THE LONDON MATHEMATICAL SOCIETY NEWSLETTER

No. 196 **July 1992**

FORTHCOMING SOCIETY MEETINGS

Friday 16 October 1992, Burlington House
Meeting on Functional Analysis
L.J. Bunce, E.M. Christensen, A. Connes, C.M. Edwards

Friday 20 November 1992, Burlington House
Annual General Meeting
J.F.C. Kingman, P. Whittle

LMS 1992 PRIZES

The De Morgan Medal is awarded to A. Fröhlich for his many important contributions in algebraic number theory.

The Senior Berwick Prize is awarded to J. Eells for his paper 'Another report on harmonic maps', Bull. London Math. Soc. 20 (1988) 385-524 (written jointly with L. Lemaire).

Junior Whitehead Prizes are awarded to K.M. Ball for his work on finite-dimensional convexity theory, and to R.E. Borcherds for his work on mathematical aspects of conformal field theory.

R.Y. Sharp
Council and General Secretary

INVITED LECTURES SERIES

The Society's Invited Lectures series consists of meetings at which a single speaker gives a course of about ten expository lectures, examining some subject in depth, over a five day period (Monday to Friday) during a University vacation. The meetings are residential and open to all interested. It is intended that the texts of the lectures given in the series shall be published. In addition to full expenses, the lecturer is offered a fee of £1000 for giving the course and a further fee of £1500 on delivery of the text in a form suitable for publication. Previous lecturers in the series have been Professor R. Melrose, Professor J.E. Marsden and Professor P.J. Olver.

For the 1994 meeting, proposals are now invited from any member who, in addition to suggesting a topic and lecturer, would be prepared to organize the meeting at the member's own institution or a suitable conference centre. Enquiries about this series should be directed to the Meetings and Membership Secretary, A.R. Pears, Department of Mathematics, King's College London, Strand, London WC2R 2LS (telephone: 071-873-2852) to whom proposals should be sent no later than 31 August 1992.

MATHEMATICAL WHO'S WHERE 1992

This booklet gives the names of over 1500 mathematicians working at universities and similar institutions in the United Kingdom. A copy is enclosed with this mailing of the Newsletter to each LMS member with an address in the area covered by the directory. Copies are available for purchase, price £3.00 or US$6.00 inclusive of postage, from the Administrator, London Mathematical Society, Burlington House, Piccadilly, London W1V 0NL. Cheques should be made payable to "The London Mathematical Society".

PROGRAMME AND CONFERENCE FUND

The Society's Programme and Conference Fund is used to give financial support to various mathematical activities in the UK. This fund is administered by the Society's Programme Committee. Grants are made under three main headings.

1. Scheme 1 Visitors

Under this scheme, a speaker from abroad is invited to spend about two weeks in the UK, to address a Society Meeting and to give lectures in three or four separate institutions. The Society pays the cost of the visitor's travel to and from the UK and living expenses in London, and the host institutions are expected to share the cost of travel within the UK and local accommodation. LMS Council is anxious that greater use should be made of this scheme to enhance, by such visits, the benefit of LMS membership to those who are not easily able to attend London meetings. In planning the Society's future meetings, Programme Committee will have this scheme in mind, and suggestions from UK institutions for visitors they would like to receive but whose expenses they could not normally afford are strongly encouraged. Programme Committee tries to plan Society Meetings at least six months in advance. Thus a suggestion for a visitor under this scheme should best be made about one year before the proposed visit.

2. Scheme 2 Visitors

Under this scheme, some financial support is provided for visitors to the UK who do not address a Society Meeting but will give lectures in at least three separate institutions. Exceptionally, support under this scheme might be provided for a speaker addressing just one meeting which is regional in scope. The LMS contribution under this scheme would be for the visitor's travelling expenses to and from the UK. Host institutions are expected to share the cost of travel within the UK and local accommodation. All arrangements for a visit supported under this scheme are the responsibility of the member who makes the application. An application, in the form of a letter to the Meetings and Membership Secretary (address below), can be submitted at any time, but should normally be made at least three months before the starting date of the proposed visit, so that the lectures to be given can be publicized in the Society's Newsletter. Applicants are encouraged to seek advantageous airfares and should quote a fare in the application. Grants under this scheme do not normally exceed £300. In the past six months, grants have been made under Scheme 2 to support the following visits: Professor F. Helein (J.C. Wood), Professor S. Goldstein (J.M. Lindsay), Dr A. Pazhitonov (E.G. Rees), Professor P.M. Gruber (P. McMullen), Professor J. Matousek (D.G. Larman), Professor M. Lorenz (K.A. Brown), Dr S.P. Tsarev (J. Gibbons), Dr A.B. Aleksandrov (N.J. Young), Professor A.M. Vinogradov (F.J. Bloore), Professor A. Kock (R. Brown), Dr G. Litvinov (E. Kissin), Dr S.P. Tan (W.J. Harvey).

3. Financial Support for Conferences

Grants are made from the Conference Fund to the organizers of conferences to be held in the United Kingdom. Programme Committee tends to give priority to the support of small meetings where an LMS grant can be expected to make a significant contribution to the viability and success of the meeting. Support of larger meetings of high quality is not ruled out but for such meetings an LMS grant would normally cover only part of the total cost. An Application Form, obtainable from the Meetings and Membership Secretary (address below), sets out conditions under which grants are normally made and requests the information Programme Committee usually requires when considering an application.

The following grants for support of conferences have been made within the past six months: £112 to J.G. Fauvel for "History of Mathematics: Research in Progress" held at Imperial College London in February 1992; £900 to J. Howie for the "Scottish Algebra Day" held at Heriot-Watt University in March 1992; £1000 to C.J. Budd for the "25th European Study Group with Industry" held at Bristol in April 1992; £570 to D.A. Lavis for the "One-Day Conference in Statistical Mechanics" held at King's College London in May 1992; £335 to A.J.W. Hilton for the "Reading One-Day Combinatorics Colloquium" held at Reading in May 1992; £100 to

J.K. Truss for the "One-Day Meeting on Model Theory and Groups" held at Leeds in May 1992; £1100 to W.J. Harvey for "Discontinuous Groups" held at King's College London in June 1992; £250 to A.J. Baker for the "Workshop on Moonshine and Related Topics" held at Glasgow in June 1992; £250 to J.M. Anderson for the "Function Theory Meeting" to be held at University College London in September 1992; £900 to I.J. Leary for the "7th British Topology Meeting" to be held at QMW London in September 1992.

Further information about these functions of Programme Committee can be obtained from the Meetings and Membership Secretary, A.R. Pears, Department of Mathematics, King's College London, Strand, London WC2R 2LS, telephone 071-873-2852, who will be pleased to discuss proposals informally with potential applicants and to give advice on submission of an application to the Society. The next meeting of Programme Committee will be held in September and it would be a great help if suggestions and applications to be considered at that meeting could be submitted no later than 31st August 1992.

EDUCATION COMMITTEE - GRANTS

The London Mathematical Society's Education Committee would welcome requests for support for activities such as popular lectures, exhibitions, masterclasses and mathematical competitions that help to encourage joint ventures between higher education institutions and schools, or the development of projects that would improve the 'Public Image of Mathematics'. To make the job of the Committee as simple as possible any application for support should contain a brief description of the proposed event or project (at most 2 pages plus covering letter). In this the general background of the project should be sketched out. This may typically be of the general form used when seeking sponsorship. A fairly detailed account of

1) the present financial position of the project

2) the expected levels of sponsorship from other sources

3) the expected expenditure and the reasons for needing LMS help

should be provided, together with some indication of the mathematical content of the activities.

The Committee meets in April, September and January, so please apply in good time before the event. Requests should be sent to Dr T. Porter, School of Mathematics, University College of North Wales, Dean Street, Bangor LL57 1UT. Informal contact may be made via MASO13@uk.ac.bangor.vaxa, but it would make my job easier if I can receive the 'formal' application via ordinary mail.

T. Porter
Secretary, Education Committee

INNOVATION IN MATHEMATICS TRAINING

Several years ago, the London Mathematical Society's Education Committee initiated a survey of Innovation in Mathematics courses. The idea of this was to produce a document, which would be frequently updated, that would list some attempts to teach Mathematics in an innovative way.

Often the lecturer faced with renovating an existing course or starting a new one from scratch, has to repeat arguments that surely must have been thrashed out by others. That lecturer should not have to "reinvent the wheel", so the "Innovation Survey" document was thought up to enable lecturers, in such a situation, to have some idea who has faced the problem before. A contact name may save hours of work, and lead to a collaboration between institutions to produce joint material, cutting out useless duplication of effort, whilst retaining academic curricular autonomy. It may also lead to publication of articles on the innovation in suitable educational journals.

In order for the document to be useful it needs to be kept up to date and it needs to be available for people to use. Please contact me if you would like a copy or if you wish to add or amend an entry. T. Porter, Secretary, Education Committee. E-mail: MASO13@uk.ac.bangor.vaxa. Address: School of Mathematics, University of Wales at Bangor, Dean Street, Bangor, Gwynedd LL57 1UT.

BRITISH TOPOLOGY MEETING

The 7th British Topology Meeting will take place at Queen Mary & Westfield College on 16th and 17th September. The programme will consist of talks of length approximately 30 minutes. Offers to speak on any aspect of topology are welcome, and space will be available for displaying preprints and posters. The cost of registration, dinner, bed and breakfast for one night will be £35.78.

This meeting is supported by the London Mathematical Society. This money will be used to support those who cannot obtain funding from their own institutions. If you, or any research students that you know, are interested in attending, contact Ian Leary, 7th British Topology Meeting, School of Mathematical Sciences, Queen Mary & Westfield College, Mile End Road, London E1 4NS. Email: ijl@uk.ac.qmw.maths. Telephone: 071 975 5520.

HISTORY OF RECREATIONAL MATHEMATICS

The first UK meeting on 'The History of Recreational Mathematics' will be held at the South Bank Polytechnic on Saturday 24th October 1992 from 10:00 to 18:00. Speakers and the titles of their talks are: A. Newing 'The Life and Work of H.E. Dudeney'; C.C. Lewin 'Early War Games'; R.C. Bell 'Early Gambling'; J. Beasley 'Some 18th Century Books on Recreational Mathematics'; E. Hordern 'Puzzles in History'; I. Finkel 'Ancient Games'; D. Singmaster 'The Centenary of Rouse Ball's Mathematical Recreations and Essays'.

A number of speakers will bring historical books and puzzles which can be examined after the talks. Anyone else is welcome to bring items of historical interest for this exhibition period. For further information contact David Singmaster, Computing, Information Systems and Mathematics Department, South Bank Polytechnic, London SE1 0AA. Telephone 081-928 8989 ext. 2050.

COMMUNICATION SKILLS

Having just read the admirable report of the Society's Working Group on Honours Degree Courses, I am impressed by their insistence on the importance of Communication Skills for Mathematics Graduates. It is now generally accepted that mathematicians as a whole are deficient in these skills. We should ask whether this is a fact of nature or a result of training

Many students of the Humanities must write an essay a week and discuss its style and content with his teachers in the presence of his peers. Their apparent ease in communicating was not won lightly.

Furthermore, communication of mathematical material presents significant extra difficulties and challenge. The syntax must be pedantically precise yet lucid. The technical jargon of the mathematician is as different from standard English as the Doric dialect of Aberdeenshire from the Cockney. It can be learned, like all languages, only by complete immersion.

The idea of a Third Year Project, both to help with communication skills and for general educational reasons, is admirable. But it's not enough by itself. The need to communicate should be emphasised at every stage of the educational ladder. When, for instance, a student is asked for the maximum value of $x - x^2$, he or she should be penalized for anything less than the complete sentence: "The maximum value 1/4 for the function $x - x^2$ is attained when $x = 1/2$".

I would suggest too that a couple of essays a term should be written - and constructively criticised. Yes, I know it's work; but perhaps through time we'd get used to setting essay titles that our students find manageable. In the process, our own communication skills might improve. One topic I suggested for a beginning Analysis class at the University of Pittsburgh proved to be highly educational - for me - and certainly improved my level of communication with the class. It was: "Discuss the most important thing you have learned so far in this course."

A Murray Macbeath
St Andrews University

NEW from Cambridge

Combinatorics, Probability & Computing

This new journal is devoted to the three areas of combinatorics, probability theory and theoretical computer science. Topics covered include classical and algebraic graph theory, extremal set theory, matroid theory, probabilistic methods and random combinatorial structures; combinatorial probability and limit theorems for random combinatorial structures; the theory of algorithms (including complexity theory), randomised algorithms, probabilistic analysis of algorithms, computational learning theory and optimisation. An attractive feature, both to authors and to readers, is the speed with which the new and important results appear in print.

Volume 1 in 1992. Published in March, June, September and December: £80; airmail £13 per year extra. ISSN 0963-5483

Mathematical Structures in Computer Science

Mathematical Structures in Computer Science (MSCS) is a new journal of theoretical computer science which focuses on the application of ideas from the structural side of mathematics and mathematical logic to computer science. The journal aims to bridge the gap between theoretical contributions and software design, publishing original papers and broad surveys with original perspectives in all areas of computing, provided that ideas or results from algebra, geometry or category theory form a basis for the work.

Volume 2 in 1992. Published in March, June, September and December: £95; airmail £14.50 per year extra. ISSN 0960-1295

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RECENT LMS PUBLICATIONS

Representations of Algebras edited by H. Tachikawa and S. Brenner. pp 304. ISBN 0 521 42411 9. LMS Lecture Note Series No.168. £24.95. LMS members discount price £18.70.

Prior to the International Congress of 1990 in Japan, a workshop on algebra was held which included some of the best known figures in this field. Many of the expository surveys given at this workshop by distinguished mathematicians are included here. Researchers into representation theory will find that this volume contains interesting and stimulating contributions to the development of the subject.

Manifolds with Singularities and the Novikov Spectral Sequence by Boris Botvinnik. pp 200. ISBN 0 521 42608 1. LMS Lecture Note Series No.170. £19.95. LMS members discount price £14.96.

Traditionally the Adams-Novikov spectral sequence has been a tool which has enabled the computation of generators and relations to describe homotopy groups. Here a natural geometric description of the sequence is given in terms of cobordism theory and manifolds with singularities. The author brings together many interesting results not widely known outside the USSR, including some recent work by Vershinin. This book will be of great interest to researchers into algebraic topology.

Lectures on Mechanics by J.E. Marsden. pp 266, ISBN 0 521 42844 0. LMS Lecture Note Series No.174. £19.95. LMS members discount price £14.96.

The use of geometric methods in classical mechanics has proven to be a fruitful exercise, with the results being of wide application to physics and engineering. Here Professor Marsden concentrates on these geometric aspects, and especially on symmetry techniques. The main points he covers are: the stability of relative equilibria, which is analyzed using the block diagonalization technique; geometric phases, studied using the reduction and reconstruction technique; and bifurcation of relative equilibria and chaos in mechanical systems.

A unifying theme for these points is provided by reduction theory, the associated mechanical connection and techniques from dynamical systems. These methods can be applied to many control and stabilization situations, and this is illustrated using rigid bodies with internal rotors, and the use of geometric phases in mechanical systems. To illustrate the above ideas and the power of geometric arguments, the author studies a variety of specific systems, including the double spherical pendulum and the classical rotating water molecule.

The book, based on the 1991 LMS Invited Lectures, will be valued by pure and applied mathematicians, physicists and engineers who work in geometry, nonlinear dynamics, mechanics and robotics.

Proceedings of the Adams Memorial Symposium on Algebraic Topology edited by N. Ray and G. Walker. Volume I pp 330. ISBN 0 521 42074 1. LMS Lecture Note Series No.175. £22.95. LMS members discount price £17.20 Volume II pp 330. ISBN 0 521 42153 5. LMS Lecture Note Series No.176. £22.95. LMS members discount price £17.20.

J. Frank Adams had a profound influence on algebraic topology, and his works continue to shape its development. The International Symposium on Algebraic Topology held in Manchester during July 1990 was dedicated to his memory, and virtually all of the world's leading experts took part. This two volume work constitutes the proceedings of the symposium; the articles contained here range from overviews to reports of work still in progress, as well as a survey and complete bibliography of Adams' own work. These proceedings form an important compendium of current research in algebraic topology, and one that demonstrates the depth of Adams' many contributions to the subject.

In the first volume the theme is mainly unstable homotopy theory, homological and categorical algebra. The second volume is oriented towards stable homotopy theory, the Steenrod algebra and the Adams spectral sequence.

Applications of Categories in Computer Science edited by M.P. Fourman, P.T. Johnstone, A.M. Pitts. pp 352. ISBN 0 521 42726 6. LMS Lecture Note Series No.177. £24.95. LMS members discount price £18.70.

Category theory and related topics of mathematics have been increasingly applied

to computer science in recent years. This book contains selected papers from the London Mathematical Society Symposium on the subject which was held at the University of Durham. Participants at the conference were leading computer scientists and mathematicians working in the area and this volume reflects the excitement and importance of the meeting. All the papers have been refereed and represent some of the most important and current ideas. Hence this book will be essential to mathematicians and computer scientists working in the applications of category theory.

Lower K- and L-theory by A. Ranicki. pp 192. ISBN 0 521 43801 2. LMS Lecture Note Series No.178. £17.95. LMS members discount price £13.46.

This is the first unified treatment in book form of the lower K-groups of Bass and the lower L-groups of the author. These groups arise as the Grothendieck groups of modules and quadratic forms which are components of the K- and L-groups of polynomial extensions. They are important in the topology of non-compact manifolds such as Euclidian spaces, being the value groups for Whitehead torsion, the Siebenmann end obstruction and the Wall finiteness and surgery obstructions. Some of the applications to topology are included, such as the obstruction theories for splitting homotopy equivalences and for fibering compact manifolds over the circle. Only elementary algebraic constructions are used, which are always motivated by topology. The material is accessible to a wide mathematical audience, especially graduate students and research workers in topology and algebra.

These books have recently been published and are available from Cambridge University Press, Customer Services, FREEPOST, The Edinburgh Building, Shaftesbury Road, Cambridge CB2 2RU. Payment should be sent with your order.

SYMPOSIUM ON GAUGE THEORY, GEOMETRY & TOPOLOGY WORKSHOP III

The third Workshop in the year-long Symposium on Gauge Theory, Geometry and Topology will be held during the two weeks 13th to 24th July 1992. The following people have been invited to speak: P. Braam, R. Cohen, K. Corlette, G. Daskalopolous, S. Donaldson, Y. Eliashberg, R. Fintushel, D. Freed, M. Furuta, P. Kronheimer, T. Mrowka, M.S. Narasimhan, C. Simpson and R. Stern. There is a limited amount of financial support available from the SERC. In addition there is further support for British visitors from the London Mathematical Society British Visitors fund. European members of GADGET and EUROPROJ are welcome to attend with their own support. Any requests for financial support, further information and application forms should be sent to Elaine Shiels, Mathematics Research Centre, University of Warwick, Coventry CV4 7AL. Fax: 0203 524182.

ANALYTIC AND GEOMETRIC ASPECTS OF HYPERBOLIC GEOMETRY INSTRUCTIONAL CONFERENCE

This meeting starts at 10 am on Monday 14th September and ends at 1 pm on Saturday 19th September. The objective is to help people get started on the subject matter of the year-long Symposium. The following background will be assumed; a first course on hyperbolic geometry and mathematical sophistication at the level of a second year PhD student in the UK. Short lecture courses will be given by Cliff Earle (Cornell), Howard Masur (Chicago Circle) and Al Marden (Minneapolis). The main thrust of the courses will be on the analytic foundation of Techmüller theory and applications to hyperbolic geometry. Apart from lecture courses, considerable time will be devoted to small group discussions based on the lecture material. Active participation will be welcomed and it is hoped that this will enable everyone to absorb the material at their own pace. There may be some research seminars but these will take place outside the formal sessions. Requests for further information and application forms should be sent to Elaine Shiels, Mathematics Research Centre, University of Warwick, Coventry CV4 7AL. Fax: 0203 524182.

Applications of Categories in Computer Science

Proceedings of the London Mathematical Society Symposium, Durham 1991

Edited by M. P. FOURMAN, P. T. JOHNSTONE and A. M. PITTS

Category theory is being increasingly applied to computer science. This volume represents some of the most important and current ideas, and includes contributions from leading computer scientists and mathematicians working in the area.

£24.95 net PB 0 521 42726 6 352 pp. 1992
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London Mathematical Society Lecture Notes Series 177

Lectures on Arakelov Geometry

C. SOULÉ, D. ABRAMOVICH, J. F. BURNOL and J. K. KRAMER

Arakelov theory is a new geometric approach to diophantine equations. To aid number theorists and algebraic geometers, background material on differential geometry is given, but techniques from algebra and analysis are covered as well. The book is based on a graduate course given at Harvard University.

£30.00 net HB 0 521 41669 8 185 pp. 1992
Cambridge Studies in Advanced Mathematics 33

Manifolds with Singularities and the Novikov Spectral Sequence

BORIS BOTVINNIK

Here a natural geometric description of the Adams-Novikov spectral sequence is given in terms of cobordism theory and manifolds with singularities. The author brings together many interesting results not widely known outside the USSR, including some recent work by Vershinin.

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Lectures on Mechanics

J. E. MARSDEN

Employing geometry to classical mechanics can prove to be a fruitful exercise with wide applications to physics and engineering. This book is based on the 1991 LMS Invited Lectures, and it includes many of the author's recent contributions to the field.

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Edited by N. RAY and G. WALKER

J. Frank Adams had a profound influence on algebraic topology, and his works continue to shape its development. The International Symposium on Algebraic Topology held in Manchester during July 1990 was dedicated to his memory, and virtually all of the world's leading experts took part.

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Numbers and Functions

Steps to Analysis

R. P. BURN

The transition from studying calculus in school to studying mathematical analysis at university is notoriously difficult. This book attemptes to remedy this problem, inviting the student reade to tackle each of the key concepts in turn and providing a sequence of several hundred exercise

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General Orthogonal Polynomials

HERBERT STAHL and VILMOS TOTIK

In this treatise, the authors present the general theory of orthogonal polynomials on the complex plane and several of its applications. In the development of the theory the main emphasis is on asymptotic behaviour and the distribution of zeros.

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Encyclopedia of Mathematics and its Applications 43

Representations of Algebras

Edited by H. TACHIKAWA and S. BRENNER

Prior to the International Congress of 1990 in Japan, a workshop on algebra was held which included some of the best known figures in this field. Many of the expository surveys given at this workshop by distinguished mathematicians are included here. Researchers into representation theory will find that this volume contains interesting and stimulating contributions to the development of the subject.

£24.95 PB 0 521 42411 9 304 pp. 1992

Discount Price for LMS members £18.70

London Mathematical Society Lecture Note Series 168

Lower K- and L- theory

A. RANICKI

This is the first treatment in book form of the applications of the lower K- and L-groups to the topology of manifolds. In particular, the groups give information about the topology of non-compact manifolds such as Euclidean spaces.

£17.95 PB 0 521 43801 2 192 pp. 1992

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THE FERRAN SUNYER I BALAGUER PRIZE

Ferran Sunyer i Balaguer (1912-1967) was a self-taught Catalan mathematician who, in spite of a serious physical disability, was very active in research in classical Mathematical Analysis, an area in which he acquired international recognition. In honour of his memory, the Institut d'Estudis Catalans announces an international mathematical research prize bearing his name, open to all mathematicians, subject to the following conditions: 1) the prize will be awarded for a mathematical monograph of an expository nature presenting the latest developments in an active area of research in Mathematics, based mainly on the applicant's own work. 2) The monograph must be original, written in English, and of at least 150 pages. 3) The prize consists of 12,000 ECU. The winning monograph will be published in Birkhaüser Verlag's series "Progress in Mathematics", subject to the usual regulations concerning copyright and author's rights.

For further information contact: Institut d'Estudis Catalans, Carme 47, 08001 Barcelona, Spain. Email@ BITNET%"ICRM0@EBCCUAB1".

NOMINATIONS FOR COUNCIL

Members of the Society are reminded that nominations of members for election to the Council may be made by writing to the Council and General Secretary (Professor R.Y. Sharp, Department of Pure Mathematics, University of Sheffield, Hicks Building, Sheffield S3 7RH). Such nominations must arrive before noon on 01 September 1992, must be made in accordance with the Charter, Statutes and By-Laws of the Society, must state the Office or term of Membership-at-Large to which nomination is made, and must be signed by the member nominated, by the nominator and by a seconder who is also a member of the Society. The sample nomination form at the foot of the next page, which could be photocopied or imitated, may help members of the Society.

All valid nominations received are added to those made by the Council, and circulated to the Society on a Ballot Paper which is used for the Council Elections at the Annual General Meeting in November. **It should be noted that Council is making just enough nominations to fill the expected vacancies, so that, if this notice leads to no additional nomination, then the 1992 Council Elections will, like those of the last four years, be essentially a formality.**

Council's decisions about its nominations are indicated in the list on the next page.

COUNCIL'S NOMINATIONS FOR THE 1992 ELECTIONS

OFFICERS (one-year terms)

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Vice-Presidents

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* A.O. Morris

Treasurer

J.D.M. Wright

Council and General Secretary

R.Y. Sharp

Meetings and Membership Secretary

D.J. Collins

Publications Secretary

D.A. Brannan

Librarian

J.A. Erdos

MEMBERS-AT-LARGE (two-year terms)

* J.M. Ball
* A. Gardiner
M.J. Taylor
* F.H.J. Cornish
H.R. Morton
* C.T.C. Wall

MEMBERS-AT-LARGE (one-year terms)

D.G. Crighton
P.M. Neumann
W.A. Hodges
J.C. Robson

Notes. (i) Members are reminded that W.A. Hodges is Chairman of the Society's Computer Science Committee and that J.C. Robson is Chairman of the Society's Education Committee.

(ii) The persons whose names are marked with an asterisk are not on the retiring Council.

(iii) Members should note that the following two Members-at-Large of Council elected for two-year terms in November 1991 will have one remaining year to serve: N.J. Hitchin, N.J. Young.

R.Y. Sharp
Council and General Secretary

We, the undersigned members of the London Mathematical Society, nominate

(block letters) .....

for election as (delete as applicable) Member-at-Large of Council (one-year/two-year term)/Officer

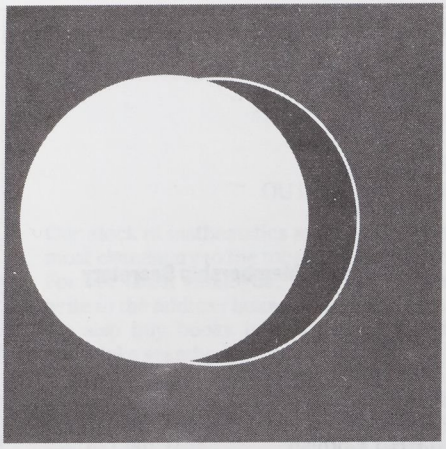
(insert Office for which nominated) .....
in the 1992 Council Elections of the Society.

Nominator's signature and printed name .....

Seconder's signature and printed name .....

I confirm that I am willing to stand for election as indicated above.

Nominee's signature .....



N. Berline, Ecole Polytechnique, Palaiseau; **E. Getzler**, Massachusetts Institute of Technology, Cambridge, MA; **M. Vergne**, DMI Ecole Normale Supérieure, Paris

Heat Kernels and Dirac Operators

1992. VII, 369 pp. (A Series of Comprehensive Studies in Mathematics, Bd. 298) Hardcover £ 42.00
ISBN 3-540-53340-0

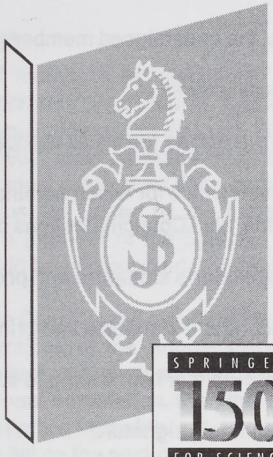
The past few years have seen the emergence of new insights into the Atiyah-Singer Index Theorem for Dirac operators. In this book, elementary proofs of this theorem, and some of its more recent generalizations, due to the authors and J.-M. Bismut, are presented. The formula for the index of the Dirac operator is obtained from the classical formula for the heat kernel of the harmonic oscillator. The only prerequisites to reading this book are a familiarity with basic differential geometry. The book finishes with a treatment of the index bundle and Bismut's local version of the Atiyah-Singer Index Theorem for families. As an application, the curvature of the determinant line bundle is calculated, following Bismut and Freed.

L. Pastur, Academy of Sciences, of the Ukrainian SSR, Kharkov; **A. Figotin**, University of Nevada, Reno, NV

Spectra of Random and Almost-Periodic Operators

1992. VIII, 587 pp. (A Series of Comprehensive Studies in Mathematics, Bd. 297) Hardcover £ 63.50
ISBN 3-540-50622-5

This study of the spectra and related characteristics of random and almost-periodic operators of various types (Schrödinger, continuous, discrete and more general) is a lively and fascinating field of research lying at the intersection of mathematical physics, spectral theory of operators and probability theory. A widespread interest in the domain and a vast amount of mathematical activity have led to many remarkable new results and viewpoints yielding insight even into traditional questions.
This book by two of the leading researchers in the field is the first systematic treatment of the fundamental problems and the large body of mathematical results known, and thus fills the gap in the reference literature. Not content to highlight the important ideas and recently developed concepts and methods, it also provides a large number of exercises to guide the reader towards improvements and generalizations.



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MATHEMATICS FROM OXFORD

Relative Category Theory and Geometric Morphisms

A Logical Approach

Jonathan Chapman and **Frederick Rowbottom**

Topos theory provides an important setting and language for much of mathematical logic and set theory. This book presents a convenient and natural solution to the treatment of geometric morphisms in this setting and shows how this may be applied to topics such as the relative Giraud theorem.

Oxford Logic Guides No. 16

0-19-853434-5, 274 pp., illus., Clarendon Press, February 1992 **£35.00**

Categories of Commutative Algebra

Yves Diers

This book shows that the concepts and constructions arising in commutative algebra and algebraic geometry are not bound to the universe of rings but possess a universality that can be interpreted in various domains of discourse.

0-19-853586-4, 288 pp., Clarendon Press, June 1992 **£40.00**

Techniques of Semigroup Theory

Peter M. Higgins

This book introduces recently developed ideas and techniques in semigroup theory to provide a handy reference guide. The trend is from the abstract to the combinatorial, with new probalistic and word-problem results, of interest to students of computer science and algebra alike.

0-19-853577-5, 268 pp., illus., Clarendon Press, March 1992 **£40.00**

Projective Representations of the Symmetric Groups

Q-Functions and Shifted Tableaux

P. N. Hoffman and **J. F. Humphreys**

This book is the first completely detailed and self-contained presentation of the wealth of information now known on the projective representations of the symmetric and alternating groups.

Oxford Mathematical Monographs

0-19-853556-2, 304 pp., Clarendon Press, May 1992 **£30.00**

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89656

Arthur Geoffrey Walker (born 1909) took his PhD at Balliol Oxford and his DSc at Edinburgh, and became a Professor first at Sheffield University from 1947 to 1952 and then at Liverpool from 1952 until his retirement in 1974. He is presently an Emeritus Professor at Liverpool. He wrote a book on harmonic spaces with Ruse and Willmore. He was awarded the Keith Medal of the Royal Society of Edinburgh in 1950 and in 1955 he was elected to Fellowship of the Royal Society. The London Mathematical Society awarded him the Junior Berwick Prize in 1947. He was the Society's 50th President from 1963-1965.

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.

1992

JULY

1-4	New Index Theorems and Applications Conference, Oxford (192)
3	Popular Lectures, Leeds University (194) (195)
4-14	Evolutionary Problems, LMS Durham Symposia, Durham (178) (189)
6-10	Mathematical Conferences in Perth, Australia (186)
6-10	European Congress of Mathematics, Paris, France (180) (188)
11-18	St Andrews Colloquium, St Andrews (185)
13-24	Séminaire de Mathématiques Supérieures, Bifurcations and Periodic Orbits of Vector Fields, Montréal, Canada (189)

AUGUST

10-14	Sussex Fourier Analysis Workshop, Sussex University (193)
10-14	Kinetics of Phase Transitions, Edinburgh (194)
10-18	Representations of Algebras and Related Topics Seminar, CMS Annual Seminar Careleton University, Ottawa, Canada (194)
16-29	Wavelets and Their Applications, Tuscany, Italy (192)
22-24	Theoretical and Applied Mechanics Congress, Haifa, Israel (191)

SEPTEMBER

3-4	Irish Mathematical Society meeting, Waterford, Ireland (193)
4-9	Homotopy Theory Conference, Gargnano, Italy (191)
14-18	Physical Interpretations of Relativity III, Imperial College, London (195)
30-1 Oct	Studies in Computer Algebra for Industry, Bath (192)

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MARCH

29-1 Apr	British Mathematical Colloquium, Reading

JULY

5-9	14th British Combinatorial Conference, Keele (188)
12-16	Combinatorial Mathematics and Combinatorial Computing Conference, Adelaide, Australia (189)

AUGUST

17-20	The Mathematical Heritage of Sir William Rowan Hamilton, Dublin, Ireland (193)

SEPTEMBER

6-9	Bubble Dynamics and Interface Phenomena Conference, Birmingham (188)

1994

AUGUST

3-11	International Congress of Mathematicians 1994, Zurich, Switzerland (189)

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.

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