

THE LONDON MATHEMATICAL SOCIETY NEWSLETTER

No. 247

March 1997

FORTHCOMING SOCIETY MEETINGS

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

Friday-Saturday 17-18 October 1997 - Scientific Societies Lecture

Theatre, London

Numerical Analysis

LMS COUNCIL DIARY

One issue which has concerned Council for some time is the future of the Society and whether we need to think in a more radical way about the activities of the Society. We have agreed to have a special meeting in an attempt to focus our thoughts on various aspects of the problems of the future. The meeting will take place on the 18th - 19th April. Before then, four working groups will have been set up, each with a convener from Council but not all members being drawn from Council. The four groups and their conveners are (1) Publications - Professor E.C. Lance, (2) Buildings - Professor A.O. Morris, (3) Membership and activities - Dr D.J.H. Garling and (4) Administration and staffing - Professor K.A. Brown. Members with views, comments and thoughts are invited to contact the conveners as soon as possible. I realise that this is short notice and the President would welcome written comments directly to him in time for the full meeting of Council where these ideas will be discussed.

The LMS is now in a position to proceed with a new journal which will be published electronically. The title will be "LMS Journal of Computation and Math-

ematics". Finding the appropriate technical support has taken longer than was anticipated but production of the journal will now begin and there is a WWW page available with all the details. The preparation has been a joint effort between the "Team on Electronics" and the Publications Committee. It was agreed at the meeting that the "Team on Electronics" should become a formal Council Committee.

The Council was happy to receive a report from the Publications Committee about the successful outcome of negotiations with the Russian Academy of Sciences and Turpion concerning the translation of "Russian Mathematical Surveys". This means that we will be involved for a further five years. This means that the LMS is now involved with the translation of four Russian journals, the others being *Izvestiya*, *Sbornik*, and jointly with the AMS, *Transactions Moscow Mathematical Society*. We are also planning to make the Proceedings available via Internet. The electronic version of the Proceedings will be available to anyone who subscribes to the paper version. There are difficult tax issues related to material only available

electronically.

There was a report from the Funding Committee about some new proposals from the Higher Education Funding Council for England (HEFCE). This could have a serious impact on the financial situation of mathematics departments in England. The Presidents of the Institute of Mathematics and its Applications and the Royal Statistical Society have written to the Chairman of the HEFCE and it was agreed that the LMS President should also write. I realise that this is a parochial matter to some of our members but it has important implications. The President has already had correspondence with at least one Vice-Chancellor about the role of mathematics in universities. The pressure on University mathematics departments to save money and cut jobs is certainly not confined to England.

Alan Camina

RESEARCH IN PROGRESS

This year, the British Society for the History of Mathematics will be holding its Research in Progress meeting at the Mathematical Institute, University of Warwick from 11-14 April 1997. The four-day residential conference is intended for all those interested in research into the history of mathematics - research students and historians of mathematics at all stages of their careers - to discuss current research and the practice of history of mathematics in general. As usual, there will be a variety of contributions, delivered primarily by research students from the UK and abroad, on current work in progress.

On the final day of the meeting, we join with members of the Institute in celebrating the sixtieth birthday of the distinguished historian of Greek mathematics, David Fowler. Speakers on this day will include: Frank Smithies (Cambridge), Wilbur R. Knorr (Stanford), S. J. Patterson (Göttingen), Jeremy Gray (Open University), Eleanor Robson (Oxford) and David Fowler himself.

Further details of this meeting are available from: John Fauvel, Faculty of

Mathematics, The Open University,
Milton Keynes MK7 6AA; e-mail:
j.g.fauvel@open.ac.uk.

VISIT OF PROFESSOR G. BOCHAROV

Professor Gennadi Bocharov of the Russian Academy of Sciences, Moscow has been awarded a London Mathematical Society fSU grant to visit the United Kingdom. He will be based at the Department of Mathematics, University of Manchester from 19th March for approximately 4 weeks. His interests are numerical analysis of functional differential equations, models in biomathematics, cell proliferation and immunology. For further information contact Professor C.T.H. Baker, Department of Mathematics, The University, Manchester M13 9PL, e-mail: head@ma.man.ac.uk; tel: 0161 275 5800, secretaries 0161 275 5813 or -5817 (direct).

VISIT OF PROFESSOR YU SEMENOV

Professor Yu Semenov (Toronto) is visiting Bristol, University of Wales, Cardiff, Imperial College, London and King's College, London with the support of a Scheme 2 LMS grant. He is to give seminars in Bristol at 4 pm on 4 March on "Perturbation theory of second order elliptic and parabolic operators: the method of Nash" and at Imperial College at 3.30 pm on 7 March on "Estimates of fundamental solutions for parabolic second order equations with measurable coefficients". For further information contact: Vitali Liskevich, Department of Mathematics, University of Bristol, Bristol BS8 1TW; e-mail: v.liskevich@bristol.ac.uk; tel: 0117 9289147; fax: 0117 9287999

BASIL C. RENNIE

Dr Basil C. Rennie, who was elected a member of the London Mathematical Society on 20 February 1947, died on 15 November 1996 at the age of 75.

LONDON MATHEMATICAL SOCIETY 1997 HARDY LECTURE TOUR

**The 1997 Hardy Lecturer, Peter May (Chicago)
will give the following lectures:**

Monday May 26, Oxford (Dr J. Roe)
Topological Hochschild and cyclic homology and algebraic K-theory

Wednesday May 28, Warwick (Professor J.D.S. Jones)
Operads in algebra, topology, and physics

Thursday 29 May, Leicester (Dr J.R. Hunton)
Derived categories in algebra and topology

Monday 2 June, Sheffield (Professor J.P.C. Greenlees)
Some equivariant algebraic topology and nonequivariant applications

Tuesday 3 June, Leeds (Dr H.D. Macpherson)
Operads in algebra, topology, and physics

Wednesday 4 June, Manchester (Professor N. Ray)
Brave new algebra in stable homotopy theory

Friday 6 June, Bangor (Professor R. Brown)
Derived categories in algebra and topology

Monday 9 June, Trinity College, Dublin (Professor D.J. Simms)
Operads in algebra, topology, and physics

Tuesday 10 June, Glasgow (Dr A.J. Baker)
Brave new algebra in stable homotopy theory

Thursday 12 June, Aberdeen (Professor J.R. Hubbuck)
Derived categories in algebra and topology

Monday 16 June, King's College, London (Dr W.J. Harvey)
Operads in algebra, topology, and physics

Wednesday 18 June, Cambridge (Dr C.B. Thomas)
Topological Hochschild and cyclic homology and algebraic K-theory

Friday 20 June, Burlington House, London, Hardy Lecture
Stable algebraic topology and stable topological algebra

This is a preliminary notice. The names in brackets are the local organisers from whom further information can be obtained. A fuller notice will appear in the May Newsletter.

'OTHER' COURSES FOR FINAL YEAR MATHEMATICS STUDENTS

A small but increasing number of UK mathematics departments include, in their final year undergraduate mathematics programme, a course with a title such as Ideas in Mathematics, Mathematical Thinking, Mathematics Education, Mathematics Teaching, Communicating Mathematics, Mathematics in Society. Although such courses are dependent on a good knowledge of undergraduate mathematics, their aims include second order features such as helping students to reflect on the nature and application of mathematical activity, considering the relation between the formal structure of mathematics and the way it grows in the mind of the learner, exploring difficulties in teaching and learning mathematics, considering topics in school mathematics together with teaching approaches from an advanced standpoint. Among the variety of purposes served by such courses is the encouragement of interest of good mathematics graduates in the idea of

going into teaching.

The LMS Education Committee is currently collecting together information on courses of this kind and is planning to circulate summaries to UK mathematics departments. If you have given such a course and would be willing to contribute to the exercise, please contact Tony Barnard, Department of Mathematics, King's College, Strand, London, WC2R 2LS (e-mail: tony.barnard@kcl.ac.uk).

VISIT OF PROFESSOR V. MAZYA

Professor Vladimir Mazya (University of Linköping, Sweden) will be visiting the UK from 11 to 21 March 1997. His visit is supported by the LMS grant, Scheme 2. He will give talks at Imperial College, London on 13 March, at Oxford University on 17 March and at Bath University on 20 March. Recently Professor Mazya proposed new numerical algorithms for solving well- and ill-posed problems of mathematical physics, in particular, a very flexible and efficient method of "approximate approximations". For further information contact Dr Alexander Grigoryan on a.grigoryan@ic.ac.uk.

LONDON MATHEMATICAL SOCIETY

TWO-DAY MEETING
Friday-Saturday 23-24 May 1997
University of Liverpool

APPLICATIONS OF SINGULARITY THEORY

V.V. Goryunov (University of Liverpool)

D.T. Lê (Université de Provence, Marseille)

D.M.Q. Mond (University of Warwick)

A. Parusinski (University of Angers)

B. Teissier (Ecole Normale Supérieure, Paris)

A.N. Varchenko (University of North Carolina, Chapel Hill)

LONDON MATHEMATICAL SOCIETY

SPITALFIELDS DAY

Friday 4 April 1997

Isaac Newton Institute for Mathematical Sciences,
20 Clarkson Road, Cambridge

REPRESENTATION THEORY AND RELATED TOPICS

Programme

- | | |
|-------|---|
| 10:30 | Coffee |
| 11:15 | J.C. Jantzen (Aarhus)
<i>Modular representations of Lie algebras</i> |
| 12:15 | Lunch |
| 14:00 | G. Malle (Heidelberg)
<i>On rings of invariants of finite linear groups</i> |
| 15:00 | R.M. Guralnick (USC Los Angeles)
<i>Polynomials, rational functions and coverings
of curves via permutation groups</i> |
| 16:00 | Tea |
| 16:30 | G.D. James (Imperial College London)
<i>Immanant problems, no solutions imminent</i> |
| 17:30 | Reception |

Anyone who is interested is welcome to attend. Lunch will be provided at a nominal cost; please let Tracey Hibbitt at the Institute know by Wednesday 26 March if you intend to come, to help us plan for lunch: telephone (01223) 335984; fax (01223) 330508; e-mail: t.hibbitt@newton.cam.ac.uk. There are limited funds available to assist research students and young mathematicians to attend; please apply by Wednesday 19 March to Heather Dawson at the Institute (e-mail: h.dawson@newton.cam.ac.uk). Research students are welcome and can apply for funding from their departments (first-year students) or EPSRC/PPARC to attend this meeting. Scientific enquiries may be addressed to Dr J. Saxl at the Institute (e-mail: saxl@pmms.cam.ac.uk).

SHEFFIELD HOMOTOPY MINICONFERENCE 1997

A three day meeting on homotopy theory and related subjects will be held at the University of Sheffield from 30th May - 1st June 1997. It is being partially supported by the London Mathematical Society and the National Science Foundation. The following have already indicated their interest in speaking (funding uncertainties mean that there are also a number of late invitations to the US and FSU outstanding): V. Buhstaber (Moscow State); J.F. Carlson (Athens, Georgia); H.-W. Henn (Bonn); S. Jackowski (Warsaw); I. Madsen (Aarhus); J.P. May (Chicago); R. Oliver (Paris XIII); D.C. Ravenel (Rochester); J. Rognes (Oslo); N.P. Strickland (Cambridge); U. Tillman (Oxford).

There will be a conference dinner on Saturday evening, and an expedition to the Peak District for a gentle walk and pub supper on Friday evening. Participants may also like to know that Peter May will be giving a Hardy Lecture to the title 'Some equivariant algebraic topology and non-equivariant applications' on Monday to the Sheffield department; this is not part of the conference, but you are welcome to come. There will be a registration fee of £40. This is one of the conditions of the LMS grant, and will be used for conference expenses. We will be able to subsidise speakers and British research students, and perhaps also some US participants, but others will have to obtain funding from elsewhere.

If you are interested in attending please let John Greenlees know by pre-registering as soon as possible, and in any case by 31st March, not forgetting to include (i) name and e-mail address (ii) your accommodation needs (iii) title and abstract if you want to offer a contributed poster/talk (iv) any special requests. Up to date details may be obtained from the SHM homepage: <http://www.shf.ac.uk/~ms/staff/greenlees/shm.html>. Further details may be available from: John Greenlees, Mathematics and Statis-

tics, University of Sheffield, Hicks Building, Sheffield S3 7RH; e-mail: j.greenlees@sheffield.ac.uk; tel: (0114)-222 3786 direct; (0114)-222 3801 office; fax: (0114)-222 3759.

MATHFIT WORKSHOP

A MATHFIT instructional workshop "Computational Number Theory and Cryptography" will be held at the University of Kent at Canterbury from 14-16 July 1997, supported by the London Mathematical Society and EPSRC. The workshop will be concerned with the application of computational number theory to privacy technology. It will aim to give participants a broad overview of some common public-key cryptographic schemes and the number theory behind their construction and breaking. Applications to authentication and signature schemes will be stressed. The workshop is aimed at postgraduates and postdoctoral workers in both Mathematics and Computer Science. Support for participants is available and applicants should contact Nigel Smart as soon as possible to avoid disappointment. Further details are available from Nigel Smart (e-mail: N.P.Smart@ukc.ac.uk) or from the World Wide Web (<http://www.ac.uk/ims/maths/mathfit>).

WORKSHOP ON THE USE OF GAP

A workshop on the use of the GAP system for computation in algebra and discrete mathematics will be held at St Andrews University from 7-11 April. The main speakers, each of whom will give a series of lectures, are G. Cooperman, L. Soicher, G. Pfeiffer. There will also be instructional sessions in a computer laboratory. The workshop is partially funded by the LMS Computer Science Committee and some funding is available to defray the expenses of UK postgraduates. Further details are available by e-mail from gap-workshop@dcs.st-and.ac.uk and from the world wide web at <http://www-groups.dcs.st-and.ac.uk/~werner/Workshop97.html>.



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University of Leicester

TEACHING OF MATHEMATICS FOR ENGINEERING

A colloquium organised by Professional Group S5 (Education and Training) and co-sponsored by the Association of Teachers of Mathematics (ATM), the Institute of Mathematics and its Applications (IMA) and the London Mathematical Society (LMS) is to be held at the Institution of Electrical Engineers, Savoy Place, London on Wednesday 5 March 1997.

The provisional programme is: Professor L. Burton (University of Birmingham) "Mathematics in undergraduate engineering courses - teaching, learning, assessing - a symbiosis"; Dr J. Appleby (University of Newcastle-upon-Tyne) "What mathematics do our students know? What should we teach them?"; Mr T. Scott (Napier University) "Interdepartmental and cross university collaboration in the delivery of mathematics in engineering programmes"; Dr B. Cox (Aston University) "The challenges faced by students and staff in the transition to first year mathematics at university"; Mrs C. Boyle (East Calder Primary School) "Primary school mathematics teaching"; Mrs A. Gammon (Sarah Bonnell School) "Secondary mathematics: current situation"; Dr L. Mustoe (Loughborough University) "Mathematics for engineers in the computer age"; Professor E. Robertson (University of St Andrews) "Technology in mathematics teaching"; Dr D. Lawson (Coventry University) "Computer algebra in engineering mathematics"; Dr N. Steele (Coventry University) "Engineering mathematics is alive"; Dr D. Clements (University of Bristol) "Computer algebra for engineers - the potentials and the problems"; Dr T. Croft (Loughborough University) "A Mathematics learning support centre for students of engineering mathematics".

Conference fee: Members of the IEE, ATM, IMA and LMS - £47.50; IEE, ATM, IMA and LMS Retired, Unemployed and Student Members - No charge; Non-members of the IEE, ATM, IMA and LMS

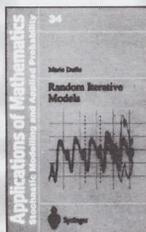
- £79.50; Retired, Unemployed and Student Non-members of the IEE, ATM, IMA and LMS - £24.00. For further information contact either Dr N.K. Gupta, Department of Electrical, Electronic & Computer Engineering, Napier University, Edinburgh; tel: 0131 455 4282; fax: 0131 455 4231; e-mail: n.gupta@napier.ac.uk or Miss Geeta Prabhu at: SET Division, Institution of Electrical Engineers, London; tel: 0171 344 5439; e-mail: gprabhu@iee.org.uk

ANALYSIS AND LOGIC MEETING

A meeting is being held from 25-29 August 1997 at the University of Mons-Hainaut (Belgium) on the subjects Geometry of Banach Spaces, Non-Standard Analysis, Ramsey Theory, Descriptive Set Theory and their Interactions. It is being organised by the team of Analysis and of Mathematical Logic of the University of Mons-Hainaut and the team of Analysis of the University of Paris 6.

The programme will include three mini-courses and ten plenary lectures. The mini-courses are: C.W. Henson (Urbana) "Nonstandard Analysis and Ultraproducts in Banach Spaces and Functional Analysis"; A. Kechris (Caltech) "On the Interactions between Descriptive Set Theory and Analysis"; T. Odell (Austin) "State of the Art in Banach Spaces". Registration fee: Bef 5.000 (\$160). Accomodation: arranged in the university residence (single and double rooms with bathroom) for around Bef 6.000 (\$190) including breakfast and lunch. Contact the organizers about contributed papers. Further information is available from: Catherine Finet and Christian Michaux, UMH, Institut de Mathematique et d'Informatique, 15 Avenue Maistriau, B-7000 Mons, Belgium; e-mail: analog@sun1.umh.ac.be; website: <http://sun1.umh.ac.be/~boffa/logicumh.htm>; tel. 32-65-373507, fax: 32-65-373318/3054.

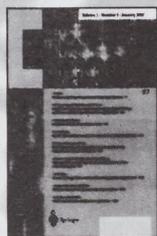
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RESEARCH STUDENT FUNDING AND THE MMATH DEGREE

In the December issue of the Newsletter there was a report of a council meeting where the relationship between first class degrees and research student funding was discussed. However this failed to mention a topic which will have an interesting effect on the process over the next few years, *videlicet* the MMath degree. What are we looking for anyway in selecting students for funding? Clearly "background knowledge" is something, but probably only a small component. "Mathematical maturity" is an ill-defined but important feature, while most important is "aptitude for research" and a broad-based enthusiasm for creative mathematics. None of these are well assessed by the standard honours degree; indeed this is not the aim of the degree qualification.

One idea which has appeal is having some form of master's degree as a pre-qualification to doctoral study. This is advantageous to both students and supervisors. It gives the student a broader range of mathematical experience, allows them to choose a preferred speciality, and experience research in a small way. For the potential supervisor it offers a broader range of indicators of research aptitude.

Due largely to recent funding policy such an arrangement is rarely found at present. However as the first cohort of MMath students work their way through the system we should soon expect most postgraduate students to be entering doctoral study with this additional year of higher-level study behind them. This provides a timely opportunity for the introduction of a more comprehensive system of selecting students for research funding.

One potential model for an MMath-based entry selection procedure is the MSc course which has been a prequalification at the University of Warwick for several years. This consists of two sets of taught courses and a dissertation. Pertinently the course offers a number of entry points to the PhD qualification, for

example, by excellent examination performance, by an outstanding dissertation, by a viva voce examination, or by a rounded performance throughout.

This offers a potential pattern for an MMath-based postgraduate entry system. The initial sifting of students for the MMath year would ensure that students have a basic ability, but this final year of study could potentially offer admissions tutors a broader range of criteria on which to assess aptitude. Clearly this requires the various MMath departments to have an agreed form in which to give out the requisite information to other departments, and a general agreement as to the standard and content of the degree. It is in this that the LMS could play a role.

Clearly there will be some problems. Perhaps the most pressing is the need to provide for those students from non-MMath departments who had proven themselves capable of advanced study. An arrangement would need to be made for such a student to transfer to an MMath university for their final year, carrying their LEA funding with them, something which is at present difficult. This issue will be forced upon the mathematics community soon. It is an opportune moment for the LMS and other bodies to play a role in creating a aptitude-based system for funding postgraduate research.

Colin Johnson
Napier University

SYMPOSIUM IN HONOUR OF PROFESSOR W.T. TUTTE'S 80TH BIRTHDAY

An international conference on Graph Theory is to be held at the University of Waterloo, Waterloo, Ontario, Canada from 16 - 17 May 1997. The symposium will be hosted by the Department of Combinatorics and Optimization. There will be a total of five invited talks by the following mathematicians, each of whom has had a significant association with Professor Tutte: Laszlo Lovasz (Yale

University, USA); Crispin St.J.A. Nash-Williams (University of Reading, England); Neil Robertson (Ohio State University, USA); Paul Seymour (Princeton University, USA); Carsten Thomassen (Technical University, Denmark). In addition, the last talk at the conference will be given by Professor Tutte.

The registration fee, of \$35 CDN (or \$25 US), includes the conference banquet at the Festival Room at the University, on the evening of 17 May. For further details and a registration form, e-mail: tutte@math.uwaterloo.ca or visit the web site: http://math.uwaterloo.ca/CandO_Dept/tutte/announce.html; tel: (519) 888-4567 ext. 3482; fax: (519) 725-5441.

CONFERENCE ON BANACH ALGEBRAS

An international conference on Banach Algebras will be held from 20 July to 3 August 1997 at the Heinrich Fabri-Institute of the University of Tübingen at Blaubeuren, located near Ulm, Germany. It will focus on the general theory of Banach algebras as well as its interplay with other related areas. Many of the leading experts are expected to attend the meeting, which will be partially supported by the Deutsche Forschungsgemeinschaft.

As well as lectures, the conference will include eight workshops dedicated to more specialised areas. The chairmen of these workshops are: W.G. Bade (Berkeley) Algebraic Structure of Banach Algebras; B. Chevreau (Bordeaux) Dual Banach Algebras and Invariant Subspaces; H.G. Dales (Leeds) Automatic Continuity; J. Eschmeier (Saarbrücken) Local Spectral Theory; J. Esterle (Bordeaux) Banach Algebras and Analytic Functions; N. Gronbaek (Copenhagen) Amenability; A. Ya. Helemskii (Moscow) Banach Homology; G. Willis (Newcastle, Australia) Banach Algebras in Harmonic Analysis.

For further details contact the conference organisers E. Albrecht and M. Mathieu at ba97@math.uni-sb.de or H.G. Dales at pmt6hgd@leeds.ac.uk.

POSTDOCTORAL FELLOWSHIP PROGRAMME

The Royal Society, in conjunction with NATO, invites applications for one year fellowships tenable in a laboratory in the UK from postdoctoral scientists of the following NATO Co-operation Partner countries: Albania, Armenia, Azerbaijan, Belarus, Bulgaria, Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Moldova, Poland, Romania, Russia, Slovak Republic, Slovenia, Tajikistan, Turkmenistan, Ukraine, Uzbekistan and the former Yugoslav Republic of Macedonia.

Candidates must be nationals of one of the above countries and must have already reached postdoctoral (or equivalent) status. Candidates in the final stages of their PhDs are eligible to apply, however awards cannot be taken up until confirmation of the PhD has been submitted to the Royal Society. Candidates must not have reached their 40th birthday at the time the award starts. Exceptions are made for applicants who may be over 40, but who have obtained their PhDs within the last 3 years only. Fellowships are for research in the natural sciences, including mathematics, engineering, non-clinical medical research and the scientific research aspects of psychology, archaeology, geography, agriculture and the history of science. The programme is generously supported by NATO. Fellowship holders receive an award which covers living costs in the UK, together with a contribution towards the international air-fare, research expenses and subsidiary visits. The award may be reduced if funding is being received from another source.

Applications are invited to two annual closing dates: 15 April and 15 September. Forms are completed jointly by host and applicant and are available from: SGK/BLL/NATO, The Royal Society, 6 Carlton House Terrace, London SW1Y 5AG; e-mail: ezmb016@mailbox.ulcc.ac.uk; tel: 0171-839 5561; fax: 0171-925 2620.

MATHEMATICS: PICKING UP THE PIECES

A one-day conference is to be held at The Open Learning Foundation, 3 Devonshire Street, London W1 on Wednesday 12th March 1997. Several reports published recently have highlighted the problem of undergraduate deficiencies in mathematical skills on entry to university. Against this background, UK higher education has had to 'pick up the pieces', often relying upon 'diagnosis' and 'prescription'. This conference looks at both of these aspects: the morning session compares and contrasts various methods of diagnostic testing; the afternoon session investigates follow-up support using different modes of teaching and learning. During the day there will be an exhibition of software and other material including Question Mark Designer, Maths Assessor and software demonstrated by the CTI Mathematics Centre, Birmingham.

The OLF Survey of Mathematics Diagnostic Testing Peter Edwards (Bournemouth University); **Diagnostic Testing using Diagnostics** Joy Sabour (University of Central Lancashire); **Diagnostic Testing using Question Mark Designer** Martin Greenhow (Brunel University); **Student Self-Assessed Diagnostic Testing** Neil Challis and Sue Elliot (Sheffield Hallam University); **Diagnostic Testing - the Aftermath** Duncan Lawson (Coventry University); **Calculus Connections - "A Multimedia Experience"?** Douglas Quinney (Keele University) and Robert Harding (University of Cambridge); **Self-managed Learning in Mathematics using Text and Video** Mike Grannell (University of Central Lancashire).

For further information and to book a place at this conference contact: Natalie Lucking on 0171 636 4186, or write to Natalie at The Open Learning Foundation, 3 Devonshire Street, London W1N 2BA. Conference charge: £29 (inc. VAT) to delegates from OLF member universities; £49 (inc. VAT) for non-members. Further details on the conference can be found on:

<http://pdmweb.bournemouth.ac.uk.staff/confdetail.html>.

16th BRITISH COMBINATORIAL CONFERENCE Reminder

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 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 E1 4NS; e-mail: bcc@qmw.ac.uk; fax: 44-181-981-9587; web: <http://www.maths.qmw.ac.uk/~pjc/bcc16.html>. There is a reduction in the registration fee of forms received before the end of April.

EXHIBITION

To commemorate the centenary of Max Newman's birth, an exhibition on his life and work is on display in the Library of St. John's College Cambridge until 18 April. The Library is open daily from 9 am to 5 pm.



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The salary for Professors is within the range NZ\$85,000 to NZ\$105,000 per annum, which is in the top 2% of salaries for New Zealand.

Applications close on **30 April 1997**.

Academic enquiries only may be made to Dr P F Renaud, Fax [64 3] 364 2587, or Email: <p.renaud@math.canterbury.ac.nz>. The University's WWW address is: <<http://www.regy.canterbury.ac.nz/home.html>>.

Conditions of Appointment and Information for Candidates may be obtained from Appointments (45594), Association of Commonwealth Universities, 36 Gordon Square, London WC1H 0PF, UK (tel. 0171 387 8572 ext. 206; fax 0171 813 3055; email: appts@acu.ac.uk). Applications, quoting Position No. MT35, must be airmailed to:

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The University has a policy of equality of opportunity in employment.

BOOK REVIEWS

The World According to Wavelets by B.B. Hubbard, A.K. Peters 1996

When Yves Meyer was professor at the 'Ecole Polytechnique the department of mathematics "... shared the same photocopy machine with the department of theoretical physics. The departmental chairman liked to read everything, know everything, he was constantly making photocopies. Instead of being exasperated when I had to wait, I would chat with him while he made his copies. One day in the spring of 1985 he showed me an article by a physicist colleague of his, Alex Grossmann in Marseilles, and asked whether it interested me. It involved signal processing, using a mathematical technique I was familiar with. I took a train to Marseilles and started working with Grossmann." Thus began the wavelet revolution described in this splendid little book.

Like another French revolution, the wavelet revolution had roots deep in the past and consequences which will take many years to work themselves out completely. The rigid framework of the Fourier transform had long been felt as too confining by people like the physicist Gabor, and the Artificial Intelligence theorist Marr (the labels physicist and AI theorist are inadequate for these larger than life figures but will have to do) and rather *ad hoc* techniques had been proposed in several fields. Meyer and the mathematicians who followed him produced a common language to describe these techniques and powerful tools to improve them. In return mathematicians, and, in particular, classical analysts, obtained a new field of research and, in the long term, perhaps even more importantly, a new perspective on the old field of Fourier analysis.

When asked by colleagues in other disciplines like engineering, computing or hydrodynamics what the fuss was about, I have rarely been able to communicate much beyond the fact that wavelets are genuinely new, exciting and useful. (Most

of the 'new mathematics' which reaches the attention of the general public can manage at most one out of three.) Now I can confidently recommend Barbara Hubbard's book as mathematically reliable, historically accurate and free of hype. (Most of the books bringing 'new mathematics' to the general public fail all three tests, often catastrophically.)

It will be noticed that I speak of an audience of numerate professionals. It is true that there is a wider audience interested in general science, but the well known aversion of this wider audience to formulae is, in my opinion, often symptomatic of aversion to mathematical modes of reasoning in general. By endlessly discussing the problem of communicating mathematics to the general public we mathematicians successfully obscure from ourselves that we cannot even communicate with physicists and engineers.

If this book is so good, why can we not produce others like it? Partly it is because we cannot spare the time; this book is a labour of love. Mainly, however, it is because as experts we have lost sight of how hard our subject actually is. We cannot bear to simplify, to stoop to analogy or even to stop with part of our tale untold. Barbara Hubbard is an outsider who begins her book with the following outline of her aims. "When at the age of four or five I asked my mother just how babies are made, her answer was so obviously absurd that I just didn't believe her, although I knew she never lied to me. I had at times the same feeling when writing this book: statements that the experts seemed to find natural, even commonplace, seemed barely credible. What I have tried to do in this book is to make them simultaneously surprising and believable."

Should we then leave the description of our subject to outsiders? Shostakovich relates how "Glazunov used to say that amateurs would make the best musicians, adding after some thought, 'If they only

knew how to play'." Much mathematical journalism leaves one with the same feeling. What is different here? The difference is that various versions have been read by Yves Meyer and Ingrid Daubechies (another great name in the field) and Barbara Hubbard's husband, himself a well-known mathematician. Such collaboration between insiders and outsiders must remain rare (off hand, I can only think of Constance Reid's mathematical biographies) and even then require special gifts on both sides to be successful. Let us celebrate this instance.

The average reader of this review is a pure mathematician and will have noticed that I recommend this book to numerate non-mathematicians. What about the reader of this review. Will he or she enjoy it? I think that even professionals can enjoy it *but* only if they read it in a non-professional manner. We are accustomed to reading mathematics like a tax lawyer reading a finance act for loopholes but this is a book for the general reader interested in the spirit rather than the letter of the law. It is not easy to set aside the habits of a lifetime. (I found it impossible when reading the 'mathematical appendices' and cannot really judge who would find them useful.) However, in the case of this book the reader will find it very rewarding.

When Stephenson was asked by a parliamentary committee to comment on the route chosen by his great rival Brunel for the Bristol-London railway, he replied 'I can imagine a better route but I could not find one'. I can imagine a better route to conduct the general reader to the ideas of wavelet theory but I could not find one.

T.W. Körner

A Mathematical Kaleidoscope by B. Conolly and S. Vajda, Albion Publishing Limited 1995.

Brian Conolly and Steven Vajda are well-known applied mathematicians from British universities who worked together on a series of lectures in San Sebastian, Spain. Both are keen statisticians so most of the book is on applications of probabil-

ity theory and stochastic processes to selected problems that they have encountered in their professional lives. The writing of the book is often casual but precise, sometimes even amusing, reflecting the unusual background of the topic. Reading it, one gets the feeling that the authors finally found time to share with us interesting and varied moments of their lives.

The book is aimed at a wide audience of mathematical readers and the contents are either original in their essence or presentation. The material is arranged so that lengthy deductions are left as notes so that the reader can concentrate on the "action" of the topic. Since the authors are skilful in manipulating mathematical expressions, the reader cannot escape from vigorous mental exercise!

The contents should be highlighted. Chapter 1, *Fantasies*, comprises: misleading messages due to errors in their binary code of transmission; some intriguing properties of the Fibonacci sequence; the difficulties of reading the face of an analogue clock in difficult light; social encounters that lead to coupling and marriages; the applications of the hypergeometric function to opinion polls and the National Lottery. Chapter 2, *Finance*, analyses, amongst other models, the financial behaviour of a cooperative of savers and borrowers (the type often advocated for poor third world countries) that can only lend money previously invested by its saving members. It is a straight study of probability distributions regarding the financial expectation of its members. Chapter 3, *Games*, examines statistical and computational methods to predict football pool results based on past performances of the playing teams using Poisson and Poisson-like processes. The writing is in the form of a dialogue between dining-table guests. Chapter 4, *Mathematical Programming*, treats, along with other topics of historical interest, the work of J. Farkas in 1894 on the foundations of duality theory and the merits of the simplex method versus other approaches to the linear programming problem. Chapter 5, *Search, Pursuit*

and *Rational Outguessing*, is about random walks technology applied not to military problems but to search processes such as hide-and-seek (with spacial restrictions), treasure hunt, piecewiselinear pursuit and circular pursuit games. It finishes with a historical military application of the Inverse Lancaster Theory treated probabilistically. Chapter 6, *Organization and Management*, covers first in probabilistic terms, the planning of committee meeting schedules with or without time overrun and/or the lunch-time effect. Two aspects of queueing theory related to the interaction between service and demand in the service industries are also included. The chapter ends with an introduction to stock control methods. Chapter 7, *Mathematical Teasers*, is a small chapter on mathematical curiosities. Chapter 8, *Triangular Geometry*, starts on the geometrical properties of the Torricelli point triangles and nests of Torricelli triangles. A long discussion on pedal circles and pedal curves follows.

On the negative side, the drawing of some of the pictures is by hand without further editorial refinement which reminds me more of pictures on a blackboard than on a printed page. Also the mathematical notation is not uniform all through the book.

F. Oliveira-Pinto

MODULAR REPRESENTATION THEORY IN THE NON-DEFINING CHARACTERISTIC WORKSHOP

The main theme of this workshop, being 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. The lecturers and provisional titles are: M. Broué (Paris) *On some conjectures about modular representations of finite reductive groups in transversal characteristics*; M. Cabanes (Paris) *On blocks and twisted induction for finite*

reductive groups; J.F. Carlson (Georgia) *Varieties, inductions and virtual relative projectivity*; R. Dipper (Stuttgart) *The (Q, q) -Schur algebra*; S. Donkin (QMW, London) *Representations of Hecke algebras and q -Schur algebras*; M. Geck (CNRS) *Basic sets of Brauer characters and the shape of the decomposition matrix*; G. Hiss (Aachen) *Decomposition numbers and generalised q -Schur algebras*; R. Guralnick (S. California) *Low-dimensional cross-characteristic representations of Chevalley groups*; G. Malle (Heidelberg) *d -Harish-Chandra series for ordinary characters and Harish-Chandra series for modular characters*; J. Michel (Paris) *Endomorphisms of Deligne-Lusztig varieties and cyclotomic Hecke algebras*; J. Rickard (Bristol) *Alvis-Curtis duality in non-defining characteristic*; R. Rouquier (Paris) *Deligne-Lusztig varieties and modular representations*; L.L. Scott (Virginia) *Stratified and quasi-hereditary endomorphism algebras*; J.G. Thompson (Cambridge/Florida) *Symplectic groups as Galois groups*; A. Zalesskii (East Anglia) *Minimal polynomials of elements of prime order*.

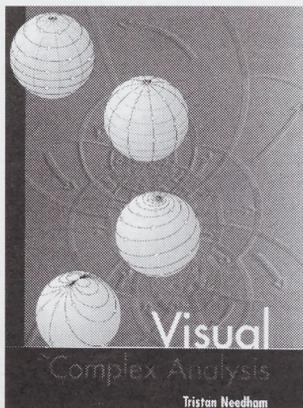
The workshop will take place at the Newton Institute and accommodation for participants will be provided at Wolfson Court, adjacent to the Institute. The conference package costs £280, which includes accommodation, breakfast and evening meals from Sunday 6 until Saturday 12 April, plus lunch and refreshments 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: are available from the 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 Heather Dawson, Isaac Newton Institute for Mathematical Sciences, 20 Clarkson Road, Cambridge CB3 0EH (h.dawson@newton.cam.ac.uk).



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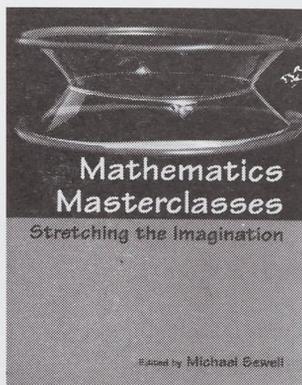
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DIARY

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.

MARCH 1997

- 3 North British Functional Analysis Seminar, University of Leeds (245)
14 Edinburgh Mathematical Society Meeting, Stirling (241)
14 Sylvester Centenary Meeting, University College, London (244)
15 Sylvester Centenary Meeting, New College, Oxford (244) (246)
18-21 Nonlinear Dynamics and Spectra of Molecules Workshop, Warwick University (243)
20 James Joseph Sylvester - Mathematician and Poet, Lecture given by P. Cohn, University College London (246)
22 South of England Computational and Algebraic Number Theory Seminar, Royal Holloway College, Surrey (246)

APRIL 1997

- 1-5 Computational Methods for Representations of Groups and Algebras Euroconference, Essen, Germany (246)
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)
7-12 Modular Representation Theory in the Non-Defining Characteristic Workshop, Isaac Newton Institute, Cambridge (245)
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)
17-19 Postgraduate Combinatorics Conference, Royal Holloway College, Surrey (245)

MAY 1997

- 2 Edinburgh Mathematical Society Meeting, Aberdeen (241)

- 23-24 Two-day London Mathematical Society Meeting, Liverpool
23-24 Groups in Galway Meeting, Galway (245)

JUNE 1997

- 2-20 Advanced School on Mathematical Models of Systems Involving Phase Changes, ICMS, Edinburgh (246)
2-28 Dirichlet Forms and their Applications in Geometry and Stochastics Euroconference, Crete, Greece (246)
6 Edinburgh Mathematical Society Meeting, St Andrews (241)
20 LMS Meeting, London
23- 4 July Confinement, Duality and Non-Perturbative Aspects of QCD Workshop, Isaac Newton Institute, Cambridge (245)
26-28 Joint International Meeting in South Africa, University of Pretoria, South Africa (244)
29-5 July Nonlinear Dispersive Waves: Theory and Applications Euroconference, Crete, Greece (246)
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 (230) (245)
14-24 Pro-p Groups and Related Topics, LMS Durham Symposium (245)
26-9 Aug Groups St Andrews 1997, Bath University (244)
28-8 Aug Representation Theories and Algebraic Geometry Seminar, Université de Montréal, Canada (245)

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

The Newsletter is published monthly except in August. Items and advertisements for inclusion in the Newsletter should be sent to the Editor, Susan Oakes, by e-mail, fax or post to the LMS office (addresses below), to arrive before the first day of the month prior to publication.

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