

# THE LONDON MATHEMATICAL SOCIETY NEWSLETTER

**No.163**

**July 1989**

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## FORTHCOMING SOCIETY MEETINGS

Friday 20 October 1989, Burlington House  
Meeting on Stochastic Analysis

B. Bollabas, G.R. Grimmett, D.J.A. Welsh, F.P. Kelly

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

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## COUNCIL NOMINATIONS

Members of the Society are reminded that nominations of members for election to the Council of the Society may be made by writing to the Council and General Secretary, who will by that time be Professor R.Y. Sharp of the Department of Pure Mathematics, University of Sheffield, Hicks Building, Sheffield S3 7RH, so as to arrive before noon on 1st September. Any nomination must be made in accordance with the Charter, Statutes and By-Laws of the Society, must state the office or term of membership of Council to which nomination is made, must be signed by the member

nominated, by the nominator and by a seconder who is also a member of the Society. All valid nominations received are added to those made by the Council at its June meeting, and circulated to the Society on a Ballot Paper which is used for voting in the Council Elections at the Annual General Meeting in November. Only those members nominated in this way are eligible for election at the Annual General Meeting.

C.J. Mulvey  
Council and General Secretary

## LMS 1989 PRIZES

The De Morgan Medal is awarded to D.G. Kendall for his distinguished contributions to the theory of probability and statistics.

The Senior Whitehead Prize is awarded to L.E. Fraenkel for his penetrating contributions to the study of the nonlinear partial differential equations of hydrodynamics.

The Junior Berwick Prize is awarded to G.R. Robinson for his paper 'Blocks, isometries and set of primes', Proc. London Math. Soc. (3) 51 (1985), 432-448, and for his two papers 'Characters of

relatively projective modules' (of which the second is jointly written with B. Kulshammer), J. London Math. Soc. (2) 36 (1987), 44-58 and 59-67.

Junior Whitehead Prizes are awarded to D.E. Evans for his work on operator algebras and their applications in mathematical physics, to F.C. Kirwan for her work on moduli problems in algebraic geometry, and to R.S. Ward for his work in mathematical physics.

C.J. Mulvey,  
Council and General Secretary.

## ALAN N. GORDON

Dr Allan N. Gordon who was elected a member of the London Mathematical Society on 20th April 1950, died on 6th March 1989. He was a lecturer in

the Department of Mathematics at Imperial College London from 1949 to 1975.

# **LONDON MATHEMATICAL SOCIETY**

## **INVITED LECTURES**

**Professor Richard Melrose  
(M.I.T.)**

will give a course of ten lectures on

**Spectral and Inverse Spectral Theory of the  
Dirichlet Problem in a Planar Domain**

in Cambridge during the week  
**Monday 26 March – Friday 30 March 1990**

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Accommodation will be available at Emmanuel College, Cambridge. Those wishing to reserve accommodation should write to Mrs S. Lowe, Department of Pure Mathematics and Mathematical Statistics, University of Cambridge, 16 Mill Lane, Cambridge CB2 1SB, before 31 October 1989.

## NEW ZEALAND MATHEMATICAL SOCIETY

The executive of the NZMS has changed. The new President is Dr Gillian Thornley and the new Secretary is Dr John Giffin. Both are at the

Massey University, Department of Mathematics and Statistics, Palmerston North, New Zealand.

## MIS NEWSLETTER

Issue no. 9 of the Royal Society Mathematical Instruction Subcommittee's Newsletter has just appeared. It deals mainly with the Pop Maths Roadshow. Some information about this exhibition to popularize mathematics was given in the January 1989 issue (no.157) of the LMS Newsletter. The Roadshow will begin at the University of Leeds (Saturday 16 – Saturday 23 September 1989) and will subsequently tour the UK over the next year or so. The MIS Newsletter also has

information about international mathematical education activities. The next MIS Newsletter will appear later in the Summer. It will contain more details of the Pop Maths Roadshow, but information may be circulated before then to those on the mailing list. For further MIS information or to join the UK mailing list please contact Jill A. Nelson, The Royal Society, 6 Carlton House Terrace, London SW1Y 5AG (telephone: 01 839 5561 ext. 266).

## ICMI CONFERENCE ON THE POPULARIZATION OF MATHEMATICS

An ICMI study will consider the public image of mathematics and mathematicians. The present situation and record of past achievements differ from country to country and there is a need for international discussion to compare experiences, to clarify issues, and to promote further reflections and actions. An ICMI invitation conference will be held at the University of Leeds on 17 – 22 September 1989. The proceedings of the con-

ference will be published as ICMI Study 5. Further details of the conference are available from Professor Geoffrey Howson, Centre for Mathematics Education, University of Southampton, Southampton SO9 5NH. Invitations have already been issued; numbers are limited. The public exhibition that will run alongside the conference – the Pop Maths Roadshow – is open to everyone.

## 4th BRITISH TOPOLOGY MEETING

The 4th British Topology Meeting will be held on Monday 25th to Tuesday 26th September 1989 at the University of Wales, Bangor.

The programme will consist of talks, of approximately 40 minutes duration, mainly on the research of British topologists and it is planned to have a discussion/problem session. It is hoped to keep the proceedings as informal as possible and offers to speak would be gratefully received. In addition, there will be space for posters and display reprints. The cost of accommodation, including meals, is £21.00 and registration £2.00. Additional accom-

modation can be arranged if required.

This meeting is supported by the London Mathematical Society. The first priority of use of the grant will be to support those participants unable to obtain funding from their own universities. If you are interested in attending, please contact as soon as possible, Tim Porter, 4th British Topology Meeting, School of Mathematics, University of Wales, Bangor, Gwynedd LL57 1UT. E-mail L006@UK.AC.BANGOR.VAXA. Telex number 61000. Telephone (0248) 351151 ext 2592. State if you would like to give a talk.

## MATHEMATICAL SCIENCES RESEARCH INSTITUTES

One of the main topics for discussion at the 1989 London Mathematical Society Retreat, held at the Isle of Thorns on the 13th and 14th May 1989, was the establishment of Mathematical Sciences Research Institutes in the United Kingdom. Most members of LMS Council were present and guests of the Society who took part in this discussion were: M.F. Atiyah (Oxford), A. Baker (Cambridge), J.M. Ball (EMS), P.M. Cohn (London), D.J.H. Garling (Cambridge), P. Goddard (Cambridge), J.M. Howie (St Andrews), D.S. Jones (IMA), P.V. Landshoff (Cambridge), P. Moore (RSS), B.D.

Sleeman (EMS), A. Smith (SERC), E.C. Zeeman (Oxford). A summary of conclusions follows.

### 1. LMS Support

The LMS President began the meeting by reporting the following decisions approved by the LMS Council in its internal discussions earlier in the Retreat.

(i) The LMS warmly supported the creation of one or more mathematical sciences research institutes in the United Kingdom of the following character:

- (a) such institutes should be of a national character, and involve the active and visible participation of the mathematical community throughout the United Kingdom;
  - (b) they should be broadly based, and involve programmes from amongst Pure Mathematics, Applied Mathematics, Statistics, Theoretical Computer Science and Theoretical Physics;
  - (c) such institutes should be located in places where their activities will have maximal impact on the formation of young British mathematicians;
  - (d) such institutes should be based on visitor programmes and should have no permanent academic staff beyond that of the Director;
  - (e) any SERC funding for such institutes should come by seeking additional funds for mathematics and should not be at the expense of current SERC support for mathematics in the United Kingdom;
  - (f) the LMS was willing to consider detailed proposals for help in establishing institutes of a similar nature at any time in the future.
- (ii) The LMS noted current plans for the creation of such Institutes in London and Cambridge. It gave warm support to the plans in London, and noted that these plans could have long term implications for the housing of the LMS. The LMS looks forward to receiving detailed proposals from London in the near future. As far as the plans in Cambridge were concerned, the LMS enthusiastically welcomed the progress already made, and made the following decisions in support of these plans.

- (a) It authorized the President to make written representations to the SERC, the ABRC and all other interested bodies, expressing strong LMS support for the Cambridge plans, and urging these bodies to give funding to the Cambridge Institute.
- (b) It authorized the President to approach IHES, the CNRS and the SMF, urging them to give French financial support to the Cambridge Institute at the same level as British support for IHES.
- (c) It requested the right to appoint a representative from outside Cambridge to the interim Planning Committee for the Institute.
- (d) It requested the right to nominate two representatives to the Scientific Committee of the Institute.
- (e) Within the general policy given in part (i), Council agreed unanimously to contribute the sum of £70,000 towards the cost of the first 5 years of the Institute, to be used as follows. The sum of £20,000 will be

available to the Scientific Committee to use as it best sees fit. The remaining £50,000 is to be used by the Scientific Committee at the rate of £10,000 per annum to enable mathematicians in British universities and polytechnics to go to Cambridge to take part in the Institute's scientific programme. All such visitors must be provided with adequate office facilities by the Institute. The Institute must also report annually to LMS Council on how this money has been spent.

- (f) The LMS will also look sympathetically on future requests from the Institute for financial guarantees on appropriate parts of its scientific programme.

## 2. Subsequent Discussion

P.V. Landschoff presented a detailed report on current plans for the Cambridge Institute, including a description of the site in Clarkson Road where St John's College has agreed to provide land and a purpose-built building for the Institute, free of rent for 5 years, provided suitable funds can be found to run the Institute. P.M. Cohn described efforts in London to seek accommodation for an Institute in the Senate House of London University. After a long and detailed discussion amongst all present, the following motion was moved by M.F. Atiyah and seconded by E.C. Zeeman:

**Motion** The mathematicians present at the Retreat welcome with enthusiasm the creation of the Institute for Mathematical Sciences in Cambridge, along the broad lines proposed by the Cambridge Committee.

It was agreed that any vote taken on this motion should reflect the views of those present as individual mathematicians, and could not be taken as binding on the organizations they represent. The motion was passed with 22 in favour, 1 against and 5 abstentions.

There was then a debate on how the UK mathematical community, and, in particular, the Learned Societies, could best ensure the national and international character of the Cambridge Institute. The members of the Cambridge Committee stressed the strong desire and commitment of that Committee to make the Institute truly national in character. It was generally agreed that the most effective means of achieving this was to have broad membership from outside Cambridge in the Scientific Committee, which would control the scientific programme of the Institute. The following specific proposals were approved by all present.

- (i) The Chairman of the Scientific Committee should be a mathematician from outside Cambridge.
- (ii) At least 60% of the members of the Scientific Committee should be from outside Cambridge.

(iii) The Scientific Committee should contain representatives of the major relevant Learned Societies, including the London Mathematical Society, the Royal Society, the Institute of Mathematics and its Applications, the Edinburgh

Mathematical Society, the Royal Statistical Society, and the Institute of Physics. The representatives of these bodies present agreed to put to their Societies the proposal to nominate such a person as soon as possible.

## **Proposal for a national INSTITUTE FOR MATHEMATICAL SCIENCES in Cambridge**

### **Introduction**

In recent years there have been exciting developments in many branches of the mathematical sciences. New and deep connections have emerged between subjects which previously appeared unrelated or had little impact on one another. This is a proposal for a national Institute devoted to the study of all branches of the mathematical sciences, including pure mathematics, statistics, numerical methods, applied mathematics, theoretical physics, theoretical chemistry, mathematical economics, theoretical computer science and mathematical biology.

The Institute will aim to stimulate research in the UK in all these fields by organising a series of visitor programmes. These will bring together mathematical scientists from UK universities and leading experts from overseas. They will meet together for concentrated research on specialised topics, and to exchange ideas and expertise through lectures, seminars, and informal contacts made possible by their extended interaction in an attractive purpose-built building.

The visitor programmes will typically involve a nucleus of 20 mathematical scientists from the UK and overseas, with more in university vacations. Programmes will typically last for 6 months. It is planned to have two operating at any time, so that usually there will be altogether four per year. However, the arrangements will be flexible: often the programmes will be shorter than 6 months, and occasionally they may be longer. The topics chosen for them will be specialised, but each will aim to bring together several areas of expertise so as to encourage the cross-fertilisation of ideas between different disciplines.

The intended structure of the Institute is modelled on that of other highly successful research institutes, such as the Institut des Hautes Etudes Scientifiques in France, the Institute for Theoretical Physics of the University of California at Santa Barbara, the Institute for Mathematics and its Applications in Minnesota, and the Mathematical Sciences Research Institute at Berkeley. Each of these institutes has its own particular character. While acting as international centres for research, they have served to enhance the strength of mathematical science in their own localities. Our own Institute will build on the many strengths that

already exist in UK universities. It will also generate new ones, and generally stimulate research on mathematics and its applications throughout the country.

### **The national character of the Institute**

It will be important to make it as easy as possible for researchers from other universities to participate fully in the activities of the Institute. This will need office space, funds for travel and subsistence, and living accommodation. Each visitor programme will usually be run by two or three experts in the subjects that it covers. Normally these will come from outside Cambridge (often from overseas) and it will be necessary to offer them sufficient support to enable them to take leave from their home institutions. Visitors to the Institute from overseas will be encouraged to visit other UK universities, and funds will be sought for this purpose.

In order to use to best advantage the expertise of those who come to the Institute, each programme will normally include a set of lectures at rather basic level. These will be aimed at graduate students. They will also be valuable for more established researchers who are contemplating a change of direction in their research, or who want to put themselves in a position of being able usefully to interact with those working in an area different from their own. These lectures will in effect be a graduate school regularly organised by the Institute. In order to make it easy for those from other universities to attend, they will be advertised well in advance and will normally occupy a period of one or two weeks during university vacations, when living accommodation in colleges is readily available.

The scientific work of the Institute will be guided by a Scientific Policy Committee. The University will be asked to appoint a majority of its members from outside Cambridge, in consultation with national bodies such as The Royal Society and the London Mathematical Society. The members of the Committee will be active mathematical scientists with international reputations.

### **The building**

St John's College has generously offered to construct a purpose-built building and make it available to the Institute rent-free for five years.

The site is in a pleasant area in the west of Cambridge, about one mile from the centre of the City and from the two existing University mathematics departments. It is close to the Department of Physics, the Institute of Astronomy and the new Royal Greenwich Observatory, to several of the new colleges, and to the University Library. The University has long-term plans to move to west Cambridge several of the other physical sciences departments, possibly including mathematics.

The process of choosing an architect and making a planning application has now been initiated (the site is in an area zoned for University development). The building will have office space for at least 45 researchers, together with seminar rooms and a library. The library will present a particular problem, because of the wide spread of interests of the Institute's members. While obviously one cannot expect to provide full coverage immediately, it is important for the success of the research that there be a good build-up of both books and journals as quickly as possible. (Members of the Institute will also have access to the many other libraries in Cambridge.)

Equally, first-class computer facilities will be of central importance. It will be necessary to have an adequate number of work stations, connected to the University's new Granta fibre-optic network. These will be used for computing, mathematical word-processing, and electronic mail.

The building will also have eating facilities, to encourage informal interaction among the participants. It is intended that the Institute will perform many of the social functions of a college. The design of the building will seek to make informal contacts between participants both frequent and natural, so as to promote the casual exchange of ideas.

It is hoped that the building will be ready for use in the summer of 1992.

### **Funding**

The Institute will enhance mathematical science in the UK by bringing in *new* money. It will complement existing activities in the subject.

The generous offer from St John's College is a good start for efforts to raise funds. The rental value of a building such as they are offering is about £150K per year. In order to accept this offer, it is necessary to find other funding, so as to convince the College that we can make good use of the building for at least 5 years. We have made an application to another Cambridge college for a grant to equip the building and for recurrent funding, and the indications are that this will result in a substantial contribution to the minimum sum that we need. However, in order to bring this up to a sufficient amount and in order to be able to make best use of the building rather than just operating at a minimum level, we need further funding from

outside Cambridge. The donations from Cambridge colleges should be regarded as pump-priming, to use as a basis for requests to other bodies.

The first grant from outside Cambridge has already been agreed by the London Mathematical Society. This is a token of the warm welcome they have given to the efforts to set up the Institute. An application to SERC is being prepared, and will be submitted in late summer; this application will emphasise that new funds are needed for mathematical science and will propose the Institute as a worthwhile target for such funds. We are applying also to charitable trusts, and to the EC Commission. We also aim to convince industrial and commercial firms that the health of mathematical science in the UK is in their vital long-term interest and needs more support.

### **Long-term developments**

As the Institute grows, its accommodation will become insufficient. During University vacations this will not be a problem, as there is the possibility of spilling over into other buildings nearby. But it is intended to ask the architects to design the building as Phase I, so that it can readily be extended when this becomes necessary and possible.

Eventually, in addition to regular visitor programmes there may be a number of small research groups, led by senior staff and including also postdoctoral fellows. Members of the groups will have fairly close common interests, but will interact also with other groups and with the visitors. Normally, there will be a limit of 5 years to any appointment. Any longer-term appointments will be limited to mathematical scientists of outstanding creativity. In particular, these might be used to attract back to the UK expatriates who are still at the peak of a very successful career abroad.

### **Management**

There will be a Director who will be an active mathematical scientist of distinction. He will be helped by a Management Committee, which will meet rather frequently. Most of its membership will be local, but also with representation from major sources of funding. General policy will be guided by the Scientific Policy Committee, whose members will be active mathematical scientists of international reputation and a majority of whom will come from outside Cambridge.

The Director and the Management Committee will run the Institute in the interests of the UK mathematical community. They will report to the University's General Board, and so the Institute will benefit from the expertise of the University's central offices in such matters as financial management and fund-raising, the issuing of contracts, and building design and management; also, the Institute's participants will be able to use University facilities such as the libraries, the Granta network and the graduate centre.

The subjects to be covered by the visitor programme will be proposed to the Management Committee by the Director, on the advice of the Scientific Policy Committee. When a proposal has been agreed, two or three mathematical scientists will be appointed to oversee the scientific details. They will generally come from outside Cambridge (often from overseas) and remain in residence for the whole of their programme.

#### Advantages of Cambridge

These proposals are possible only because of the existence in Cambridge of colleges that have pump-priming funds available for the initiation of new academic projects. Cambridge has two leading mathematics departments, which will be important for providing a supportive environment for the activities of the Institute. There are also a large number of gifted graduate students and undergraduates, many of whom go on to do research in other universities. Every effort will be made to bring these into contact with the visitors, who we believe will find this an attractive feature of the Institute. And the general strength of Cam-

bridge in the physical and biological sciences, technology and computing will help to promote the interdisciplinary nature of the Institute, which is one of its important aims.

Cambridge is a pleasant small city with excellent facilities. It is attractive to visitors from abroad. Stansted Airport is nearby and developing into a major international airport, and there are now good connections to other parts of the country by the M11 motorway and the A1. Living accommodation for visitors will not be a problem: staff of the University continually take leave and are ready to let their houses to visitors, and there is a possibility that we may have the use of College-owned apartments close to the Institute. During University vacations, when it is likely that there will be increased numbers of participants at the Institute, there will be ready access to accommodation in Colleges close by. Because Cambridge is small, the Institute's participants will usually live relatively close to the Institute, and this will help to promote the interaction between them that is a central aim of the project.

## INSTITUTE FOR MATHEMATICAL SCIENCES

*Examples of Possible Visitor Programmes  
Each programme is intended to last for about 6 months  
and to involve some 20 researchers*

1. The theory of knots and links in 3-dimensional space.
2. The mathematics of control systems and signal processing.
3. The theory of crystallisation.
4. Nonlinear wave theory and applications.
5. Asymptotics.
6. Optimisation and Frustration.
7. Chaotic behaviour.
8. Geometry and combinatorics.
9. Seismic waves in laterally heterogeneous materials.
10. Stochastic networks.
11. Artificial neural networks.
12. Stochastic economics.
13. Mathematical modelling of epidemics.
14. Multivariable approximation by radial functions.
15. Conformal field theory.
16. Flow processes in porous media.
17. Random graphs.
18. Analysis of algorithms.
19. Foundations of functional programming.
20. Arithmetical algebraic geometry.
21. Mathematics of production control.
22. Bifurcations, pattern selection and spatiotemporal chaos.
23. Topological methods in group theory.
24. Representations of infinite soluble groups.
25. Quantum chemistry.
26. Manifolds of four dimensions.
27. Theoretical computer science.
28. Oscillations in collapsible tubes.
29. Helioseismology.
30. Global differential geometry and general relativity.
31. Supersymmetry in mathematics.
32. Cohomology of discrete groups.
33. Nonlinear stability in numerical differential equations.
34. Aggregation and complex flow.
35. Non-perturbative techniques in quantum and statistical field theory.

## CALL FOR COMMENTS

It is anticipated that many members will wish to comment on the two preceding articles. Comments and suggestions will be welcomed by the Presi-

dent, Professor J.H. Coates, Department of Pure Mathematics, 16 Mill Lane, Cambridge CB2 1SB.

## **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 members 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. Grants under this scheme do not normally exceed £250. The Society believes the scheme to be very useful and has made grants to the total value of about £2300 in the past six months.

### **3. Financial Support for Conferences**

Grants are made from the Programme and Conference Fund to the organizers of conferences to be held in the UK. 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: £350 to A. Frohlich for 'Galois Modules' held at UMIST in February 1989; £150 to J.G. Clunie for the 'One-day Complex Analysis Meeting' to be held at York in September 1989; £1000 to A.H. Schofield for 'Skew Fields and Rings: in honour of Paul Cohn' to be held in London in July 1989; £500 to S.C. Power for 'Operator Algebras' held at Lancaster in April 1989; £600 to J.W. Bruce for 'Applications of Singularity Theory to Geometry' held at Newcastle in April 1989; £500 to D.A. Rand for the '1989 Nonlinearity Meeting' held at Warwick in March 1989; £500 to R. Brown for the 'Fourth British Topology Meeting' to be held at Bangor in September 1989; £200 to A.J.W. Hilton for the 'Reading Combinatorics Colloquium' held at Reading in April 1989; £1300 to S.K. Donaldson for the 'Sir Michael Atiyah Birthday Meeting' held at Oxford in April 1989; £1000 to A. Carbery for the 'Workshop in Fourier Analysis' held at Sussex in June 1989; £250 to P.J. Collins for the 'Symposium on General Topology and its Applications' held at Oxford in June 1989; £600 to D.H. Pitt for 'Category Theory and Computer Science' to be held at Manchester in September 1989; £600 to A. Frohlich for 'Arithmetic Galois Modules' to be held at Cambridge in September 1989; £500 to A.J. Baker for 'p-adic Methods and their Applications' to be held at Manchester in September 1989.

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 01-836-5454, 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 to the Meetings and Membership Secretary no later than 31 August 1989.

## ARITHMETIC GALOIS MODULES

There will be a further informal meeting on Arithmetic Galois Modules at Cambridge University, from midday 26th September to midday 28th September 1989. Any one interested should write

to D. Burns, DPM&MS, Cambridge University, 16 Mill Lane, Cambridge CB2 1SB. The meeting is supported by the London Mathematical Society.

## SORBY RESEARCH FELLOWSHIP

The Sorby Research Fund Committee (a joint Committee of the Royal Society and University of Sheffield) is now inviting applications for a Sorby Research Fellowship to be held in one of the departments of science (including medicine, mathematics, engineering and technology) in the University of Sheffield. The post is tenable for three

years in the first instance from 1 October 1989, and renewable for a further two years, with a possibility of a permanent post thereafter. The salary scale is £10,670 to £13,556. Further particulars are available from the Director of Personnel Services, The University, Sheffield, S10 2TN. Closing date is 14 July 1989.

## ALGEBRA CONFERENCE

On August 21st-26th 1989, an International Conference on Algebra will be held at the Institute of Mathematics at the Siberian Branch of the Soviet Academy of Sciences. The conference is in honour of the 80th anniversary of the birth of one of this century's distinguished algebraists, Academician A.I. Mal'tsev (1909-1967).

The conference will cover the following topics: group theory; ring theory; model theory and algebraic systems; algebraic methods in geometry, analysis and theoretical physics; and applied and

computer algebra. Considering its high scientific level, this conference promises to be an unprecedented event in algebra in the Soviet Union and may be the first all-world conference on the subject.

For more information contact: Yu. L. Ershov, Chairman of the Organizing Committee, USSR Academy of Sciences, Order of Lenin, Siberian Branch, Institute of Mathematics, 630090 Novosibirsk 90, University Avenue 4. Telephone 35-44-50.

## CATEGORY THEORY AND COMPUTER SCIENCE

This is the third in the biennial series of conferences on category theory and computer science and is being held in Manchester from 5th to 8th September 1989. This is the major international conference series in the area and covers applications of category theory in programming language semantics, program specification and program logics, type theory, algorithm design etc. Proceedings are published in the Springer LNCS

Series.

Further details are available from Local Arrangements Office: Jane Gray, Department of Computer Science, University of Manchester, Oxford Road, Manchester M13 9PL. Telephone 061-275 6136. JANET:janeg@uk.ac.man.cs.uk.

The conference is supported by SERC IT Logic Initiative and the London Mathematical Society.

## ADAMS MEMORIAL SYMPOSIUM

An international symposium on algebraic topology will be held at the University of Manchester, England from 1st to 15th July 1990. This Symposium will commemorate the life and work of Frank Adams, who held the Fielden chair of pure mathematics at Manchester from 1964 to 1971,

and will be centred on stable homotopy theory. The Symposium is sponsored by the SERC. Further details can be obtained from Jackie Minshull, Department of Mathematics, University of Manchester, Manchester M13 9PL (e-mail: MBBMATH@UK.AC.MCC.CMS).

## VISIT OF PROFESSOR TRUNG

Professor Ngo Viet Trung will be visiting the United Kingdom from 12th July for approximately three weeks. He will be lecturing at the Universities of Edinburgh, Sheffield and Southampton. Further details are available from Dr L. O'Carroll, Department of Mathematics, Edinburgh University; Professor R.Y. Sharp, Department of Pure

Mathematics, Sheffield University or Dr D. Kirby, Faculty of Mathematical Studies, Southampton University.

Professor Trung's visit has been made possible by a Scheme 2 travel grant from the London Mathematical Society.

# **British Association 1989 Annual Meeting University of Sheffield Mathematics Section**

## **Tuesday 12 September**

Sir David Cox, Nuffield College, Oxford  
*Manifold Applications of Mathematics*

Professor Frank Leppington, Dept of Mathematics, Imperial College  
*Transmission of Noise through Flexible Panels*

Professor John Ball, Dept of Mathematics, Heriot-Watt University  
*Crystal Microstructure and Non-attainment of Minimum Energy*

## **Wednesday 13 September**

Dr Sarah Darby, Imperial Cancer Research Fund, Cancer Epidemiology Unit, Oxford  
*Cancer Near Nuclear Installations?*

Professor Robert Curnow, Dept of Applied Statistics, University of Reading  
*Assessment of DNA Fingerprinting Evidence*

Dr David Spiegelhalter, MRC Biostatistics Unit, Cambridge  
*Statistics and Medical Expert Systems*

Professor Brian Ripley, Dept of Mathematics, University of Strathclyde  
*How to spot a Spiral in the Far Distance*

## **Thursday 14 September**

Professor Terence Lyons, Dept of Mathematics, Edinburgh University  
*A Noisy World*

Dr Richard Ward, Dept of Mathematics, Durham University  
*Solitons: the Scattering of Lumps of Energy*

Professor David Brannan, Dept of Mathematics, Open University  
*Complex Analysis -What's Happening?*

Dr Francis Clarke, Dept of Mathematics & Computer Science, University College, Swansea  
*The Bernoulli Numbers, Ancient and Modern*

## **Friday 15 September**

Dr Frank Kelly, Statistical Laboratory, Cambridge  
*Randomness, Networks and Communication*

Dr Raymond Hill, Dept of Mathematics & Computer Science, University of Salford  
*Error-correcting Codes*

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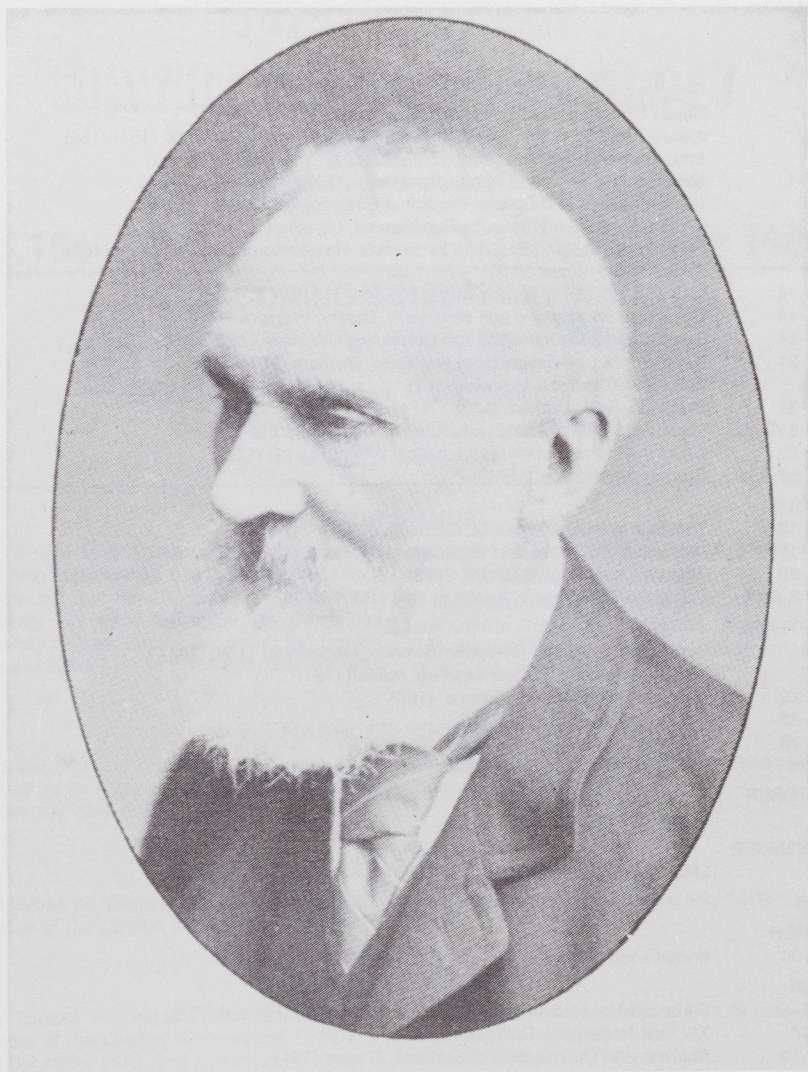
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William Thomson, Lord Kelvin (1824-1907) graduated second Wrangler and Smith's Prizeman from Cambridge in 1845, and soon went to the University of Glasgow where he occupied the Chair of Natural Philosophy until 1899. One of his earliest works was a controversial, one-page paper on the age of the earth based on the theory of heat. In the 1850s he did important work on submarine telegraphy. In 1867 he put forward a theory of atoms as knotted vortices in the ether which he hoped would explain the interaction of matter and fields. In the same year he wrote with Tait a *Treatise on Natural Philosophy*, a book that influenced all who read it, notably Maxwell. Knighted in 1866, made Baron Kelvin in 1892, President of the Royal Society in 1890 (of which he had long been a member), he was the Society's eighteenth President, from 1898-1900.

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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 W1V 0NL (telephone 01-437 5377, fax 01-439 4629), to arrive before the first day of the month prior to publication.

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