LONDON MATHEMATICAL SOCIETY

Professor D. K. Harrison

(Oregon and King's, London)

SOME SPECIAL MATRICES OF RATIONAL NUMBERS

Professor K. H. Hofmann

(Tulane)

RECENT RESULTS ON CONTINUOUS LATTICES AND THEIR APPLICATIONS

FRIDAY, 20th January, 1978, at 3.30 p.m.

Geological Society's Meeting Room,

Burlington House,

Piccadilly, London, W1V 0NL

All interested are very welcome.

Tea will be served at 4.30 p.m.

LMS NEWSLETTER

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DATES OF SOCIETY MEETINGS

Friday, 20 January 1978, Burlington House.

Friday, 17 March 1978, Burlington House.

Friday/Saturday, 19/20 May 1978, Gregynog, Powys, weekend meeting.

Friday, 16 June, 1978 Burlington House, Whitehead meeting.

Friday, 20 October 1978, Burlington House.

Friday, 17 November 1978, Burlington House, Annual General Meeting.

London meetings will be held in the Geological Society's Rooms, Burlington House, Piccadilly. Council meetings will be held in conjunction with all the above London meetings. Council will also meet in London on 12 May 1978.

D. B. SINGMASTER

TREASURER'S REPORT

In order to give more time for the preparation and consideration of the accounts, Council has directed that the end of the Society's financial year should be moved from 30 September to 31st August. Thus the figures I am about to report to you are based on 11 months instead of a full year. I will, however, draw members' attention to one or two financial transactions which took place this September; these will, of course, appear in the 1977–78 accounts.

The surplus of income over expenditure amounts to no less than £58,153, compared with £41,630 in the previous session. Some £47,000 of this surplus is attributable to the publications side of our activities, but here I must point out that a printing bill for almost £10,000 arrived in September, after the books were closed, so that these figures are to a certain extent distorted. The non-publications side shows a surplus of around £11,000; this is mainly due to income from investments and particularly the high interest rates obtainable in the earlier part of the year.

The market value of the Society's portfolio of stock exchange investments rose from £162,534 to £208,793, including £19,126 of new money, and the experience of the Trust Funds has been similar. About one third of this value is represented by fixed interest securities and the balance by equities. While fixed interest securities provide good income they offer little protection against inflation. To help safeguard the future, therefore, the Society has recently purchased an agricultural property situated not far from Oxford, Royal Oak Farm, as it is called, contains some 200 acres of arable land. We bought the farm from Brasenose College for £65,000, and the immediate yield is a little over 4%. I should make it clear that the Society is simply the landlord, and that we have no plans to get involved in farming as such.

On the periodicals side, the price increases introduced as from 1977 have not led to any serious fall in circulation. The *Proceedings* with a profit of around £20,000 continues to be the star performer. Both *Russian Mathematical Surveys* and the *Journal* make valuable contributions with around £7,000 each but the *Bulletin* continues to show a loss in the region of £2.000. It must be remembered that these figures include substantial amounts attributable to the further fall in the value of sterling and that the position is therefore somewhat less favourable than it might appear.

Finally I would like to draw members' attention to certain particular items of income and expenditure. Expenditure on meetings has almost doubled reflecting the more lavish programmes which have been presented recently. Grants to conferences are also on the increase: over £4,500 was devoted to this purpose in the past session although we expect to get some of it back. The Hardy Lecturer, the new members list and the reprinting of the Charter, Statutes and Bylaws are all substantial items which fell in the past year. Administrative costs have risen to a moderate extent. Subscription income is much the same as last year since there was no change in the rates and membership figures are fairly steady.

I. M. JAMES

COUNCIL & GENERAL SECRETARY'S REPORT

The last "Secretary's Report" was made in 1971, so we take the opportunity here to review briefly the last six years as well as to report on the 1976–77 session.

In November 1971 there were approximately 1,070 individual members and 38 corporate members of the Society; today there are about 1,310 individual members and 43 corporate members. The considerable increase since 1971 is largely due to two recruiting drives organised by Dr. J. A. Tyrrell and Professor A. W. Goldie.

The activities of the Society have changed a great deal over the six years. The Instructional Conferences, which have usually but not always been financially supported by NATO as part of its Advanced Study Institutes programme, continue to be held every two years, with the *Proceedings* being published by Academic Press. In summer 1977 the conference on Lie Groups organised by Professor M. F. Atiyah in Oxford was attended by 144 mathematicians.

Starting in 1974 the Society has held a summer season of Durham Symposia, with efficient organisational assistance of Durham University and financial assistance of the Science Research Council and the U.S. Army. The venture got underway at what seemed a very unpromising time for funding; but it has been really amazingly successful. The topics of the three 1977 Symposia were: Multivariate Approximation, Applications of Sheaf Theory, and Homological and Combinatorial Techniques in Group Theory.

Two years ago Council set up a Conference Support Committee to provide an element of pump-priming finance to meetings not primarily sponsored by the Society; this contributes to three or four meetings each year.

Until recently the Society met on the third Thursday of each month for a single lecture, apart from the summer vacation and a so-called "Country Meeting" held in May. In the past year or so the pattern has changed out of recognition. There are generally two meetings each term, with a couple each year held outside London, generally on the third Friday of a month. The meetings have at least two speakers each; in January 1977 there was an experimental two-day meeting in Birmingham with four main speakers and smaller discussion groups; this was very successful, and it is planned to continue to have occasional meetings with this format.

In June the De Morgan Medal was awarded to Professor C. A. Rogers, and the Junior Berwick Prize to Professor G. Lusztig. The 1977 Collingwood Prize was given to D. M. Turner of Durham University.

On the publications side the Society's *Monographs* and *Lecture Notes* series, which had just begun by 1971, have now produced about four dozen volumes and are clearly well-established and successful. Members can purchase volumes of the *Monographs* at a 20% discount by sending a cheque with their order to Academic Press, 24–28 Oval Road, London NW1 7DX; and of the *Lecture Notes* at 25% discount by sending a cheque with their order to the Administrative Assistant of the LMS, Burlington House, Piccadilly, London W1V 0NL.

The LMS *Newsletter*, which was instituted in 1974 as a result of the 1970–71 Committee on long-term Planning, has been widely welcomed, and has become the main vehicle of communication between the Society and its members; the current Editor is Professor B. E. Johnson.

In 1975 the LMS and University College London entered on a new agreement covering the LMS Library, covering in particular its ownership, exchanges, purchases and binding. Members' borrowing rights were not in any way affected.

Since 1975 the Society has sponsored singly or jointly with the J.M.C. an annual Nottingham Conference on Mathematical Education, and since 1976 has (together with the E.M.S.) provided the B.M.C. with a financial guarantee. It also has a 25% interest in the Applied Probability Trust, and a 50% interest in the *Russian Mathematical Surveys*.

Reciprocity agreements continue to increase in number; these currently cover the American, Australian, Indian, New Zealand and Southeast Asian Mathematical Societies, Canadian Mathematical Congress, Dansk Matematisk Forening, Deutsche Mathematikervereinigung, Norsk Matematisk Forening, Société Mathématique de Belge, Svenska Matematikersamfundet and Wiskundig Genootshap.

The Society also has a large number of standing and ad-hoc committees, and representatives on mathematical and educational bodies; a fairly complete list appeared

in the April 1977 *Newsletter*. In April this year Mrs. B. Shalit retired after eleven years devoted service to the Society; her successor as Administrative Assistant is Mrs. B. Simpson. Finally we observe that the "Society Secretary" has now amoeba-like become two, and we are both kept fully occupied!

D. A. BRANNAN

MEETINGS AND MEMBERSHIP SECRETARY'S REPORT

In 1 November 1976 we had 1,266 (ordinary and reciprocity) members, 38 institutional members and 27 Honorary members. We have since elected 114 members, 5 institutional members and 1 Honorary member. We sadly note the deaths of Honorary members Brauer, Morse and Segre and the deaths of three of our five most senior members: S. M. Jacob, elected 1903), E. Cunningham (elected, 1905), J. E. Littlewood (elected, 1907).

We have had six meetings in the past session. Professor Atiyah gave his Presidential address in November. There was an experimental two-day meeting in Birmingham with speakers being Professors Osserman, Douady, Herman and Macdonald. The Naylor Prize Lecture was inaugurated by Professor Sir James Lighthill in March with Dr. Hammersley as second speaker. The May meeting was at Bangor with Professors Tutte and Bott. The 1977 Hardy Lecturer, Professor Moser, gave 10 lectures around the British Isles, including the Sixth Hardy Lecture to the Society in June, when Professor Baernstein was second speaker. In October there was an experimental film meeting.

I would like to take this opportunity to remind members that we are always open to and grateful for comments and suggestions on speakers, conference and any other Society activities.

D. B. SINGMASTER

1978 BERWICK PRIZE

At the June meeting this year of the Society the Council will be awarding the Society's Senior Berwick Prize. Accordingly it has appointed the following as the 1978 Prize Committee: Professor J. W. S. Cassels, Professor C. T. C. Wall and Professor C. A. Rogers. The Council invites members of the Society to submit their views confidentially in writing to any member of the Committee by 1 March. Council reserves the right not to make an award if a candidate of sufficient merit is not recommended by the Prize Committee.

The detailed regulations and procedure for the award of the Prize are available from the undersigned; the principal points that members should note are:

(1) The Prize will be awarded in respect of a definite piece of work published by the Society in any of its publications (at present the three periodicals, the *Monographs*, and the *Lecture Notes* Series) in the period 1 January 1974, until 31 December 1977.
(2) The members of the Prize Committee are ineligible for the award.
(3) Only mathematicians who are members of the Society at the date of the award are eligible for the Prize.
(4) No member can receive the Senior Berwick Prize more than once; winners of the Junior Berwick Prize are not however disqualified from eligibility. D. A. BRANNAN

SUPPORT FOR CONFERENCES

Members organising mathematical conferences are reminded that Council has set aside a sum of money for conference support. This will normally be used for relatively inexpensive conferences, or for items that cannot be covered by grants from other sources. Applications may be made at any time, and enquiries should be addressed to Professor C. T. C. Wall, Department of Pure Mathematics, University of Liverpool L69 3BX.

Two applications were received last session. A grant of £150 was authorised to assist with expenses of European visitors at a conference on "Surgery, homotopy and group actions" at Newcastle on 17–23 July; and a grant of £400 towards the expenses of a symposium in Algebraic Topology to be held in Oxford in June 1978.

MATHEMATICAL THEORY OF NON-LINEAR PROBLEMS

A Durham Research Symposium on the mathematical theory of non-linear problems in quantum mechanics and quantum optics will be held on 3–13 July 1978. The main object of the symposium is to bring together mathematicians and theoretical physicists who have worked on quantum mechanics involving non-linear response of systems to external stimuli. It is hoped to investigate especially problems in non-linear quantum optics and to see if the more pure mathematically-inclined studies of non-linear systems can contribute to the analysis of the problems encountered by the applied mathematicians. Topics that it is hoped to cover include: multiphoton processes, quantum systems in intense electromagnetic fields, quantum equations and other evolutionary differential equations with non-linear terms, and geometrical methods in quantum mechanics.

Principal speakers will probably include J. O. Eberly, P. Lambropoulos, J. Lewis, J. Retherford, M. O. Scully, I. Segal and D. J. Simms.

The Science Research Council will provide some financial support. Attendance will be primarily by direct invitation. A few places however will be available for others who wish to participate: those interested should write to: Professor E. A. Power, Department of Mathematics, University College London, Gower Street, London W.C.1.

DURHAM SYMPOSIUM IN FINITE SIMPLE GROUPS

An LMS Research Symposium will be held on 31 July to 10 August 1978 at the University of Durham with the aim of clarifying the precise position of the classification of finite simple groups and the immediate future of the programme, and to discuss the "post-classification" situation. It is expected that M. Aschbacher, G. Glauberman, D. Gorenstein and J. G. Thompson will give lectures or seminars. In addition, sets of lectures on the representation theory of groups of Lie type will be given by R. W. Carter and J. E. Humphreys, and on the geometry of sporadic groups by J. Tits. It is hoped also to organise a number of more informal seminars.

In addition to the principal speakers, the following have indicated that they expect to attend: J. L. Alperin, H. Bender, N. Burgoyne, M. J. Collins, C. W. Curtis, B. Fisher, P. Fong, R. Foote, D. Goldschmidt, R. Griess, Z. Janko, D. R. Mason, G. M. Seitz, L. Solomon, R. Solomon, B. Stellmacher, N. Suzuki, F. G. Timmesfeld and J. H. Walter.

Attendence will be primarily by invitation. Enquiries about remaining places should be made to Dr. M. J. Collins, Mathematical Institute, 24–29 St. Giles, Oxford OX1 3LB, preferably before 31 January.

The symposium will be supported financially by the Science Research Council. Most grants will be offered directly; a small number of grants are reserved for other U.K. participants who should apply as above.

Research students who have completed at least two years' postgraduate study may be considered for membership, but should apply through, and with the support of, their supervisors. They will not be eligible for grants.

Accommodation will be in Grey College and is expected to cost between £8 and £10 per day, including meals. There will be a registration fee of £7·50.

LMS INSTRUCTIONAL CONFERENCE ON ANALYTIC SETS

An LMS instructional conference on Analytic Sets, their connections with mathematical logic and applications in functional analysis will be held at University College, London on 16–29 July 1978. The main instructional lectures will be given by C. Dellacherie (Strasbourg), J. Hoffman-Jorgensen (Aarhus), J. E. Jayne (London), A. Kechris (Cal. Tech.), D. A. Martin (U.C.L.A.), C. A. Rogers (London), and A. H. Stone (Rochester). For further particulars apply to Dr. J. E. Jayne, Department of Mathematics, University College London, Gower Street, London WC1F 6BT, England.

READING COMBINATORICS COLLOQUIUM

A one-day colloquium on combinatorics will be held in the University of Reading on 25 January 1978, starting at 10·45 a.m. Further details can be obtained from D. E. Daykin, Dept. of Mathematics, The University, Whiteknights, Reading RG6 2AH.

AUSTRALIAN STATISTICAL AND STOCHASTIC PROCESSES CONFERENCES

The eighth conference on stochastic processes and their applications and the fourth Australian statistical conference will be held on 6-10 July 1978 and 11-14 July 1978, respectively at the Australian National University Canberra. Both conferences will feature invited speakers and sessions for contributed papers. The invited speakers include A. A. Borovkov, J. Gani, E. J. Hannan, T. E. Harris, D. L. Inglehart, J. F. C. Kingman, K. Krickkeberg, R. Leadbetter, P. A. W. Lewis, B. B. Mandelbrot, R. Pyke, Yu. A. Rozanov, V. V. Sazonov E. Seneta and D. Vere-Jones. Further details can be obtained from C. C. Heyde, CSIRO Division of Mathematics and Statistics Box 1965 Canberra City A.C.T. 2601, Australia.

CONGRESS ON LOGIC, METHODOLOGY AND PHILOSOPHY OF SCIENCE

The 6th International Congress of Logic, Methodology and Philosophy of Science will be held in Hannover on 22–29 August 1979 under the auspices of the International Union of History and Philosophy of Science (Division of Logic, Methodology and Philosophy of Science) and sponsored by the German Research Council (DFG) and the Land Niedersachsen. The congress will include, among others, the following sections: Proof theory and foundations of mathematics, Model theory and its applications, Recursion theory and theory of computation, axiomatic set theory, and foundations of probability and induction.

The sessions will consist of a number of invited addresses and symposia, in addition to brief contributed papers.

Further details can be obtained from: Sekretatiat des Internationalen Kongresses fur Logik, Methodologie und Philosophie der Wissenschaften, Welfengarten 1, D-3000 Hannover, BRD.

THIRD SYMPOSIUM ON COMPUTATIONAL STATISTICS

This symposium, organised by the Vereniging voor Statistiek in association with the COMPSTAT Society, Vienna will be held in Leiden on 21–25 August 1978. The organisers hope to cover the following areas:—Multivariate Analysis, Regression Methods, Exploratory Techniques, Simulation, Survey Analysis and Software Packages. Invited speakers include J. A. Nelder and J. Tinbergen. Further details can be obtained from COMPSTAT 1978, Centraal Reken Instituut, University of Leiden Wassenaarseweg 80, Leiden, Netherlands.

SOUTHEAST ASIAN MATHEMATICAL SOCIETY

The Society now publishes the *Southeast Asian Bulletin of Mathematics* with the financial assistance of the French Embassy in Singapore. Volume 1, Number 1, appeared in May 1977. The subscription rate for the *Bulletin* is $12 (Singapore) per volume of two issues; orders should be sent to SEAMS Publications Committee, c/o Department of Mathematics, Nanyang University, Jurong Road, Singapore 22.

D. A. BRANNAN