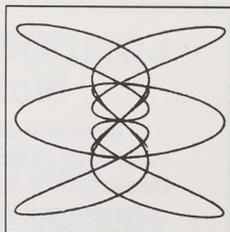


THE LONDON MATHEMATICAL SOCIETY NEWSLETTER



No. 137

February 1987

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Advertising: Susan Oakes, LMS Office, Burlington House, Piccadilly, London W1V 0NL. Tel: 01-437 5377.

The *Newsletter* is published monthly, except in August and September. Items for inclusion (with the exception of advertising material) should be sent to the Editor, to arrive before the tenth day of the month prior to publication. Advertisements, and general enquiries about the Society, should be addressed to Susan Oakes at the LMS Office.

Forthcoming Meetings

Friday, 20 February 1987, University of Manchester

(R.O. Gandy, J.V. Tucker, G. Kreisel)

Friday 20 March 1987, Burlington House

(J.M. Ball, J.B. McLeod)

8-9 May 1987, Edinburgh

Joint meeting with Edinburgh Mathematical Society

(M. Christ, A.M. Davie, E.B. Davies, E.M. Stein, N.Th. Varopoulos)

Friday 19 June 1987, Burlington House

Friday 16 October 1987, Burlington House

Friday 20 November 1987, Burlington House

REPRESENTATION THEORY AND GROUP THEORY

There will be a symposium on this topic from January to July 1988 at the University of Manchester and U.M.I.S.T. (with the support of the S.E.R.C. of Great Britain). A number of international visitors have already agreed to participate. There will be a conference with the same title from July 10 - 16, 1988. Anyone

interested in participating in either event should write for further information to: R.T.G.T. Department of Mathematics, University of Manchester Institute of Science and Technology, P.O. Box 88, Manchester, M60 1QD, England.

LONDON MATHEMATICAL SOCIETY Notice of General Meeting

There will be a General Meeting of the Society on Friday, 20th February 1987 at 2.30p.m. in Lecture Theatre 2.16, the Department of Mathematics, the University of Manchester, to consider a proposal by the Council of the Society to delete the existing By-Law II,1 and to substitute that printed below.

The new By-Law II,1, if accepted would keep the 1987-1988 annual subscription of individual members at the 1986-1987 level, would increase prices of the Bulletin, the Journal and the Proceedings to individual members by £1.00 per volume.

The price of the Bulletin would thereby be increased to its level in 1985-1986, with the prices of the Journal and the Proceedings maintaining the parity with that of the Bulletin achieved in 1986-1987.

Text of the Proposed By-Law II,1

The annual subscription to the Society of Ordinary Members for the 1987-1988 session shall be £6. The prices of the Society's periodicals to Ordinary Members shall be: *Proceedings* £8 per volume, *Journal* £8 per volume, *Bulletin* £8 per volume.

C.J. MULVEY,
Council and General Secretary.

TWO-DAY JOINT LMS-EMS MEETING

A joint meeting of the London and Edinburgh Mathematical Societies will be held in Edinburgh on Friday and Saturday, 8 and 9 May 1987. There will be a programme of five lectures on Friday afternoon and Saturday morning, given by M. Christ (California), A.M. Davie (Edinburgh), E.B. Davies (London), E.M. Stein (Princeton) and N.Th. Varopoulos (Paris). An informal dinner will be held on Friday evening. It is hoped that some of the speakers may stay in Edinburgh for a longer period, and anyone interested in visiting

Edinburgh while they are there is invited to write to Professor T.J. Lyons, Department of Mathematics, University of Edinburgh, Mayfield Road, Edinburgh EH9 3JZ, as soon as possible. Financial assistance may be available for such visits. Further details of the meeting will be circulated with the March Newsletter, or can be obtained from C.J. Shaddock at the above address. Help in finding overnight accommodation can be provided.

THE 1987 COLLINGWOOD LECTURE

The Department of Mathematical Sciences of the University of Durham holds an annual lecture on the History and Philosophy of Mathematics, in memory of Sir Edward Collingwood, F.R.S. The 1987 lecture will be given by *Dr. J.S. Bell, F.R.S.* of CERN, Geneva, who will speak about

No Action at a Distance?

The lecture will take place at 3.15pm on Tuesday, 24th February in the Scarborough Lecture Theatre, Science Laboratories, University of Durham.

RICHARD KANE

Professor Richard Kane (London, Western Ontario and Max-Planck-Institut, Bonn) will visit the U.K. with financial support provided by the LMS between 15 and 26 February. Provisional arrangements are that Professor Kane will speak

on February 16 at Oxford (I.M. James), February 17 at Manchester (J.N. Ray), February 19 at Cambridge (C.B. Thomas) and February 23 at Aberdeen (J.R. Hubbuck). Those named in parentheses can be contacted for further details.

LONDON MATHEMATICAL SOCIETY

FRIDAY 20 FEBRUARY 1987

Meeting to mark the Fiftieth Anniversary
of the Publication of A.M. Turing's Paper

'On Computable Numbers
with an Application to the Entscheidungsproblem'

2.30 R.O. GANDY (Oxford)

What did, and what did not happen in 1936

3.30 J. V. TUCKER (Leeds)

The Church-Turing Thesis and the Theory of
Programming Languages

5.00 G. KREISEL (Salzburg)

Busy and Quiet Sides of (Turing's) Logic

Tea will be served at 4.30

The meeting will be held in Lecture Theatre 2.16

Department of Mathematics

THE UNIVERSITY OF MANCHESTER

All interested are very welcome

Enquiries may be directed to the Department of Mathematics,
The University, Manchester M13 9PL. Tel : 061-273 7121

VISITING MATHEMATICIANS

University of Strathclyde

P. A. Binding (University of Calgary, Calgary,
Canada)

R. E. Kleinman (University of Delaware, Newark,
USA)

R. Millar (University of Alberta, Edmonton,
Canada)

Raphael Soriano (University of Granada) Statisti-
cal problems in astronomy and image
processing

University of Surrey

J. Denes (Budapest) Combinatorics

T. De Oliveira (Lisbon University) Statistics

M. Miura (Shimshu University, Japan) Statistics

University of Sussex

Kensuke Tanaka (Niigata University, Japan)
Markov Game Theory

A. J. Petkau (University of British Columbia,
Canada) Functional Analysis; Interpolation
Theory; Partial Differential Equations

H. Triebe (University of Jena, GDR) Statistics

University College of Swansea

C. Ben-Yelles (Algiers) Mathematical Logic

P. Blanchard (Bielefeld) Stochastic Processes
and applications

D. Stroock (MIT) Stochastic Processes and
applications

OPERATOR ALGEBRAS & APPLICATIONS

A symposium will be held during 1986-7 at the Mathematics Institute, University of Warwick, with support from the Science and Engineering Research Council and the National Science Foundation on Operator Algebras and applications and connections with topology and geometry (K-theory, index theory, foliations, differentiable structures, braids, links) with mathematical physics (statistical mechanics and quantum field theory) and topological dynamics.

The following special events are planned to be held at Warwick during the year:

Workshop on Operator Algebras in Mathematical Physics: 23 - 28 March 1987.

A Workshop on Cyclic Homology and K-theory is being organised by J.D.S. Jones during 6 - 11 April 1987.

A US-UK Joint Seminar on Operator Algebras is being organised by D.E. Evans and M. Takesaki during 20 - 25 July 1987.

The following are expected to participate in the Warwick Symposium on Operator Algebras and Applications:

D.B. Abraham (Oxford)
H. Araki (RIMS, Kyoto)
R.J. Archbold (Aberdeen)
M.F. Atiyah (Oxford)
C.J.K. Batty (Oxford)
P. Baum (Brown)
H. Behnke (Osnabrück)
J.V. Bellissard (Marseille)
B.E. Blackadar (Reno)
J-B. Bost (Ecole Normale S.)
O. Bratteli (Trondheim)
G. Brown (NSW)
L.G. Brown (Purdue)
A.I. Carey (Adelaide)
E. Christensen (Copenhagen)
C.H. Chu (Goldsmith's)
A. Connes (College de France)
J. Cuntz (Marseille)
R.G. Douglas (Stony Brook)
D. Dubin (Open)
E.G. Effros (UCLA)
G.A. Elliott (Copenhagen)
R. Exel (Sao Paulo)
F. Goodman (Iowa)
J. Gunson (Birmingham)
U. Haagerup (Odense)
D.E. Handelman (Ottawa)
P. de la Harpe (Geneva)
R. Herman (Penn. State)
N. Higson (Pennsylvania)
R.L. Hudson (Nottingham)
N.M. Hugenholtz (Groningen)
S. Hurder (Illinois) -
C.A. Hurst (Adelaide)
B.E. Johnson (Newcastle)

V.F.R. Jones (Berkeley)
P.E.T. Jorgensen (Iowa)
P. Julg (College de France)
R.V. Kadison (Pennsylvania)
J. Kaminker (Indiana)
G.G. Kasparov (Chernoglovka)
J. Kraus (SUNY, Buffalo)
W. Krieger (Heidelberg)
E.C. Lance (Leeds)
J.T. Lewis (IAS, Dublin)
R. Longo (Rome)
T.A. Loring (Berkeley)
G. Luke (Oxford)
T. Matsui (RIMS, Kyoto)
K. Matsumoto (Niigata)
W. Moran (Adelaide)
A. Ocneanu (Penn. State)
G.K. Pedersen (Copenhagen)
C. Phillips (UCLA)
M. Pimsner (INCREST)
R. Plymen (Manchester)
S. Popa (INCREST)
R.T. Powers (Pennsylvania)
A.N. Pressley (King's, London)
M.A. Rieffel (Berkeley)
M. Rordam (Pennsylvania)
J.E. Roberts (Osnabrück)
D.W. Robinson (Canberra)
J. Roe (Oxford)
S. Sakai (Nihon, Tokyo)
G. Segal (Oxford)
G. Sewell (QMC, London)
A. Sinclair (Edinburgh)
G. Skandalis (Paris)
R. Smith (Texas A & M)
M. Spera (Rome)
E. Stormer (Oslo)
S. Stratila (INCREST)
R.F. Streater (King's, London)
M. Takesaki (UCLA)
K. Tamaki (Ibaraki)
J. Tomiyama (Niigata)
A-M Torpe (Odense)
A. Valette (Brussels)
A. Verbeure (Leuven)
D. Voiculescu (INCREST)
A. Wassermann (Liverpool)
S. Wassermann (Glasgow)
H. Wenzl (Berkeley)
M. Winnink (Groningen)
E.J. Woods (Queen's)
J.D.M. Wright (Reading)
F. Yeadon (Hull)

Further information may be obtained from: D.E. Evans, Mathematics Institute, University of Warwick, Coventry CV4 7AL, England.

Detailed information about the *Workshop on Cyclic Homology and K-Theory* may be obtained from J.D.S. Jones at the same address.

Joint Mathematical Council of the United Kingdom The Public Image of Mathematics - Newsletter 2

A sub-committee of the Joint Mathematical Council has continued to meet to consider the ways in which the public image of mathematics might be improved. Early in 1985 a newsletter was sent out to the Constituent Societies of Council outlining a range of activities that were felt to be contributing to a better image of the subject. Some of the Constituent Societies used the contents of the newsletter to communicate information to their members through their own publications and, as a result, information has been received about other activities going on in many places.

The sub-committee is seeking ways of disseminating information more extensively and becoming more effective as an agent for information exchange. It would, therefore, welcome as much detail as possible about initiatives that are being taken and which can be reported in Newsletter 3. To help in this, Newsletter 2 will have a wider distribution than its predecessor.

Anyone with ideas for achieving the aims set out above or with information about interesting activities not so far reported is invited to write to: G.T. Wain, Centre for Studies in Science and Mathematical Education, University of Leeds, Leeds LS2 9JT.

or to contact anyone of the other members of the sub-committee who are:

Professor C.A. Rogers, University College, London

Dr. K. Devlin, University of Lancaster

Mr. G.H. Littler, Derbyshire College of Higher Education

Dr. D. Singmaster, Polytechnic of the South Bank

Dr. G. Flegg, The Open University

Mr. L. Rogers, Roehampton Institute of Higher Education

Ms. R. Nolder, c/o. The Mathematical Association

During the last year the sub-committee has considered a number of initiatives and also become aware of many activities that are taking place around the country. A summary of these is given below.

1. Museums, Exploratories and Exhibitions

a) The development of an interactive Exploratory in Bristol was reported in the last Newsletter. Professor Richard Gregory of Bristol University has carried his plans forward during the last 18 months and a limited exhibition opened this Autumn in the Victoria Rooms in the University of Bristol. After a one-year trial it is hoped then to move to a permanent site in the old Brunel train sheds near the station. A two week exhibition was also held at the British Association

meeting in Bristol and a large number of people visited. The Exploratory is designed to evolve and it is hoped that there will be an increasing number of exhibits concerned with mathematics. Anyone interested in proposing new ideas or being involved in the project should communicate with Professor Gregory, Brain and Perception Laboratory, The Medical School, University of Bristol, University Walk, Bristol BS8 1TD.

- b) Discussions are now in an advanced stage about the setting up by the Leeds City Council of an exploratory in science and mathematics in Leeds. Suggestions about mathematical items will be made to the steering committee by an ad hoc group set up in the University of Leeds. Further information can be obtained from Dr. A. West, School of Mathematics, University of Leeds, Leeds LS2 9JT.
- c) The Science Museum in London has recently opened an interactive series of exhibits designed for children and called The Launch Pad. Few of the exhibits are directly mathematical but a number deal with mechanical principals and several have an underlying mathematical idea.
- d) It is understood that Sainsbury's Ltd. have made available some money to assist in the setting up of interactive exhibitions/displays. Anyone considering such a development in their own area is advised to approach the Education Liaison Officer of Sainsbury's.
- e) A travelling exhibition involving mathematics and science is under consideration to be mounted in cooperation with the production of a new BBC series. The producer involved is Mr. R. Mudge and the exhibition designer is Mr. S. Pizzey who has worked with the Bristol Exploratory as well as at the Science Museum and the National Photographic Museum.
- f) An exhibition on Knots has been developed by Professor R. Brown at the University of Wales, Bangor. The exhibition has been designed for popular viewing and has been used for open days and to accompany lectures on Knots for the London Mathematical Society, a Mermaid Molecule Club lecture and at sixth form conferences. Professor Brown is currently seeking money in order to reproduce the exhibition in an "attractive, stylish and professional way". It will then be displayed at master classes and in schools in Gwynedd. If enough funding can be obtained a number of copies of the exhibition could be published which could be

made widely available throughout the country. Anyone wanting further information should contact Professor Brown, Department of Pure Mathematics, University of College of North Wales, Bangor, Gwynedd, LL57 2UW.

- g) Many people will have seen the exhibition "Frontiers of Chaos" which toured the country in 1985/86. Those who did will have been impressed by the remarkable quality of the reproduction of computer graphics arising out of relatively simple iterative procedures. The publication *Frontiers of Chaos* by Pietgen and Richter, University of Bremen was available at the exhibitions and provides a striking record of the event. Unfortunately it is now out of print but there is a successor book called *The Beauty of Fractals* by Pietgen and Richter, published by Springer-Verlag.

2) Drama

- a) Since 1980 there has been an annual competition for schools in South East Wales, an entry to which has consisted of an episode from the history of science, technology or engineering; a contemporary, controversial issue related to the social consequences of developments in science and technology, or the exposition of a scientific concept in a way that facilitates its understanding. From 1985/6 onwards these competitions are now being held in several regions of England and Wales under the auspices of the British Association for the Advancement of Science. Further information can be obtained from Dr. P. Briggs, British Association for the Advancement of Science, Fortress House, 23 Savile Row, London W1X 1AB.
- b) The Joint Mathematical Council has been discussing recently an initiative in mathematics similar to that in science described in a). A grant has been sought from the Gulbenkian Foundation and approaches are now being made to LEA's in which the first venture might take place. The Council has set up a committee to manage arrangements. Further details can be obtained from Mr. G.T. Wain, Centre for Studies in Science and Mathematics Education, University of Leeds, Leeds LS2 9JT.
- c) The Watch Theatre has toured the country in 1985/6 with a new play called "Maths, Magic and Moon". The tour went to secondary schools and universities and was written for sixth formers and others. It was about astronomy, mathematics and attitudes to science and research. Further information can be obtained from Watch Theatre, 48 Robin Hood Lane, Winnersh, Berkshire. A previous production was entitled "Time, The Clock and the Cobweb."

- d) The Molecule Club, based at the Mermaid Theatre, London continues to write and produce plays on themes from science and mathematics. Information can be obtained from The Molecule Club, The Mermaid Theatre, Puddle Dock, London EC4.
- e) Some experiments in the use of drama to initiate mathematical activity in schools have been tried by the Theatre in Education group called Big Brum. Details can be obtained from Mr. P. Wynne Willson, 38 Millward Street, Birmingham B9 5BA. The work will be described at the next annual conference of the Association of University Mathematics Education Teachers.

3. Competitions

It is clear that throughout the country there are many mathematical competitions organized by various groups of people. The full range of what is on offer is not known to the Council sub-committee and what follows is a brief account of those that are known. It would be useful to receive information about other competitions that exist so that the approaches used can be made more widely known. The form of some of the competitions listed below may appeal to readers who are then encouraged to try similar ideas in their own locality.

- a) The Scottish Mathematical Council organizes annual project competitions open to the age ranges 7 - 12 years and 12 - 18 years. Financial assistance is given by certain Scottish industrial organizations within the CBI and by the Scottish Education Department. Some recent projects in the secondary competition include: Mathematics in Nature, Square, Spirals, The Life and Work of John Napier, Non-periodic Tilings and Polycombs. More information can be obtained from Mr. C. Woods, Heriot Watt University, Edinburgh.
- b) There are a number of activities in mathematical education including two competitions that are organized by the group known as Mathematical Education on Merseyside which is a partnership between university and polytechnic staff, school teachers, LEA advisers and industrial and commercial sponsors. The two competitions are called Challenge and Radio Challenge. The first is aimed at three different age groups; the under 18, under 15½ and under 13½. The competition is in the form of a sheet of six problems, solutions to which have to be submitted by a given date. Prizes have been donated by ICI and Royal Insurance and presented at evenings of mathematical recreation held in the University of Liverpool. Radio Challenge is a team knock-out competition with the final rounds broadcast

by Radio City. The winners are awarded the Radio City Trophy. Questions set in both competitions with solutions provided have been compiled into a number of publications. Further information can be obtained from Dr. I. Porteous, Department of Pure Mathematics, The Mathematics and Oceanography Building, The University of Liverpool, P.O. Box 147, Liverpool, L69 3BX.

- c) Competitions aimed at the three age groups 8 - 13, 13 - 16 and 16 up, are organized in West and North Yorkshire by the Schools of Education and Mathematics in the University of Leeds in partnership with the Yorkshire Branch of the Mathematical Association and sponsored by Yorkshire Television. The 8 - 13 competition is based on individual projects; the 13 - 16 on problem papers with preliminary and final rounds; and the 16+ on a team project approach. Prizes are awarded at a prize-giving at which finalists display their entries and at which some of the judging takes place. In 1986 there were approximately 2,000 pupils involved. Further information is available from Mr. G.T. Wain, Centre for Studies in Science and Mathematics Education, University of Leeds, Leeds LS2 9JT.
- d) Competitions outlined above are only a few of those that go on nationwide. Others that have been brought to the attention of the sub-committee are based on the Universities of York and Sheffield. The former organize a written competition for schools and the latter a radio competition similar to the one in Liverpool.

4. Conference

In September 1986 the NATFHE Mathematics Education Section, in conjunction with DES, organized their annual conference around the theme Images of Mathematics. The public image was one aspect considered. Others were imagining and images in the process of learning the subject. Information about the programme of the conference and any outcomes from it may be obtained from Dr. D. Woodrow, Faculty of Community Studies and Education, Didsbury School of Education, 799 Wilmslow Road, Didsbury, Manchester M20 8RR.

5. Master Classes

For about five years the Royal Institution has been organizing master classes for 12/13 year olds in London. During that period the Royal Institution has built up a network of master classes throughout the country based on the London model. There are now regular courses being held in Birmingham, Cheltenham, Edinburgh, Gwynedd, Hillingdon, Leeds, Manchester, Newcastle, Suffolk, Sussex and Warwick. General organization is co-ordinated by

the Royal Institution but each course is sponsored by a local firm. Many of the pupils who take part are involved in visits to the Royal Institution. There is also a follow-up study in progress to try to find out what the participants go on to do after the master class experience. A newsletter is produced from time to time giving details of the whole programme. Anyone interested in obtaining a newsletter or finding out more about the master classes should write to Professor J. Crank, The Royal Institution, 21 Albemarle Street, London W1X 4BS.

6. Mathematical Trails

An interesting development that has come to the attention of the Council's sub-committee is of mathematical trails in several parts of the country. Some of these trails are designed specifically for school pupils, leading them around a local area, directing their attention to mathematical aspects of the environment and setting simple mathematical tasks. The model is the nature trail but the contents are mathematical. Other mathematical trails have been devised with the general tourist in mind and can be obtained from local information centres. Places where it is known that such trails exist are Bristol, Newcastle, Birmingham and Leeds. Information has also been received about several trails that have been developed in Melbourne, Australia.

7. Broadcasting

During the last two years a number of television programmes have been produced which deal with mathematics and serve to popularize the subject to some extent. Amongst them have been two Horizon programmes, one dealing with aspects of pure mathematical studies and the other with children learning mathematics. The Open University has re-made its TV programmes on the history of mathematics and the new series will be broadcast starting early in 1987.

Yorkshire Television is now considering a new series of programmes called Mathematics Eye which is planned to be similar to the series Scientific Eye which has already been broadcast. The producer responsible for both is Adam Hart-Davies.

8. Publishing

The Computer Page, produced in the Guardian each week, and which contains a number of references to mathematics continues in an extended form. The main writer on mathematical issues is Dr. K. Devlin of the Pure Mathematics Department of the University of Lancaster.

An interesting item of information received by the sub-committee is about the reporter Lee Dembart of the Los Angeles Times. He is a science reporter who also writes on mathematics. His writing brings to public

attention something of the work of mathematicians. Also in the USA the Joint Policy Board for Mathematics, an action committee of the MAA, and SIAM is considering the creation of a public information office to collect and disseminate to the media items of importance to the mathematical community.

As mentioned earlier the Mathematics on Merseyside group has published a number of collections of questions that have been used in their various competitions since 1978. Included are the following titles: Senior Challenge '80-'84, Challenge '78-'82, Radio Challenge 1982 and Radio Challenge 1983. These publications include a lot of material of help to those who may be considering setting up competitions. They can be obtained from Dr. I. Porteous (for address see 3b above).

9. Recreational mathematics

From the wide variety of puzzles and problems available in many popular publications it would seem reasonable to assume that recreational mathematics is extremely well and very much alive. David Singmaster is involved in a number of

aspects of recreational mathematics including editing the Oxford Series in Recreational Mathematics the first three books of which are: *Mathematical Byways* in Ayling, Beeling and Ceiling by H. ApSimon, *The Ins and Outs of Peg Solitaire* by J. Brearley and *Rubik's Cubic Compendium* by Erno Rubik et al.

Future publications are to include a book on sliding piece puzzles by E. Hordern, a translation of *Mathematische Unterhaltungen und Spiele* by Ahrens, a book on J. Slocum's puzzle collection and a sourcebook and/or bibliography on sources in recreational mathematics by D. Singmaster.

David Singmaster is also preparing an article on mathematical monuments and would like to receive any information about any known to readers.

Anyone with an interest in mathematical recreations should make contact with David Singmaster, South Bank Polytechnic, London SE1 0AA.

DOMAIN THEORY AT LEEDS

A meeting on Domain Theory will be held at the Nuffield conference Centre, Fairbairn House, Leeds University, beginning with lunch on Friday, 26 June and ending with afternoon tea on Saturday, 27 June, 1987. The meeting will be jointly sponsored by the LMS and the Leeds University Centre for Theoretical Computer Science.

Domains are to computation roughly as topological spaces are to continuity, and their theory and applications have evolved rapidly out of pioneering work by Scott and Ershov 15 to 20 years ago. It is intended that the meeting should

provide a forum for interaction between mathematicians and computer scientists interested in theoretical foundations of computation.

This is a preliminary announcement. Further details, including the names of invited speakers, will be published later. The cost of full board at Fairbairn House will be approximately £35. Those interested should write to Dr. J.V. Tucker (Computer Studies) or Dr. S.S. Wainer (Mathematics), University of Leeds, Leeds LS2 9JT.

We wish to purchase runs and odd Nos. of: *Sphinx*, *Revue Mensuelle des Questions Recreatives*, Bruxelles, 1931-39, *Journal of Recreational Mathematics*, 1968 -, *Recreational Mathematics Magazine*, 1961-64, *Sphinx-Oedipe*, Nancy, 1906-1932, *Mathematical Pie*, 1950 -. All books published in the series "Librairie du Sphinx" Bruxelles, Rouse-Ball, W.W.R. "Mathematical Recreations and Essays" all editions from the first (1891) to 11th (1939). Also mathematical books of all kinds from very elementary to advanced texts. Also biographies of mathematicians and physicists. We also sell books in this field, indeed, we specialise in mathematics and will be pleased to receive your list of books wanted and to send you our current catalogue sent post free on request.

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