THE LONDON MATHEMATICAL SOCIETY NEWSLETTER

No. 317 **July 2003**

FORTHCOMING SOCIETY MEETINGS

Tuesday 22 July 2003 – Edinburgh
Hodge Centenary Meeting – Joint Meeting with the Edinburgh Mathematical Society
Friday 24 October 2003 - Southampton
South West and South Wales Regional Meeting
Nonlinear Dynamics
Friday 21 November 2003 - London
L.C.G. Rogers, M.H.A. Davis (Naylor Lecture)
Friday 20 February 2004 - London
D. Schleicher, S.M. Rees (Mary Cartwright Lecture)

COUNCIL DIARY
9 May 2003

Peter Goddard had told us at the January Council meeting that one of the first tasks of any new President was to nominate a successor. We had not expected the succession to be relevant as soon as it will be, and we will be sorry to lose him prematurely, but at the May Council meeting we were very happy to congratulate him on his prestigious new appointment and impending move to Princeton. And we applauded his excellent choice of Frances Kirwan as our President Designate. She will stand for election in November to be the Society's second ever woman President.

The Treasurer explained that the BMC Reserve Fund, which was formerly held by the Edinburgh Mathematical Society, no longer exists. But this does not indicate any change in the level of support that the LMS expects to give to the BMC in future.

The Publisher showed us flyers for the relaunch of *Compositio Mathematica* as a journal in the LMS stable, in which the 'runners and riders' of the first issue were listed. The relaunch in 2004 will be at two thirds of the 2003 price.

Council approved in principle details of remit and structure for the Mathematics Promotion Unit which it is hoped to set up in De Morgan House, staffed by at least a part-time 'Press Officer'. The remit of the unit is wide-ranging. We would like to build up our links with key figures in government and the media, increase our lobbying, and produce and distribute briefing papers and press releases. We should produce comprehensive data sets on mathematics education and research, responses to government reports, submissions to inquiries. And incidentally, with such a unit in place we should be in a better position to respond rapidly to remarks reported in the media displaying misunderstanding of what mathematics is and mathematicians do, which simply need to be quickly and authoritatively challenged. The Society needs to use the media more effectively than it currently does, for the benefit of mathematics, and with the help of the proposed unit it would be able to do that.

The Education Secretary presented the response prepared by a subcommittee of four torstr TiD(h)Tj 50 0

opportunities in a spectrum of mathematical areas ranging through mathematical modelling, computational logic, stochastic analysis and much more. Ursula continues discussion with EPSRC Programme Managers Annette Bramley (mathematics) and Vince Osgood (IT and computing).

The General Secretary also reported on EPSRC matters. A first meeting between the President and Annette Bramley is currently being scheduled. And the Society is busy setting up a committee to lead its initiative on 'Mathematics and the Biological Sciences'.

Sarah Rees

INTERNATIONAL REVIEW OF MATHEMATICS
Report 5

Dr Stephen Huggett has been appointed Scientific Secretary of the Review. Stephen is a lecturer at the University of Plymouth and is currently Programme Secretary of the LMS.

The Steering Group has been giving detailed thought to the structure of the Review Week and in particular to the visits that subgroups of the International Panel will make. The visits should emphasise quality not scale, picking up on the best mathematics wherever it is done − they must not give the impression that all good mathematics is done in large institutions. The Group developed a multi-level concept for the eight visits. Each visit will have a single venue, selected for its size, position, facilities and its international standing, and with a substantial community of young postdoctoral and postgraduate students. At each venue, key institutions of high standing in the region centred on the venue would jointly act as "hosts" and would present the core material to the sub-Panel. Inevitably, the number of "hosts" will vary from venue to venue. In addition, there would also be an opportunity for mathematics done in other institutions, groups and centres in the region to be seen by the Panel.

It is important that the presentations made during the visit are demonstrative of the strengths of the region and the dynamics for the future. They should be subject-centred, highly selective and regionally inclusive. The Steering Group is considering the concept of inviting individuals (possibly not from the venue) to coordinate and plan the presentations on behalf of the region and to ensure a proper reflection of the region's strengths. The sub-Panel will want to have full and open interaction with postgraduates and postdoctorals. There would be a buffet lunch at which the sub-Panel can mix freely with mathematicians, particularly young staff and postdoctorals.

In developing these guidelines for the visits, the Steering Group was very aware that the actual programmes may end up being rather different in the eight venues, reflecting the differing natures of the regions and institutions. The Steering Group will be contacting the Heads of Departments in the venues and the hosts shortly, after which the list of venues will be announced on the Review web site (www.cms.ac.uk/irm/)

In addition to the visits, the Panel will receive a number of briefings, to cover the structure of the Research Base (Research Councils and Funding Councils), EPSRC and the Mathematics Programme, the RAE, other support mechanisms such as the Royal Society and the LMS. A considerable amount of data will be provided in advance, describing the nature of the UK mathematics and statistics community and the research being done.

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

STYLE COLUMN

Regular readers of the *Newsletter* will have noticed the constancy of its format and style to date, despite prognostications to the contrary. However, readers will also be familiar with the fact that knowledge of the first n terms of a sequence does not determine the $n+1$ term without further information - and in this case the information is that after initial contacts with several design consultancy firms the Newsletter Editorial Board has now engaged one of these on the production of (we hope) the next issue on very reasonable financial terms. Alert readers will recall that there is no August issue, and so in September all LMS members can anticipate a quickening of the pulse as they open the usual, or perhaps unusual, envelope. We trust the intensity of this new experience will have no deleterious consequences.

David Chillingworth

NATIONAL TEACHING FELLOWSHIP SCHEME

We are delighted to congratulate Angw

LMS PRIZES 2003

Polya Prize

PROFESSOR ANGUS MACINTYRE FRS of the University of Edinburgh, is awarded the Polya Prize for his widely influential contributions to model theory and its applications.

Over the last thirty years he has found many new applications of model theory in algebra, geometry, number theory, asymptotics and theoretical computer science. His work established a theory of p-adic semi-algebraic sets, and has since been widely used in p-adic contexts, for example to prove a conjecture of Serre on the rationality of Poincaré series. His papers on totally transcendental fields and on algebraic groups created new paradigms for research in these areas. His work on the first-order content of Weil cohomology has opened up new possibilities for applying model theory in algebraic geometry.

Berwick Prize

DR TOM BRIDGELAND of the University of Edinburgh is awarded the Berwick Prize for the paper: "Equivalences of triangulated categories and Fourier-Mukai transforms" published in the *Bulletin of the London Mathematical Society* Volume 31 (1999) pages 25 - 34.

This paper introduced new methods and solved an important question in algebraic geometry. Subsequently these pioneering methods have been used to illuminate concepts and to solve problems across a number of areas of mathematics.

In 1981, Shigeru Mukai established the duality result that the derived category of coherent sheaves on an abelian variety X and the one arising from the dual X^{-} are the same. Mukai conjectured that such a duality should hold more generally, in particular between a $K3$ surface X and a certain moduli space of vector bundles over X. Tom Bridgeland's paper gave a simple proof of Mukai's conjecture. In a joint paper with A. King and M. Reid, the methods were used to understand the generalised McKay correspondence between the geometry of crepant resolutions of a quotient singularity $\mathbf{C}^3/G$ and the representation theory of the finite group G. Another application of these ideas gave rise to Bridgeland's proof of the conjecture that flops (which are transformations between certain 3-dimensional varieties) induce an equivalence between the relevant derived categories. A consequence is that birational Calabi-Yau three-folds have equivalent derived categories. In recent work he has applied his methods to problems of interest to mathematical physicists by providing a precise setting to study stabilities related to Dirichlet branes.

Senior Whitehead

DR PETER NEUMANN of Oxford University is awarded the Senior Whitehead Prize in recognition of his contribution to and influence on research into diverse branches of group theory, and for his broad-ranging service to British mathematics over many years.

Peter Neumann's research interests have included varieties of groups, finite permutation groups of degree p or 3p (where p is a prime), a classification of groups with a cofinite Jordan set, infinite Jordan groups, automorphism groups of ordered sets, Frobenius groups, and recognition algorithms for matrix groups.

In all these endeavours he has been instrumental in designing research programmes and setting up teams of experts to work on them. A list of his past research students is impressive not only for its length, but for the high proportion which are now prominent mathematicians in their own right.

Neumann takes a keen interest in the history of mathematics and especially in the history of group theory. As with his mathematical lectures, his history talks on Burnside, Galois and others are beautifully constructed and a delight to attend.

His contribution to the health of mathematics in this country is wide-ranging. He was until recently President of the British Society for the History of Mathematics. He was Chairman of the British Mathematical Olympiad Committee from 1995 to 1997, and chaired the UK Mathematics Trust from its inception in 1996 till now. He has been a long-term stalwart of the LMS, and served as Publications Officer for six years. As generations of Oxford graduates will confirm, he takes a keen and inspirational interest in undergraduate teaching and was a natural choice to produce the report on the structure of undergraduate degrees which bears his name.

He receives this accolade in recognition of his extensive contribution to a great many aspects of our discipline.

Whitehead Prizes

DR NICHOLAS DOREY of the University of Wales Swansea is awarded a Whitehead prize for his contributions to mathematical physics, specifically to the understanding of non-perturbative effects in gauge field theories.

In a remarkable series of papers produced over seven years in collaboration with Hollowood, Khoze and Mattis, he has developed powerful methods for the computation of non-perturbative (instanton) effects in supersymmetric gauge field theories. With Khoze and Mattis, he has provided remarkable and highly influential calculations of multi-instanton effects in N=2 supersymmetric gauge theory.

Dorey's work, often in collaboration, is characterised by the ability to find beautiful ways to perform exact computations. He has been one of the world leaders in the very significant developments in understanding of supersymmetric gauge theories that have taken place in recent years.

DR TOBY HALL of the University of Liverpool is awarded a Whitehead prize for his work on the dynamics of surface homeomorphisms. Hall has obtained some beautifully detailed and informative results, with the structure he has uncovered developing from, and extending, the one-dimensional theory, especially the famous Sarkovskii Theorem for interval maps, sometimes in unexpected ways.

Hall's results on forcing relations for periodic orbits of horseshoe type started with his thesis, and in recent years these results have been very considerably extended, with a reasonable conjecture for the full picture, in an extraordinarily rich study of horseshoe-like families, together with his collaborator, André de Carvalho.

The project continues to run apace, already represents an extremely important advance in the study of families of maps in low dimension, and is a quite startling example of what can be achieved from the topological viewpoint.

DR MARC LACKENBY of St Catherine's College and the University of Oxford is awarded a Whitehead prize for his contributions to three dimensional topology and to combinatorial group theory.

He has proved unexpected results about Dehn surgery, which is a much used method to construct a three-dimensional manifold M_2 from another one M_1, based on a knot $K \subset M_1$ and a twisting coefficient p/q . One is a uniqueness result and the other provides a bound on the type of surgery that can give an 'exceptional' manifold.

He has found an algorithm enhancing Thurston's famous result giving the existence of hyperbolic structures on a large class of three dimensional manifolds. It allows one to calculate (up to explicit bounds) the volume of the (hyperbolic) complement of a class of knots. Another result is related to the famous 2π theorem of Gromov and Thurston that a

Dehn filling of a cusped hyperbolic manifold M^3 along a curve of length more than 2π always gives rise to a negatively curved manifold. Lackenby has shown that if 2π is replaced by 6 then the fundamental group of the resulting manifold is Gromov hyperbolic. A consequence is that at most 12 manifolds obtained by surgery on a hyperbolic knot can have non-negatively curved fundamental group. Conversely, it is known that the figure eight knot has ten exceptional surgeries.

His recent work on the Heegaard genus of coverings has opened up new relations with other areas of mathematics and there are exciting possible consequences for combinatorial group theory.

DR MAXIM NAZAROV of the University of York is awarded a Whitehead prize . He is famous for his work on the covering group of the symmetric group. He constructed the representations of the covering group of the symmetric group, thus solving a problem which had been open for 75 years. His work also opened the door for the construction of the irreducible modular representations of the covering group.

Nazarov has furthermore constructed Young symmetrizers for the covering group and, more recently, for Brauer centralizer algebras. He presented some of this work in an Invited Lecture at the 2002 International Congress of Mathematicians.

EPSRC POSTDOCTORAL FELLOWSHIPS IN MATHEMATICS

The EPSRC Mathematics Programme awards up to 10 postdoctoral fellowships in Mathematics each year. The aim of the fellowship is to help talented young researchers establish an independent research career shortly or immediately after completing a PhD.

The postdoctoral fellowships in mathematics will now be for a maximum of three years. They are open to mathematicians, statisticians and operational researchers who are in their final year PhDs or have recently completed PhDs. The fellow receives their salary, plus a £6K per a e0 i0 TD(s)Tj39 0 TD( )Tj 27 0 TD(a)Tj 44 0Tj 28 0 TD(a)j 49 0 TD(e)Tj 44 0 TD(l)Tj 28 0 TD(l)Tj 28 0 T

The International Human Frontier Science Programme (HFSP) is an international non-governmental non profit association devoted to the promotion of basic research focused on the elucidation of the sophisticated and complex mechanisms of living organisms.

The HFSP supports novel, innovative and interdisciplinary basic research focused on the complex mechanisms of living organisms; topics range from molecular and cellular approaches to systems and cognitive neuroscience. A clear emphasis is placed on novel collaborations that bring biologists together with scientists from fields such as physics, mathematics, chemistry, nanoscience, computer science and engineering to focus on problems at the frontier of the life sciences. Further information can be obtained from the web (www.hfsp.org).

ISAAC NEWTON INSTITUTE FOR MATHEMATICAL SCIENCES
Call for Proposals

The Isaac Newton Institute for Mathematical Sciences is a national research institute in Cambridge. It aims to bring mathematical scientists from UK universities and leading experts from overseas together for concentrated research on specialised topics in all branches of the mathematical sciences from pure mathematics, applied mathematics, and statistics, to engineering, computer science, theoretical physics and mathematical biology.

At any time there are two visitor programmes in progress, each with about twenty scientists in residence. Included within these programmes are periods of more expanded activity including instructional courses and workshops. Full details of the programmes so far completed and those currently running or confirmed for the future are on the website (www.newton.cam.ac.uk/programs/index.html).

The Institute now invites new proposals for programmes for 2006 onwards. A choice of six-month or four-month programmes is available. A short programme of four weeks duration is available during July/August each year. These short programmes are intended for more narrowly focussed topics or for subjects that may be at an embryonic stage of development, and for which a longer programme might not be as yet justified.

Proposals should follow the guidelines given in Submission of Proposals and be addressed to The Director, Sir John Kingman, Isaac Newton Institute for Mathematical Sciences, 20 Clarkson Road, Cambridge CB3 0EH.

Proposers should state whether they would prefer a four-month, six-month or four-week programme. The Institute is pleased to receive proposals at any time. The Scientific Steering Committee normally meets in April and October each year. Proposals for consideration at the next meeting (October 2003) should be received by **31 July 2003**. Further information is also available from The Director (email: info@newton.cam.ac.uk; tel: 01223 335999), who will answer any enquiries.

ROYAL SOCIETY SCIENTIFIC DISCUSSION MEETINGS

The Royal Society is soliciting proposals for the Society's scientific discussion meetings and for 'theme' issues of its journal *Philosophical Transactions.*

The Royal Society holds around 12 interdisciplinary scientific discussion meetings each year, which focus on new or rapidly changing science and technology. Any UK scientist is eligible to propose a discussion meeting. Scientific meetings are generally two days in duration where approximately 14 experts in an area of science or technology are invited to present

papers on the latest developments in the subject and to stimulate discussion among those attending (generally 100-300 participants). Interdisciplinary subjects are especially appropriate to the Society's programme and suggestions for subjects with economic and social implications are welc(ad)Tj 44 0 TD(n)Tj 50 0 TD8

Applications for support for satellite meetings should make clear the financial and organisational connection with the main meeting. This is particularly important in cases where the expenses of speakers could be shared between the two meetings. Special arrangements apply to the BMC and its satellites.

Notes for Guidance
Applicants should keep in mind the following points:

1. The committee does not normally meet the full cost of an activity. Rather it aims to give added value to an event largely funded by other means, or to bridge the gap between cost and the resources that might reasonably be made available by a university department.
2. The grants do not cover departmental overheads. The committee will generally not allow items such as secretarial costs, which could be seen as part of normal departmental provision, or entertainment.
3. Each of the schemes has a particular aim as well as its own financial limits. It is helpful if applicants consider carefully how their proposal fits the particular scheme in question, and its detailed rules (which change from time to time). Thus the academic justification for a Scheme 2 grant should focus on the benefit to UK mathematics that the proposed visit would bring, while that for a Scheme 5 grant should focus on the benefits in the Scheme 5 country. In neither case should it be assumed that the distinction of the visitor renders further justification unnecessary.
4. The committee is made up of mathematicians with a wide spread of research interests, but it should not be assumed that they are familiar with the technical details of any particular area of mathematics. Proposals are judged by the committee itself: although it may seek advice, it does not normally send proposals to referees. It is therefore important that the case for a grant should be written for the general mathematician and not for the specialist.
5. The committee judges each application on its merits. Since its membership changes from year to year, it should not be assumed that it is familiar with the details of previous applications and correspondence from earlier rounds; nor should it be assumed that a grant, for example under Scheme 3 or for a regular collaboration under Scheme 4, will be renewed repeatedly.
6. The limits mentioned in the various schemes are upper bounds, not standard awards. Grants are made to meet actual expenditure on items in the application, and any surplus must be returned to the Society, rather than retained for related purposes or carried forward to another year.
7. Applications should be brief and self-contained. Please do not append substantial documents that contain irrelevant detail or refer to websites for key information.
8. The task of collating applications, forwarding them to the committee, recording decisions, and preparing and checking notification letters is nontrivial and time-consuming. Please apply well in advance and bear in mind that you may not hear the outcome of an application immediately.

Scheme 1 - Conference Grants
Grants are made to the organisers of conferences to be held in the United Kingdom. Programme Committee tends to give priority to the support of meetings where an LMS grant can be expected to make a significant contribution to the viability and success of the meeting. The Society expects that the meetings which it supports will be open to all members of the Society, and will only support a closed meeting if an exceptional case is made. Support of larger meetings of high quality is not ruled out but for such meetings an LMS grant will normally cover only a modest part of the total cost. Potential applicants should note that the Society is reluctant to award grants to conferences which clash with other significant mathematical meetings in Britain such as the British Mathematical Colloquium or the British Applied Mathematical Colloquium.
The current upper limit for grants is £5,000, the size of the grant to take into account the length of the conference, the number of UK participants and the number of research students

taking part. The basic grant shall not normally exceed £3,000, with additional support available for research students (up to £1,000) and 'Scheme 5' participants (up to £1,000). The basic grant is primarily intended to cover the expenses of principal speakers.

Applicants should note that conference attendance will not be funded, except for principal speakers, research students, and 'Scheme 5' participants. Support here is intended to contribute to travel, accommodation and subsistence costs, but not registration fees.

The Society will not make grants to cover the cost of secretarial help, excessive room charges, publicity, or conference dinners and entertainment: it expects such items to be covered by contributions in kind from the host department, or by registration charges, or by income from other sources.

The Society wishes to support UK based research students, and applications should include details of the extent to which such research students will be involved in the conference. Up to £1,000 may be awarded to support participants who are research students at UK universities. (In this context 'research student' means 'research student of any nationality studying at a UK university'.)

The Society also wishes to encourage overseas participants from the former Soviet Union, Eastern Europe and other countries within the scope of Scheme 5 (see below); a further £1,000 may be awarded to support such participants.

These additional grants are intended to help widen participation in a meeting. The committee does not expect that all of these sums will necessarily be spent; any surplus must be returned to the Society and may not be used for other purposes. Academic and financial reports of the conference are expected.

Applications are considered at the September, February and June meetings of Programme Committee. Deadlines for receipt of applications for these meetings are 31 August, 31 January and 31 May.

Scheme 2 - Visitors

Some financial support is provided for visitors to the UK who give lectures in at least three separate institutions. Exceptionally, support under this scheme might be provided for a speaker addressing just one meeting which is regional in scope, but a special case would be required.

The LMS contribution under this scheme is towards actual expenses for travel (international and within the UK), accommodation and subsistence, up to a maximum of £1,200. The grant is only intended as a partial contribution and applicants are expected to approach the host institutions for funding to cover the remainder of these costs. Applicants are responsible for making all the arrangements for a visit under this scheme and are expected to make economical travel arrangements where possible, e.g. Apex air fare and 2nd class rail fare. A maximum of £50 a day is allowable for accommodation and subsistence according to the formula: actual accommodation costs up to £35 per day, £15 per day for other subsistence costs.

There are no specific deadlines but normally an application should be submitted at least three months before the date of the proposed visit to allow for consideration by the LMS Programme Committee and an announcement of the visit in the Society's Newsletter. Applications will not be considered between mid-June and mid-September.

Grants awarded since November 2002

SCHEME 1

Applicant	Title	Grant

S. French D. Rickles	12th Foundations of Physics Conference	£500
A. Thomason	Combinatorics in Cambridge	£5,000

MODERN MECHANICS AND MATHEMATICS

An international conference on Modern Mechanics and Mathematics in honour of Ray Ogden's 60th birthday is to be held at Keele University from 28-30 August. The conference organizers cordially invite all those who either know Ray personally, or know his resear

BRITISH WOMEN IN MATHEMATICS DAY

What sounds like it should have been discovered by a female mathematician, but wasn't? A Julia set. These fractals and their dimensions were the subject of our first talk on 6 May, by Gwyneth Stallard. It seemed to me a rather appropriate topic, although not because of the name.

Instead, it is another example of lateral thinking, thinking outside the box. Let me explain. For those mathematicians first trying to find ways to define the idea of dimension of a fractal (for example the coastline of Britain) the standard notions of length and area failed to fit. How could a curve of seemingly infinite length fit in a finite area? Of course, the answer is that we define dimension by another method, and fractals have non-integer dimension between 1 and 2.

Why was this appropriate for the occasion? It is one example of where it helps to use a continuum model rather than a stark choice between length and area: not black and white but several shades of grey. It is not men and women who do mathematics, but people, and we are all different.

One advantage of getting a crowd of women together to listen to each other present research is that we see the differences more than the similarities. Claudia Yastremiz's work as a quantitative analyst in the City is a world away from Katie Chicot's research into transitive linear orders, both in the nature of their employment and in mathematical flavour. Put them together and we see that they are not merely both female mathematicians but people doing very different jobs. When women form a tiny minority in a university department or at a conference, there is the danger that we grou

BOOK REVIEW

Such Silver Currents: The Story of William and Lucy Clifford 1845-1929 by M. Chisholm, Lutterworth Press (www.lutterworth.com), pp 208, £17.50, ISBN 0718830172.

William Kingdon Clifford died at the age of 33 in 1879. He left behind a mathematical legacy in geometry and algebra that lives on both under his own name (as in Clifford algebras, Clifford's theorem for Riemann surfaces, Clifford-Klein space forms etc.) and also those of others (the Hopf fibration and the Dirac operator). Even that remarkable output formed but a part of his short life's work for, after seven years in Cambridge spent evolving from an Anglo-Catholic into a radical humanist, he engaged in series after series of public lectures where he advanced his newfound philosophy with missionary zeal, preaching that "truth and right are to be got at by free enquiry and the love of our comrades for their own sakes and nobody else's". Thus he trod from the Dialectical Society to the Republican Society, the Royal Institution to the Sunday Lecture Society … and he also made room, or at least so one supposes, for the London Mathematical Society where for a period he was a member of Council. Clerk Maxwell, writing a reference for Clifford for a Chair at UCL, perhaps best summed up his

the incidence properties of the circles that pass through triples of points of intersection of a configuration of lines. This result still has a modern charm and the interested reader can see an interactive version on the web (www.cut-the-knot.org/Curriculum/Geometry/CliffordChain.shtml) where a nice proof of the theorem by Morley (which seems to owe more to Lagrangian interpolation than geometry) can be found.

Lucy Clifford's work unfortunately has had a less enduring appeal. While her plays, novels and short stories were often at the time controversial in content they now hardly merit a footnote in the history of Victorian literature. It is Lucy's life which dominates the book, but it is William's work that survives. Does that say something about mathematics or about us mathematicians?

Nigel Hitchin
University of Oxford

MIDLANDS REGIONAL MEETING

The third LMS Midlands Regional Meeting took place on 14 May 2003. This was the first time the Society has held a Regional Meeting at Coventry University and as hosts we were rather nervous. In the event it was much enjoyed.

The first speaker was Olaf Wolkenhauer from UMIST, but about to move to a chair at Rostock, who spoke on "Mathematical Modelling of Cellular Dynamics". Understanding what makes cells change their behaviour is an important area of current research. The approach here discussed using block diagrams as a starting point and explained that the reaction of biologists to any discrepancies between the model and the actuality was to suggest putting in another feed-back loop. The particular cells referred to belong to the bacterium streptomyces (which produces the nice smell in the air after rain). Questions afterwards covered a range of topics, including applying both possibility theory and category theory to these problems.

In contrast Robert Babuska from Delft gave a lecture on "Fuzzy Systems", explaining how generalised logic systems work and how the T-S Rules of Inference for neuro-fuzzy control systems are used. One application mentioned concerned the sizes of particles in industrial detergents. If these are too small they blow away and if they are too big they clog machinery. (Robert's talk at the subsequent Workshop on Uncertainty Modelling discussed applying these Rules of Inference to the design of combine-harvesters, where the motor is sometimes just driving the thing along and at other times is harvesting, and the engine needs to adjust accordingly. The results of this are to be tried out on combine-harvesters in Belgium this summer.)

After the talks there was a reception and a meal in the Lanchester Restaurant, named after Frederick Lanchester of motor-car fame, who dabbled in every science, including mathematics (in particular what we would call Operational Research).

Helen D. Robinson

RECORDS OF PROCEEDINGS AT MEETINGS

LONDON MATHEMATICAL SOCIETY
AND
EDINBURGH MATHEMATICAL SOCIETY
JOINT MEETING

Tuesday 22 July 2003, Edinburgh

As part of the International Centre for Mathematical Sciences (ICMS) conference 'Hodge Theory in a New Century' the London Mathematical Society and the Edinburgh Mathematical Society are jointly hosting an afternoon of more general talks likely to be of interest to a broad range of mathematicians.

14.00	Introduction: LMS/EMS Business
14.15	**Michael Atiyah:** *Sir William Hodge – the man and the mathematician*
15.15	**Roger Penrose**: *Mathematical experiences as a Cambridge research student under William Hodge*
16.00	Tea
16.45	**Fritz Hirzebruch:** *Hodge numbers, Chern numbers, Catalan numbers*
17.30	Finish

A conference banquet will take place in the Playfair Library on Tuesday 22 July (at 19.30 for 20.00) and will cost around £30.

The meeting will be held in the Michael Swann Building in the University of Edinburgh's Kings Buildings (entry via Gate 4 on Mayfield Road).

All are welcome and there is no charge for attendance. It is, however, necessary to reserve a place, either by completing the online form on the website (www.ma.hw.ac.uk/icms/meetings/2003/HODGE/LMS-EMSmtg.html) or by contacting ICMS, 14 India Street, Edinburgh EH3 6EZ (tel: +44 (0)131 220 1777; fax: +44 (0)131 220 1053; email: icms@maths.ed.ac.uk).

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

Daphne Jackson Research Fellowship

Sponsored by the London Mathematical Society

Applicants are invited to apply for a half-time Research Fellowship under the auspices of the Daphne Jackson Trust*. The Fellowship will be sponsored by the London Mathematical Society.

The Daphne Jackson Trust helps talented women scientists, engineers and technology specialists to return to work after a career break by offering half-time, sponsored Fellowships in research laboratories throughout the UK. Since its inceptioninvited

TOPICS IN ALGEBRAIC GEOMETRY

LMS/EPSRC Short Course

University of Bath, 15-19 Septe

DERIVED CATEGORIES IN ALGEBRA AND GEOMETRY

LMS/EPSRC Short Course

University of Warwick, 1 – 5 September 2003

Organiser: D. Rumynin

The notion of derived et t

THE TWENTY-NINTH ANNUAL

UNDERGRADUATE MATHEMATICS TEACHING CONFERENCE

A working conference to improve the design and delivery of the mathematics curriculum for undergraduates.

The University of Birmingham
1 – 3 September 2003

Guest Speakers:

Professor Cliff Beevers OBE
Director of the CALM Project for Computer Aided Learning in Mathematics and Co-Director of the Scottish Centre for Research into On-Line Learning and Assessment, Heriot-Watt University

Professor Chris Budd
Professor of Applied Mathematics at the University of Bath and Chair of Mathematics at the Royal Institution of Great Britain

Further details at
www.umtc.ac.uk/umtc2003
Dr Neil Gordon, Conference Chair (chair@umtc.ac.uk)
Dr Dirk Hermans, Local Organiser (info@umtc.ac.uk)

ANNUAL ELECTIONS TO LMS COUNCIL

The normal way in which nominations to Council are now made is via the Nominating Committee, but there is still provision for any member of the Society to make nominations directly. Anyone who wishes to propose someone for a position as an Officer of the Society or as a member of Council is invited to inform M.J. Taylor, who is currently chairing the Nominating Committee (martin.taylor@umist.ac.uk) or one of the other members of the Committee (C.A. Hobbs, N.J. Hitchin, M.A.H. MacCallum, U. Martin, E.G. Rees, D.M. Sloan, J.F. Toland). Any direct nominations should be sent to the General Secretary (Professor N.L. Biggs, Department of Mathematics, London School of Economics, Houghton Street, London WC2A 2AE, n.l.biggs@lse.ac.uk) to arrive before noon on **1 September 2003** such nominations must bear the signatures of the Nominator and three Seconders and of the Nominee.

P.R. Cooper
Executive Secretary

(nb This item in this 5j 55 0 TD(G)Tj 72 0 TDD(t)Tj 28 0 TD( )Tj36 0 TD(h)Tj 50 0 TD(i)Tj 28 0 TD(s5j 55 0 T

Gl. Coire

July 2003

22 LMS/Edinburgh Mathematical Society Joint Meeting, Hodge Centenary, Edinburgh University (317)

September 2003

15-19 Topics in Algebraic Geometry, LMS/EPSCR Short Course, Bath University (317)