth of research and training activities supported by the programme. The portfolio now includes a significant component at the interfaces with other disciplines, and encompasses statistics and operational research as well as mathematics.'

The way the programme operates will not change and it will continue to support programme-specific activities such as the small grant scheme, workshops and post-doctoral fellowships alongside its support for research grants through responsive mode and a small number of managed activities.

ROYAL SOCIETY UNIVERSITY RESEARCH FELLOWSHIPS 2004

Applications are invited for appointments tenable from 1 October 2004. The Fellowships are funded, largely through a parliamentary grant from the Office of Science and Technology, for research in all the natural sciences (including agriculture, mathematics, health and human sciences, technology and engineering). This scheme aims to provide outstanding scientists, who should have the potential to become leaders in their chosen field, with the opportunity to build an independent research career.

Eligibility: Applicants must have a PhD or equivalent research experience, and must have at least two and not more than seven years' full-time postdoctoral experience by 1 October 2004. Career breaks such as maternity leave, EU national service and voluntary

service overseas can be discounted, but teaching experience and/or time spent in industry since the award of a PhD should be included in the total amount of postdoctoral experience. Part-time work will be counted *pro rata*.

University Research Fellowships are open only to European Union citizens who are either currently employed in the UK or, if not employed, have at some time been resident in the UK for a continuous period of three years other than for the sole purpose of receiving full-time education. Persons holding a permanent post in a European Union university will not be considered.

Length of tenure: Appointments are tenable for five years in the first instance (possibly renewable in instalments up to a maximum of 10 years) and will be available from 1 October 2004.

Place of tenure: Fellowships must be held in a UK university.

Value: Research fellows are paid on the non-clinical academic and academic-related staff (Lecturer A and B) salary scale which currently runs from £22,191 to £33,679. Starting salaries will be set at a point on this scale, with London Allowance where appropriate, and will rise incrementally each year. A limited number of merit increments will be awarded each year to reward outstanding performance. Annual research expenses (up to a maximum of £13,000 for the first year and £11,000 thereafter) will be available together with relocation expenses and a contribution to baggage costs for successful applicants from overseas and their families.

Number offered: Varies. Around 30 available for 2004.

Closing date: 9 January 2004. Past experience suggests that the results of the competition will be available about five months after the closing date. Please note that interviews are not held for these fellowships

Applications can only be submitted online on the Royal Society's new electronic Grant

Application and Processing (e-GAP) system (<https://e-gap.royalsoc.ac.uk>, or via the e-GAP logo on the front page of the Society's website). Applications can no longer be submitted on paper. If you would like any further information on these schemes, about the e-GAP process, or the submission of your application, please contact the Research Appointments Department, The Royal Society, 6-9 Carlton House Terrace, London SW1Y 5AG (tel: 020 7451 2545, email: e-gap@royalsoc.ac.uk).

ROYAL COMMISSION FOR THE EXHIBITION OF 1851 Research Fellowship

The scheme of 1851 Research Fellowships is intended to give a few young scientists or engineers of exceptional promise the opportunity for conducting research for a further period of two years. Approximately six awards are made each year.

Candidates in science subjects must normally be in possession of a PhD degree, or in the final stages of their PhD studies. Candidates offering engineering do not have to be in possession of a PhD, but must be of at least PhD standard. The Fellowships are open to candidates in any of the physical or biological sciences, in mathematics, in applied science, or in any branch of engineering.

The Fellowship stipend payable in 2004 is £21,700 for the first year, and £22,800 for the second year. In addition a London Weighting of £2,134 per annum is payable in appropriate cases.

A candidate must be British or a citizen of the British Commonwealth or of the Republics of Ireland or Pakistan, and should preferably be less than thirty years old. Candidates must be recommended by Professors or Heads of Departments of Universities or other Institutions of equivalent status in the United Kingdom.

Recommendations made on the prescribed

forms must be received on or before 27 February 2004. Appointments to the Fellowship will be made during June 2004. The full regulations, and application form, can be found at: www.royalcommission1851.org.uk/res_fellow.html.

VISIT OF PROFESSOR YURI MAISTRENKO AND DR OLEKSANDR POPVYCH

Professor Yuri Maistrenko and Dr Oleksandr Popvych (National Academy of Sciences, Ukraine) will be visiting Dr Peter Ashwin (University of Exeter) for a period during January 2004. During this time they will be working with Dr Ashwin on problems related to synchronizations, especially applications to coupled map systems. Their visit to the UK is supported by LMS Scheme 2 (Maistrenko) and Scheme 4 (Popovych) grants. Professor Maistrenko will give talks at Exeter, Bristol and UMIST; at the time of writing these have not yet been scheduled. For details please check the webpage www.maths.ex.ac.uk/Research/appIDSC/evens.html or contact PAshwin@ex.ac.uk.

PERCY ALEXANDER MACMAHON 150th Birthday Celebration

A meeting to celebrate Percy Alexander MacMahon's 150th birthday will be held on Thursday 23 September from 13:30 to 17:00, at the Open University Centre for the History of the Mathematical Sciences. The speakers will be George Andrews of Penn State University and editor of MacMahon's Collected Works, Keith Lloyd of Southampton University, David Singmaster of South Bank University, and Paul Garcia of the Open University. There will be a small exhibition of MacMahon memorabilia. For further information, email Paul Garcia (paul@marybj.cix.co.uk).

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SMS-NATO ADVANCED SUMMER INSTITUTE

Summer School

The SMS-NATO Advanced Summer Institute Summer School on *Morse Theoretic Methods in Non-linear Analysis and Symplectic Topology* will be held from 21 June - 2 July at the Université de Montréal, Canada. The following is a partial list of subjects to be covered :

- Floer homological methods in symplectic topology;
- Lagrangian geometry and topology;
- Analysis behind symplectic field theory;
- Generating functions and applications;
- Morse theory, graphs, and loop spaces;
- Homotopy theoretic tools in finite and infinite dimensional Morse theory;
- The Morse complex for infinite dimensional manifolds;
- The Conley index in Hilbert spaces with applications;
- Topology of robot motion planning.

The Invited Speakers are:

- Alberto Abbondandolo (Scuola Normale di Pisa)
- Paul Biran (Tel-Aviv)
- Ralph Cohen (Stanford)
- Octav Cornea (Montréal)
- Michael Farber (Tel-Aviv)
- Kenji Fukaya (Kyoto)
- Helmut Hofer (Courant Institute)
- Marek Izydorek (Technical University of Gdansk)
- Yong-Geun Oh (Madison)
- Leonid Polterovich (Tel-Aviv)
- Matthias Schwarz (Leipzig)
- Claude Viterbo (École Polytechnique)

The application deadline is **8 March 2004**. For further information and an application form contact: Diane Bélanger, SMS Coordinator, Département de Mathématiques et Statistique, Université de Montréal, CP 6128 succ Centre-Ville, Montréal QC H3C 3J7, Canada (email: sms2004@dms.umontreal.ca) or visit the website (<http://www.dms.umontreal.ca/sms>).

MATHEMATICS ACTIVITIES AT ICTP IN 2004

School on Commutative Algebra and Interactions with Algebraic Geometry and Combinatorics (24 May - 11 June)

Directors: A. Simis (Universidade Federal de Pernambuco, Recife, Brazil), N.V. Trung (Academy of Sciences of Vietnam, Hanoi, Vietnam), G. Valla (Università di Genova, Italy). **10 January 2004** deadline for requesting participation. Details available from: <http://agenda.ictp.trieste.it/smr.php?1563>

Summer School and Conference on Dynamical Systems (19 July - 6 August)

Directors: M. Viana (IMPA, Brazil), J.-C. Yoccoz (Collège de France). Honorary Directors: J. Palis (IMPA, Brazil), Ya. Sinai (Princeton University & Landau Institute, Russia). **15 March 2004** deadline for requesting participation. Details available from: <http://agenda.ictp.trieste.it/smr.php?1573>

Advanced School & Conference on Non-Commutative Geometry (9 - 27 August)

Directors: O.A. Laudal (University of Oslo, Norway), C. Procesi (Università 'La Sapienza', Rome, Italy), M. Van den Bergh (Limburgs Universitair Centrum, Diepenbeek, Belgium). **28 February 2004** deadline for requesting participation. Details available from: <http://agenda.ictp.trieste.it/smr.php?1576>

The Adbus Salam International Centre for Theoretical Physics (ICTP) was founded in 1964 by Abdus Salam (Nobel Laureate). ICTP operates under the aegis of two United Nations agencies: UNESCO and IAEA and is regularised by an agreement with the Government of Italy which provides the major part of the Centre's funding. One of the main aims of ICTP is to foster the growth of advanced studies and research in the developing countries. For further information visit the website www.ictp.trieste.it/.

School of Mathematics

The University of Southampton invites applications for five appointments in the fields of Applied Mathematics, Operational Research, Pure Mathematics and Statistics. The University is in the top ten of research-led universities in the UK for both research quality and research income. In the 2001 Research Assessment Exercise, all the units of assessment within the School were rated 5.

Professor of Statistics

Ref: 03P0355

The University is seeking a Professor to enhance and further its research in Statistics and to play a leading role in the newly created Southampton Statistical Sciences Research Institute (S²RI). The person appointed to this position will have a record of research achievement at the highest level in one or more areas of statistical science. It is anticipated that this appointment will be made in time to influence the Statistics appointment advertised below.

Closing date for applications for this position: 6 February 2004.

Lectureship in Statistics

Ref: 03P0356

Applications are invited for a Lectureship in Statistics with a start date of 1 September 2004.

An active researcher is sought who has a commitment to high quality research and teaching and who will be able to enhance the activities of S²RI.

Salary will be on the Lecturer A/B scale £22,191 - £33,679 per annum.

Closing date for applications for this position: 16 April 2004.

Informal enquiries concerning both of the above posts are welcome and may be made to Professor S.M. Lewis, telephone +44 (0)23 8059 3652 email: S.M.Lewis@maths.soton.ac.uk

Lectureship in Applied Mathematics Ref: 03F360

Applications are invited for a Lectureship in Applied Mathematics with a start date of 19 April 2004. The Applied Mathematics Group has an international reputation in General Relativity and Applied Mathematics. We seek someone with a strong research background in an area which will enhance the strengths of the group.

Salary on the Lecturer A/B scale £22,191 - £33,679 per annum.

Closing date for applications: 6 February 2004.

Informal enquiries concerning this post are welcome and may be made to Professor J.A. Vickers telephone +44 (0)23 8059 5113 email: J.A.Vickers@maths.soton.ac.uk

Lectureship in Operational Research

Ref: 03F0358

Applications are invited for a Lectureship in Operational Research with a start date of 19 April 2004 or as soon as possible thereafter. The Operational Research Group has an international reputation for its research in Deterministic and Stochastic Operational Research. We seek someone with a strong research background which will enhance the strengths of the Group.

Salary will be on the Lecturer A/B scale £22,191 - £33,679 per annum.

Closing date for applications: 6 February 2004.

Informal enquiries concerning this post are welcome and may be made to Professor C.N. Potts, telephone: +44 (0)23 8059 3651, email: C.N.Potts@maths.soton.ac.uk

Lectureship in Pure Mathematics

Ref: 03F0359

Applications are invited for a Lectureship in Pure Mathematics with a start date of 1 September 2004. The Pure Mathematics Group has an international reputation in Geometric Group Theory and Algebraic K-theory. We seek someone with an outstanding record of research in an area which will enhance the strengths of the Group.

Salary will be on the Lecturer A/B scale £22,191 - £33,679 per annum.

Closing date for applications: 6 February 2004.

Informal enquiries concerning this post are welcome and may be made to Professor G.A. Jones, telephone +44 (0)23 8059 3654 email: G.A.Jones@maths.soton.ac.uk

Information relating to the School may be found at <http://www.maths.soton.ac.uk>

Application forms and further particulars may be obtained from Human Resources, University of Southampton, Highfield, Southampton SO17 1BJ, tel: +44 (0) 23 8059 2750, email: recruit@soton.ac.uk or minicom: +44(0) 23 8059 5595, or alternatively visit our website www.jobs.soton.ac.uk Completed application forms should be returned by the stated closing date and the appropriate reference quoted.

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LONG-STANDING MEMBERS

The following is a list of mathematicians who have completed fifty years or more of membership of the London Mathematical Society.

12/12/1929	Wright, E.M	17/06/1948	Bateman, P.T.
04/02/1932	Potter, H.S.A	18/11/1948	Mullender, P.
13/12/1934	Meyler, D.S	13/12/1948	Fishel, B.
16/12/1937	Pitt, H.R.	20/01/1949	Borwein, D.
08/02/1940	Kendall, D.G	17/03/1949	Kilmister, C.W.
09/05/1940	Willmore, T.J	28/04/1949	Austin, M.C.
17/12/1940	Good, I.J.	17/11/1949	Northcott, D.G.
17/03/1943	Dyson, F.J.	15/12/1949	Godwin, H.J.
15/06/1944	Williams, A.E	19/01/1950	Shepherdson, J.C.
25/01/1945	Collard, K.	16/02/1950	Lehner, J.
25/01/1945	Ollerenshaw, K.	23/03/1950	Ponting, F.W.
17/05/1945	Henstock, R.	15/06/1950	Ackroyd, R.T.
28/06/1945	Tropper, A.M.	14/12/1950	Patterson, E.M.
13/12/1945	Rogers, C.A.	19/04/1951	Chen, D.L.C.
25/04/1946	Goldie, A.W.	17/05/1951	Roth, K.F.
25/04/1946	Rothman, M.	14/06/1951	Jackson, M.
23/05/1946	Huppert, E.L.	14/06/1951	Ledermann, W.
23/05/1946	Rees, D.	20/12/1951	Dowker, Y.N.
19/12/1946	Higman, G.	20/12/1951	Herszberg, J.
19/12/1946	Ruston, A.F.	17/01/1952	Boyd, A.V.
16/01/1947	Macbeath, A.M.	17/01/1952	Wilson, D.H.
20/02/1947	Hay, G.E.	14/02/1952	Utz, W.R.
20/03/1947	Hayman, W.K.	15/02/1952	Shephard, G.C.
22/05/1947	Ghaffari, A.	20/03/1952	Bonsall, F.F.
19/06/1947	Cassels, J.W.S.	20/03/1952	Swinerton-Dyer, H.P.F.
27/11/1947	Hilton, P.J.	20/11/1952	Knight, A.J.
18/03/1948	Burkill, H.	18/12/1952	Reeve, J.E.
18/03/1948	Isaacs, G.L.	18/12/1952	Taunt, D.R.
18/03/1948	Reade, M.O.		

DEADLINES REMINDER

9 January	Royal Society University Research Fellowships 2003 applications
16 January	De Morgan Medal, Senior Berwick Prize, Naylor Prize, Fröhlich Prize, Whitehead Prizes nominations
31 January	LMS annual subscription payments
4 February	Cecil King Travel Scholarship applications
27 February	Royal Commission Research Fellowship applications

WIDENING PARTICIPATION IN MATHEMATICS, STATISTICS AND OPERATIONAL RESEARCH

Widening participation has been a concern for mathematics related subjects for some time as this discipline area continues to experience recruitment problems and there are not enough graduates with mathematics related degrees to meet industry's demands.

The Mathematics, Statistics and Operational Research (MSOR) community has already done a lot of work in this area. Links have been developed with schools and the general community, and there have been a number of alternative entry routes provided such as HNDs, foundation degrees and bridging courses to prepare students for degree work.

Students are being supported by a range of appropriate and flexible curricula. A number of new learning and teaching methodologies are being employed. In addition, modes of study have been adapted to cater for the differing needs of students. There is also considerable evidence that the students that have been recruited from this wider pool are realising their potential.

These are the conclusions presented in the booklet *Widening Participation in Mathematics, Statistics and Operational Research*, by Bill Cox (Aston University) and Penny Bidgood (Kingston University), which has just been published by the LTSN Maths, Stats & OR Network. The booklet examines how lecturers have responded to widening participation, identifies good practice and sets out to disseminate it to the wider community. It contains over 30 different case studies from a wide range of higher education institutions. It groups these under three main headings: recruitment, retention and realising potential.

The examples of practice cover a wide range of outreach activities such as improving links with schools and colleges, publications for school children and providing support and materials for

school teachers. A number of alternative entry routes like HNDs and foundation degrees are profiled. There are also a few examples of recruitment aimed at specific groups of people.

The section on retention looks at matching the curriculum to the student intake, student support mechanisms and facilities as well as retention in the USA, retention in FE and improving student achievement in English Higher Education.

This booklet is the latest in the occasional series produced by the LTSN Maths, Stats & OR Network under the heading *Learning and Teaching in Mathematics, Statistics and Operational Research* (ISSN 1476-1378). The other titles in the series are: *Post-sixteen Mathematics within Curriculum 2000, Guidelines for Introducing Group Work in Undergraduate Mathematics, Good Practice in the Provision of Mathematics Support Centres* (2nd ed), *Flexible Learning in Statistics*.

If you would like a copy of any of these booklets, please contact the LTSN Maths, Stats & OR Network (tel: 0121 414 7095, email: info@mathstore.ac.uk). Electronic versions are also available via <http://ltsn.mathstore.ac.uk/publications/index.shtml>.



"ACTUALLY THIS IS A VERY EXPERIMENTAL COLLEGE. WE HAVE NO CURRICULUM AND NO CLASSES. HOW IT WORKS ESSENTIALLY, IS IF YOU WANT TO LEARN SOMETHING, YOU GO SOMEPLACE AND YOU LEARN IT."

© Sidney Harris

DEVELOPING LINKS BETWEEN TEACHING AND RESEARCH

A Day Break Workshop on Developing Links between Teaching and Research, organised by LTSN Maths, Stats & OR Network, will be held on Wednesday 28 January at the University of Birmingham. The course will cover a range of approaches that may be developed to introduce research topics and techniques into an undergraduate programme. The four year M.Sci and M.Math programmes usually require a significant project component where specialised research topics may be addressed. However this course will focus more on other approaches based on practice elsewhere in the country.

This will include courses based on Research Foundations in Applied Mathematics, problems based on Industrial Mathematics Links (eg Oxford Study Group), courses focusing on History of Mathematics (perhaps concentrating on certain individuals) and 'apprentice' or 'shadowing' of academic staff undertaking research activities. The intention of the course will be to prompt participants into developing and extending their own 'departmental approach' to integrating a research component into courses, based on the expertise and knowledge-base available in the department and sharing their experiences with colleagues.

Speakers will include Professor Chris Budd (Bath), Dr Chris Sangwin (Birmingham), Dr Neil Challis (Sheffield Hallam) and the organiser Professor John Blake (Birmingham). The cost of £45 includes tea, coffee, lunch and any course materials. Please register online at <http://ltsn.mathstore.ac.uk/daybreak/> or contact Brad Payne (tel: 0115 848 4713, email Bradley.payne@ntu.ac.uk).

AMS PRESIDENT-ELECT

Professor James G. Arthur of the University of Toronto has been elected as President-Elect of the American Mathematical Society (AMS). He will officially assume this office on 1 February 2004. One year after that, he will succeed AMS President David Eisenbud of the Mathematical Sciences Research Institute and the University of California, Berkeley.

James Arthur is an internationally recognized mathematician who works in the theory of automorphic forms. This theory is a cornerstone of the Langlands Program, which suggests deep connections between analysis, number theory, and representation theory. Arthur is probably best known for his development of the so-called Arthur-Selberg trace formula, a key analytic tool in the Langlands program.

James Arthur received his PhD from Yale University in 1970 and has been at the University of Toronto since 1979; he became a University Professor in 1987. He has received several prizes, including the Tory Medal of the Royal Society of Canada, the Canada Gold Medal of the National Science and Engineering Research Council and the G. de B. Robinson Prize of the Canadian Mathematical Society. He is a fellow of The Royal Society of London, The Royal Society of Canada, and the American Academy of Arts and Sciences.

Professor Arthur was twice an invited speaker at the International Congress of Mathematicians (Warsaw, 1983, and Berlin, 1998). He also spoke at the AMS meeting, *Mathematical Challenges of the 21st Century*, at the University of California, Los Angeles, in 2000.

Professor Arthur has a substantial record of service with the AMS. He has been on several Society committees and served as a Member at Large of the Council (1986-88) and as Vice President (1999-2001).

ROYAL INSTITUTION DISCOURSE

David Acheson, one of this year's LMS Popular Lecturers, was the speaker at a Royal Institution Discourse on 31 October 2003. As ever, David gave an excellent talk, entitled *1089*, entertaining a large and diverse audience, in the manner customary to these long-established evenings.

Scattered around the RI Library for the event were exhibitions to amuse and inform. The Society's materials attracted good interest, in particular the videos of the Popular Lectures, including, of course, those of David and Marcus du Sautoy earlier this year.

Another exhibition – models of mathematically-related sculptures by John Robinson – renewed the long association of the Royal Institution with Bangor mathematics and the sculptor.

Ronnie Brown first saw some of John's amazing sculptures in John's Freeland Gallery in Albemarle Street, after a Mathematics

Masterclasses Organisers' Meeting in 1985, the Gallery's second and last year of operation. This led to some of John's maquettes being presented at the Royal Institution in 1988 and 1992, for Discourses of Sir Michael Atiyah and of Ronnie Brown, and to full size sculptures being shown at the Pop Mathematics Roadshow in Leeds in 1989 and Liverpool in 1990. A website at Bangor (www.cpm.informatics.bangor.ac.uk), showing over 55 sculptures, was constructed in 1996, supported by Edition Limitée, and was upgraded in 2002 with EPSRC support. This has made John's work available to the world. Ronnie Brown has lectured on John's work in Oxford, Toronto (Fields Institute, 90th birthday of Donald Coxeter), Maubeuge, San Sebastian, Paris, Obidos, Bologna, Anglesey and Bilbao.

One of the aims of this association of mathematics and art is to link mathematics, in the public mind and for students, with imagination, rhythm of form, and creativity. Another is to suggest questions on the nature and role of mathematics, and indeed of art.



John Robinson

WHITTAKER AND WATSON

The text *Modern Analysis* by E.T. Whittaker and G.N. Watson, published by Cambridge University Press, has been continuously in print for more than a century. This seems all the more remarkable in an age when many textbooks come and go with great rapidity. *Whittaker and Watson*, as it is most usually called, was first published in 1902, with Whittaker as the sole author. Subsequent editions bear the names of both Whittaker and Watson. The second and third editions followed in 1915 and 1920, and a large number of reprints of the fourth edition have been made since it first appeared in 1927.

E.T. Whittaker (1873-1956) was educated at Manchester Grammar School and Trinity College, Cambridge. Following a Fellowship at Trinity College, he was Astronomer Royal for Ireland from 1906. In 1912 he was appointed to the chair of mathematics at the University of Edinburgh, where he remained for the rest of his career. He was President of the LMS

in 1928-29, was awarded the De Morgan Medal in 1935, and was knighted in 1945.

G.N. Watson (1886-1965) was also educated at Cambridge, and followed in Whittaker's footsteps, becoming a Fellow of Trinity College in 1910. He held a chair at Birmingham from 1918 to 1951, and was President of the LMS for the period 1933-35.

The Preface to the fourth edition consists of the following two sentences: 'Advantage has been taken of the preparation of the fourth edition of this work to add a few additional references and to make a number of corrections of minor errors. Our thanks are due to a number of our readers for pointing out errors and misprints, and in particular we are grateful to Mr E.T. Copson, Lecturer in Mathematics in the University of Edinburgh, for the trouble which he has taken in supplying us with a somewhat lengthy list.' E.T. Copson (1901-1980), who subsequently married Whittaker's elder daughter Beatrice, was himself the author of several texts, the best known being *Functions of a Complex Variable* (1935), which remained in print for about fifty years.

I am grateful to Mr Graham Robertson of Cambridge University Press for the following information about *Whittaker and Watson*:

1. Sales for the fourth edition since 1975 exceed 20,000 copies.
2. The second edition cost 18 shillings, and the fourth edition cost 40 shillings in 1930.

My own copy of the fourth edition, printed in 1958 and purchased in 1959, cost 80 shillings, and the dust jacket bears the following quotation from a review in *Nature*: 'Whittaker and Watson has entered and held the field as the standard book of reference in English on the applications of analysis to the transcendental functions.' This statement would not look out of place if it were repeated today.

George M. Phillips
University of St Andrews

BOOK REVIEW

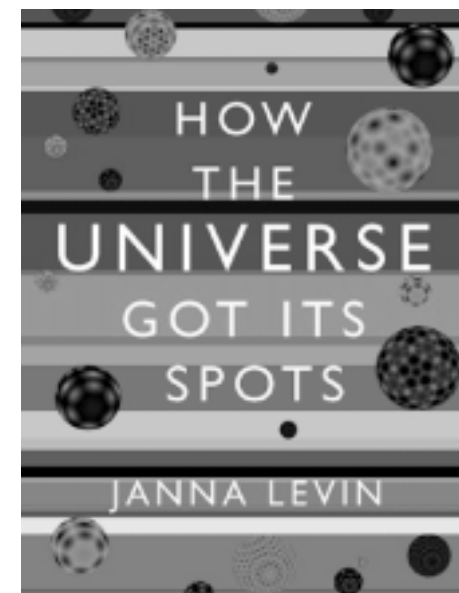
How the Universe Got Its Spots. Diary of a Finite Space in a Finite Time by Janna Levin. Weidenfeld & Nicolson, paperback 2003, pp 224, £7.99, ISBN 0753813769; hardback 2002, pp 142, £16.99, ISBN 0297646516.

Popular science has become gradually more fashionable over the past fifteen years or so. This trend has partly been set by the bestsellers of Stephen Hawking, which have introduced modern cosmology into the public awareness. However, while there are now several good popular books on the subject, this new contribution from young cosmologist Janna Levin provides something unique: a rare insight into the personal and intellectual life of a scientist.

The book is a two-year diary of unsent letters to the author's mother, chronicling the peripatetic and insecure existence of a postdoctoral researcher. At the start she leaves behind her sun-drenched life in California, in order to strike out a new path

in the chillier climes of England, with British boyfriend Warren in tow. Her unfortunate partner makes a great sacrifice, giving up his musical career to become a domestic drudge while she chases her scientific muse.

The main motivation behind the writing is the urge to explain what her work is about and what makes her tick. A history of the scientific view of the cosmos is presented, from Copernicus via Newton to Einstein and beyond. Being addressed to a non-scientist, everything is explained beautifully in an intuitive way, with many pictures. Even more unusual is the backdrop of her personal life, so that the most technical descriptions are interspersed with thoughts and reflections on where she is and who she's with.



The 'Finite Space' of the subtitle refers to Levin's original work concerning the possible extent of the universe. She has a gut feeling that nature abhors infinities, so the space we live in should be finite. However,

LMS INVITED LECTURES 2004

Professor M.W. Davis (Ohio State University)
The Geometry and Topology of Coxeter Groups

Monday 5 - Friday 9 July 2004

The 2004 LMS Invited Lectures will be given at the School of Mathematics, University of Southampton. This series is held annually: a single speaker gives a course of 10 expository lectures, examining an important topic in depth, over a five day period. Further details will be announced later on. For general enquiries contact the organiser Dr I.J. Leary (I.J.Leary@maths.soton.ac.uk).


just as we can travel on the curved surface of our planet without falling off, in a compact universe there is no edge of space. To explain this requires an appreciation of topology, in order to understand how space fits together, and the book gives a highly accessible introduction to these ideas. An important insight is that while Einstein's general theory of relativity describes the local geometry of the universe, in terms of the curvature of space-time, it does not address global topological questions.

The notion of a finite universe has received very recent media attention due to new measurements of the cosmic microwave background radiation by NASA's WMAP spacecraft, prompting the Guardian headline 'Universe is shaped like a football, says scientist'. The experts are still in disagreement about the correct interpretation of the WMAP results - apparently the football has already been ruled out! For a non-

expert like me, Levin's book provides a fascinating introduction to the work of Thurston, Best and Weeks on compact three-manifolds with negative curvature. There is also a wonderful scientific analogy between patterns of radiation in the sky and Murray's work in mathematical biology on the leopard's spots, which gives the book its title.

Science is viewed here as a creative expression of our sense of wonder at the universe, and its human face is vividly evoked by the autobiographical passages. Levin is also brave enough to expose her raw nerves, not least the deterioration of her relationship with Warren. Yet she ends on a note of hope, suggesting that there may be a reconciliation of the differences between science and art, and between mind and heart.

Andy Hone
University of Kent



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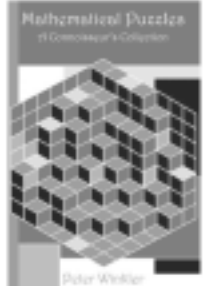
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Peter Winkler

ISBN: 1-56881-201-9; 177 pp.; £12.00

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— Ronald Graham
President, MAA



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 normally 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: spoor@lms.ac.uk).

MATHEMATICIANS VISITING THE UK IN 2004

Aberdeen University

Benn, I. (University of New South Wales) *Relativity*, Jul – Dec '04

Bath University

Gutierrez-Penna, E. (National University of Mexico) *Bayesian Statistics*, Aug '03 – Aug '04

Bristol University

Brundan, J. (University of Oregon, USA) *Pure Mathematics*, 29 Sep – 30 Jan '04

Rudnick, Z. (Tel Aviv University) *Applied Mathematics*, 1 Oct '03 – 30 Sep '04

Chester College

Bocharov, G. (Russian Academy of Sciences, Moscow) *Mathematical Immunology*, Apr – Jul '04

Durham University

Guifloye, B. (IT Tralee, Ireland) *Differential Geometry*, 26 Apr – 25 May '04

Exeter University

Emirsajlow, Z. (Technical University of Szczecin) *Control Theory*, 5 Oct '03 – 31 Jan '04

Liao, X. (Chinese Academy of Sciences, Shanghai, China) *Astrophysical Fluid Dynamics*, 1 Oct '03 – 1 Mar '04

Maistrenko, Y. (Ukraine Academy of Sciences) *Nonlinear Dynamics, Synchronization*, until Jan '04

Heriot-Watt University

Afrouzi, G. (Mazandaran University, Iran) *Differential Equations, Functional Analysis*, Oct '03 – Mar '04

Hull University

Falkovich, G. (Weizmann Institute for Science, Israel) *Mathematical Theory of Turbulence*, Mar – Apr '04

McLeod, J. (Mount Holyoke College) *Topological Algebra and Combinatorics*, Sep '03 – Jul '04

Imperial College London

Barnea, Y. (University of Wisconsin, USA) *Algebra*, 1 Aug '03 – 1 Mar '04

Masumune, J. (Japan Society of the Promotion of Science) *Geometry & Analysis of the Dirac & Kohn Laplace Operators*, 1 Feb '03 – 1 Feb '05

Painov, D. (Ecole Polytechnique, France) *Geometry*, 1 Apr – 30 Jun '04

Sibini, P. (University of Southern Denmark) *Mathematical Physics: Time Dependent Statistics in Complex Systems*, Sep '03 – Aug '04

Sohn, S.Y. (Yonsei University Seoul, Korea) *Statistics*, Dec '03 – Dec '04

Zweimuller, R. (University of Salzburg, Austria) *Dynamical Systems*, 10 Sep '03 – 31 Jan '04

Kings College London

Dudulhava, R. (Academy of Sciences of Georgia) *Integral Equations, Operator Theory, Partial Differential Equations, Mechanics of Solids*, Nov '03 – Feb '04

Leeds University (Pure Mathematics)

Callier, F. (Namur University, Belgium) *Analysis & Control Theory*, 26 Apr – 25 Jun '04

Leicester University

Diracca, L. (University of Padova) *Algebra*, Sep '03 – Sep '04

Milstein, G.N. (Ural State University) *Stochastic Numerics*, Mar – Oct '04

Sun, X. (University of Southwest Missouri, USA) *Approximation Theory*, Jun-Aug '04

Liverpool University (Pure Mathematics)

Bryden, J. (University of Southern Illinois, USA) *Topology & Representation Theory*, Jan – Jun '04

London School of Economics

Beck, A. (University of Wisconsin) *Search Games*, Jan – Mar '04

Gal, S. (Haifa) *Search Games*, Apr – Jun '04

Loughborough University

Sutyryn, G.G. (Rhode Island University, USA) *Geophysical Fluid Dynamics, Oceanic and Atmospheric Vortices and Fronts*, 20 Aug '03 – 20 Apr '04

Manchester University

Rafikul, A. (Guwchati, India) *Numerical Linear Algebra*, 25 Mar '03 – Mar '04

Taras, P. (Moscow State University) *Algebraic Theory & Combinatorics*, 1 Aug '03 – 31 Jan '04

Napier University

Kuzmin, G.A. (Institute of Thermophysics, Novosibirsk, Russia) *Fluid Dynamics, Turbulence*, 15 – 31 Mar '04

Newcastle University

Agler, J. (University of California, San Diego) *Operator Theory*, 1 Jul – 31 Aug '04

Marcantognin, S. (Caracas University, Venezuela) *Operator Theory*, 1 Jul – 31 Dec '04

Nottingham University

Ihara, Y. (Kyoto University) *Number Theory*, Mar '04

Kato, K. (Kyoto University) *Arithmetic Geometry*, Spring – Summer '04

Sato, K. (Nagoya University) *Arithmetic Geometry, K-theory*, Oct '03 – Sep '04

Saito, S. (Nagoya University)

Arithmetic Geometry, Spring-Summer '04

Stix, J. (University of Bonn) *Arithmetic Geometry*, Oct '03 – Jan '04

Oxford University (Mathematical Institute)

Carrillo, C. (Mexico) *Mathematical Biology*, 1 Oct '03 – 1 Jul '04

Johnston, A. (University College London) *Mathematical Biology*, 1 Oct '03 – 30 Sep '04

Kroner, H. (Kaiserslautern) *Mathematical Finance*, 6 Oct '03 – 13 Mar '04

Liu, R.T. (Taiwan) *Mathematical Biology*, 4 Aug '03 – 31 Jul '04

Mackey, M. (Montreal) *Physiology*, 10 Feb – 18 Mar '04

Martinez, D. (Spain) *Geometry*, 1 Oct '03 – 30 Sep '04

Mena, F. (Portugal) *General Relativity*, 1 Oct '03 – 30 Sep '05

Meyer-Hermann, M. (Dresden) *Mathematical Biology*, 1 Oct '03 – 30 Sep '04

Nakagaki, T. (Hokkaido University, Japan) *Mathematical Biology*, Feb – Nov '04

Scheerlinck, N. (Belgium) *Mathematical Biology*, 1 Sep '04 – 28 Feb '05

Zheng, Z. (China) *Scientific Comp/PDE*, 1 Mar '03 – 28 Feb '05

Portsmouth University

Yaghoobi, M.A. (University of Kerman, Iran) *Operational Research*, 1 Nov '03 – 1 Aug '04

Queen Mary, University of London

Bae, J.S. (Chonnam National University, Korea) *Statistics*, 10 Feb '03 – 31 Jan '04

Filho, J. (Universidade Federal de Lavras, Brazil) *Design of*

Experiments, 12 Jan - 9 Apr '04
Zochi, S. (Universidade de São Paulo, Brazil) *Design of Experiments*, 1 Mar '04 - 28 Feb '05

Royal Holloway

Schaathun, H.G. (Bergen, Norway) *Fingerprinting*, 3 Oct '03 - March '04

Shin, S. (Sookmyung Women's University, S. Korea) *Cryptography*, 2003-04

Salford University

Krillova, I. (Saratov State University, Russia) *Bio Mechanics*, Sep '03 - Sep '04

Nolde, E.V. (Russian Academy of Sciences, Moscow) *Asymptotic Methods, Wave Propagation in Solids and Structures*, Oct '03 - Oct '04

Southampton University

Afshar-Nejad, Z. (Ferdowsi University, Mashhad, Iran) *Dynamical Systems*, 1 Dec '03 - 30 Sep '04

Borchers, B. (New Mexico Tech; IPAM, Los Angeles, USA) *Semidefinite Programming*, 8 - 11 Jan '04

de Oliveira, E. (Bahia Universidad) *Clustering Techniques; Three-Phase Simulation Methods*, 12 Sep '03 - 31 Aug '04

Lecuire, C. (UMPA, France) *Kleinian Groups and Hyperbolic Manifolds*, 1 Oct '03 - 31 Jan '04

Liyanage, M. (Sri Jayawardedepura University, Sri Lanka) *Industrial Applied Mathematics*, 1 Feb - 31 July '04

Morones, R.M. (ITAM, Mexico) *Industrial Applied Mathematics*, 1 Aug '03 - 31 Jul '04

Penny, M.P. (QUT, Brisbane, Australia) *Modelling of Dye-*

Sensitive Solar Cells, 15 Jan - 6 Feb '04

St Andrews University

Albert, M. (University of Otago, New Zealand) *Combinatorics on Permutations*, Sep '03 - Jan '04

Hornig, G. (Ruhr-Universität Bochum) *Magnetohydrodynamics*, Feb - May '04

Zhugzhda, Y. (University of Moscow) *Magnetohydrodynamics*, Spring '04

Strathclyde University

Belyakov, V.A. (Landau Institute of Theoretical Physics, Moscow) *Nonlinear Optics in Chiral Liquid Crystals, Electromagnetic Waves in Periodic Media, Solid State Nuclear Physics*, 1 Jun - 31 Aug '04

UMIST

Mendez, V. (Universitat International de Catalunya, Spain) *Dynamical Properties of Reaction-Diffusion Fronts*, 1 Apr - 30 Jun '04

Reisen, B.V. (Universidade Federal do Espirito, Brazil) *Long Memory Models*, 10 Nov '03 - 30 Apr '04

Yalcinkaya, S. (METU, Ankara, Turkey) *Pure Mathematics*, 25 Jul '03 - 31 Jul '04

University of Wales, Aberystwyth
Ervin, V.J. (Clemson University, SC, USA) *Viscoelastic Flow, Numerical Analysis*, Jul - Aug '04

Mullen, G.L. (Pennsylvania State University, USA) *Design Theory, Finite Fields, Hypercubes*, Jun - Jul '04

Owens, R.G. (École Polytechnic Fédérale de Lausanne, Switzerland) *Viscoelastic Flow, Spectral Methods*, May '04

University of Wales, Swansea
Levendovskii, S. (University of

Texas) *Pseudo-differential Operators & Markov Processes, Applications to Finance*, Mar - Apr '04

Warwick University (Mathematics Institute)

Brassesco, S. (Instituto Venezolano de Investigaciones Cientificas) *Stochastic Analysis*, 21 Aug '03 - 31 Aug '04

Choi, Y. (Kyungpook National University) *Hyperbolic Geometry*, 16 Oct '03 - 15 Oct '04

Ingalls, C. (University of New Brunswick) *Noncommutative Algebra, Algebraic Geometry*, 1 Sep '03 - 31 Aug '04

Lecuire, C. (UMPA, ENS-Lyon) *Hyperbolic Geometry*, 1 Feb - 3 May '04

Liu, Y. (Yangzhou University) *PDEs & Nonlinear Dynamics*, 25 Oct '03

- 30 Oct '04
Marden, A. (University of Minnesota) *Kleinian Groups*, 15 Mar - 15 May '04

Moori, J. (University of Natal) *Algebra*, 30 Jul '03 - 15 Jan '04
Shen, Y. (Suzhou University) *Geometric Analysis*, 10 Jul '03 - 10 Jan '04

Warwick University (Statistics)

Jayasekara, L. (University of Rumana, Sri Lanka) *Contingency Tables, Tests on Contingency Tables*, 1 Oct '03 - 31 Mar '04

York University

Beresnevitch, V. (Minsk University, Belarus) *Number Theory*, Oct '03 - Aug '04

Skrigonov, M. (Steklov Institute, St. Petersburg, Russia) *Number Theory*, Nov - Dec '03

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FORTHCOMING CONFERENCES

Modelling Permeable Rocks IV	<i>University of Southampton, 29 March - 1 April 2004</i>
Quantitative Modelling in the Management of Health Care IV	<i>University of Salford, 31 March - 2 April 2004</i>
Modelling in Industrial Maintenance and Reliability V	<i>University of Salford, 5 - 7 April 2004</i>
Analysing Conflict and its Resolution	<i>St. Catherine's College, Oxford, 28 - 30 June 2004</i>
Flood Risk Assessment:	<i>University of Bath, 7 - 8 September 2004</i>
Boundary Integral Methods III: Theory and Applications	<i>Reading University, 14 - 18 September 2004</i>
Mathematics in Signal Processing VI	<i>Royal Agricultural College, Cirencester, 14 - 16 December 2004</i>
Recent Advances in Non-Linear Mechanics	<i>Aberdeen University, 30 August - 1 September 2005</i>
Mathematics of Surfaces XI	<i>Loughborough University, 5 - 7 September 2005</i>

CO-SPONSORED CONFERENCE

International Conference on Mathematical Modelling and Applications	<i>City University, London, 10 - 14 July 2005</i>
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For further details of all these conferences visit our website on www.ima.org.uk or contact: **Lucy Nye**, Conference Officer, The Institute of Mathematics and its Applications, Catherine Richards House, 16 Nelson Street, Southend-on-Sea, Essex SS1 1EF.

Direct line: (01702) 356110
Email: Lucy.Nye@ima.org.uk

Switchboard: (01702) 354020
Fax: (01702) 354111

CALENDAR OF EVENTS

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

JANUARY 2004

- 6-9** Geometry & Analysis Towards Quantum Theory, UK-Japan Winter School, Durham University (321)
- 8** Mixing and Its Applications Meeting, Imperial College London (321)
- 9** UK & Republic of Ireland SIAM Section Annual Meeting, Sheffield University (316)
- 9** Bristol Leicester Oxford Colloquium, Oxford University (321)
- 10-11** New Frontiers in Computational Mathematics Workshop, Manchester University (318)
- 19** Mathematics in the Metropolis Lecture, Gresham College London (321)
- 20** 400 Years of British Mathematics Meeting, Open University (319)
- 20-23** Towards a Predictive Biology Conference, INI, Cambridge (316)
- 21** Combinatorics Meeting, Open University (321)

FEBRUARY 2004

- 9** Random Matrix Theory and the Birch/Swinnerton-Dyer Conjecture Spitalfields Day, Isaac Newton Institute, Cambridge (321)
- 20** LMS Mary Cartwright Lecture, University College London (322)

MARCH 2004

- 29-1 Apr** Modelling Permeable Rocks IV, IMA Conference, Southampton University (319)
- 30-2 Apr** Applications of K-theory and Cohomology Meeting, Southampton University (321)
- 31-2 Apr** Quantitative Modelling in the

Management of Healthcare IV, IMA Conference, Salford University (319)

APRIL 2004

- 5-7** Modelling in Industrial Maintenance and Reliability V, IMA Conference, Salford University (319)
- 5-8** BMC, Queen's University, Belfast (315)
- 13-16** Maths Takes Shape, MA Annual Easter Conference, York University (321)
- 16-17** Howard Hoare Symposium, Birmingham University (321)
- 19-22** BAMC, East Anglia University (320)

MAY 2004

- 12** LMS Midlands Regional Meeting, Nottingham
- 28-31** Meeting in Honour of Professor Wong, City University, Hong Kong (319)

JUNE 2004

- 16-18** Croatian Congress of Mathematics, Split University, Croatia (321)
- 18** Hardy Lecture, LMS Meeting, London
- 21-25** Mathematics for Industry European Conference, Eindhoven, The Netherlands (321)
- 21-2 Jul** SMS-NATO Advanced Summer Institute Summer School on *Morse Theoretic Methods in Non-linear Analysis and Symplectic Topology*, Université de Montréal, Canada (322)
- 27-2 Jul** Fourth European Congress of Mathematics, Stockholm, Sweden (315)
- 28-30** Analysing Conflict and its Resolution, IMA Conference, Oxford (319)

JULY 2004

- 2** LMS Northern Regional Meeting, Newcastle University
- 4-11** ICME10, Copenhagen, Denmark (308)
- 5-9** Geometry and Topology of Coxeter Groups, M.W. Davis, LMS Invited Lectures, Southampton University (322)
- 10-14** Mathematical Modelling and Applications International Conference, City University, London (321)
- 12-16** IWOTA, Newcastle University

**WILLIAM HENRY YOUNG
DE MORGAN MEDALLIST
1917**



Professor Young received the De Morgan Medal on 1 November 1917. In his early work, Young arrived independently at a definition of the integral in a form different from, but essentially equivalent to, that of Lebesgue. He was anticipated by about two years but he recognized this magnanimously and in further development of the theory it was he who named 'the Lebesgue integral'. In later papers, Young developed the

theory of integration differently, by the 'method of monotone sequences', which is now often applied in introductions to integration. Using this method, he had complete success in giving a common generalization of the Lebesgue and Stieltjes integrals. Young also did significant work on Fourier series and other special orthogonal series and on the differential calculus of functions of several variables.