# THE LONDON MATHEMATICAL SOCIETY NEWSLETTER

**No. 178** **December 1990**

## FORTHCOMING SOCIETY MEETINGS

Friday 18 January 1991, Burlington House
K.J. Falconer, T.J. Ransford
Friday 15 February 1991, Lancaster
Friday 15 March 1991, Burlington House
Friday, Saturday 17 - 18 May 1991, Oxford
Thursday 13 June 1991, Burlington House
Friday 18 October 1991, Burlington House
Friday 15 November 1991, Burlington House

## 1990 COUNCIL ELECTIONS

At the Annual General Meeting on 16th November 1990, the following members were elected to Council: J.F.C. Kingman (President); J.M. Howie and P.M. Neumann (Vice-Presidents); J.D.M. Wright (Treasurer); R.Y. Sharp (Council and General Secretary); A.R. Pears (Meetings and Membership Secretary); D.A. Brannan (Publications Secretary); J.A. Erdos (Librarian); D.G. Crighton, E.C. Lance, H.R. Morton, M.J. Taylor, (Members-at-Large, 2-year terms); W.A. Hodges, R.L.E. Schwarzenberger, C.M. Series (Members-at-Large, 1-year terms). S.K. Donaldson, W.D. Evans, C.J. Mulvey, P. Vámos and N.J. Young are Members-at-Large whose terms expire in 1991.

R.Y. Sharp
Council and General Secretary

## A SOCIETY LOGO?

The Society's Council is considering the adoption of a 'logo' which would be used on certain publications, in particular to balance the American Mathematical Society logo in any joint publications with the AMS, and in the publicity associated with some activities sponsored by the Society's Education Committee. Council, having failed to come up with any suitable idea, has decided to launch a competition, open to all readers of the Newsletter, for the design of an appropriate logo. A prize of £100 will be awarded for the winning entry. Entries should be submitted to the Administrator, London Mathematical Society, Burlington House, Piccadilly, London W1V 0NL, to arrive no later than 31st January 1991. The judges will be looking for an idea that has some mathematical content, and it should be noted that, as the initials L.M.S. are now associated in the public mind with 'Local Management of Schools', an embroidered version of 'LMS' is unlikely to be successful. Council makes no commitment to adopt the prize-winning entry and, if the response to this competition turns out to be poor, the prize will not be awarded. The result of the competition will be announced in the April issue of the Newsletter.

## 1991 LIST OF MEMBERS

A new edition of the Society's List of Members is being prepared to appear in May 1991. Members' entries will be as in the current (1989) List of Members unless I am advised of any necessary changes. A form for making amendments and notes on its completion are enclosed with this Newsletter. Members who wish to change their 1989 entry and members who do not have a 1989 entry are asked to complete the form in full and return it to me, in the envelope provided, to arrive not later than Friday 1st March 1991.

S.M. Oakes
Administrator

## MARSHALL HALL

Professor Marshall Hall, Professor Emeritus of Mathematics of the California Institute of Technology and distinguished Professor of Emory University, died on 4th July 1990 at the age of 79. He was elected a member of the London Mathematical Society on 17th May 1956.

## FOUNDATION OF THE EUROPEAN MATHEMATICAL SOCIETY

The European Mathematical Society has been founded under an initiative of 33 mathematical societies covering Europe in its entirety - from Portugal to Georgia and from Finland to Italy. The European Mathematical Society aims to establish a sense of identity amongst European mathematicians, to concern itself with the relations of mathematics to society, to be involved in mathematical education and to promote research in pure and applied mathematics. Founded at a historic juncture in European affairs the avowed purpose of the Society is to foster the development of all aspects of mathematics in Europe.

The Society wishes to encourage a spirit of European community amongst young mathematicians and to co-ordinate postgraduate studies with the aim of facilitating student interchange; in this context the European Mathematical Society views with concern the "brain drain" out of and across Europe of young female and male mathematicians. The Society will make a determined effort to explain the significance of mathematical research and its applications in the life of the modern world. Communications between mathematicians, by electronic and other means, are to be developed; links between mathematicians working in similar areas are to be extended and activities of meetings are to be co-ordinated. The publication of a newsletter and of a journal for mathematics are under active consideration. Other future activities include the promotion of meetings and, in particular, the organisation of major European Congresses, the first to take place in Paris, 1992.

At its inception meeting, held on 27th to 29th October 1990, under the hospitality of the Polish Academy of Sciences, the European Mathematical Society recorded its profound thanks to Sir Michael Atiyah, incoming President of the Royal Society of London, for his work over several years in establishing the Society. By acclaim, Sir Michael became the first individual member of the Society.

The Officers of the Society are:

**President:**
Professor F. Hirzebruch. (Bonn, Germany).
**Vice-Presidents:**
Professor Cz. Olech (Warsaw, Poland).
Professor A. Figa-Talamanca (Rome, Italy).
**Secretary:**
Professor E.C. Lance (Leeds, United Kingdom).
**Treasurer:**
Professor A. Lahtinen (Helsinki, Finland).

The seat of the European Mathematical Society is in Helsinki.

## MATHEMATICAL SCIENCES ANNUAL: 1991

This is an annual publication containing the addresses etc. of Departments of Mathematics, Statistics, Computer Science and kindred subjects at Universities, Polytechnics etc. in the United Kingdom. Copies of the first edition are being distributed free of charge to all the Departments concerned for further distribution to their staff. Subject to availability additional copies can be obtained directly from myself (stamped addressed A4 envelope, please). I.M. James, Mathematical Institute, 24-29 St Giles', Oxford OX1 3LB.

## SCHRÖDINGER LECTURES

Dr B.B. Mandelbrot of Thomas J. Watson Research Laboratories, IBM Yorktown Heights, New York will give the Fourth Schrödinger Lecture on 'Fractals' at Imperial College, The Great Hall, on Thursday 9th May 1991 at 5.30 pm. Further details from Dr P. Dolan, Department of Mathematics, Imperial College. Telephone 071-589 5111, ext 5761 (answerphone).

## COUPLED OSCILLATING NEURONS

A one day meeting on Coupled Oscillating Neurons will be held on Friday 13th December 1990 at Kings College London. The programme is as follows: 10.00 - 10.45 Introduction to Non-Linear Oscillators, Dr I. Stewart, Warwick. 10.45 - 11.15 Coffee. 11.15 - 12.00 Coupled Oscillators, Dr C. Baessens, Warwick. 12.00 - 12.45 Bifurcating Neurons, Dr A. Holden, Leeds. 12.45 - 2.00 Lunch. 2.00 - 2.45 Modelling Oscillatory Neurons, Dr J.L. Hindmarsh, Cardiff. 2.45 - 3.30 Information Processing by Oscillatory Neurons, Dr C.L.T. Mannion, Surrey and Professor J.G. Taylor, Kings. 3.30 - 4.00 Tea. 4.00 - 4.45 Cardiac Neurons, Professor D. Noble, Oxford. 4.45 - 5.30 Title to be announced, Professor V. Kryukov, Soviet Union.

The cost of participation will be £40.00 (£20.00 postgraduates). Morning coffee, buffet lunch and afternoon tea will be provided. It will not be possible to issue invoices or offer reductions to those wishing to do without lunch etc. Cheques should be made payable to NCO Meeting and sent to Professor J.G. Taylor, Department of Mathematics, Kings College, Strand, London WC2R 2LS. The meeting will take place in Room 3B 20 in the Strand Building, King's College, London WC2.

# LONDON MATHEMATICAL SOCIETY

## INVITED LECTURES

**Professor Jerrold Marsden**
University of California, Berkeley

will give a course of ten lectures on

## MECHANICS AND SYMMETRY

in Southampton during the week
Monday 15 to Friday 19 April 1991

Accommodation and meals will be available in a University Hall of Residence.

Those wishing to reserve accommodation or to receive further details should contact Dr. D.R.J. Chillingworth, Department of Mathematics, University of Southampton, Southampton SO9 5NH. Telephone (0703) 593677 (direct) e-mail drjc@uk.ac.soton.maths. Reservations for accommodation should be made no later than **15 February 1991.**

Professor Marsden is joint winner of the 1990 AMS/SIAM Norbert Wiener Prize in Applied Mathematics

## UNE OPPORTUNITÉ

The Department of Mathematics of the University Paris-Sud (Orsay) advertises three to four positions of "Maitre de Conferences" in the Mathematics Department. The teaching load of a "Maitre de Conferences" is 6 hours a week for 25 weeks a year to groups of about 30 students. Also the "Maitre de Conferences" are expected to participate actively in the various research activities of the department.

There are two essential prerequisites: 1) The candidates should speak fluent French; 2) They should hold a PhD degree by the time of their effective hiring, i.e. October 1991.

Research achievements and potentialities in research will be determining criteria in the choice of the "Maitre de Conferences", who are expected to be between 25 and 30 years old. The position of the "Maitre de Conferences" is a permanent position in the French civil service. However, it is expected that the people hired will be able to obtain a position of Professor (in France or elsewhere) within a reasonable time. The salary is around 10.000 Francs per month (Social Security having been deducted). The progression in the salary may vary, depending on the research abilities of the "Maitre de Conferences".

Those interested are required to send immediately a curriculum vitae and a list of publications to Monsieur le Président de la Commission de Spécialistes, Département de Mathématique, Université Paris-Sud, 91405 Orsay, France. Important information like address, fax or electronic mail address should also be included. The thesis adviser should send a letter of recommendation to the above address.

The positions will be formally advertised around January 1991. It is therefore important that contact may be made with the candidates, so they can complete the necessary forms in due time (usually one month). Any supplementary information may be obtained from the address above, or by fax: 33-1-69416221 or by contacting the department's secretary, Madame Souriou: 33-1-69417956.

## ONLINE INFORMATION MEETING

The 14th International Online Information Meeting is being held at Olympia 2, London W14 from 11th to 13th December 1990. The American Mathematical Society exhibit will be at Stand No.2 adjacent to the Buffet area. MathSci Disc and MathSci Online will be shown on Tuesday 11th December 11.00-18.00, Wednesday 12th, 9.30-18.00, and Thursday 13th, 10.30-16.00.

MathSci Disc is the CD-ROM version of Mathematical Reviews (MR) and Current Mathematical Publications (CMP), containing MR with complete reviews back to 1981. MathSci Online, available through DIALOG and ESA, contains MR 1959- , CMP, Current Index to Statistics, ACM Guide to Computing Literature, Computing Reviews, and Technical Reports in Computer Science

Free exhibition tickets are available from the London Mathematical Society office.

## THE 1991 HARDY LECTURER

The Council of the London Mathematical Society is pleased to announce that Professor H.B. Lawson has accepted its invitation to be the 1991 Hardy Lecturer. Blaine Lawson graduated from Brown University in 1964 and was awarded the Ph.D. degree at Stanford University in 1968. He was affiliated to the University of California at Berkeley from 1968 to 1978 and has been Professor of Mathematics at the State University of New York at Stony Brook since 1978. He has held numerous Visiting Professorships throughout the world.

Professor Lawson will be visiting the U.K. for four weeks from 20th May 1991 and will give about twelve lectures including the 1991 Hardy Lecture to the Society on Thursday 13th June. He would be prepared to lecture on the following topics:

**Symmetric Products, Algebraic Cycles, and Some New Invariants in Algebraic Geometry;**

**A Theory of Algebraic Cocycles;**

**Positive Scalar Curvature, Spin Cobordism and the Â-invariant;**

**Algebraic Cycles, Bott Periodicity, and the Chern Characteristic Map;**

**Singular Connections and Characteristic Residues;**

**A Relative Index Theorem with Applications to Global Geometry;**

**Manifolds of Positive Curvature.**

Institutions that wish to invite Professor Lawson to give a lecture should write to the Meetings and Membership Secretary, A.R. Pears, Department of Mathematics, King's College London, Strand, London WC2R 2LS by 31st December 1990. First and second choices of lecture topic should be specified. It is expected that many more invitations will be received than can be accepted and neighbouring institutions are strongly encouraged to submit joint invitations. The itinerary and lecture title at each venue will be decided by the Society's Programme Committee in consultation with Professor Lawson and the host institutions.

# THE UNIVERSITY OF WAIKATO

## HAMILTON, NEW ZEALAND

## LECTURER IN MATHEMATICS

The University of Waikato invites applications for a Lectureship in Mathematics within the Department of Mathematics and Statistics. This Department, together with the Department of Computer Science, forms the new School of Computing and Mathematical Sciences. The Department of Mathematics and Statistics has 17.5 full-time equivalent staff, and approximately 2500 course enrolments across all Schools of Study in the University. Teaching and research supervision is done at undergraduate, Masters and Doctoral levels.

The Department wishes to develop research in computational aspects of mathematics, and to strengthen the links between the two Departments in the School of Computing and Mathematical Sciences. The University therefore especially encourages applications from mathematicians with strong research records in computational areas, such as computer algebra or numerical analysis.

The salary range for Lecturers is currently $NZ37,440 - $NZ49,088 per annum.

Enquiries of an academic nature may be made to Professor D.S. Bridges, telephone (64) 71 562889 or e-mail: bridges@waikato.ac.nz.(via Internet). Information on the method of application and conditions of appointment can be obtained from the Academic Staff Unit, University of Waikato, Private Bag 3105, Hamilton, New Zealand, telephone (64) 71 562889, Fax (64) 71 560135. Applications quoting reference number A90/97 close on **15th January 1991.**

Places for appointees' children may be available in the creche run by the Campus Creche Society (Inc). The University welcomes applications from suitable people regardless of race, creed, marital status or disability.

# THE UNIVERSITY OF AUCKLAND

## NEW ZEALAND

## LECTURER IN THE DEPARTMENT OF MATHEMATICS & STATISTICS

The Department of Mathematics and Statistics teaches a full range of undergraduate and postgraduate courses. Within the department there are two units which operate with a certain degree of autonomy. These are the Statistics Unit and the Applied and Computational Mathematics Unit.

The Department has particular research strength in combinatorics and graph theory, finite group theory, functional analysis, complex analysis, topology, numerical analysis and statistics.

Applicants should have a proven record in teaching and research in some branch of Pure Mathematics. Applications from candidates with expertise in Combinatorial Mathematics or other areas of Pure Mathematics related to Computer Science are particularly welcome.

Commencing salary will be established within the range NZ$37,440-NZ$49,088 per annum.

Conditions of Appointment and Method of Application are available from Appointments (38666), Association of Commonwealth Universities, 36 Gordon Square, London WC1H 0PF; or from the Assistant Registrar (Academic Appointments), University of Auckland, Private Bag, Auckland, New Zealand. Applications should be forwarded as soon as possible, but not later than **28th February 1991.**

The University of Auckland
An Equal Employment Opportunity Employer

## MATHEMATICIANS VISITING THE UK 1990-91

ABERDEEN UNIVERSITY

Dr W. Bareto (Cumana, Venezuela) Relativity, 90 - 91.

Professor R.J. Faudree (Memphis, U.S.A.) Graphs, Spring 91.

Professor F. Harary (New Mexico State University, U.S.A.) Graphs, June 91.

Dr A. Held (Bern, Switzerland) Relativity, Summer 91.

Dr A. Herdegen (Krakow, Poland) Relativity, 90 - 91.

Dr C. Hoensalaers (Max Planck, Munich, Germany) Relativity, Autumn 90.

Professor D. Holton (Otago, New Zealand) Graphs, Jan 91.

Professor A. Kono (Kyoto, Japan) Algebraic Topology, Mar - Oct 91.

Dr A. Lun (Monash, Australia) Relativity, Autumn 90.

Professor C. Nesetril (Charles University, Prague, Czechoslovakia) Graphs,
June 91.

Professor P.E. Parker (Wichita, U.S.A.) Relativity, Winter 90 - 91.

Dr Z. Perjes (Budapest, Hungary) Relativity, Spring 91.

Professor D. Slack (University of Virginia, U.S.A.) Algebraic Topology, Summer 91.

Professor J.S. Spielberg (Arizona State, U.S.A.) Operator Algebras, 1 Sept - 1 Dec 90.

Professor B.O.J. Tupper (New Brunswick, Canada) Relativity, Spring 91.

Professor W. Wallis (Southern Illinois University, U.S.A.) Graphs, June 91.

Professor Chen Yongping (Shenyang T.V. University) Fixed Point Theory, Session 90 - 91.

BIRKBECK COLLEGE

Professor T.M.M. Campos (PUC Sao Paulo) Genetic & Related Algebras, Dec 90 - Jan 91.

Professor T. Postelnicu (Centre for Mathematical Statistics, Bucharest) Statistics, Biomathematics, 3 weeks during the first half of 1991.

BIRMINGHAM UNIVERSITY

Mr. J. Best (University of Wollongong, Australia) Fluid Mechanics, Oct 90 - Jun 91.

Dr G. Fulford (Australian Defence Force, Canberra, Australia) Fluid Mechanics, Mar - Jun 91.

Dr A. M. Ngwengwe (University of Zambia, Zambia) Statistical Modelling, Oct - Dec 90.

Dr A. Osman (University of Kebangsaan, Malaysia) Fuchsian groups, Aug 90 - Feb 91.

BRADFORD UNIVERSITY

Dr J. Sztrik (University of Debrecen, Hungary) Stochastic Processes, Queueing and Reliability Theory, 14 Sep 90 - 28 Feb 91.

BRISTOL UNIVERSITY

Professor W. O. Criminale (University of Washington, U.S.A.) Hydrodynamic Stability, Sept - Nov 90.

Dr C. Jianning (University of Inner Mongolia, China) Plasma Physics, Oct 90 - Sept 91.

CAMBRIDGE UNIVERSITY D.A.M. & T.P.

Professor B.A. Bolt (University of California, Berkeley) Geophysical Fluid Dynamics, 1 Jan - 30 Mar 91.

Dr T. Berger (Institute of Theorentical Physics, Hamburg) High Energy Physics, 1 Oct 90 - 30 Sept 91.

Dr N. Deruelle (Paris) General Relativity, 1 Oct 89 - 30 Jun 91.

Dr J. Fernando (Arizona State University) Fluid Dynamics, 5 July - 4 Dec 90.

Dr G. Giavarini (University of Parma, Italy) High Energy Physics, 26 Apr 90 - 31 July 91.

Professor J-T. Jeong (Kum-Oh Institute of Technology) Fluid Dynamics, 15 Aug 90 - 15 Aug 91.

Dr J. Kiehl (N.C.A.R. Boulder, Colorado) Atmospheric Fluid Dynamics, 3 Sep 90 - 30 Sept 91.

Professor M. B. Lesser (Royal Institute Technology, Stockholm) Fluid Dynamics, 3 Jun - 28 Jul 91.

Professor L. Liu (Beijing Normal University) General Relativity, 1 Jan - 30 Jun 91.

Dr D.D. Reible (Louisiana State University) Fluid Dynamics, 1 Jan - 31 May 91.

Professor K.V. Rodzhdestvensky (U.S.S.R.) Fluid Dynamics, 1 Oct - 31 Nov 90.

Dr A.M. Samsonov (Leningrad, U.S.S.R.) Fluid Dynamics, 10 Oct - 20 Dec 90.

Professor K.S. Soh (University of Seoul, South Korea) General Relativity, 15 Sept 90 - 30 Sept 91.

Dr Y. S. Soibelman (University of Rostov, U.S.S.R.) High Energy Physics, 1 Jan - 30 Mar 91.

Professor C. Thorn (University of Florida) High Energy Physics, 1 Jan - 30 Jun 91.

Dr S. Vergniolle (C.N.R.S., Paris) Fluid Dynamics, 1 Jan - 31 Dec 91.

Dr J. Xu (Udan University, Shanghai) General Relativity, 1 Oct 90 - 31 Aug 91.

Dr J. Yoshida (Hokkaido University, Japan) Fluid Dynamics, 28 Mar 90 - 31 Mar 91.

CAMBRIDGE UNIVERSITY D.P.M. & M.S.

Professor A.V. Bukhvalov (Voznesenskii Institute of Finance & Economics, Leningrad), 10 Dec - 31 Dec 90.

Professor P. Casazza (University of Missouri) 90 - 91.

Professor W. Feldman (University of Arkansas) 90 - 91.

Dr S. Kamiya (Okayama University of Science) Sep 90 - Mar 92.

Dr K. Keating (University of Michigan) 90 - 91.

Dr J. Moerdijk, Lent 91.

Dr S.T. Swift, 90 - 91.

Professor N. Yui (Queen's University, Kingston) From Apr 91.

CITY UNIVERSITY

Dr R. Muniz (Universidade Federal Fluminense, Brazil) Low-Dimensional Magnetic Structures, 1 Aug 89 - 31 Aug 91.

Dr Z. Reut, Theoretical Mechanics, 1 Oct 90 - 31 Sept 91.

Dr M. Weinstein (Israeli Ministry of Defence, Israel) Theoretical Fluid Dynamics, 1 Oct - 31 Dec 90.

DURHAM UNIVERSITY

Professor F-J Pedit (Emory University, Atlanta, U.S.A.) Differential Geometry, Jan - Mar 91.

EDINBURGH UNIVERSITY

Professor B. Hughes (Vanderbilt University, U.S.A.) Topology, Aug 90 - Jun 91.

Professor J. Hunter (University of California, Davis) Nonlinear Wave Propagation, Jun - Jul 91.

Professor W. Vogel (Martin-Luther University, Halle-Wittenberg, Germany) Intersection Theory Commuta-

tive Algebra, 16 Sept - 15 Dec 91.
Professor M. Yamasaki (Josai University, Japan) Topology, Oct 90 - Sept 91.
Dr Zhang Tu-Sheng (Institute of Applied Mathematics, Academia Sinica, Beijing, China) Infinite Dimensional Stochastic Analysis, Sept 89 - Mar 91.

EXETER UNIVERSITY
Dr P.N. Anh (Mathematical Institute, Hungarian Academy of Sciences, Budapest, Hungary) Ring Theory, Nov 90 - Jan 91.

GLASGOW UNIVERSITY
Professor J.R. Cho (Pusan National University, South Korea) Group Theory, 1 Oct 90 - 30 Sept 91.
Professor A.K. Kabli (University of Makkah, Saudi Arabia) Analysis, 1 Oct 90 - 30 Sept 91.

HERIOT-WATT UNIVERSITY
Dr Y. Du (Shandong University, China) Nonlinear Functional Analysis; Partial Differential Equations, Oct 90 - Oct 91.

HULL UNIVERSITY
Dr M. Capinski (Institute of Mathematics, Krakow, Poland) Nonstandard Analysis, Stochastic Analysis, P.D.E's, Oct 90 - Sept 91.
Dr J.G. Maks (University of Technology, Delft, Holland) Clifford Algebras, Oct 90 - Sept 92.
Dr S.A. Ng (Hong Kong) Logic, Nonstandard Analysis, Oct 89 - May 92.

KEELE UNIVERSITY
Professor H.D. Brunk (Oregon State University U.S.A.) Mathematical Statistics, Apr - Sept 91.
Professor A.H. El-Mawaziny (The American University in Cairo, Egypt) Mathematical Statistics, Jan - June 91.

KENT UNIVERSITY
Professor J.A. Thas (University of Ghent, Belgium) Combinatorial Mathematics, Jan 91.

KING'S COLLEGE LONDON
Mr R. Agacy (James Cooke University, Australia) Relativity, 1 Jul - 30 Nov 90.
Professor T. Azuma (Dokkyo University, Japan) Cosmology and Relativistic, 1 Aug 90 - 31 Jul 91.
Dr N.V. Ivanov (Steklov Mathematical Institute, U.S.S.R.) Discrete Groups, Low Dimensional Topology, 1 month (not yet known).
Dr P. Kröger (University Erlangan-Nürnberg) Parabolic Differential Diffusion Processes, 1 Sept 90 - 31 Aug 91.

LANCASTER UNIVERSITY
Professor R. Jones (University of Colorado, U.S.A.) Statistics, Time Series, 8 - 15 Apr 91.
Dr E. Katsoulis (Athens University, Greece) Operator Algebras, 1 Oct 90 - 1 Oct 91.
Professor S. Zeger (Johns Hopkins, Baltimore, U.S.A.) Statistics, Time Series, 8 - 15 Apr 91.

LEEDS UNIVERSITY
Professor S.A. Amitsur (Hebrew University, Jerusalem) Algebra, 22 Apr - 31 May 91.
Dr N. Groenbaek (Copenhagen, Denmark) Cohomology of Banach Algebras, Feb - Mar 91.
Professor Teng Zhen Huan (Peking University, China) Fluid Mechanics, Apr 90 - Mar 91.
Professor J.O. Kessler (University of Arizona, U.S.A.) Pattern Formation in Micro-Organism Population, Aug 90 - Jul 91.
Dr V.K. Tyagi (University of Delhi, India) Mathematical Logic, 1 Feb - 1 Apr 91.
Dr G. Willis (Australia National University, Canberra, Australia) Banach Algebras, Derivations, Approx. Identities, Jan - 30 Jun 91.

LIVERPOOL UNIVERSITY
Dr U.N. Bhosle (Tata Institute, Bombay, India) Algebraic Geometry, 1 - 31 May 91.
Dr S. Izumiya (Sapporo, Japan) Singularities, 15 Apr 91 - 31 Jan 92.
Professor M.S. Narasimman (Tata Institute, India) Algebraic Geometry, 1 month between Feb & Aug 91.

LONDON SCHOOL OF ECONOMICS
Dr J. Lauri (University of Malta, Malta) Graph Theory, Oct 90 - Jul 91.

NEWCASTLE UPON TYNE UNIVERSITY
Professor M. Funakoshi (Kyushu University, Japan) Water Waves/Chaos, Sept 90 - Jun 91.

OPEN UNIVERSITY
Professor M. Bruckheimer (Weizmann Institute of Science, Israel) Using History in Mathematics Education, 18 Oct - 14 Nov 90.
Professor C.E. Lunneborg (University of Washington, U.S.A.) Statistics, Sept - 15 Dec 90.
Professor D. McNeil (McQuarrie University, Australia) Statistics, Oct - Dec 90.

OXFORD UNIVERSITY
Dr R.D. Braddock (Brisbane, Australia) Filtration, Mar - Sept 91.
Dr A.L. Carey (Adelaide University) Quantum Field Theory, Apr - May 91.
Dr H. Chate (Inst. Rech. Fond, France) P.D.E., May - Jun 91.
Professor D.M. Davis (Lehigh, U.S.A.) Homotopy, Oct - Dec 90.
Dr J.F. Harper (Wellington, New Zealand) Applied Mechanics, Sept 90 - Jun 91.
Dr A.K. Head (CSIRO, Australia) Mechanics, Sept - Dec 90.
Professor E. Herrmann (Stanford, U.S.A.) Mechanics Apr - Jun 91.
Dr D. Home (Bose Institute, Calcutta) Found. Qu. Mech., Aug 91.
Professor L.N. Howard (Florida State University) P.D.E., May - Jun 91.
Professor G.R. Ierley (Michigan Tech University) P.D.E., May - Jun 91.
Professor H.-P.A. Kunzi (Berne, Switzerland) Topology, 90 - 91.
Dr Li Jianguo (Tsinghua, China) Nonlinear Differentials, May - Dec 90.
Professor A.K. Macpherson (Bethlehem, U.S.A.) Crystal Growth, Sep - Dec 91.
Professor M.H. Mahowald (North West, Ill.) Topology, December 90.
Professor G. Michler (Essen, Germany) Fin Gr., Jan 91.
Professor F. Miraglia (Sao Paolo, Brazil) Mathematical Logic, 90 - 91.
Dr T. Muller (Frankfurt, Germany) Algebra, Aug 90 - Jan 91.

Dr A.G. Myasnikov (Siberian Academy Science) Math. Logic., Feb - Dec 91.
Professor J. Nakagawa (Joetsu University, Japan) Number Theory, Feb - Oct 91.
Professor N. Oda (Fukuoka University, Japan) Homotopy, Apr 90 - Mar 91.
Professor V.Q. Phong (Hanoi, Vietnam) Functional Analysis, Mar - Jun 91.
Dr A.L. Portuyagin (Academy of Science, USSR) Geophysics, Feb - Apr 91.
Professor A. Shalev (Jerusalem, Israel) Algebra, 90 - 91.
Dr U. Solitro (Padua, Italy) Logic, Jul - Dec 90.
Professor E.A. Spiegel (Columbia University, New York, U.S.A.) P.D.E., May - Jun 91.
Professor K. Tsuboi (Kanagawa, Japan) Differential Geometry, Aug 90 - Jan 91.
Dr S. Williams (University Queensland, Australia) Graph Theory & Combinatorics, Jan - Jun 91.
Dr T.W. Wright (US Army, Maryland, U.S.A.) Solid Mechanics, Sept 90 - Aug 91.
Professor O. Yanuschkevichiene (Lithuania) Char. Thms. Oct - Nov 90.
Dr E. Zelmanov (Novosibirsk) Jordan Algebra, Jan - Dec 91.

QUEEN MARY & WESTFIELD COLLEGE
Professor S. Bachmuth (University of California, U.S.A.) Algebra, Sept - Dec 90.
Professor P. Badadzhanov (Academy of Science of the Tajik SSR Dushunbe, USSR) Astrophysics, Stream Integration, 5 - 19 Nov 90.
Professor Groeneboom (Technical University of Delft, Holland) Statistics, 24 - 26 Oct 90.
Professor A. Harvey (New York University, U.S.A.) Relativity, 28 Oct - 10 Nov 90.
Professor J. Hall (Michigan State University, U.S.A.) Geometry, Sept 90 - Aug 91.
Dr B. Iyer (Ministere de l'Education Nationale DARC, Paris) General Relativity and Early Universe Cosmology, 1 Dec 90 - 1 Feb 91.
Professor L. Liu (Beijing University, China) Astrophysics, Relativity, 1 Jan - 1 Apr 91.
Professor A.W.C. Lun (Monash University, Victoria, Australia) Relativity, 28 Oct - 10 Nov 90.
Professor J. Martinez (University of Paris, France) Relativity, Sept 90 for 1 year.
Professor A. Shalev (Hebrew University, Jerusalem) Finite Group, Sept 90 - Jun 91.
Professor M. Valtonen (University of Turku, Finland) Few Body Problems Astrophysics, 5 - 19 Oct 90.
Professor J. Walton (University of Illinois, U.S.A.) Algebra, Sept - Dec 90.
Mr S. Yacai (Xiamen University, China) Lie Algebras, Nov 90 for 1 year.
Dr R. Zagretdwov (Kazan State University, USSR) Resonant Motions of Small Bodies in the Solar System, Jan - Sept 91.

QUEEN'S UNIVERSITY BELFAST
Professor Y.A. Abramovich (Indiana University - Purdue University at Indianapolis, U.S.A.) Functional Analysis, 14 - 27 Dec 90.

READING UNIVERSITY
Dr D.R. Stocks (University of Alabama at Birmingham, U.S.A.) Lattice Paths and Fibonacci Numbers, Foundations of Analysis, Oct 90 - July 91.

ROYAL HOLLOWAY & BEDFORD NEW COLLEGE
Dr J. Brüdern (Göttingen, Germany) Number Theory, Diophantine Approximation, 1 Mar - 1 Jul 91.
Professor Z. Dai (Beijing University, China) Cryptography, Jul 90 - Jun 91.
Professor J. Giles (Newcastle, N.S.W., Australia) Convex Analysis, 3 Dec 90 - 13 Jan 91.
Professor R. McFeat (University of Western Australia, Australia) Combinatorics, 31 Dec 90 - Jun 91

SALFORD UNIVERSITY
Mr K.K. Lai (City Polytechnic, Hong Kong) 2 - 9 Oct 90.
Dr M. Vujorsevic (Institute Mihajlopupin, Yugoslavia) 11 - 17 Nov 90.

SHEFFIELD UNIVERSITY
Dr L.V. Dutra (Instituto de Pesquisas Espaciais, Brazil) Signal Processing, Oct 90 - Sep 91.
Mr Tang Zhong Ming (Suzhou University, China) Algebra, Nov 90 -Oct 91.
Dr P. Schenzel (Martin-Luther Universität, Germany) Commutative Algebra & Algebraic Geometry, 3 Jan - 31 Mar 91.
Dr H. Zakeri (University for Teacher Education Tehran, Iran) Commutative Algebra, Sep 90 - Sep 91.

STIRLING UNIVERSITY
Dr S.K. Simić (University of Belgrade, Yugoslavia) Graph Theory, Sep 90.
Mr Y.S. Yang (Dalian University of Technology, China) Graph Theory & Computing, Sep 90 - Aug 91.

STRATHCLYDE UNIVERSITY
Professor G. Dassios (University of Patras, Greece) Applied Analysis, Apr 91.
Professor R.E. Kleinman (University of Delaware, U.S.A.) Applied Analysis, Feb 91.

ST ANDREWS UNIVERSITY
Professor W.O. Criminale (University of Washington, U.S.A.) Hydrodynamic Stability, 21 Nov 90 - 21 Jan 91.
Dr G. Howas (University of Queensland, Australia) Computational Group Theory, 22 Jun - 6 Jul 91.

SURREY UNIVERSITY
Dr M. Miura (Shinshu University, Japan) Statistics Applied to Seraculture, 1 - 31 Oct 90.
Dr C. Wang (Beijing Institute of Technology, China) Graph Theory and Combinatorics, 8 Oct 90 - 30 Sep 91.

U.M.I.S.T.
Dr N.M. Bogoliubov (Steklov Mathematical Institute, USSR) Quantum Integrable System, Quantum Statistical Mechanics, 1 Nov 90 - 31 Oct 91.

UNIVERSITY COLLEGE OF NORTH WALES
Professor M. Pfenniger (Swiss Federal Institute of Technology, Switzerland) Homotopy, Category Theory, Oct 90 - Sep 92.

WARWICK UNIVERSITY
Professor J.L. Alperin (Chicago University, U.S.A.) Groups, Rings and Representations, Spring & Summer Terms.
Professor S.A. Amitsur (Hebrew University, Israel) Groups, Rings and Representations, Summer Term.
Professor H.H. Andersen (Aarhus University, Denmark) Groups, Rings and Representations, Summer Term.

Professor M. Auslander (Brandeis University) Groups, Rings and Representations, Summer Term.
Professor M. Broué (Ecole Normale Superieure, France) Groups, Rings and Representations, Summer Term.
Professor R.A. Bryce (Australian National University, Australia) Groups, Rings and Representations, Summer Term.
Professor D. Buchsbaum (Brandeis University) Groups, Rings and Representations, Summer Term.
Professor J.F. Carlson (Georgia University, U.S.A.) Groups, Rings and Representations, Spring & Summer Terms.
Professor D.K. Chun (Chonbuk National University) Topology, Autumn Term.
Professor E. Cline (Oklahoma University, U.S.A.) Groups, Rings and Representations, Summer Term.
Professor J. Cossey (Australian National University, Australia) Groups, Rings and Representations, Spring Term.
Dr Zhu Deming (East China Normal University) Nonlinear Systems, 90 - 91
Dr D. Deriziotis (Crete University) Groups, Rings and Representations, Autumn & Spring Terms.
Professor P. Fong (Illinois University, U.S.A.) Groups, Rings and Representations, Summer Term.
Professor E. Friedlander (Northwestern University, U.S.A.) Groups, Rings and Representations, Summer Term.
Professor J.I. Hall (Michigan State University, U.S.A.) Groups, Rings and Representations, Summer Term.
Professor H. Heineken (Würzburg University) Groups, Rings and Rrepresentations, Spring Term.
Professor R.B. Howlett (Sydney University, Australia) Groups, Rings and Representations, Spring & Summer Terms.
Professor J.E. Humphreys (Massachusetts University, U.S.A.) Groups, Rings and Representations, Summer Term.
Professor M. Isaacs (Wisconsin University, U.S.A.) Groups, Rings and Representations, Summer Term.
Professor J.C. Jantzen (Oregon University, U.S.A.) Groups, Rings and Representations, Summer Term.
Professor A. Joseph (Weizmann Institute, Israel) Groups, Rings and Representations, Summer Term.
Dr A.S. Jones (Queensland University, Australia) Nonlinear Differential Equations, 90 - 91.
Professor Zun-xian Li (Beijing Language Institute, China) Groups, Rings and Representations, Spring & Summer Terms.
Mr Zhang Lianping (Shanzi University, China) Functional Analysis, 90 - 91.
Dr L. Liu (Wuhan University, China) Markov Processes, 90 - 91.
Dr C. Marijuan López (Valladolid University, Spain) Singularity Theory, Spring & Summer Terms.
Professor G. Lusztig (M.I.T., U.S.A.) Groups, Rings and Representations, Summer Term.
Professor Han Moaon (Shanghai International University, China) ODEs and Dynamical Systems, 90 - 91.
Professor G. Michler (Essen University, Germany) Groups, Rings and Representations, Spring Term.
Professor J. Neubüser (Technische Hochschule, Aachen, Germany) Groups, Rings and Representations, Spring Term.
Professor M.F. Newman (Australian National University, Australia) Groups, Rings and Representations, Spring Term.
Professor B. Parshall (Virginia University, U.S.A.) Groups, Rings and Representations, Summer Term.
Professor D.S. Passman (Winsconsin University, U.S.A.) Groups, Rings and Representations, Summer Term.
Dr E. Pickersgill (Moscow University, USSR) Singularity Theory, 90 - 91.
Professor W. Plesken (Technische Hochschule, Aachen, Germany) Groups, Rings and Representations, Spring Term.
Professor L. Puig (Ecole Normale Superieure, France) Groups, Rings and Representations, Summer Term.
Professor I. Reiten (Trondheim University, Norway) Groups, Rings and Representations, Spring Term.
Professor D.J.S. Robinson (Illnois University, U.S.A.) Groups, Rings and Representations, Summer Term.
Dr I. Sarac (Uludag University) Analysis, 90 - 91.
Professor L. Scott (Virginia University, U.S.A.) Groups, Rings and Representations, Summer Term.
Professor C.M. Scoppola (Trento University, Italy) Groups, Rings and Representations, Spring & Summer Terms.
Professor G.M. Seitz (Oregon University, U.S.A.) Groups, Rings and Representations, Spring Term.
Professor C.C. Sims (Rutgers University, U.S.A.) Groups, Rings and Representations, Spring Term.
Professor S.D. Smith (Illinois University, U.S.A.) Groups, Rings and Representations, Summer Term.
Professor T.A. Springer (Utrecht University, Holland) Groups, Rings and Representations, Spring Term.
Professor B. Srinivasan (Illinois University, U.S.A.) Groups, Rings and Representations, Summer Term.
Professor T. Taniguchi (Kurume University) Analysis, 90 - 91.
Professor Y. Tsujji (Kyoto Sangyo University, Japan) Probability Theory and Fractal Theory, 90 - 91.
Professor A. Turull (Miami University, U.S.A.) Groups, Rings and Representations, Spring Term.
Professor N. Vavilov (Leningrad State University, USSR) Groups, Rings and Representations, Spring Term.
Professor Z.X. Wan (Institute of Systems Science, Beijing, China) Groups, Rings and Representations, Spring Term.
Professor W.J. Wong (Notre Dame University, U.S.A.) Groups, Rings and Representations, Spring & Summer Terms.
Professor G. Zacher (Padua University, Italy) Groups, Rings and Representations, Autumn & Summer Terms.
Professor Huaizhong Zhao (Institute of Applied Mathematics, Beijing, China) Dynamical Systems, 90 - 91.

YORK UNIVERSITY

Professor Y.V. Melnichuk (Lvov Institute) Number Theory, Oct 91.
Professor J. Rossi (Virginia Polytechnic Institute & State University, U.S.A.) Complex Analysis, Sep - Dec 90.
Professor J.C. Turner (University of Waikao, New Zealand) Braid Groups, Sep - Dec 90.

# Cambridge Mathematics

## Infinite-Dimensional Lie Algebras

Third Edition

**VICTOR G. KAC**

This is the third, substantially revised edition of an important monograph which is self contained and sufficiently detailed to be used for graduate courses. Applications in mathematics and mathematical physics are discussed in relation to the basic theory.

£40.00 net PB 0 521 37215 1
432 pp. 1990

*Now in paperback*

## Logic and Computation

Interactive Proof with Cambridge LCF

**L. C. PAULSON**

This book is concerned with techniques for formal theorem-proving, with particular reference to Cambridge LCF (Logic for Computable Functions). Part I outlines the mathematical preliminaries, elementary logic and domain theory, and explains them at an intuitive level. Part II serves as a reference manual for Cambridge LCF.

£13.95 net PB 0 521 39560 7
320 pp. 1990
*Cambridge Tracts in Theoretical Computer Science 3*

## The Popularization of Mathematics

Edited by **A. G. HOWSON** and **J.-P. KAHANE**

This book presents papers arising from the ICMI study seminar organized in conjunction with a highly successful touring exhibition known as the 'Pop Maths Roadshow'. It will be essential reading for all mathematical educators and those interested in the popularization of mathematics.

£25.00 net HB 0 521 40319 7
£8.50 net PB 0 521 40867 9
224 pp. 1990
*ICMI Study Series*

## Stochastic Flows and Stochastic Differential Equations

**HIROSHI KUNITA**

This book gives a systematic treatment of the theory of stochastic differential equations and stochastic flows of diffeomorphisms, and through the former studies the properties of stochastic flows. The book is based on lectures given by Professor Kunita and can be used with advanced courses on probability theory or for self-study.

£40.00 net HB 0 521 35050 6
360 pp. 1990

For further information contact Susan Chadwick at the address below

**Cambridge University Press**

The Edinburgh Building, Cambridge CB2 2RU, UK.

## LONDON MATHEMATICAL SOCIETY DURHAM SYMPOSIA

There will be three Symposia in 1991:

**28th June - 8th July:** *Probabilistic Methods in Combinatorics*

Organisers: Dr B. Bollobás*, Dr T.I. Fenner, Professor A.D. Barbour.
Main Speakers: P. Erdos, P. Flajolet, A.M. Frieze, S. Janson, R.M. Karp, T. Luczak, J.M. Steele.

**9th July - 19th July:** *Conformal Field Theory*

Organisers: Dr P. Goddard*, Professor D.I. Olive.
Main Speakers: M.F. Atiyah, S. Donaldson, V. Kac, T. Miwa, G. Moore, W. Nahm, G. Segal, A. Zamolodchikov, J.-B. Zuber.

**20th July - 30th July:** *Application of Categories in Computer Science*

Organisers: Professor M.P. Fourman, Dr P.T. Johnstone, Dr A.M. Pitts*.
Main Speakers: P-L. Curien, P.J. Freyd, A.R. Meyer, J.C. Reynolds, D.S. Scott, G. Winskel.

These research symposia are organised under the auspices of the London Mathematical Society and are supported by Research Grants from SERC. There may be a few places available for mathematicians not yet invited. Those interested should write for more information to the organisers marked * at the following addresses:

Dr B. Bollobás, Department of Pure Mathematics and Mathematical Statistics, University of Cambridge, 16 Mill Lane, Cambridge CB2 1SB.

Dr P. Goddard, DAMTP, University of Cambridge, Silver Street, Cambridge CB3 9EW.

Dr A.M. Pitts, University of Cambridge, Computer Laboratory, Pembroke Street, Cambridge CB2 3QG.

The Durham Symposia committee is planning the following symposia for 1992:

**4 July-14 July:** *Evolutionary problems* (modelling and numerical.analysis of non-linear dynamical systems).

Organisers: Professor C.T.H. Baker (Manchester), Dr. D. Griffiths (Dundee), Dr. R. Thomas (UMIST).

**14 July-24 July:** *Non-commutative rings - new directions.*

Organisers: Dr T.H. Lennagan (Edinburgh), Dr K.A. Brown (Glasgow).

**21 July-31 July:** *The geometry of operator algebras and Banach spaces.*

Organisers: Dr A.M. Sinclair (Edinburgh), Dr T.K. Carne (Cambridge), Dr S. C. Power (Lancaster).

The programme for subsequent years is taking shape but is not yet firmly fixed. Members of the Society who wish to propose Durham Symposia are invited to write to the Chairman of the Durham Symposia Committee, who is Dr Peter M. Neumann, The Queen's College, Oxford OX1 4AW.

## MATHEMATICAL MEDAL

The Union of Czechoslovak Mathematicians and Physicists awarded its Mathematical Medal to Professor W.N. Everitt. It was awarded for his outstanding scientific results and for his significant contribution to the co-operation and friendship between Czechoslovak and British mathematicians.

## SYMPOSIUM ON ARITHMETIC IN HONOUR OF BRYAN BIRCH

To celebrate the 60th birthday of Bryan Birch, a symposium will be held in Oxford on 27th and 28th September 1991. The programme will include talks by J. Coates, B. Gross, K. Rubin, A. Scholl, J-P. Serre and Sir H. P. F. Swinnerton-Dyer, and a celebratory meal. The meeting will be supported by the London Mathematical Society.

For further details contact Dr N.M. Stephens, Department of Computing Mathematics, University of Wales College of Cardiff, Cardiff CF2 4YN. E-mail: nelson@uk.ac.cf.cm. The organisers are A.J. Scholl, and N.M. Stephens.

## BRITISH MATHEMATICAL COLLOQUIUM

The 43rd British Mathematical Colloquium will be held at the University of Bath, from Tuesday 26th to Thursday 28th March 1991. The list of speakers is as follows: S.I. Adian (Steklov, Moscow), H. Brézis (Paris), I. Ekeland (Paris), A.M. Odlyzko (AT&T Bell Labs), G.R. Brightwell (LSE), C.J.B. Brookes (Cambridge), A.P. Carbery (Sussex), C.M. Goldie (QMW), F.C. Kirwan (Oxford), W. Ledermann (Sussex), A.J. Macintyre (Oxford), U. Martin (RHBNC), M.J. Micallef (Warwick), R.W.K. Odoni (Glasgow), D. Preiss (UCL), J.N. Ray (Manchester), D.A. Salamon (Warwick), R.S. Ward (Durham).

There will also be a civic reception, a demonstration of the use of mathematical software on Sun workstations and other computers, and a discussion session on mathematics education led by D.N. Burghes (Exeter).

Bookings must be received by 28th February, and reduced registration fees apply until 31st January. UK members are receiving booking forms with this Newsletter, and further copies are obtainable from Dr G.R. Burton, School of Mathematical Sciences, University of Bath, Claverton Down, Bath BA2 7AY, telephone 0225 826218, e-mail grb@uk.ac.bath.maths.

# Modern German classics now available in English

J. Liouville 1809–1882

**R. Remmert,** University of Münster

## *Theory of Complex Functions*

### *Readings in Mathematics*

Translated from the German by R. B. Burckel

1990. XVIII, 440 pp. 68 figs. (Graduate Texts in Mathematics, Vol. 122)
Hardcover £42.00 ISBN 3-540-97195-5

**Contents:** Historical Introduction. – Chronological Table. – Elements of Function Theory. – The Cauchy Theory. – Cauchy-Weierstrass-Riemann Function Theory.

The material from function theory, up to the residue calculus, is developed in a lively and vivid style, well motivated throughout by examples and practice exercises. Additionally, there is ample discussion of the historical evolution of the theory, biographical sketches of important contributors, and citations (original language together with English translation) from their classical works. Yet the book is far from being a mere history of function theory. Even experts will find here few new or long forgotten gems, like Eisenstein's novel approach to the circular functions.
This book is destined to accompany many students making their way into a classical area of mathematics which represents the most fruitful example to date of the intimate connection between algebra and analysis. For exam preparation it offers quick access to the essential results and an abundance of interesting inducements. Teachers and interested mathematicians in finance, industry and science will also find reading it profitable, again and again referring to it with pleasure.

**J. H. Ewing,** Indiana University, Bloomington, IN (Ed.)

## *Numbers*

By **H.-D. Ebbinghaus, H. Hermes, F. Hirzebruch, M. Koecher, K. Mainzer, J. Neukirch, A. Prestel, R. Remmert**

With an Introduction by K. Lamotke

Translated from the German by H. L. S. Orde

1990. XVIII, 395 pp. 24 figs. (Graduate Texts in Mathematics. Subseries: Readings in Mathematics, Vol. 123)
Hardcover £35.00 ISBN 3-540-97202-1

**Numbers** aims to present the structure of number systems. Starting with the basic number system, from the natural numbers to the complex numbers (part A); it then moves on to the "hypercomplex numbers" (part B); and finally introduces two relatively new extensions of the real number system (part C). The authors emphasize the historical foundation of modern mathematics.

Springer-Verlag
Berlin
Heidelberg
New York
London
Paris
Tokyo
Hong Kong
Barcelona

☐ Heidelberger Platz 3, D-1000 Berlin 33 ☐ 175 Fifth Ave., New York, NY 10010, USA ☐ 8 Alexandra Rd., London SW19 7JZ, England ☐ 26, rue des Carmes, F-75005 Paris ☐ 37-3, Hongo 3-chome, Bunkyo-ku, Tokyo 113, Japan ☐ Citicorp Centre, Room 1603, 18 Whitfield Road, Causeway Bay, Hong Kong ☐ Avinguda Diagonal, 468-4° C, E-08006 Barcelona

## DRAFT PRINCIPLES FOR THE FUTURE OF AS/A LEVEL EXAMINATIONS

The Education Committee responded on behalf of the London Mathematical Society to the consultation document issued by the Schools Examinations and Assessment Council in September 1990. The document sets out 33 principles (some with up to 18 subsidiary principles) which are intended to govern AS/A level examinations in England and Wales from 1996. Since the corresponding courses will have to start in 1994, with new syllabuses being approved by SEAC in 1993, there is very little time for syllabus writers, examination boards and higher education institutions to prepare for the new system.

The response document includes 80 questions and was sent to all local authorities, colleges of higher education, polytechnics and universities as well as nearly 200 other bodies including the LMS. There is some doubt whether SEAC can take adequate notice of the answers within the timetable set by the government. However, as some of the draft principles could have a dramatic effect on 16-19 mathematics, we give for information a precis of a few of the principles together with a precis of our response.

SEAC : *AS and A level syllabuses should be designed to encourage learning to the same standard over a 2-year period. AS level should embrace the essence of advanced level work, while A level in the same subject should extend the range of contest and occupy about twice the teaching and learning time.*

LMS : It would seem to us that breadth and depth in mathematics are inseparable. If so, it is neither possible nor meaningful to reach "the same standard " in half the syllabus, and it is simplistic to think that the " essence" of advanced level mathematics can be defined. There should be the possibility of a certificated exit qualification after one year of a 2-year course.

SEAC : *Subject cores should be developed and included in every AS or A level syllabus bearing the relevant title.*

LMS : In mathematics it may be necessary to have a collection of cores with different titles and different purposes.

SEAC : *AS and A examinations are discrete subject-based examinations in which the syllabuses provide for the assessment of a coherent body of knowledge, understanding and skills... AS syllabuses should be varied in character, available in single disciplines, combinations of disciplines and in broad-based subject areas such as science, social sciences and the performing arts.*

LMS : The second principle should not be limited to AS-level but is in any case at odds with the first principle.

SEAC : *All AS and A level syllabuses should ensure rigour and depth of study appropriate to the discipline... and should encourage breadth of learning and experience through the incorporation of core skills, cross-curricular themes, a variety of modes of learning and appropriately selected subject matter.*

LMS : Again the two principles are potentially contradictory unless the first is qualified by the additional phrase 'and appropriate to the level of attainment of the students' and the second by the phrase 'as appropriate to the subject concerned'. The requirement for core skills should not, for example, impose modern language skills on AS/A level mathematics (or vice versa).

SEAC : *AS and A assessment must be reliable and valid, and the current standards must be maintained... syllabuses and assessment tasks should be designed to be suitable for students capable of achieving level 7 of the national curriculum.*

LMS : The two principles are contradictory. Current AS and A level assessment is not reliable (cf cross-subject comparisons showing that mathematics is harder than other subjects and the striking variations in AS mathematics results from board to board). While the current A/B grades represent a satisfactory standard, the current D/E grades more often represent failure at a course which was too hard for the student. Students entering at levels 7/8 of the national curriculum should be offered a ladder of interim qualifications based on positive achievement on an easier syllabus which bridges the gap between intermediate level GCSE and A level.

SEAC : *Reporting of AS/A assessments should be helpful and relevant to all users, provide a clear record of the student's attainment in the core skills, and assist the process of building up a record of achievement.*

LMS : It must be quick, not too complicated and not too expensive. There is a danger that these principles will lead to administratively complex procedures creating impossible burdens on teachers, examination boards and the higher education admissions process.

Other important issues covered in the document are the assessment of modular AS/A level schemes, the assessment and moderation of coursework and the internal procedures of examination boards but it is strongly silent about the relationship between AS/A levels and BTEC or other technical/vocational qualifications. LMS members who have questions not answered by this brief summary are encouraged to write to me at the Science Education Department, University of Warwick.

R.L.E. Schwarzenberger
Chairman, Education Committee

Edmund Taylor Whittaker (1873-1956) FRS, a pupil of Forsyth and Darwin at Cambridge, became second Wrangler in 1895 and Smith's Prizeman in 1897. His *Introduction to Modern Analysis* (first written without Watson) of 1902, and his *Analytical Dynamics* of 1904 were the first rigorous modern books on their subjects in English. Also noteworthy is his *History of Theories of Aether and Electricity*. From 1906 to 1912 he was the Astronomer Royal of Ireland. He taught Eamon de Valera, who later consulted him about setting-up the Dublin Institute for Advanced Study. He was elected a Fellow of the Royal Society in 1905, won the Royal Society's Royal Medal (1916), the Sylvester Medal (1931) and Copley Medal (1954). He received the London Mathematical Society's De Morgan Medal in 1935 and was the Society's 33rd President, from 1928-1929.

## 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.

**1990**

| | |
|---|---|
| DECEMBER | |
| 7 | Edinburgh Mathematical Society Meeting, Napier College Edinburgh (176) |
| 9-12 | Canadian Mathematical Society Winter Meeting, Canada (177) |
| 17-20 | Texas/ESO-CERN Symposium, Brighton (176) |

**1991**

| | |
|---|---|
| JANUARY | |
| 10-11 | Discrete Groups and Geometry Conference, Birmingham (177) |
| 18 | LMS Meeting, London |
| 18 | Edinburgh Mathematical Society Meeting, Heriot-Watt (176) |
| 21-2 Feb | Geometry Conference, Thailand (177) |
| FEBRUARY | |
| 15 | LMS Meeting, Lancaster |
| 15 | Edinburgh Mathematical Society Meeting, Edinburgh (176) |
| MARCH | |
| 15 | LMS Meeting, London |
| 15 | Edinburgh Mathematical Society Meeting, Dundee (176) |
| 25-29 | British Mathematical Colloquium, Bath (176)(177) |
| APRIL | |
| 9-12 | British Applied Mathematics Colloquium, Oxford (177) |
| 15-19 | J.E. Marsden, LMS Invited Lectures, Southampton (177) |
| 23-26 | Mathematical and Numerical Aspects of Wave Propagation Phenomena, France (172) |
| MAY | |
| 3 | Edinburgh Mathematical Society Meeting, Stirling (176) |
| 7-14 | Number Theory Workshop, Singapore (177) |
| 17-18 | 2-day LMS Meeting, Oxford |
| 27-29 | Computing and Information Conference, Canada (177) |
| JUNE | |
| 1 | Edinburgh Mathematical Society Meeting, St Andrews (176) |
| 9-14 | Fixed Point Theory and Applications Conference, Canada (177) |
| 13 | LMS Meeting, London |
| 17 | London Mathematical Society Popular Lectures, Sheffield |
| 28 | London Mathematical Society Popular Lectures, Imperial College, London |
| JULY | |
| 1-5 | The Mathematics of Nonlinear Systems, Bath (168)(175)(177) |
| 7-12 | Gregynog Symposium on Differential Equations, Gregynog (176) |
| 8-12 | British Combinatorial Conference, Surrey (165) |
| 8-12 | Australian Mathematical Society Annual Conference, Australia (177) |
| 8-14 | Radicals, Hungary (172) |
| 13-16 | British Congress of Mathematics Education, Loughborough (170) |
| 22-26 | Computational and Applied Mathematics Congress, Ireland (167) |
| AUGUST | |
| 18-24 | Number Theory Association Conference, Canada (177) |
| SEPTEMBER | |
| 25-27 | Numerical Methods in Fluid Mechanics, Switzerland (174) |
| OCTOBER | |
| 18 | LMS Meeting, London |
| NOVEMBER | |
| 15 | 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, to arrive before the first day of the month prior to publication. Telephone 071- 437 5377, Fax 071-439 4629, E-mail lms@uk.ac.kcl.cc.oak.

Printed by Boyatt Wood Press, Southampton (0703) 333132