THE LONDON MATHEMATICAL SOCIETY NEWSLETTER

No.165 **October 1989**

FORTHCOMING SOCIETY MEETINGS

Friday 20 October 1989, Burlington House
Meeting on Stochastic Combinatorics.
B. Bollobas, G.R. Grimmett, D.J.A. Welsh, F.P. Kelly

Friday 17 November 1989, Royal Society
R.M. May, J.D. Murray

INVITED LECTURE SERIES

Following an idea raised at the 1987 Retreat of the Society, Council has decided to establish a series of Invited Lectures, along the following broad lines. The lectures will be on major fields of current mathematical research, and will be instructional in nature, being directed both at graduate students beginning research, or established mathematicians who wish to learn a field outside their own research speciality. The Lectures will normally be a small course of 10 lectures spread over a week. There will be no registration fee for the lectures, and the host institution will be expected to arrange inexpensive accommodation for those who register sufficiently early. The first Invited Lectures will be given by Professor R. Melrose (M.I.T.) at Cambridge from March 26 – 30, 1990. The title of his lectures will be *"Spectral and Inverse Spectral Theory of the Dirichlet Problem in a Planar Domain"*. Council hopes that this new initiative will receive the enthusiastic support of members, and of graduate students in mathematics around the country. The deadline for reservation of accommodation in Cambridge (which will be at Emmanuel College) is October 31 of this year. Those wishing to reserve accommodation should write to Mrs S. Lowe, Department of Pure Mathematics and Mathematical Statistics, University of Cambridge, 16 Mill Lane, Cambridge CB2 1SB.

J.H. Coates
President

ELECTRONIC MAIL DIRECTORY

In the present session, the Society intends to produce a directory of e-mail addresses of mathematicians in UK universities. Departmental Secretaries will already have distributed forms for completion by those who wish to have their e-mail addresses included. I should be most grateful if those who use e-mail would complete this form promptly and encourage other e-mail users in their Departments, who are not members of the Society, also to do so.

A.R. Pears
Meetings and Membership Secretary

1991 HARDY LECTURER

In Spring 1990 the Council proposes to appoint the 1991 Hardy Lecturer. The Lectureship is awarded to a distinguished overseas mathematician, who then comes to the United Kingdom and Ireland for from four to six weeks, visits a number of universities, and addresses the June meeting of the Society, giving in all about twelve lectures during this stay. The visit usually takes place during the months of May and June.

The Council invites members of the Society to submit their views on possible candidates for the award of this Lectureship, together with reasons for their choice, confidentially in writing to any member of the General Purposes Committee of the Society (J.H. Coates, J.D.M. Wright, R.Y. Sharp, A.R. Pears, D.A. Brannan) by 30 November 1989.

R.Y. Sharp
Council and General Secretary

BRITISH COMBINATORIAL COMMITTEE

At the Business Meeting held during the Twelfth British Combinatorial Conference (3 – 7 July 1989, University of East Anglia) a new Committee was elected to serve until the next Conference. At a subsequent meeting of the newly elected Committee, members to serve as Honorary Secretary and Honorary Treasurer were chosen. The members of the new Committee are as follows: Professor C. St J. A. Nash-Williams (Chairman), Dr I. Anderson (Treasurer), Dr A.D. Gardiner (co-opted), Dr A.J.W. Hilton, Dr J.W.P. Hirschfeld, Dr C. McDiarmid, Dr G.P. Thomas, Mrs C.A. Whitehead (Secretary). Ex Officio: Mr P.A. Rado (Bulletin Editor), Dr A.D. Keedwell and Mr P.J. Owens, Local Organizers for 1991 Conference.

The committee is grateful for financial support received from the London Mathematical Society Conference Fund towards the costs of the above-mentioned Conference.

Thirteenth British Combinatorial Conference

The Committee wishes to announce that the next British Combinatorial Conference will be held at the University of Surrey from 8 – 12 July 1991.

British Combinatorial Bulletin

This booklet, published annually, contains news of Conference and Colloquia on Combinatorial topics, a list of British mathematicians known to be interested in Combinatorics and information about forthcoming research publications. It is available on request free of charge to mathematicians resident in Great Britain and at a cost of £2 (to cover postage for two issues) to interested persons resident overseas. Please send £2 sterling to the Editor, Mr P.A. Rado, Department of Mathematics, Royal Holloway and Bedford New College, Egham Hill, Egham, TW20 0EX, England.

One-Day Colloquia on Combinatorial Topics

The British Combinatorial Committee has again decided to make a limited sum of money available for the support of One-Day Colloquia on Combinatorial topics. The Committee will, however, expect any Institution requesting money under this agreement to provide part of the total needed from its own funds. Proposals for consideration by the Committee should be sent in the first instance to the Secretary, Mrs C. Whitehead, Department of Mathematical Studies, Goldsmiths' College, London SE14 6NW.

MERGER

Following the merger of University College, Cardiff (UCC) and the University of Wales Institute of Science and Technology (UWIST) to form the University of Wales College of Cardiff, a School of Mathematics has been formed out of the previous Departments of Pure Mathematics (UCC), Applied Mathematics (UCC), Statistics and Operational Research (UCC), and Mathematics (UWIST). The Head of the School is Professor C. Hooley, FRS, the other Professors being W.D. Evans, J.D. Griffiths, N.C. Wickramasinghe, and J. Wiegold.

The address and telephone number are: School of Mathematics, University of Wales College of Cardiff, Mathematics Institute, Senghennydd Road, Cardiff CF2 4AG; telephone: 0222 874813.

LONDON MATHEMATICAL SOCIETY SUBSCRIPTION

The annual subscription, including periodicals, for the session November 1989 – October 1990 is due on 1st November 1989. Together with this Newsletter is a renewal form to be completed and returned with your remittance in the enclosed envelope.

No action is required if you are already paying by direct debit, and do not wish to change your choice of publications. Fully complete and return the form if you are paying by direct debit but wish to change your choice of publications. Bank accounts of members paying by direct debit will be debited with the appropriate amount on 15th January 1990. Other members should either enclose a cheque (£ sterling or US$) with their form or, if they have a UK bank account and wish to take advantage of this convenient form of payment, request a direct debit mandate.

The Society reserves the right to discontinue the supply of periodicals to members whose subscriptions remain unpaid by 31st January 1990. Where the subscription arrives after 31st January back issues will be supplied but with some delay.

If the renewal form is missing from your Newsletter, contact the Administrator, Susan Oakes, at the London Mathematical Society, Burlington House, Piccadilly, London W1V 0NL.

AUSTRALIAN MATHEMATICAL SOCIETY

The 34th Annual Meeting of the Australian Mathematical Society will be held at the James Cook University of North Queensland in Townsville from 2nd to 6th July 1990. The opening session on the morning of Monday 2nd will include the presentation of the Australian Mathematical Society Medal, and a brief talk by its recipient. There will be invited contributions from overseas and Australian mathematicians. For further information, write to, Professor R.J. Hosking, Department of Mathematics, James Cook University, Townsville, Queensland 4811, Australia.

LONDON MATHEMATICAL SOCIETY

Meeting on Stochastics and Combinatorics
FRIDAY 20 OCTOBER 1989

2.00 B. Bollobás (Cambridge)
Martingales, Isoperimetric Inequalities
and Random Graphs

2.50 G.R. Grimmett (Bristol)
The Contact Process Understood:
A Simple Model for a Spatial Epidemic

3.40 D.J.A. Welsh (Oxford)
Randomisation in Algorithms

A General and Ordinary meeting will commence at 5.00

F.P. Kelly (Cambridge) will speak on
Randomness, Networks and Control

Geological Society's Meeting Room
Burlington House, Piccadilly, London W1

All interested are very welcome
Tea will be served at 4.30 pm

INTERNATIONAL CONGRESS OF MATHEMATICIANS 1990
FIRST ANNOUNCEMENT

The International Congress of Mathematicians will be held in Kyoto, Japan at the Kyoto International Conference Hall from 21st to 29th August 1990, under the auspices of the International Mathematical Union.

There will be about 16 invited one-hour expository addresses covering recent developments in major areas of mathematics, and approximately 140 invited 45-minute lectures divided into the following 18 sections: 1. Mathematical logic and foundations; 2. Algebra; 3. Number theory; 4. Geometry; 5. Topology; 6.Algebraic geometry; 7. Lie groups and representations; 8. Real and complex analysis; 9. Operator algebras and functional analysis; 10. Probability theory and mathematical statistics; 11. Partial differential equations; 12. Ordinary differential equations and dynamical systems; 13. Mathematical physics; 14. Combinatorics; 15. Mathematical aspects of computer science; 16. Computational methods; 17. Applications of mathematics to the sciences; 18. History, teaching and the nature of mathematics.

The International Commission on Mathematical Instruction will have several invited lectures. All Ordinary Members of the Congress will have an opportunity to present ten-minute short communications; informal mathematical seminars may be organised on participants' initiative. All invited lectures will be published in the Proceedings of ICM-90. A complimentary copy will be sent to each Ordinary Member after the Congress. Abstracts of the short communications will be distributed to Ordinary Members at the Congress free of charge. English, French, German and Russian will be the official languages of the Congress.

The Second Announcement will describe all the activities of the Congress in detail and provide instructions on how to complete the pre-registration process and obtain accommodation. It will provide more, although not complete, information on the scientific programme, and give instructions regarding the submission of abstracts of short communications and the organization of informal seminars. To receive the Second Announcement, write to the Secretariat ICM-90, Research Institute for Mathematical Sciences, Kyoto University, Kitashirawaka, Sakyo-ku, Kyoto 6060, Japan by 15th October 1989.

ANNUAL GENERAL MEETING

The Annual General Meeting of the London Mathematical Society will be held on Friday 17th November 1989 at 3.00p.m. in the Wellcome Lecture Hall of The Royal Society, 6 Carlton House Terrace, London SW1Y 5AG.

At the Annual General Meeting the report of the Treasurer will be read, the Council and Officers of the Society for the coming year will be elected, and Auditors appointed. The election of Council and Officers is governed by Article 9 of the Charter of the Society, by Articles 18, 24 and 31 of the Statutes of the Society and by By-Law I of the By-Laws of the Society.

A Ballot Paper is enclosed which contains a list of those names recommended by the present Council, in accordance with By-Law I.6, for election as Officers and Members-at-Large of the Council. It should be noted that the following five Members-at-Large of Council elected for two-year terms at the last A.G.M. have one remaining year to serve: J.W. Bruce, D.G. Crighton, P. Holgate, E.G. Rees, C.M. Series.

The election is (again) uncontested because no nomination from a Member of the Society was received by the Council and General Secretary by the deadline of 01 September 1989.

A member of the Society is entitled to vote in the election by striking out on the Ballot Paper those names for which he does not vote. The member must then validate the Ballot Paper both by writing his name legibly on it and by signing it.

The completed Ballot Paper should either be brought to the A.G.M. or sent to "The Scrutineers, London Mathematical Society, Burlington House, Piccadilly, London W1V 0NL", to arrive at least 36 hours before the time of the A.G.M.

R.Y. Sharp
Council and General Secretary

EDINBURGH MATHEMATICAL SOCIETY

Meetings of the Edinburgh Mathematical Society for the 1989-90 session are: 20 October (Edinburgh) Annual General Meeting and Presidential Address, Professor B.D. Sleeman; 17 November (Glasgow) Professor T.J. Lyons; 15 December (Edinburgh) Professor P.L. Lions; 19 January (Edinburgh) Dr C.R. Leedham-Green; 16 February (Edinburgh) Dr C.G. Gibson; 9 March (Dundee) Professor R.M. May; 4 May (Aberdeen) Professor D.G. Quillen; 2 June (St Andrews) Dr J. Howie.

Further information may be obtained from C.J. Shaddock, Honorary Secretary, Edinburgh Mathematical Society, Department of Mathematics, University of Edinburgh, Mayfield Road, Edinburgh EH9 3JZ.

LONDON SCHOOL OF ECONOMICS AND POLITICAL SCIENCE

Lecturer in Mathematics

Applications are invited for appointment to the above post from 1 October 1990.

It is planned to focus the mathematical work of the School on discrete or applicable mathematics. Candidates should have research interests in Algebra, Logic, Combinatorics or a related area.

Appointment will be at an appropriate point of the Grade A or Grade B salary scale for lecturers £10458 to £15372 or £16014 to £20469 plus £1650 London Allowance a year. In assessing the starting salary consideration will be given to qualifications, age and experience.

Application forms and further particulars are available, on receipt of a stamped, addressed envelope, from the Staffing Office, Room H515, London School of Economics, Houghton Street, London WC2A 2AE. Closing date for applications: 30 October 1989.

Candidates wishing to discuss the post informally should contact Professor N.L. Biggs (telephone 01 405 7686).

MATHEMATISCHES INSTITUTE UNIVERSITAET OF ZÜRICH

There is a vacancy at the Mathematisches Institute of the Universitaet of Zürich for a Professor in Geometry to complement the existing areas of teaching and research. Applicants should be expert in a field such as Geometry, Topology, Global or Harmonic Analysis.

Applications, with curriculum vitae and list of publications, should reach the Dekanat der Philosophischen Fakultät II, Universität Zürich, Winterthurerstrasse 190, CH-8057 Zürich,Switzerland, before 31st October 1989.

FOUR-YEAR POSTGRADUATE TRAINING IN MATHEMATICS

The following document, prepared by the Council of the Society, was forwarded to the SERC Mathematics Committee for consideration at its September meeting.

J.H. Coates
President

The Council of the London Mathematical Society wishes to urge the SERC Mathematics Committee to investigate the possibility of introducing a system of four-year Research Studentships to be used alongside the present three-year Research Studentshipsfor Ph.D.-level training in mathematics. We have found widespread support for this proposal coming from all over the country and from many different branches of mathematics. We set out below the reasons why we believe that some change in the arrangements for SERC postgraduate support in mathematics is necessary, together with some of the difficulties involved, and we suggest how such a system might work in practice.

1. Background

An essential element of a Ph.D. thesis is that it should contain some original contribution to research. So before Ph.D. students can even start working on their thesis topic, they must have reached the research frontier of their subject. In many areas of mathematics an undergraduate training necessarily finishes far short of the research frontier, and a period of advanced study is needed to bridge the gap. This is an international problem, and other countries are facing it by lengthening the training period. At the University of California in Berkeley, for example (where the incoming graduate students are at least as well qualified as most beginning graduate students in the UK), it is now normal for a Ph.D. to take five or six years, two for a Master's degree or Qualifying Examination, and three or more to write a Ph.D. thesis.

In the past, the specialised structure of the English education system has meant that a first-degree graduate in mathematics had a breadth and depth of knowledge which was adequate for a three-year Ph.D. training. It is doubtful whether this is still the case; and future developments in school and undergraduate education will greatly accelerate this change. Most undergraduate students may well benefit from an education system which is increasingly project-oriented and decreasingly knowledge-based. Even those students who go on to postgraduate studies may find that an early experience of project work forms a good basis for a training in research methods. But for the mathematics research worker there is no substitute for knowledge; and it seems clear that in future much of this knowledge will have to be acquired at the postgraduate level.

2. Possible solutions

The most undesirable solution, which will be forced on many areas of mathematics unless something is done to change the system, is for us to steer Ph.D. students towards increasingly routine projects in unexciting areas of mathematics where they can safely pick up a Ph.D. in three years. This will exclude them from many of the most important newly developing areas of the subject and will distort the whole future of mathematics in this country. Some areas of mathematics are already suffering from this effect, and the problem will become increasingly severe as changes in A level mathematics work their way through the universities.

Some people have called for a lengthening of the English B.Sc. course to four years (possibly adopting the Scottish model or something similar). This seems politically unrealistic and academically undesirable: the shape of our undergraduate courses should not be dictated by the needs of the small minority of students who go on to higher degrees.

One solution which works very well is that used at Cambridge, where Part III of the Maths Tripos effectively provides a year's postgraduate training as the fourth year of an undergraduate course. But is difficult to see how this model could be introduced elsewhere.

The other solution, which seems to have widespread support among academic mathematicians, is that it should become normal for postgraduate training in mathematics to be spread over four years, one year of coursework leading up to a Qualifying Examination or Master's degree followed by three further years of research leading to a Ph.D. degree. We believe that this should become a usual pattern for postgraduate training in mathematics. It would enable other universities to adopt the benefits of the Cambridge system, though with the difference that the initial or qualifying year would take place at the postgraduate rather than the undergraduate level. It is also essentially the pattern which is followed at another highly successful postgraduate school, that at Warwick, though because of SERC regulations (see below) their students often have to survive rather precariously in their final year, after their SERC grants have run out.

The qualifying year would have great academic advantages. It would enable prospective Ph.D. students to make a much more informed choice about their subject area for research. It could also be used as an effective filter, with a fairly stringent M.Sc.-level examination to weed out those unsuited to Ph.D. research. It might be thought to favour large departments which could lay on postgraduate lecture courses, but recent letters to the President of the LMS show strong support for this proposal from smaller departments too, as the following extracts show:

"The emphasis should be on encouraging

M.Sc. courses as a precursor to a Ph.D. This would cost much less than four-year first degrees for all students and so may be a more realistic target." (Royal Holloway and Bedford New College)

"We suggest that SERC be urged to allow four years for a Ph.D. following a three-year undergraduate course. It seems clear that, in the future, such an undergraduate course cannot attain the same degree of 'specialisation' as hitherto and if standards of Ph.D.'s are to be maintained another year for research will be necessary." (University College, Swansea)

3. The SERC angle

Nearly all British postgraduate students are supported by SERC grants; and SERC have three rules or principles which stand in the way of four-year Ph.D. programmes:

(a) No student can receive SERC support for more than three years.

(b) Completion rates: a Ph.D. thesis should be submitted no more than four years after the start of a Ph.D. course.

(c) M.Sc. courses (at least, those supported by one-year Advanced Course Studentships) should be vocational, not academic. They should be an end in themselves, not a prelude to a Ph.D.

Of these, (b) and (c) appear to be sacrosanct, and dictated by political pressures from above. So any proposal for change should avoid challenging them. It seems much more likely that (a) can be changed. Indeed, Professor Mitchell, the Chairman of SERC, has said in public that he sees no reason why a subject committee should not successfully put forward a case for (a) to be relaxed.

We propose that the SERC Mathematics Committee should press for such a change, and we outline below two alternative possible models for implementing it.

4. Models for a system of four-year postgraduate training.

In some areas of mathematics, a three-year postgraduate training for a Ph.D. is still quite viable. Also, some students (like those who take the Cambridge Part III) have an adequate background to go straight into a three-year Ph.D. course. For these reasons, it is essential to retain the present system of three-year Research Studentships alongside any new scheme.

Four-year studentships obviously cost more than three-year studentships, and the cost would have to be met from somewhere in the Mathematics Committee's budget, either by reducing the total number of research studentships or by reallocating resources from elsewhere. We envisage that about one-third of the Mathematics Research Studentships (say 50 per year) would be transferred to the four-year scheme, at an annual cost of approximately £200K.

Model A: "four year grants"

Under this model, a department nominating a student for a Research Studentship, would have to specify either a three-year Research Studentship, or a four-year Research Studentship. There would be a ceiling on the number of four-year Research Studentship awarded to a department. (For a department with a current ceiling of eight Research Studentships, the ceiling might be three four-year Research Studentships.) SERC would award the available numbers of three-year and four-year Research Studentships to the best applicants, giving preference to migrating Firsts, etc., as at present.

A student with a four-year Research Studentship would spend the first year undergoing advanced training (lecture or reading courses) with an examination at the end of the year, and progress into the second year would be conditional on a satisfactory performance. The Ph.D. course would start in the second year, and the first year would not count towards the four-year "completion rate" period.

Model B: "one plus three"

Under this model, SERC would make available 50 one-year grants ("Pre-Research Studentships") each year. The rules governing their award would be similar to those for Advanced Course Studentships, but with the differences that the entry standard would be higher (a First, or a good upper Second) and that they would be awarded for pre-research training rather than vocational training. Students completing such a course would then be eligible for a three-year Research Studentship in the usual way.

5. Conclusion

The continued health of mathematics in this country requires that we should be training research students in all the major developing areas of the subject. Changes in school and university syllabuses will make this an increasingly unrealistic aim unless there is some lengthening of the post-graduate training period. We ask the SERC Mathematics Committee to initiate moves in this direction as a matter of urgency.

IRANIAN MATHEMATICS CONFERENCE

The 21st Annual Iranian Mathematics Conference will be held at the University of Isfahan from 13th to 16th March 1990. For further information, write to The Organizing Committee of the 21st AIMC, Department of Mathematics, University of Isfahan, PO Box 81745-163, Isfahan, Iran.

RECENT SERC AWARDS

Visiting Fellowships

M.J. Baines, Reading. K. Miller, U.S.A. *Moving finite elements.*

R.A. Cairns, St Andrews. D.J. Kaup, U.S.A. *Nonlinear wave equations.*

W.W.L. Chen, Imperial College. J. Beck, Hungary. *Irregularities of distribution.*

J.H. Coates, Cambridge. A. Ash, U.S.A. *Arithmetical algebraic geometry.*

D.J. Collins, Queen Mary College. E.C. Turner, U.S.A. *Fixed points of automorphisms of free products of groups.*

P.G. Daniels, City University. M. Weinstein, Israel. *Stability of convection in a vertical slot.*

M.M. Dodson, York. J. Poschel, Germany. *Diophantine approximation in Hamiltonian systems.*

P.J. Donnelly. Queen Mary College. S. Tavare, U.S.A. *Mathematical modelling and statistical estimation in the analysis of DNA sequence data.*

C.M. Elliot, Sussex. S. Carsson, Sweden. *Finite element methods for nonlinear evolution equations.*

G.R. Everest, East Anglia. K. Gyory, Hungary. *Aspects of the s-unit equations.*

A.P. Fordy, Leeds. A.G. Reyman, Poland. *Algebraic constructions of Hamiltonian systems of lax type.*

K.W. Gruenberg, Queen Mary College. A. Weiss, Canada. *Integral representation theory of finite groups.*

B. Hartley, Manchester. Y.K. Min. *Homological techniques in group theory.*

W.K. Hayman, York. H. Halberstam, U.S.A. *Sieving methods and analysis.*

J.R. Hubbuck, Aberdeen. A. Kono, Japan. *The homotopy and cohomology of free and based loops. Kac-Moody exceptional Lie and certain gauge groups.*

F.P. Kelly, Cambridge. M.I. Reiman, U.S.A. *Light traffic optimal control of queuing systems.*

J.H. Merkin, Leeds. B.F. Gray, Australia. *Mathematical models of reaction diffusion in isothermal systems and in smouldering combustion.*

L.W. Morland, East Anglia. A. Sawicki, Poland. *Dynamic compaction of saturated granular materials.*

P.E. Newstead, Liverpool. U.N. Bhosle, India. *Vector bundles on singular hyperelliptic curves.*

N.C. Owen, Bath. P. Sternberg, U.S.A. *The effect of a singular perturbation of nonconvex variational problems.*

W. Parry, Warwick. D. Rudoph, U.S.A. *Finitary coding of 2N-actions of finite type.*

M.J.D. Powell, Cambridge. N. Dyn, Israel. *Algorithms for radial basis function interpolation.*

N. Riley, East Anglia. P.D. Weidman, U.S.A. *A theoretical and experimental investigation of vortex-ring pairs.*

R.M. Roberts, Warwick. V.M. Zakalyukin, U.S.S.R. *Equivariant Lagrangian and Legendrian singularities 1.*

D.C. Robinson, Kings College London. J.N. Goldberg. *New variables and classical general relativity.*

P. Rowlinson, Stirling. D. Cvetkovic, Yugoslavia. *Computer investigations of graph spectra.*

R.Y. Sharp, Sheffield. P. Schenzel, West Germany. *Asymptotic behaviour of ideals in commutative Noetherian rings.*

J.T. Stafford, Leeds. S.C. Coutinho, Brazil. *Locally free modules over rings of differential operators.*

G. Tunnicliffe-Wilson, Lancaster. G.C. Tiao, U.S.A. *Multivariate time series model selection.*

R.C. Vaughan, Imperial College. J.H.H. Chalk, Canada. *Exponential sums and the solutions of equations and congruences.*

J.R.L. Webb, Glasgow. L.E. Payne, U.S.A. *Comparison methods for solutions of nonlinear Dirichlet problems.*

Research Grants

J.M. Ball, J. Carr, J.C. Eilbeck, Heriot-Watt. *Computing equipment for nonlinear systems programme.*

J.F. Clarke, E.F. Toro, Cranfield Institute of Technology. *Theoretical studies of combustion-driven waves.*

N.J. Cutland, Hull. *Applications of Loeb space methods to Malliavin calculus and related topics.*

P.G. Daniels, City University. *Separation in high Prandtl number thermal boundary layer flow.*

A.P. Dawid, University College, London. *Bayesian analysis in expert systems.*

S. Donkin, Queen Mary College. *Polycyclic groups and algebraic groups.*

P.J. Donnelly, University College, London. *Stochastic modelling in molecular population genetics.*

P.J. Donnelly, University College, London. *Genealogy and duality in non neutral genetics models 1.*

K.D. Elworthy, Warwick. *Stochastic partial differential equations and related topics.*

D.B.A. Epstein, Warwick. *Automatic groups and hyperbolic geometry.*

A.P. Fordy, Leeds. *Miura maps, modifications and deformations of multi-Hamiltonian systems.*

D.H. Fremlin, Essex. *Set theoretical analysis.*

S. French, Leeds. *Symposium on combinatorial optimization.*

D.J. Green, Bristol. *Regularisation in image analysis and its statistical regression.*

J.A. Green, R.W. Carter, Warwick. *Groups, rings and representations.*

M.B. Green, C.M. Hull, Queen Mary College. *Mathematical problems in the theory of superstrings.*

B. Hartley, Manchester. *Simple locally finite groups.*

D.V. Hinkley, Oxford. *Scotstrap techniques theory, implementation.*

W.A. Hodges, H.D. Macpherson, Queen Mary College. *Permutation groups applied to model theory II.* L.H. Hodgkin, P.S. Howe, Kings College London. *Global analysis of superspace: fermionic path integrals.*

J.D.S. Jones, Warwick. *Cyclic cohomology – research assistant.*

J.W. Kay, Glasgow. *Robust statistical methods for image processing and analysis.*

W.S. Kendall, Warwick. *Symbolic computation and stochastic calculus.*

N.G. Lloyd, University College of Wales. *Nonlinear diffusion equations and their equilibrium states.*

D. Mollison, S. Zachary, I. Ziedins, Heriot-Watt. *Application of stochastic network and spatial models, especially to telecommunications and epidemics.*

K.W. Morton, D.F. Mayers, J.S. Rollett, Oxford. *Multigrid methods for computational fluid dynamics.*

D.F. Parker, Edinburgh. *Coupled nonlinear equations for optical waveguides.*

D.B. Pearson, Hull. *Theory and applications of spectral analysis of differential operators and infinite matrices.*

T.J. Pedley, Leeds. *Computation of self-excited oscillations in collapsible channels.*

I.C. Percival, F. Vivaldi, Queen Mary College. *Singular potentials and complex billiards.*

R. Penrose, K.P. Tod, Oxford. *Initial cosmological singularities.*

B.D. Ripley, Strathclyde. *Equipment for statistical image analysis and simulation.*

B.D. Ripley, Strathclyde. *Simulation of complex stochastic systems.*

J. Saxl, Cambridge. *Multiplicity-free representations of finite classical groups and related topics.*

R. Sibson, B.W. Silverman, C. Jennison, A. Robinson, Bath. *Topics in computational statistics.*

A.F.M. Smith, Nottingham. *Inference and display methodollogy for irregular and multiparameter likelihoods.*

F.T. Smith, University College, London. *Theory and computation on compressible boundary layer transition.*

A.J.M. Spencer, T.G. Rogers, Nottingham. *Analysis of stress and deformation in laminated elastic shells.*

R.B. Vinter, Imperial College. *Nonsmooth analysis and optimal control.*

R.S. Ward, Durham. *Scattering of solitons and lumps in the nonlinear sigma model in 2+1 dimension.*

A.J. Wathen, Bristol. *Numerical analysis of iterative solution techniques for finite element equations.*

SOURCES OF TRAVEL MONEY

Sources of travel money for UK research workers in Mathematics and Statistics wishing to travel abroad or wishing to invite visitors from abroad.

NOTES

1. Most of the grant awarding agencies listed below are British. Other countries have similar networks and, just as British agencies fund both incoming and outgoing visits, it is possible to obtain funds for visits to and from other countries from the agencies in those countries.
2. This is the first edition of this document. Please send details of corrections and omissions to: Professor B.E. Johnson, Department of Mathematics and Statistics, The University, Newcastle upon Tyne NE1 7RU. Tel. (091) 222 6000.

BRITISH UNIVERSITIES Each University receives a block grant, part of which is intended to support research. Most universities recognise the importance of collaborative visits in mathematical research and make funds available for travelling.

BRITISH COUNCIL The British Council makes awards to allow postgraduate research workers to visit the UK for anything between 2 months and 3 years. The awards are made by the British Council representative in the country in which the research worker is based and further details should be obtained locally. Addresses of British Council offices overseas can be obtained from your nearest UK office.

Support is also available for outgoing visits by UK workers. Details of this scheme may be had from: Specialist Tours Department, The British Council,

65 Davies Street, London W1Y 2AA. Tel (01) 930 8466.

EEC SCIENCE PLAN The EEC makes grants to enable research workers in one EEC country to visit an institution in another for up to 3 years. Part of the scheme is reserved for young research workers. They also support 'Twinning' arrangements. Details can be had from: DG X11, Commission of the European Communities, Rue de la Loi 200, Brussels, Belgium.

FULBRIGHT COMMISSION The commission provides travel grants to cover the expenses of UK workers and dependents visiting an approved US institution for at least four months. Similar grants are available for US workers visiting the UK.

The Commission also provides Lecturing Scholarships which support visits of one academic year by US scholars to UK institutions and funds Collaborative Projects and Faculty Exchanges between UK and US institutions of higher education. Details may be had from: The Fulbright Commission, 6 Porter Street, London W1M 2HR. Tel.(01) 486 7697.

LEVERHULME TRUST – Commonwealth/USA Visiting Fellowships. Funds are available to support young postdoctoral workers from the Commonwealth or USA wishing to visit a UK university for an academic year. Further details can be had from: The Administrative Assistant to the Director, The Leverhulme Trust, 15-19 New Fetter Lane, London EC4A 1NR. Tel. (01) 822 6892.

LONDON MATHEMATICAL SOCIETY The LMS provides small grants to support visitors to the UK. Normally the visitor is expected to give talks at three or more institutions and the LMS pays for travel to and from the UK. The LMS also makes grants for conferences. Details can be had from: The Administator, London Mathematical Society, Burlington House, Piccadilly, London W1V 0NL. Tel. (01) 437 5377.

NATO NATO Grants support **projects** involving collaboration between research workers in its member countries. In many cases funding is entirely for travel but the emphasis is on the project not the visits.

Senior Guest Fellowships are available to support visits of at least 3 weeks duration by leading mathematicians.

Longer term visits (over 2 months) are funded through the NATO Science Fellowships Programme. UK citizens can obtain details from: Dr G.W.D. Findlay, Science and Engineering Research Council, PO Box 18, Polaris House, North Star Avenue, Swindon SN2 1ET. Tel. (0793) 411 000.

Other NATO-country citizens should contact: NATO Scientific Affairs Division, Fellowships Office, 1110 Brussels, Belgium.

NUFFIELD SMALL GRANTS SCHEME Among activities which may be financed are outgoing or incoming working visits to collaborate in research or for small workshops in the UK. Grants are not made for organising or attending conferences. Decisions are usually made within six weeks of submission. Further details can be obtained from: Roselyn White, The Nuffield Foundation, 28 Bedford Square, London WC1B 3EG. Tel. (01) 631 0566.

ROYAL SOCIETY The Royal Society has a number of schemes

(a) It makes travel funds available from a Parliamentary Grant for this purpose.

(b) European Science Exchange Programme. This covers visits from between 2 weeks and 6 months between the UK and other Western European countries. Fellowships of 1 to 2 years are also available. Preference is given to young scientists.

(c) The Royal Society also has a number of exchange arrangements with a number of individual countries, mostly those in which the administrative structure follows the Russian model.

(d) Guest Research Fellowships. This scheme is designed to bring outstanding research scientists to the UK for visits of 4 – 24 months.

More details of these schemes appear in the Year Book of the Royal Society. Further information can be obtained from: The Executive Secretary, The Royal Society, 6 Carlton House Terrace, London SW1Y 5AG. Tel. (01) 839 5561.

SERC The SERC awards both incoming and outgoing Visiting Fellowships. The cost of visits can also be included as part of larger research proposals. Details can be obtained from: Mathematics Committee Secretariat, SERC, Polaris House, North Star Avenue, Swindon SN2 1ET. Tel. (0793) 411312.

SCOTTISH GRANTS The following are available.

(a) **CARNEGIE TRUST** This provides travel grants for graduates and staff of Scottish universities. Grants cover only travel costs within countries or groups of countries abroad and not intercontinental travel or travel to Continental Europe. Details from: Carnegie Trust for the Universities of Scotland, 22 Hanover Street, Edinburgh EH2 2EN. Tel. (031) 220 1217.

(b) **EDINBURGH MATHEMATICAL SOCIETY** The EMS Centenary fund provides small grants to its members for a variety of projects which may include travelling expenses, support for visitors and contributions to workshops or conferences. Details can be had from: The Honorary Secretary, Edinburgh Mathematical Society, James Clerk Maxwell Building, the Kings Building, Mayfield Road, Edinburgh EH9 3JZ. Tel. (031) 667 1081.

(c) **ROYAL SOCIETY OF EDINBURGH** This provides funds for its Fellows to travel both in and outside the UK and to bring visitors from outside Scotland to Scotland. Details are in the RSE Yearbook or may be had from: Royal Society of Edinburgh, 22-24 George Street, Edinburgh. Tel (031) 225 6057.

Murdoch University

PERTH
WESTERN AUSTRALIA

CHAIR IN MATHEMATICS

Agreement has been reached between Murdoch University and the University of Western Australia to seek amalgamation, subject to legislative approval, of the two institutions by January 1990.

The Chair in Mathematics within the School of Mathematical and Physical Sciences at Murdoch University will become vacant at the end of 1989 with the retirement of the Foundation Professor of Mathematics, Professor A.P. Robertson.

Applications are invited from mathematicians with research interests in any area of pure or applied mathematics or statistics. The person appointed will be expected to have an outstanding research record, a proven ability for leadership and a commitment to teaching.

There are at present 15 full-time members of staff in mathematics and statistics. Current research interests include control theory, dynamical systems, functional analysis, harmonic analysis, numerical analysis, probability theory, robust statistics and multivariate statistical analysis.

The University offers a full range of courses in mathematics and statistics, including honours and post-graduate studies. There is also a strong commitment to service teaching in mathematics and statistics across the University.

Agreement was recently reached between Murdoch University and the University of Western Australia to seek a merger of the two institutions by January 1990.

SALARY: $A63,919 per annum

Conditions of appointment include superannuation, long service leave, access to outside studies programmes, payment of fares to Perth for appointee and dependant family, removal and settling-in allowances.

There is no prescribed application form. Applicants are invited to submit a full curriculum vitae, supported by an appropriate letter including the names and addresses of three referees.

Applications and requests for further information should be sent to:

The Chief Personnel Officer
Murdoch University
MURDOCH, WESTERN AUSTRALIA 6150
Telephone: (619) 332 2283

Applications will close on 27 October 1989

Applicants resident in the United Kingdom, Europe or Africa, may obtain supporting statements from and should lodge one copy of any application with:

The Secretary General
Association of Commonwealth Universities
36 Gordon Square
LONDON WC1H OPF UNITED KINGDOM

MURDOCH UNIVERSITY IS AN EQUAL OPPORTUNITY EMPLOYER

King Fahd University of Petroleum & Minerals

Dhahran 31261, Saudi Arabia

Mathematical Sciences Department

We are seeking faculty members to teach graduate and undergraduate courses in all areas of mathematical sciences. A PhD in Mathematics is required. Candidates must also have previous research experience preferably in Applied Mathematics and Numerical Analysis, or the ability to carry out research. Excellent teaching skills required.

KFUPM offers attractive salaries commensurate with qualifications and experience and benefits that include, free furnished air-conditioned accommodation on campus, yearly repatriation tickets, ten months work each year with two months paid vacation. Minimum regular contract for two years, renewable.

Interested applicants are requested to send their Curriculum Vitae with supporting information within one month from date of publication to:

Dean of Faculty and Personnel Affairs
King Fahd University of Petroleum & Minerals
Dept. No. MATH/540/BP-01
Dhahran 31261
Saudi Arabia

Horace Lamb (1849-1934) graduated second Wrangler and Smith's Prizeman from Cambridge in 1872, and for ten years was Professor of Mathematics at the new University of Adelaide, before returning to Manchester to become the Professor of Mathematics there. The department flourished under him, for he was a born teacher. He wrote many papers and several books, most famously one on hydrodynamics, and had a particular interest in the theory of the tides. He was elected an FRS in 1884, and awarded their Copley Medal in 1923. He received the Society's De Morgan Medal in 1911 and was the Society's twentieth President, from 1902-1904.

DIARY

The diary lists Society meetings and other events publicised 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.

1989

OCTOBER	
20	LMS Meeting, London (165)
NOVEMBER	
17	LMS Meeting, London

1990

JANUARY	
19	LMS Meeting, London
FEBRUARY	
16	LMS Meeting, Bath
MARCH	
16	LMS Meeting, London
26–30	Invited Lectures (160)
APRIL	
1–14	Generators and Relations in Groups and Geometries, Italy (164)
2–6	British Mathematical Colloquim, East Anglia
MAY	
18–19	2–day LMS Meeting, Sheffield
JUNE	
6–9	European Consortium for Mathematics in Industry, Finland (159)
11–14	XIV Rolf Nevanlinna Colloquium, Finland (162)
12–15	Analysis and Optimization of Systems, France (161)
15	LMS Meeting, London
27–30	Algebraic Hyperstructures and Applications, Greece (162)
JULY	
1–15	Adams Memorial Symposium, Manchester (163)
2–6	34th Annual Meeting, Australian Mathematical Society, Australia (165)
3–6	Ordinary and Partial Differential Equations, Dundee (164)
9–11	New Trends in Systems Theory, Italy (162)
9–20	Geometry and Topology of Four-Manifolds, Canada (162)
AUGUST	
21–29	International Congress of Mathematicians 1990, Japan (151) (165)
21–29	Logic Conference, Japan (160)
OCTOBER	
19	LMS Meeting, London
NOVEMBER	
16	LMS 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, London Mathematical Society, Burlington House, Piccadilly, London WIV 0NL (telephone 01-437 5377, fax 01-439 4629), to arrive before the first day of the month prior to publication.

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