THE LONDON MATHEMATICAL SOCIETY NEWSLETTER

No. 245 **January 1997**

FORTHCOMING SOCIETY MEETINGS

Friday-Saturday 21-22 February 1997, Oxford University
Group Theory
Friday-Saturday 23-24 May 1997, Liverpool University
Applications of Singularity Theory
Friday 20 June 1997 - Linnean Society, London
J.P. May (Hardy Lecture), D. Quillen

LMS COUNCIL DIARY

At the last meeting of Council for the year 1996 there were a number of retirements. Two stood out for me perhaps because they represent the end of an era. The two were David Brannan, who has served as Publications Secretary since 1986, and Rodney Sharp, who has served as Council and General Secretary since 1989. The only other officer to retire was the President, Nigel Hitchin, but Presidents only serve for two years!

As someone who has served as a member of Council for only two years it is difficult for me to do justice to the way they have, in their different ways, seen the Society through many changes. Rodney Sharp was always gently reminding Council of its duties and responsibilities. His years of service also meant that he could often remind us of past decisions which helped to keep us on the narrow path of virtue. David Brannan has helped to maintain the high standards of the Society's publications as well as keeping the prices competitive. I am sure this has helped us to attain the present healthy financial position. He has done much to develop our strong links with various Russian journals, although the stories of vodka and smoke-filled rooms we preferred to regard as tall stories brought back by intrepid travellers.

These years have seen many political pressures being brought to bear on universities in Britain and through the many officers and subcommittees the Society has tried to keep the interests of mathematics and mathematicians to the fore. A key question for the Society is how much longer individuals can continue to serve in this voluntary way. It is not that people are unwilling to serve but how many institutions are willing to allow their staff to devote time and energy to helping societies like ours. The pressures on teaching and research are making many universities in Britain wary of losing the full time activities of such able people.

As a result of the involvement of the Society in discussions about Woolsthorpe Manor (Isaac Newton's birthplace) we were asked for money. We agreed to give £6000 towards the development of an exhibition of material related to Newton's scientific work; it will be interesting to see how generous other bodies with connections to Newton are.

Council agreed to appoint Credit Suisse Asset Management Ltd as investment manager with discretionary powers. This was at the request of the Finance Committee; earlier Council had been concerned with some of the finer points of the agreement.

There was a long debate about a grant to the Newton Institute. For the first five years of the Institute we gave £10,000 per year. They have now asked for a new grant over the next five years for a significantly larger amount. There was concern about how the money was used. At a forum at the British Mathematical Colloquium held in Manchester in Spring 1996 many people had expressed the view that there was a lack of Pure Mathematics at the Institute. It was agreed to support immediately the programme on 'Representation theory of algebraic groups and related finite groups'; some of Council felt that this was respecting the wishes of members as expressed at the aforementioned forum. A sum of £5000 was given with the specific purpose of supporting mathematicians at British universities, especially younger ones. The incoming President was asked to write to the Director for further clarification on the long term funding.

Alan Camina

TREASURER'S REPORT TO THE ANNUAL GENERAL MEETING 1996

In order to comply with the requirements of the Charities (Accounts and Reports) Regulations 1995 which came into force on 1st March 1996 and the Statement on Recommended Practice on Accounting by Charities, there are additional changes in the presentation of the Annual Accounts this year. Furthermore, an attempt has been made to simplify the presentation and to provide additional information of interest to members.

As a published version of the Annual Report and Accounts is available to members on request and as a version will be deposited in the Society's Archives on the World Wide Web, it is only necessary to highlight a few basic facts.

- The Fixed Asset Investments of the Society (now including Special Trust Funds) increased from £7,056,517 to £7,936,689. Financial markets continued to be strong and this was reflected in the growth in the Society's assets.
- The total in the Ordinary Share Fund is £2,770,581 (£1,909,431), the Fixed Interest Fund is £2,353,463 (£2,200,241) and in Bank and Building Society Deposits is £2,712,645 (£2,846,845).
- Income from investments increased from £282,085 to £346,068.
- The Printing and Publication Reserve Fund and the Building and Development Reserve Fund have been increased to £900,000 and £1,200,000 respectively. Council intends to build the latter Reserve Fund to £2,000,000 as soon as possible.
- The Society's publishing activities continue to be its main source of income; this year the total was £497,865.
- The Council has allocated a total budget of £160,000 to the Programme Committee and the Durham Symposia Committee for 1996-97.
- Expenditure on 'other grants, subscriptions and prizes' increased to £69,740.
- The Charity Commissioners for England and Wales have recently issued an Order giving the Society power to appoint an investment manager with discretionary powers and also to appoint a corporate body to hold its investments.

In presenting this report, it is my pleasure to thank Susan Oakes and Harvinder Lotay for the meticulous way in which they deal with the Society's financial affairs from day to day. Also, I would like to express my gratitude to fellow members of the Finance Committee, especially to those who are leaving this year after a long period of service.

GORDON M. PETERSEN

Professor Gordon M. Petersen, who was elected a member of the London Mathematical Society on 18 December 1958, died on 9 November 1996.

ABDUS SALAM

Professor Abdus Salam, theoretical physicist and Nobel laureate, died on 14 November 1996 aged 70.

LONDON MATHEMATICAL SOCIETY

TWO-DAY MEETING

FRIDAY 21ST & SATURDAY 22ND FEBRUARY 1997

MATHEMATICAL INSTITUTE, OXFORD

Group Theory

Friday

2.20 Opening Session
2.30 M. Vaughan-Lee (Oxford) *Bounds in the Restricted Burnside Problem*
3.30 Tea/Coffee
4.00 M. Broué (Paris) *On Finite Complex Reflection Groups*
5.15 M. Dunwoody (Southampton) *Geometric Splittings of Groups*

Saturday

9.15 A. Joseph (Paris and Weizmann Institute) *Harish-Chandra Homomorphisms*
10.15 Tea/Coffee
10.45 G. Higman, FRS (Oxford) *Buttons*
12.00 E. Zelmanov (Yale) *Variations on the Theme of Burnside*

All interested are very welcome

A dinner will be held at St Cross College, Oxford on the evening of Friday 21 February at 7.00 p.m. for 7.30 p.m. The cost of the dinner will be £14.50 per person, inclusive of wine. Those wishing to attend should inform Miss Susan Oakes, London Mathematical Society, Burlington House, Piccadilly, London W1V 0NL, enclosing a cheque payable to "The London Mathematical Society" to arrive no later than Friday 7 February.

Enquiries may be addressed to Dr Peter Neumann, The Queen's College, Oxford OX1 4AW (e-mail: peter.neumann@queens.ox.ac.uk).

1997 LMS PRIZES

The Council proposes to award, in Summer 1997, a Pólya Prize, a Senior Whitehead Prize, a Junior Berwick Prize, and one or more Junior Whitehead Prizes. Accordingly, it has appointed J.M. Ball, T.J. Lyons, I.G. Macdonald, R.S. MacKay and E.G. Rees to the 1997 Prizes Committee

The Council invites members of the Society to submit their views on possible candidates for the award of these Prizes confidentially in writing to any member of the Prizes Committee by 1 March 1997. In each case, nominations should contain explicit reference to the grounds on which the nomination is based. The Prizes Committee would particularly welcome suggestions of possible candidates for the award of the Junior Berwick Prize and the Junior Whitehead Prize(s), in view of the condition (explained below) concerning publication which applies to the former and the age conditions which apply to both. Council reserves the right not to make an award in the event that no candidate of sufficient merit is recommended by the Prizes Committee for a particular Prize.

The Pólya Prize is to be awarded in recognition of outstanding creativity in, imaginative exposition of, or distinguished contribution to, mathematics within the United Kingdom; it may not be awarded to any person who has previously received the De Morgan Medal.

The Senior Whitehead Prize is to be awarded to a mathematician who is normally resident in the United Kingdom on 1 January 1997 in respect of work in, influence on or service to mathematics, or in recognition of lecturing gifts in the field of mathematics; it may not be awarded to any person who has previously received the De Morgan Medal or the Senior Berwick Prize.

The Junior Berwick Prize is to be awarded to a mathematician who, on 1 January 1997, is a member of the Society, is under the age of forty years, and is not already a Fellow of the Royal Society, in respect of a definite piece of mathematical research work actually published by the Society during the period from 1 January 1993 to 31 December 1996.

The Junior Whitehead Prizes are to be awarded to mathematicians who on 1 January 1997 are normally resident in the United Kingdom or members of the Society mainly educated in the United Kingdom, who are not already Fellows of the Royal Society, and who are under the age of forty years (except that this age restriction may be relaxed when it appears desirable to do so in order to take fair account of broken career patterns). Grounds for the award may include work in and influence on mathematics.

No person may be awarded a given Prize more than once, and the President of the Society and the members of the Prizes Committee are ineligible for any of the awards. The detailed regulations and procedure for the award of each Prize can be obtained from the Administrator, London Mathematical Society, Burlington House, Piccadilly, London W1V 0NL.

J.S. Pym
Council and General Secretary

ANNUAL SUBSCRIPTION

The Society is appreciative of those members who have paid their 1996/97 subscriptions. May we remind those who have not yet paid that subscriptions were due on 1 November 1996. 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 Newsletters to members whose subscription remains unpaid by 31 January 1997. 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, Eurocheque quoting your card number on the reverse or by Giro. If you have misplaced your renewal of subscription form, contact the Assistant Administrator, Harvinder Lotay, at the LMS office, e-mail: lms@lms.ac.uk; tel: 0171 437 5377; fax: 0171 439 4629.

LONDON MATHEMATICAL SOCIETY INVITED LECTURE SERIES 1997

Professor J.L. Alperin, University of Chicago

Characters, Subgroups and Modules

A series of 10 lectures on representation theory will be given by Professor J.L. Alperin during the week 14 - 18 April 1997 in the School of Mathematics and Statistics, University of Birmingham.

The series will take as its starting point and main motivation the character table and all its mysteries. It will show how this leads to the main topics in representation theory, such as modular representations, groups of Lie type and even the latest notions like derived categories. Many interesting and important open problems will be mentioned, to give an indication of all the worlds that remain to be to conquered. The lectures will be addressed to a wide audience of experts and non-experts, and they should be accessible to research students in nearby fields. Some preliminary reading, from any book on representation theory, would be helpful.

Tentative Programme

- Wedderburn theorems and characters of finite groups: a review. Structure of algebras and their representations. Application to finite groups. Characters and character tables.
- Open problems. The main problem of character theory arising from Brauer's work. The weight, McKay and Dade conjectures. The Knorr-Robinson reformulations using the p-subgroup complexes.
- Homological methods. Projective modules, projective resolutions, relatively projective modules and induced modules.
- Cyclic theory. Groups with a cyclic Sylow p-subgroup, Brauer trees, blocks.
- Equivalences. Morita equivalences, stable equivalences, derived equivalences, conjectures of Broué and work of Rickard.

Accommodation Some accommodation, costing £23.55 per night for a single room and English breakfast, has been reserved in University House from 13 to 18 April 1997. Modest financial assistance will be available for research students who apply early for accommodation. If you wish to use this accommodation, please contact the organizers as soon as possible; unrequired rooms may have to be released in the middle of January. There are (more expensive) bed and breakfast hotels close to the University where one might be able to find accommodation even on the day of arrival.

Registration Participants are asked to register (by e-mail or letter). There is no registration fee. Early registration (preferably before the end of January) would be greatly appreciated by the organizers, but later registration is also possible.

Contact address For further details, registration, and arrangement of accommodation, please contact Mrs S. Bennett at the School of Mathematics and Statistics, University of Birmingham, Edgbaston, Birmingham B15 2TT (e-mail: s.d.bennett@bham.ac.uk, tel: 0121-414-6593).

SEMINAIRE DE MATHEMATIQUES SUPERIEURES - NATO ADVANCED STUDY INSTITUTE

A Seminar on "Representation Theories and Algebraic Geometry" will be held at the Université de Montréal from 28 July - 8 August 1997. The Seminar is held with the support of NATO, and the Université de Montréal. The principal speakers are M. Brion (Lyon), A. Broer (Montréal), R. Brylinski (Pennsylvania State), V. Ginzburg (Chicago & Moscow State), J. Jantzen (Aarhus), A. Joseph (Weizmann Institute & Paris VI), F. Knop (Rutgers), P. Littelmann (Strasbourg), G. Lusztig (MIT), D. Peterson (UBC), W. Soergel (Freiburg), T. Springer (Utrecht). Partial financial assistance will be available. Priority will be given to graduate students. Requests for participation or financial assistance must be received before 14 March 1997. Further information is available from: G. David, Coordinator SMS, Department of Mathematics & Statistics, Université de Montréal, CP 6128-Centreville, Montreal, (Qc), Canada H3C 3J7; fax (514) 343-5700.

BRITISH MATHEMATICAL COLLOQUIUM

An application form with a timetable and list of speakers is enclosed with this Newsletter. The Special Session on *Low Dimensional Topology* is organised by Dr R. Fenn with speakers: R. Fenn (Sussex), J. Montesinos (Madrid), J.E. Hoste (Pizer), M. Boileau (Toulouse). The Special Session on Partial Differential Equations is organised by Professor E.B. Davies with speakers: E.B. Davies (KCL), D.G. Vassiliev (Sussex), H. Brezis (Paris), R. Hempel (Germany). Letters to departments will contain details of the subsidies for students, which are funded by the LMS. Also titles will be on http://galisteo.ma.rhbnc.ac.uk/bmc.html

Gar de Barra
Secretary

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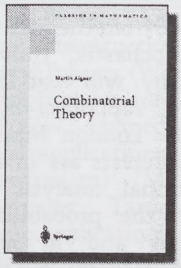

M. Aigner

Combinatorial Theory

X, 484 pages.
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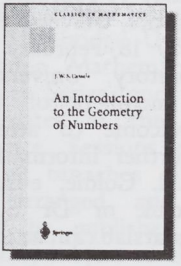
ISBN 3-540-61787-6

From the reviews:
"This book presents a very good introduction to combinatorics. It covers most aspects of enumeration and order theory ... This book can warmly be recommended first of all to students interested in combinatorics. A two semester course can also be based on it." *Publicationes Mathematicae Debrecen*
Due January 1997

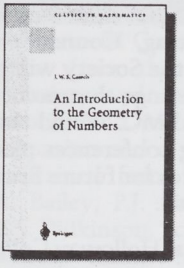


J.W.S. Cassels

An Introduction to the Geometry of Numbers

X, 344 pages.
Softcover £ 25
ISBN 3-540-61788-4

From the reviews:
"The work is carefully written. It is well motivated, and interesting to read, even if it is not always easy ... the author has written an excellent account of an interesting subject." *Mathematical Gazette*
Due January 1997



P. Dembowski

Finite Geometries

XIV, 378 pages.
Softcover £ 25
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From the reviews:
"The author deserves unstinting praise for the skill, energy, and perseverance which he devoted to his work. The finished product confirms what his many earlier contributions to the subject of finite geometry have already indicated, namely, that he is an undisputed leader in his field." *Mathematical Reviews*
Due January 1997

Already available:

A. Dold
Lectures on Algebraic Topology
1995. XIII, 377 pages. 10 figures.
Softcover £ 25
ISBN 3-540-58660-1

H. Federer
Geometric Measure Theory
1996. XIV, 676 pages.
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F. Hirzebruch
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K. Itô, H. McKean
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S. MacLane
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A. Weil
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VACANT RESEARCH APPOINTMENTS 1997

Applications are invited for about 30 Royal Society University Research Fellowships, tenable in the first instance for five years from 1 October 1997 (or later in the academic year 1997-98). Renewals of three years and then a further two may be possible. The appointments available embrace all branches of science, including agriculture, medicine, mathematics, engineering and technology.

Research Fellows are paid on the academic and academic-related staff (Lecturer A and B) salary scale which currently runs from £15,154 to £26,430 plus three additional discretionary points up to £29,532. Starting salaries will be 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 about £11,000 for 1997-98) will be available together with travel expenses and a contribution to baggage costs for successful applicants from overseas and their families.

Applicants must have a PhD or equivalent research experience. They should be at least 26 but not have passed their 40th birthday by 1 October 1997, and have between two and seven years postdoctoral experience. Applicants over 40 may be considered under very exceptional circumstances; they should contact the Research Appointments Department at The Royal Society for advice before submitting an application. Fellowships must be held in a university in the United Kingdom. Those already holding substantive posts in a European Union university will not be considered. University Research Fellowships are open only to European Union citizens who are either employed in the UK or who, if not employed, have been resident in the UK for a continuous period of three years other than for the sole purpose of receiving full-time education.

Application forms and further information are available from the Research Appointments Department, The Royal Society, 6 Carlton House Terrace, London SWIY 5AG (fax: 0171-930 2170). **Closing date: 24 January 1997**. Application forms are not available after 10 January 1997 and applications arriving after 4 p.m. on 24 January will not be considered.

VISIT OF PROFESSOR R. GRÜBEL

Professor Rudolf Grübel, from the Institut für Mathematische Stochastik, Universität Hannover, Germany, will visit England in February 1997, supported by a Scheme 2 grant of the London Mathematical Society. His interests are in the application of functional analysis to stochastic models, in the probabilistic analysis of algorithms and in nonparametric and robust statistics. He will lecture on Thursday 13 February at the School of Mathematical Sciences, University of Sussex, on Friday 14 February at the School of Mathematics, University of Bath, and on Tuesday 18 February at the Statistical Laboratory, University of Cambridge. All members of the Society are very welcome to attend these lectures. For further information contact Professor C.M. Goldie, e-mail: C.M.Goldie@sussex.ac.uk or Dr S.M. Pitts, e-mail: S.Pitts@statslab.cam.ac.uk.

DATES OF THE BRITISH MATHEMATICAL COLLOQUIUM

At its October meeting, Council reaffirmed its policy that the Society will not normally support meetings that occur at the same time as the BMC. Would those who may be planning conferences please note the following dates for future British Mathematical Colloquia:

14-17 April 1997 Royal Holloway College

6-9 April 1998 Manchester University

29 Mar - 1 Apr 1999
Southampton University

16th BRITISH COMBINATORIAL CONFERENCE

The 16th British Combinatorial Conference will be held at Queen Mary and Westfield College, University of London from 7 to 11 July 1997. Nine invited lectures have been arranged: John Conway (Princeton) 'M_{13}'; Keith Edwards (Dundee) 'The harmonious chromatic number and the achromatic number'; Clement Lam (Concordia) 'Computer construction of block designs'; Cheryl Praeger (Western Australia) 'Finite quasiprimitive graphs'; Bruce Reed (Paris) 'A new connectivity measure and some applications'; Alexander Schrijver (Amsterdam) 'Minor-monotone graph invariants'; Tamas Szonyi (Budapest) 'Some applications of algebraic curves in finite geometry and combinatorics'; Tom Trotter (Arizona State) 'Finite partially ordered sets'; Dominic Welsh (Oxford) 'Approximate counting'.

The invited lectures will be published by Cambridge University Press in the London Mathematical Society Lecture Notes Series, and will be given to all delegates at the start of the Conference. Sessions of contributed talks in all branches of Combinatorics will be arranged, and contributed papers will be published in *Discrete Mathematics*, subject to the acceptance by the Editors and appropriate referees. The Conference will also have demonstrations of software for combinatorics, as well as the traditional problem session. The Conference is organised by the British Combinatorial Committee with financial support from the London Mathematical Society and the Institute of Combinatorics and its Applications. Further information and a registration form can be obtained from the local organisers: R.A. Bailey, P.J. Cameron, L.H. Soicher and S. Wilkinson, School of Mathematical Sciences, Queen Mary and Westfield College, Mile End Road, London El 4NS; e-mail: bcc@qmw.ac.uk; fax: 44-181-981-9587; web: http://www.maths.qmw.ac.uk/~pjc/bcc16.html.

1997 LMS DURHAM SYMPOSIUM

There will be one symposium in 1997:

PRO-P GROUPS AND RELATED TOPICS, Monday 14th July to Thursday 24th July 1997. Organisers: D. Segal*, M.P.F. du Sautoy, A. Shalev. Main Speakers (provisional): Professor N. Boston (Illinois), Dr C.R. Leedham-Green (QMW), Professor A. Lubotzky (Hebrew), Professor A. Mann (Hebrew), Professor M.F. Newman (Canberra), Professor S. Sen (Cornell), Professor E.I. Zelmanov (Yale).

This research symposium is organised under the auspices of the LMS and is supported by Research Grants from EPSRC. There may be a few places available for mathematicians not yet invited. Those interested should write for more information to the organiser marked * at the following addresses: Dr D. Segal, All Souls College, Oxford, OX1 4AL, tel: 01865 279359, fax: 01865 279299; e-mail: dsegal@vax.ox.ac.uk

FAST STREAM FOR FIRST-TIME APPLICANTS

EPSRC has introduced a fast stream approval process for first time applicants requesting grants of up to £50,000. Elegibility is limited to new university staff members, supported from general university funds, within the first two years of their appointment, and making their first application as principal investigator to EPSRC. If the proposal receives favourable comment from the required three referees in the first stage of the review process, the grant will be approved without having to enter the rank-ordering stage. Requests under these arrangements should be marked 'Fast Stream' at the top of the proposal form. In other respects EPSRC's normal eligibility guidelines apply, as set out in the Guide to Research Grants. The Guide and proposal forms are available from university registrars and secretaries and the information is also on EPSRC's World Wide Web site (http://www.epsrc.ac.uk).

MATHEMATICS AND COMPUTING


a.m. turing

This month, we would like to remind readers of the MathFit (Mathematics for Information Technology) programme, which is jointly sponsored by the EPSRC and the LMS. Applications for cross-disciplinary research, Visiting Fellowships, and Workshops are encouraged. (Further details are probably most easily found via the LMS WWW page.)

In particular, the LMS is involved in supporting Workshops and, below, we include brief reports on three such Workshops that have taken place during the past six months.

Computer Algebra, Bath, April 1996. Taken from report by James Davenport.

A MathFit instructional workshop on Computer Algebra was held at the University of Bath during 15-16 April, 1996, with nineteen attendees. The main speakers were: Manuel Bronstein (Zürich), "A common framework for differential and difference equations"; Victor Flynn (Liverpool), "Applications of computer algebra in algebraic number theory"; Steve Linton (St. Andrews), "The GAP system - present capabilities and future plans"; Stephen Watt (Nice), "Systems issues in computer algebra". In addition, there were four short presentations, in which the Larch and Axiom systems featured prominently.

Practical sessions supplemented the lectures, and computer algebra software packages were demonstrated and made available to participants. Documentation in Maple was provided by Edward Young of Adept Scientific plc, UK distributors for Maple.

Finite Model Theory, Swansea, July 1996. Report by Anuj Dawar.

A MathFit instructional workshop on finite model theory was held at the University of Wales Swansea during July 7-9, 1996. The workshop aimed to provide researchers and students in the field of logic and computer science with an introduction to the problems, methods and applications of finite model theory. Finite model theory has emerged in recent years as an active area of research in theoretical computer science, bringing to bear methods of mathematical logic in general, and model theory in particular, on such application areas as computational complexity, database theory and computer- aided verification.

The workshop was attended by about 40 participants from the UK and several other European countries. The speakers were Anuj Dawar (Swansea), Stephane Grumbach (INRIA, Rocquencourt), Ian Hodkinson (Imperial College, London), Clemens Lautemann (Mainz), Iain Stewart (Leicester) and Colin Stirling (Edinburgh).

Concurrency, Communication and Distribution, Kent, July 1996. Report by John Derrick.

A MathFit workshop on mathematical models of concurrency, communication and distribution was held at the University of Kent at Canterbury on 19-21 July 1996. The aim was to give participants a broad overview of formal models of concurrency and distribution, covering a spectrum of mathematical techniques rather than being specific to one approach. Four speakers covered a number of topics including: true vs interleaving

semantic models and their equivalences; differing notations and approaches, and modal and temporal logics for concurrency.

An invited lecture on concurrency and time was given by Steve Schneider of Royal Holloway and Bedford New College.

There was substantial interest in the meeting, with thirty four attendees, including students and staff from the UK and overseas. The style of the workshop was similar to those funded by the LogFit initiative, with a number of lectures given over the course of the weekend, each supported by a one or two hour practical session.

Eleven and a half hours of talks were given in all. A one and a half hour tool session was held on Saturday evening, which allowed participants to simulate and test specifications they had written during the workshop. A set of notes and exercises was available to all participants; additional copies can be obtained from the workshop organisers.

MATHFIT PROGRAMME 1997

The following events are being sponsored by the EPSRC/LMS MathFit initiative in 1997. All have been designed to contain an instructional or introductory interdisciplinary component and all interested, whether on the computational or mathematical side, are welcome to attend subject to restrictions of space. For further details of individual workshops please contact the organisers at the addresses given below, or see the Society's web pages, http://www.qmw.ac.uk/~lms/lms.html where further details will be placed as they become available.

Methods and algorithms for radio channel assignment, 8-10 April 1997
Dr Robert Leese, University of Oxford (leese@maths.ox.ac.uk)

Models and algorithms for planning and scheduling problems, 7-11 April 1997
Dr Celia Glass, University of Southampton (cag@maths.soton.ac.uk)

The art and science of Bayesian image analysis, 30 June - 2 July 1997
Professor K V Mardia, University of Leeds (k.v.mardia@leeds.ac.uk)

Games and computation, July 1997
Professor Samson Abramsky, University of Edinburgh (samson@dcs.ed.ac.uk)

Computational number theory, 14-16 July 1997
Dr N Smart, University of Kent (N.P.Smart@ukc.ac.uk)

New paradigms for computation on classical spaces, 8-10 September 1997
Professor Achim Jung, University of Birmingham (A.Jung@cs.bham.ac.uk)

The EPSRC/LMS MathFit programme in Mathematics for Information Technology is intended to stimulate interdisciplinary research and supports instructional meetings, research grants and visiting fellowships: for further details see http://www.epsrc.ac.uk/progs/area/it_cs/mfitcall.htm or contact one of the coordinators: for the EPSRC, Mrs Anne Farrow (anne.farrow@epsrc.ac.uk) or Dr Dominic Semple (dominic.semple@epsrc.ac.uk) and for the LMS, Professor Ursula Martin, University of St Andrews (tel: 01334 463252; e-mail: um@dcs.st- and.ac.uk).

This occasional column is for the discussion of topics on the boundary between mathematics and computer science, thus covering both applications of mathematics in computer science and uses of computers in mathematics. Relevant material, such as opinions, notices about Maths & CS meetings and reviews of research, teaching and support software, is solicited. Contributions should be sent to the editors of the column: w.hodges@qmw.ac.uk (Wilfrid Hodges, Queen Mary & Westfield College) dfh@maths.warwick.ac.uk (Derek Holt, University of Warwick).

PRINCETON

The Nature of Space and Time

Stephen Hawking and Roger Penrose

Can the quantum theory of fields and Einstein's general theory of relativity, the two most accurate and successful theories in all of physics, be united in a single quantum theory of gravity? Can quantum and cosmos ever be combined?

On this issue, two of the world's most famous physicists —Stephen Hawking (*A Brief History of Time*) and Roger Penrose (*The Emperor's New Mind*)—disagree. They explain their positions in a new book based on their lectures and debate at the Isaac Newton Institute for Mathematical Sciences at the University of Cambridge.

This thought-provoking book is essential reading for teachers, researchers, and graduate students alike.

The Isaac Newton Institute Series of Lectures
Cloth: £16.95 ISBN 0-691-03791-4

Period Spaces for p-divisible Groups

M. Rapoport and Th. Zink

In this monograph p-adic period domains are associated to arbitrary reductive groups. Using the concept of rigid-analytic period maps the relation of p-adic period domains to moduli space of p-divisible groups is investigated. In addition, non-archimedean uniformization theorems for general Shimura varieties are established. The material is illustrated throughout the book with numerous examples.

Annals of Mathematics Studies, 141: Luis A. Caffarelli, John N. Mather, and Elias M. Stein, Editors
Paper: £24.00 ISBN 0-691-02781-1 Cloth: £50.00 ISBN 0-691-02782-X

Renormalization and 3-Manifolds Which Fiber over the Circle

Curtis T. McMullen

Many parallels between complex dynamics and hyperbolic geometry have emerged in the past decade. Building on work of Sullivan and Thurston, this book gives a unified treatment of the construction of fixed-points for renormalization and the construction of hyperbolic 3-manifolds fibering over the circle. Both subjects are studied via geometric limits and rigidity.

Annals of Mathematics Studies, 142: Luis A. Caffarelli, John N. Mather, and Elias M. Stein, Editors
Paper: £20.00 ISBN 0-691-01153-2 Cloth: £43.00 ISBN 0-691-01154-0

THE DEARING INQUIRY

As members will know, the Government set up a National Committee of Inquiry into Higher Education under the chairmanship of Sir Ron Dearing. Its report is expected this summer. To help it in its work, the Committee distributed a Request for Evidence in the form of a list of 32 questions. Council decided to respond, but only to those questions which bore directly on mathematics and on which it was confident there was a consensus among LMS members. These are some of the points that were made. (The ordering follows the questionnaire; it does not indicate relative importance!)

- As described in greater length in the LMS/IMA/RSS report *Tackling the Mathematics Problem*, the mathematics background of students entering university is a matter of great concern.
- The most important distinguishing feature of higher education is that most of the teaching is done by individuals who are themselves active practitioners of the subject. We would expect this to be important in all subjects; it certainly is in mathematics.
- Most students in mathematics (and, we believe, science and engineering as well) are best served by following a unified course at a single institution. Some students will inevitably want to change institution or interrupt their studies, but the modular systems operated by most universities already provide sufficient flexibility.
- The computer has vastly increased the range of mathematical techniques available outside the physical sciences and engineering. All graduates should be numerate, and this must now include an understanding of mathematics up to at least the level of an American "freshman calculus" course. Mathematics should also be part of the curriculum for all 16-19 year olds.
- The great diversity of higher education institutions means there cannot be a national standard for mathematics qualifications. Employers, research councils and others will have to recognise this and allow for it.
- The dual support system is very important for mathematics, where grant income tends to be both smaller and less reliable as an indicator of research success.
- Mathematics does not depend on expensive equipment and large numbers of technicians. Even if concentrating research resources even further were the best way forward for other science subjects, there is less to be gained and more to be lost if the same policy were applied in mathematics.
- If vocational qualifications are to be acceptable as entry for science and engineering courses, their mathematical content must be at an appropriate standard.
- In mathematics, as in other science subjects, there is an important interaction between teaching and research. Within most Departments there are some who are more involved in one and some in the other, but in a Department with little research activity it is hard to ensure that what is taught to the students is of an appropriate standard and up to date.
- People with high mathematical ability find little difficulty in obtaining good jobs outside education. Good researchers are also able to move to universities outside the UK. If the pay and career prospects are inadequate, and if the work loads in most universities increase to the point where research is no longer an important part of the job, mathematics could become a shortage subject in the universities just as it already is in the schools.

Peter Saunders

NORTH BRITISH FUNCTIONAL ANALYSIS SEMINAR

A meeting of the North British Functional Analysis Seminar will be held at the University of Leeds from 2.30 pm until 5.00 pm on Monday 3rd March 1997. The speaker will be Professor Haakan Hedenmalm (Lund). For further information contact Dr G. Blower (e-mail: G. Blower@lancaster.ac.uk).

SYMMETRY AND BIFURCATION

An informal 2-day meeting in Symmetry and Bifurcation will be held at the University of Southampton from 9-10 January 1997 as part of the activities of the Research Group in Dynamics of Symmetric Systems funded by the LMS under Scheme 3 and organised by Peter Ashwin (Surrey), David Chillingworth (Southampton) and Matt Nicol (UMIST). For further details of the Southampton meeting contact David Chillingworth (drjc@maths.soton.ac.uk, tel 01703 593677); for information on the Research Group contact Peter Ashwin (p.ashwin@mcs.surrey.ac.uk, tel 01483 259000 ext 2634) or see the web page (http://www.mcs.surrey.ac.uk/Research-/Maths/LMS.html) where details of the programme for January meeting will be posted.

RUSSIAN STATE PRIZE

Dr V.P. Belavkin (Nottingham) has been awarded, jointly with Professor R.L. Stratonovich, the Main State Prize of the Russian Federation (formerly the Lenin Prize) in 1996 for Outstanding Achievements in Science and Technology. Previous winners of this prestigious prize include Arnold, Gelfand, Kolmogorov, Maslov, Novikov, Pontryagin, Saferevich and Sakharov. The prize was awarded for the joint work of Belavkin and Stratonovich on Stochastic Methods in Classical and Quantum Physics, Probability and Measurement Theory.

1997 POSTGRADUATE COMBINATORICS CONFERENCE

The 8th Postgraduate Combinatorics Conference will be held at Royal Holloway College from 17th-19th April, sponsored by the British Combinatorial Committee. The conference provides a unique opportunity for postgraduate students in combinatorics and related areas to exchange ideas and also hone their presentation skills. There will be three guest lectures given by Graham Brightwell (LSE), Peter Cameron (QMW) and Colin McDiarmid (Oxford). Further details are available from Alan Lauder, Department of Mathematics, Royal Holloway College, Egham, Surrey TW20 0EX (a.lauder@rhbnc.ac.uk).

VISIT OF PROFESSOR S.R. SVIRSHCHEVSKII

Professor S.R. Svirshchevskii from the Institute of Mathematical Modelling, Russian Academy of Sciences (Moscow), will be visiting the UK from 8 to 30 January 1996, supported by the LMS under its fSU scheme. He will be based at the School of Mathematical Sciences, the University of Bath. He will be visiting the Institute of Mathematics and Statistics, University of Kent. The titles of his seminars concern applications of group-theoretical methods for nonlinear partial differential equations and new results on linear subspaces invariant under quasilinear differential operators. For further information contact Dr V.A. Galaktionov (School of Mathematical Sciences, University of Bath, Bath BA2 7AY, UK; tel.: 01225 826988, e-mail: vag@maths.bath.ac.uk).

GRESHAM COLLEGE GEOMETRY

During the 1997 Spring semester three Public Lectures in Geometry will be given by Professor Ian Stewart (Gresham Professor of Geometry) 'Four Centuries of Logarithms' Monday 27 January at 1.00 pm at Gresham College, 'Turing's Tiger' Wednesday 9 April at 5.30 pm at Sarah Bonnell School, Deanery Road, Stratford, London E15 and 'Chippendale's Lost Geometry' Wednesday 21 May at 1.00 pm at Gresham College. Admission is free and without tickets. Further details of the lectures are available from Gresham College, Barnard's Inn Hall, Holborn, London EC1N 2HH, telephone 0171-831 0575.

PROGRAMME AND CONFERENCE FUND

The Society's Programme and Conference Fund is used to give financial support to various mathematical activities in the UK. Grants are made under five main headings, which are set out in summary form below.

Type of Grant	General Purpose	Amount	Deadlines
Conference Grant	Support of conferences within the UK. The grant may be either a substantial contribution to a small meeting or a small contribution to a large meeting	Up to £2500	31 January, 31 May and 31 August.
Scheme 2	Support for a foreign visitor who will give lectures at three places in the UK	Return travel to UK up to a maximum of £500	At least three months before the visit
Scheme 3	Support of incidental costs for collaborative work by research groups from three (or more) different places	Travel or other costs up to £1000 for one year	31 January, 31 May and 31 August
Scheme 4	Support of travel and subsistence costs incurred by a UK member or their collaborator in carrying out joint research.	Up to £300	31 January, 31 May and 31 August
fSU Scheme	Support of visits to UK by fSU mathematicians and support of visits to fSU by UK mathematicians	Basic travel and living expenses up to £1000	At least three months before the visit

Only Society members are eligible for Scheme 4 grants. Otherwise, any mathematician working in the UK is eligible for a grant; applications from non-members must be countersigned by a Society member. Applications for conference grants must be submitted on the appropriate form, available either from the Society's Office(lms@lms.ac.uk), or from the Society's ftp archive which can be reached via ftp ftp.qmw.ac.uk. In all other cases, applications should be made by letter, including (as appropriate) the academic case, details of participants and activities, places to be visited, the proposed timetable and a budget of estimated costs. Applications should be sent to the Administrator, Miss Susan Oakes, at London Mathematical Society, Burlington House, Piccadilly, London W1V 0NL (tel: 0171 437 5377; e-mail: lms@lms.ac.uk; fax: 0171 439 4629). Further information and advice can be obtained from her or from the Meetings and Membership Secretary, Dr D.J.H. Garling, Department of Pure Mathematics and Mathematical Statistics, 16 Mill Lane, Cambridge CB2 1SB (e-mail d.j.h.garling@pmms.cam.ac.uk; fax 01223 337920; tel: 01223 337978). The information is on the Society's home page on the World Wide Web at http:www.qmw.ac.uk/~lms/grants.html.

Conference

Topic	Awardee	Amount
Scottish Computational Mathematics Symposium 1996	D.M. Sloan	£ 390
Workshop on Fourier Analysis	A. Carbery	£1000
Meeting in Honour of Terry Wall's birthday	J.W. Bruce	£2500
Reading Two- day Combinatorics Meeting	A.W.G. Hilton	£ 440
Low-dimensional Topology Meeting	R.A. Fenn	£2486
Combustion Science at the Turn of the Century	D.G. Crighton	£1500
Stochastic Modelling of Physical Systems	G.R. Grimmett	£2000
Models and Algorithms for Planning and Scheduling Problems	C.A. Glass	£1000
EMS St Andrews Colloquium	J. O'Connor	£ 500
British Women Mathematicians Day, 1996	R. Williams	£1215
Logic Colloquium, 1997	S.S.Wainer	£2500
Bianisotropics, 1997	W. Weiglhofer	£2500
16th British Combinatorial Conference	J. Sheehan	£1400
Sheffield Homotopy Mini-Conference	J.P.C. Greenglass	£2500
1997 University of Wales Pure Mathematics Colloquium	M.V. Lawson	£ 800
Mathematics of Non-linear Optics	D.F. Parker	£2000
British Mathematical Colloquium	G. de Barra	£5000

Mathematics in the Real World	C.J. Earle	£1200
12th British Topology Meeting	U. Tillmann	£2500
4-Dimensional Geometry and Quantum Field Theory	M. Atiyah	£2500
Combinatorial Designs and their Applications	K. Quinn & B. Webb	£ 300

Scheme 2 Visitor	Awardee	Places to visit	Amount
E. Bayer-Fluckiger	C. Kearton	Edinburgh, Durham, Cambridge	£330
K. Györy	G.R. Everest	Cambridge, Glasgow, UEA	£500
S.P. Novikov	A. Ranicki	Cambridge, Oxford, Edinburgh	£500
R. Grübel	C.M. Goldie	Bath, Sussex, Cambridge	£477
H. Hedenmalm	G. Blower	Leeds, London	£500
J. Hall	M. Collins	UEA, London	£500
J. Alperin	M. Collins	London, Bristol	£500

Scheme 3: Topic	Applicants	Institution	Award
Computational Number Theory	N.M. Stephens	Goldsmiths	£ 900
	N.P. Smart	Kent	
	B.J. Birch	Oxford	
	J.E. Cremona	Exeter	
Mathematical Physics- Physical Mathematics	D.E. Evans	Swansea	£1000
	W.D. Evans	Cardiff	
	A.O. Morris	Aberystwyth	
Algebraic Geometry	G.K. Sankaran	Bath	£1000
	F.C. Kirwan	Oxford	
	D. Salamon	Warwick	
	P.M.H. Wilson	Cambridge	
K-theory and Analysis	J. Brodzki	Exeter	£1000
	J. Jones	Warwick	
	R.J. Plymen	Manchester	
	J. Roe	Oxford	
Spectral Analysis for PDE's	L. Parnovski	Sussex	£1000
	E.B. Davies	Kings College	
	M van den Berg	Bristol	
Dynamics of Symmetric Systems	P. Ashwin	Surrey	£1000
	M. Nicol	UMIST	
	P.M. Roberts	Warwick	
	D.R.J. Chillingworth	Southampton	
	J. Furter	Brunel	

Scheme 4: Awardee	Institution	Collaborator	Institution	Award
M. Levitin	Heriot Watt	D. Vassiliev	Sussex	£ 300
		L. Parnovski	Sussex	
		M. van den Berg	Bristol	
		D.V. Evans	Bristol	
M. Edjvet	Nottingham	A. Juhasz	Haifa	£ 300
N.J. Young	Lancaster	J. Agler	San Diego	£ 300
A. Movchan	Bath	R.C. McPhedran	Sydney	£ 300
S.S. Wainer	Leeds	H. Schwichtenberg	Munich	£ 220
T.W. Korner	Cambridge	A. Olevskii	Tel Aviv	£ 300
I.J. Siemons	East Anglia	L. Kerber	Bayreuth	£ 300

fSU: Visitor	From	Awardee	Place to visit	Grant
D. Shpak	Kiev	I. Kovalenko	North London	£ 960
			Glasgow,	
			Edinburgh	
A. Baranov	Minsk	A.E. Zalesskii	Norwich	£1000
		B.Z. Moroz	Minsk	£ 500
S.G. Samko	Rostov on Don	W.D. Evans	Cardiff, Sussex	£ 800
G. Bocharov	Moscow	C.T.H. Baker	Manchester	£1000
N.N. Nekhoroshev	Moscow	G. Gaeta	Loughborough	£1000
L. Shakihet	Ukraine	N.J. Ford	Chester	£1000
S.A. Posashov	Moscow	V.A. Galakitionov	Bath	£1000
E. Nosyreva	Ukraine	H. Ockendon	Oxford	£1000
O.V. Besov	Russia	W.D. Evans	Cardiff, Bath	£1000
			Brighton	
V.A. Kondratiev	Moscow	A. Grigor'yan	London	£ 655

ISAAC NEWTON INSTITUTE FOR MATHEMATICAL SCIENCES

Junior Membership of the Newton Institute

We propose to introduce a category of Junior Member of the Newton Institute, intended for Research Students and postdoctoral workers who are still within five years of being awarded the PhD degree. Junior Members will receive information about future programmes, and workshops within programmes, and will be encouraged to apply to attend these. Details will be announced shortly, and will be available in the Institute's World Wide Web page (http://www.newton.cam.ac.uk).

Future Programmes

The following programmes have been approved and will take place during the periods indicated:

Jan-Jun 1997 *Representation Theory of Algebraic Groups and Related Finite Groups.* Organisers: M. Broué (Paris), R.W. Carter (Warwick), J. Saxl (Cambridge)

Jan-Jun 1997 *Non-Perturbative Aspects of Quantum Field Theory.* Organisers: D.I. Olive (Swansea), P. Van Baal (Leiden), P. West (King's College, London)

Jul-Dec 1997 *Disordered Systems and Quantum Chaos.* Organisers: J.P. Keating (Bristol), D.E. Khmelnitskii (Cambridge), I.V. Lerner (Birmingham), P. Sarnak (Princeton)

Jul-Dec 1997 *Neural Networks and Machine Learning.* Organisers: C.M. Bishop (Aston), D Haussler (UCSC), G.E. Hinton (Toronto), M. Niranjan (Cambridge), L.G. Valiant (Harvard)

Jan-Jun 1998 *Dynamics of Astrophysical Discs.* Organisers: J.C.B. Papaloizou (QMW), J.E. Pringle (Cambridge), J.A. Sellwood (Rutgers)

Jan-Jun 1998 *Arithmetic Geometry.* Organisers: J-L. Colliott-Thélène (Orsay), J. Nekovár (Cambridge), C. Soule (IHES)

Jul-Dec 1998 *Biomolecular Function and Evolution in the Context of the Genome Project.* Organisers: N. Goldman (Cambridge), P. Donnelly (Chicago), W. Fitch (Irvine)

Jul-Dec 1998 *Nonlinear and Non-stationery Signal Processing.* Organisers: R.L. Smith (N Carolina), P.C. Young (Lancaster), W.J. Fitzgerald (Cambridge)

Jan-Jul 1999 *Turbulence.* Organisers: G.F. Hewitt (Imperial College), P.A. Monkewitz (Lausanne), N. Sandham (QMW), J.C. Vassilicos (Cambridge)

Jan-Jul 1999 *Mathematics and Applications of Fractals.* Organisers: R.C. Ball (Cambridge), K.J. Falconer (St Andrews)

May-Aug 1999 *Complexity, Entropy and the Physics of Information.* Organisers: A Albrecht (Imperial), W. Zurek (LANL), R.M. Solovay (Berkeley)

Jul-Dec 2000 *Singularity Theory.* Organisers: V.I. Arnol'd (Moscow), J.W. Bruce (Liverpool), O. Siersma (Utrecht)

Forthcoming workshops

The following workshops will take place during the programme *Representation Theory of Algebraic Groups and Related Finite Groups:*

4 April 1997 *Spitalfields Day* The speakers will be R.M. Guralnick, G.D. James, J.C. Jantzen and G. Malle

7-12 April 1997 *Modular Representation Theory in the Non-Defining Characteristic* (Please see separate announcement below for full details.)

23 - 28 June 1997 *NATO Advanced Study Institute on Modular Representations and Subgroup Structure of Algebraic Groups and Related Finite Groups*

The following workshop will take place during the programme *Non- Perturbative Aspects of Quantum Field Theory:*

8-19 April 1997 *EC Easter School on Duality*

23 June-4 July *NATO Advanced Study Institute on Confinement, Duality and non-perturbative aspects of QCD* (Please see separate announcement below for full details.)

Further information and application forms for all the above conferences are available via the Newton Institute's WWW server at http://www.newton.cam.ac.uk or from Michael Sekulla at the Newton Institute, to whom completed applications should be sent (e-mail: m.sekulla@newton.cam.ac.uk, tel: 01223 330119).

Modular Representation Theory in the Non-Defining Characteristic

The main theme of the workshop, organised by G.R. Robinson (Leicester) and to be held from 7 - 12 April 1997, is to survey the wide variety of methods currently being developed to study the representation theory of groups of Lie type and related structures in non-defining characteristic.

Lecturers: M. Broue (Paris); M. Cabanes (Paris); J.F. Carlson (Georgia); R. Dipper (Stuttgart); S. Donkin (QMW, London); M. Geck (CNRS); G. Hiss (Aachen); R. Guralnick (S California); G. Malle (Heidelberg); J. Michel (Paris); J. Rickard (Bristol); R. Rouquier (Paris); L.L. Scott (Virginia); J.G. Thompson (Cambridge/Florida).

Location and Costs: The workshop will take place at the Newton Institute and accommodation for participants will be provided at Wolfson Court, adjacent to the Institute. The conference package costs £280, which includes accommodation, breakfast and evening meals from Sunday 6 April until Saturday 13 April, plus lunch and refreshments during the days that lectures take place. There will be some funding available from the LMS to support UK participants.

Further Information and Application Forms: available from WWW at http://www.newton.cam.ac.uk/programs/ragapr.html where general information about the Newton Institute may also be found. Completed application forms should be sent to Michael Sekulla at the Newton Institute, or via e-mail to: m.sekulla@newton.cam.ac.uk

Closing date for the receipt of applications is 28 February 1997.

Confinement, Duality and Non-Perturbative Aspects of QCD

The meeting, to be held from 23 June - 4 July 1997, comprises an advanced school that covers the most important techniques to study QCD and confinement, ranging from electromagnetic duality, through Wilson's renormalisation group to lattice gauge theory. The ASI assembles world experts who can evaluate the impact of the latest developments. The school is directed towards advanced graduate students, junior post-doctoral fellows and researchers. This meeting will be the culmination of the final phase of the six-month programme on Non-Perturbative Aspects of Quantum Field Theory taking place at the Newton Institute and being organised by D Olive, P van Baal and P West.

Organising Committee: I. Drummond (Cambridge), M. Shifman (Minnesota), P. West (King's, London), Director: P. van Baal (Leiden)

Lecturers: A. Di Giacomo (Pisa); A. Schwimmer (Weizmann); P. Hasenfratz (Bern); M. Shifman (Minnesota); G't Hooft (Utrecht) E. Shuryak (SUNY at Stony Brook); R. Kenway (Edinburgh); M. Teper (Oxford); P. Lepage (Cornell); J. Verbaaschot (SUNY at Stony Brook); C. Michael (Liverpool); P Weisz (MPI, München); A. Migdal (Princeton); P. West (King's, London); R. Perry (Ohio State, Columbus); C. Wetterich (Heidelberg); M. Polikarpov (ITEP, Moscow); D. Zwanziger (NYU, New York).

Applications: In addition to submitting an application form, students and post-doctoral fellows should arrange for a letter of recommendation to be submitted by a senior scientist. Limited financial support is available for participants from appropriate countries. The usual guidelines for the NATO ASI series will be followed in the selection of participants. The workshop will take place in the Mill Lane lecture rooms and accommodation for participants will be provided at nearby Selwyn College. The conference package costs £650 which includes accommodation, breakfast and evening meals plus lunch and refreshments during the days that lectures take place.

Further Information and Application Forms: available from the WWW at http://www.newton.cam.ac.uk/programs/nqfasi.html where a list of titles for the lectures, pointers to the main programme and general information about the Newton Institute can be found. Completed application forms and letters of recommendation should be sent to Michael Sekulla at the above address, or via e-mail to: m.sekulla@newton.cam.ac.uk

Closing date for the receipt of applications is **1 February 1997.**

SCHOOL MATHEMATICS

The Third International Mathematics and Science Study (TIMSS) has now published its report on the achievements of 13 year olds in 40 countries. For England, the results in science were encouraging: not quite up with the Pacific rim but better than most. The results in mathematics were disappointing, to say the least.

English pupils did significantly worse than those in about half the countries in the survey. Their relative position has worsened since the last survey five years ago; they have fallen behind children in Australia, Canada and Ireland and are no longer ahead of those in the USA. Things are no better in Scotland, where the performance was even poorer than in England. The timing of the tests may put Scottish pupils at a disadvantage, but whereas last time they did as well as those in England, now they are behind.

The results are depressing but not surprising. They confirm what we have long suspected and what Tackling the Mathematics Problem clearly demonstrated, that there are serious problems in school mathematics. They also indicate that these problems start long before the sixth form. We shall keep pressing for an urgent review of mathematics in the schools, from primary upwards.

Peter Saunders

LONDON MATHEMATICAL SOCIETY RESULTS OF THE 1996 COUNCIL ELECTIONS

At the Annual General Meeting of the Society held at Burlington House on Friday 15 November 1996, the following were elected to the Council of the Society: J.M. Ball (President); W.A. Hodges and A.J. Macintyre (Vice-Presidents); A.O. Morris (Treasurer); J.S. Pym (Council and General Secretary); D.J.H. Garling (Meetings and Membership Secretary); E.C. Lance (Publications Secretary); J.A. Erdos (Librarian); A.R. Camina, A.D. Gardiner, J.D.S. Jones, U. Martin (Members-at-Large, 1-year terms); R.J. Archbold, A.G. Chetwynd, F.C. Kirwan, E.G. Rees, A.J. Scholl, J.F. Toland (Members-at-Large, 2-year terms).

K.A. Brown and P.T. Saunders are Members-at-Large whose terms expire in 1997.

J.S. Pym
Council and General Secretary

EMS SUMMER SCHOOLS CALL FOR PROPOSALS

The European Mathematical Society has launched its series of Summer Schools. The series is intended to include two schools a year, one in Pure Mathematics and one devoted to applications of Mathematics. With this activity the EMS wants to encourage young European mathematicians to meet and study together current developments in Mathematics and its applications.

The EMS, through its Summer School Committee, will examine proposals for summer schools fully organized by other institutions. To meet the EMS requirements, each school should be at a pre-doctoral level, last from 2 to 3 weeks, and have about 100 participants, mainly graduate students or young mathematicians coming from several European countries. Costs of participation should be kept low and, if possible, grants should be available to people from countries which cannot afford any financial support. The EMS will guarantee its moral support to the selected schools, advertising within the European mathematical community, and will apply for funds to the Training and Mobility for Researchers (TMR) Programme of the European Commission. Topics, which may be single or composite, sites, and organisers of the schools will vary each year.

The Society is now asking for proposals for the two 1998 summer schools. A proposal should in particular contain the topic (title and short description), names of lecturers, site, timing, costs, conditions for participants, name and address of the organizer. Proposals should be sent to: Professor G. Monegato, Dipartimento di Matematica, Politecnico di Torino, Corso Duca degli Abruzzi 24, 10129 Torino, Italia; fax: 39-11-564.7599; e- mail: monegato@polito.it, by **31 January 1997.** Decision can be expected by the end of February. These deadlines must me observed since the one for applications to the TMR programme is 31 March 1997.

Giovanni Monegato
Chairman

80th BIRTHDAY MEETING

To mark the 80th birthday of Professor Graham Higman, FRS, in January 1997, two special lectures will be given in the Mathematical Institute, Oxford, on Tuesday 21 January.

3 pm. Professor J.L. Alperin (University of Chicago) "p-groups; old problems and new methods"

5 pm. Professor J.I. Hall (Michigan State University) "Classifying locally finite simple groups"

There will be a reception in the Mathematical Institute in Graham Higman's honour following these lectures, and all members of the Society are most welcome to join in this celebration.

Professors Alperin and Hall are being supported by Scheme 2 grants from the Society for their visits to the United Kingdom, and they will in addition be giving the following seminars elsewhere:

Professor Alperin: London Algebra Seminar, Mathematics Seminar Room, Queen Mary and Westfield College, Thursday 16 January, 4.45 pm "Problems in the representation theory of finite groups" and Mathematics Department, Lecture Room 2, University of Bristol "Problems in the representation theory of finite groups"

Professor Hall: School of Mathematics, University of East Anglia, Monday 20 January "Classifying locally finite simple groups" and London Algebra Seminar, Mathematics Seminar Room, Queen Mary and Westfield College, Thursday 23 January, 4.45 pm "Classifying locally finite simple groups"

For further information contact the local organizers: Michael Collins, Oxford (mjc@vax.ox.ac.uk); Jeremy Rickard, Bristol (j.rickard@bristol.ac.uk); David Evans, UEA (d.evans@uea.ac.uk).

DEPARTMENTAL NEWS

Professor Eduardo L. Ortiz of Imperial College London, will be a John Simon Guggenheim Senior Research Fellow at Harvard University for a year from January 1997.

1997 CIME COURSES

Mathematics Inspired by Biology
June 13 - June 20 1997, Martina Franca, Taranto
Course Directors: V. Capasso (Milano) and O. Diekmann (Utrecht)
H.L. Smith (Arizona State) The dynamics of competition;
K.P. Hadeler (Tübingen) Random walk systems modeling spread and interaction;
O. Diekmann (Utrecht) Dynamics of physiologically structured populations;
R. Durrett (Cornell) When is space important in modelling biological systems;
P. Maini (Oxford) Mathematical modelling in morphogenesis.

Advanced Numerical Approximation of Nonlinear Hyperbolic Equations
22 - 28 June 1997, Cetraro (Cosenza), Italy
Course Director: Alfio Quarteroni (Politecnico di Milano)
B. Cockburn (Minnesota, Minneapolis) Discontinuous Galerkin methods for nonlinear conservation laws;
C. Johnson (Chalmers University of Technology, G!teborg) Adaptive methods for differential equations with application to compressible flow problems;
C-W. Shu (Brown University, Providence) Essentially non-oscillatory (ENO) and weighted, essentially non-oscillatory (WENO) schemes for hyperbolic conservation laws;
E. Tadmor (UCLA and Tel Aviv University) High resolution methods for the approximate solution of nonlinear conservation laws and related equations.

Quantum Cohomology
30 June - 8 July 1997, Cetraro (Cosenza)
Course Directors: P. De Bartolomeis (Firenze); B. Dubrovin (SISSA, Trieste); C. Reina (SISSA, Trieste)
M. Gromov (IHES) GW-invariants;
D. Salomon (Warwick) J-holomorphic curves and symplectic geometry;
C. Taubes (Harward) 4-dimensional symplectic geometry;
G. Tian (MIT) Quantum cohomology and WDVV equations;
E. Witten (Princeton) SW-invariants.

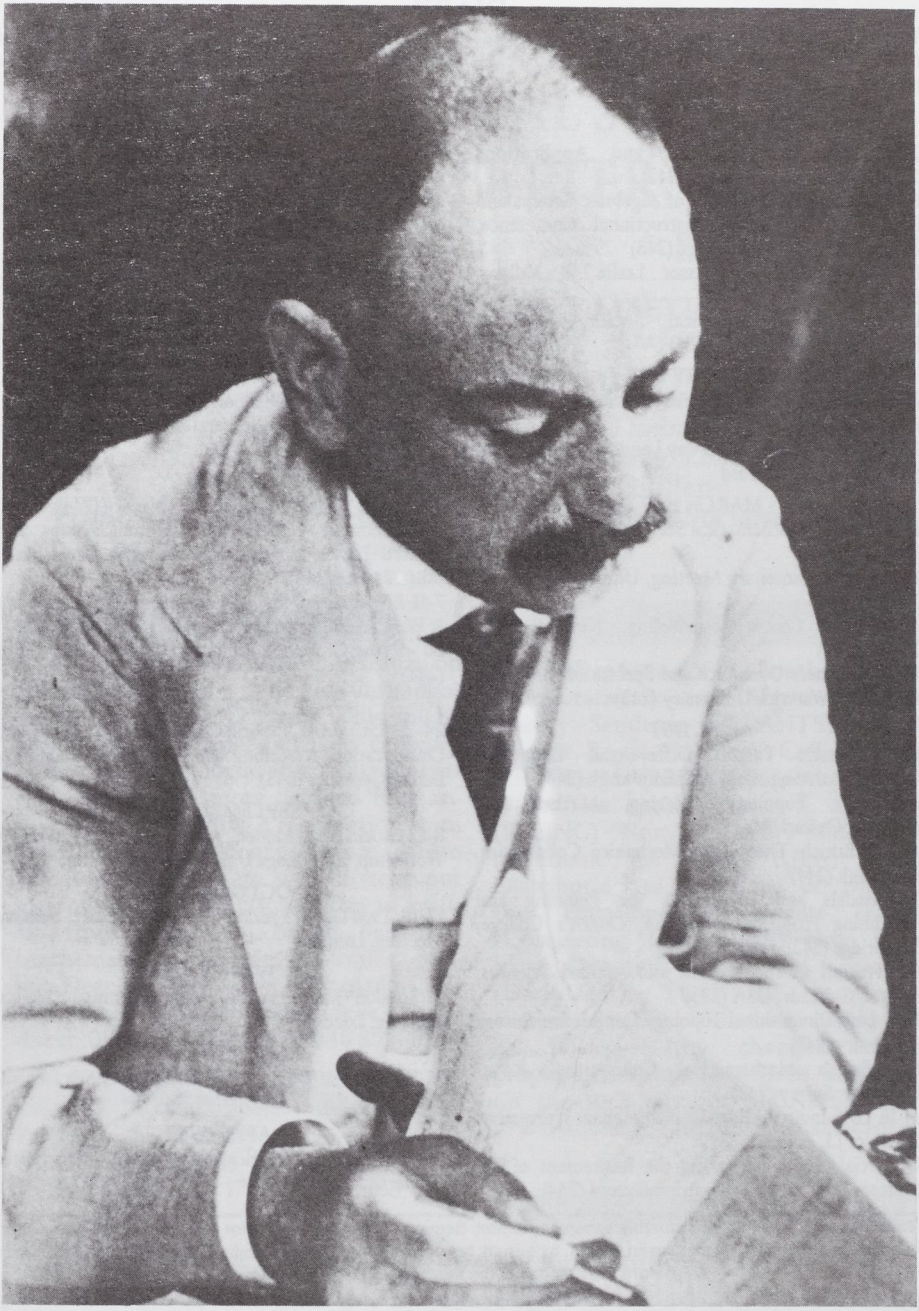
Arithmetic Theory of Elliptic Curves
12 - 20 July 1997, Cetraro (Cosenza), Italy
Course Director: C. Viola (Pisa)
J. Coates (Cambridge) Iwasawa theory for elliptic curves without complex multiplication;
R. Greenberg (Washington, Seattle) Iwasawa theory for elliptic curves;
K.A. Ribet (California at Berkeley) Two-dimensional representations of Gal$\bar{Q}$;
K. Rubin (Ohio State) Elliptic curves with complex multiplication.

Further information from: C.I.M.E., c/o Dipartimento di Matematica "U. DINI" v.le Morgagni 67/A, 50134 Firenze, Italy; tel: 39-55-434975; fax: 39-55- 434975, 4222695; e-mail: cime@udini.math.unifi.it;http://www.math.unifi.it/CIME/Welcome.to.CIME.

GROUPS IN GALWAY (XX)

The next Groups in Galway meeting will take place on 23/24 May 1997. This is the 20th such conference in the annual series of Groups in Galway conferences. Furthermore 1997 is also the 100th anniversary of the appearance of the first edition of William Burnside's book: "Theory of Groups of Finite Order". Since Burnside's Problem has been a leitmotiv of the research in Galway, it has been decided to have as the main theme of the conference: "Problems and results related to the work of Burnside".

The following have agreed to talk at the conference: Sean Tobin (Galway), Mike Newman (Canberra), Ralph Stohr (Manchester), Des MacHale (Cork), Werner Nickel (St Andrews), Rod Gow (Dublin), Eamonn O'Brien (Aachen), Celine Lossa (Rochester). Further information from: Ted Hurley, Department of Mathematics, University College, Galway; e-mail: Ted.Hurley@ucg.ie; Fax: +353 91 750542.



E LANDAU
Honorary Member 1924

DIARY

The diary lists Society meetings and other events publicized in previous issues of the Newsletter. For further information, refer to the figure in brackets, which is a cross reference to the LMS Newsletter number.

JANUARY 1997

2-5 Mathematics Education and Applications Conference, Nicosia, Cyprus (242)
6-11 Representation Theory of Algebraic Groups and Related Finite Groups Instructional Conference, Newton Institute, Cambridge (243)
16 Milner Lecture, Professor Leslie G. Valiant, Edinburgh University (244)
17 Edinburgh Mathematical Society Meeting, Edinburgh (241)

FEBRUARY 1997

14 Edinburgh Mathematical Society Meeting, Edinburgh (241)
21-22 Group Theory, Two-day London Mathematical Society Meeting, Oxford

MARCH 1997

14 Edinburgh Mathematical Society Meeting, Stirling (241)
14 Sylvester Centenary Meeting, University College, London (244)
15 Sylvester Centenary Meeting, New College, Oxford (244)
18-21 Nonlinear Dynamics and Spectra of Molecules Workshop, Warwick University (243)

APRIL 1997

1-11 Stochastic Partial Differential Equations Instructional Meeting, ICMS, Edinburgh (244)
2-4 British Topology Meeting, Mathematical Institute, Oxford (244)
4 39th British Theoretical Mechanics Colloquium, Edinburgh (244)
7-11 Models and Algorithms for Planning and Scheduling Problems Workshop, Queen's College, Cambridge (242)
8-11 Fractals in the Natural and Applied Sciences, Denver, Colorado, USA (233)
11-14 Low-Dimensional Topology Conference, Sussex University (242)
14-17 British Mathematical Colloquium, Royal Holloway, Surrey (242)
14-18 LMS Invited Lectures, Birmingham University, Professor J.L. Alperin (238)
17 Special Meeting Marking the Retirement of Bill Morton, Computing Laboratory, Oxford (244)

MAY 1997

2 Edinburgh Mathematical Society Meeting, Aberdeen (241)
23-24 Two-day London Mathematical Society Meeting, Liverpool

JUNE 1997

6 Edinburgh Mathematical Society Meeting, St Andrews (241)
20 London Mathematical Society Meeting, Linnean Society, London
26-28 Joint International Meeting in South Africa, University of Pretoria, South Africa (244)
30-1 July Boundary Integral Methods Conference, Leeds University (242)

JULY 1997

6-13 Logic Colloquium, Leeds University (244)
7-11 Harmonic Morphisms, Harmonic Maps and Related Topics, Université de Bretagne Occidentale, Brest, France (244)
7-11 British Combinatorial Conference, Queen Mary & Westfield College, London (230)
26 - 9 Aug Groups St Andrews 1997, Bath University (244)

AUGUST 1997

24-29 15th IMACS World Congress 1997 on Scientific Computation, Modelling and Applied Mathematics, Berlin, Germany (243)

SEPTEMBER 1997

8-12 Stochastic Modelling of Physical Systems Workshop, Cambridge University (244)

OCTOBER 1997

17-18 Two-Day London Mathematical Society Meeting, London

NOVEMBER 1997

21 London Mathematical Society, Annual General Meeting, London

DECEMBER 1997

13-17 European Women in Mathematics 8th General Meeting, ICTP, Trieste, Italy (244)

APRIL 1998

6-9 British Mathematical Colloquium, Manchester University

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