

Combinatorics

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Director of CMSA till December 31st 1987
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Professor A. Street,
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charges.)

1. ICCMC2

This conference was held from 24-28 August at the ANU in Canberra. Approximately 90 people attended the conference from many parts of the globe.

The Proceedings will be published as a special issue of *Ars Combinatoria*.

2. Future CMSA meetings

Attached are the minutes of the Annual Meeting of the CMSA held on August 15. You will note that there is to be no CMSA meeting as such next year. This is because the SRI in Newcastle in February is to have a combinatorial flavour and CMSA is to participate in the National Mathematical Sciences Congress to be held in Canberra in May.

The next CMSA conference will be held at the University of Queensland in 1989.

Note that the motion to affiliate with the Australian Mathematical Society was lost.

National Mathematical Sciences Congress 1988

This Congress is being held as part of the Bicentennial Celebration in 1988. It is a broad spectrum conference spanning the whole of the mathematical sciences, the first of its kind to be held in Australia. Its aim is to highlight developments and achievements, with an emphasis on Australian contributions, as well as to encourage communication between mathematical scientists of different specialisations.

The programme will include plenary lectures and a comprehensive range of invited lectures as well as contributed paper sessions. In addition, various special sessions are being arranged including ones on aspects of the History of Mathematical Sciences in Australia and on aspects of Mathematical Sciences in Industry. It is also intended to complement the formal presentation with displays covering various applications and relevant computer developments. For further information write to N.M.S.C. Secretariat

P.O. Box E345,
Queen Victoria Terrace,
Canberra A.C.T. 2600

INVITATION TO THE SUMMER RESEARCH INSTITUTE 1988

Roger B. Eggleton

A Feast of Combinatorial Mathematics

The Summer Research Institute 1988 of the Australian Mathematical Society will be held in Newcastle, 20 January - 5 February 1988. The organising committee extends a very warm invitation to members of the Combinatorial Mathematics Society of Australasia: Please come to this Bicentennial Summer Research Institute! We've included, as part of the menu, a feast of Combinatorial Mathematics which you won't want to miss. Besides, summer is the right time to visit Newcastle's beaches, beautiful Lake Macquarie, the vineyards of the Hunter Valley, and a long list of other attractions in the area. And the Bicentennial celebrations will doubtless provide many additional attractions, especially as Australia Day falls within the dates of the Meeting.

The invited speakers who will give lecture series at SRI 1988 include the following distinguished combinatorial mathematicians:

Professor Claude Berge (5 lectures: 1-5 February), Directeur de Recherche, Centre National pour la Recherche Scientifique, Paris. Professor Berge's expertise in graph theory will be the basis for his lectures at SRI 1988. Besides numerous research papers, Claude has published some ten books in graph theory and combinatorial mathematics, several of which have been published in second editions; some have also been translated into other languages, including English, Russian, German, Spanish and Chinese. He is also a prolific researcher and a popular speaker, and his lectures in SRI 1988 will be sure to draw numerous participants. Professor Berge's airfares will be funded by QANTAS.

Professor Paul Erdős (probably 2 or 3 lectures during the week 25-29 January), from the Hungarian Academy of Sciences. Professor Erdős, known to many of us as Uncle Paul, holds numerous visiting appointments around the world, and has long and distinguished career in many fields of mathematics. He is famous for (among other things) his problems with prize-money, his many fruitful and stimulating conjectures, his ability to rapidly and fruitfully collaborate with fellow mathematicians on their latest problems, and his encouragement of young mathematicians. His lectures will probably deal with graph theory, combinatorial geometry, and elementary combinatorial number theory.

Dr Ronald L. Graham (5 lectures: 25-29 January), Director, Mathematical Sciences Research Center, AT&T Bell Laboratories, Murray Hill, New Jersey. Ron's special interests in combinatorial mathematics will provide the broad field for his lectures. Among his many professional activities, he is Chairman of a number of committees of the Board of Trustees of the American Mathematical Society; Chairman of the Board of Directors of the International Congress of Mathematicians held in Berkeley in August 1986; Chairman of the Mathematics Section of the New York Academy of Sciences; and he is currently on the editorial boards of no fewer than 31 journals and monograph series in combinatorial mathematics, graph theory, computer science and other areas of mathematics. Ron is a prolific researcher and an

excellent public speaker. His participation in SRI 1988 will be especially attractive to everyone interested in combinatorial mathematics.

Professor Rudolf Lidl (5 lectures: 1-5 February), Head, Department of Mathematics, University of Tasmania. Rudolf is a specialist in applications of algebra, and has written several books on the subject, including the joint work with Günter Pilz, *Applied Abstract Algebra* (Springer, 1984). He will give a lecture series on finite fields, with applications. Professor Lidl's airfares are being funded by Australian Airlines.

Dr Henry O. Pollak (3 lectures: 20-22 January), who has recently retired as assistant vice-president, Mathematical Communications and Computer Services Research Laboratory, Bell Communications Research after 35 years service at Bell Telephone Laboratories. Henry has published papers on analysis, function theory, probability theory and mathematics education and holds a patent jointly with Ron Graham for work on interconnected loop digital transmission systems. He has actively participated in professional mathematical associations and is a past-president of the Math. Association of America (1975-1977). In his retirement he is devoting himself to a number of activities linked to mathematics education. He is visiting Australia as a Fulbright Scholar and will also be participating in the AAMT Biennial Conference and the Applied Mathematics Conference.

IBM Australia is entirely funding a speaker for SRI 1988. At the time of writing, details are not quite finalised, but it is likely that the person chosen will be of considerable interest to combinatorial mathematicians. Probably the speaker will be :

Dr Barry Trager (3 lectures: 20-22 January), IBM, Yorktown Heights, New York. Barry is known as an excellent expositor. He is codesigner of Scratchpad II, in charge of algebra development of the system. He is a world authority on symbolic integration, and his MIT thesis *Integration of Algebraic Functions* is a landmark in computer algebra. Besides symbolic integration, his current interests include Groebner bases for the solution of algebraic equations, the current "hot topic" in algorithmic aspects of computer algebra.

Other Speakers

The other themes of SRI 1988 are concerned with aspects of applied statistics, notably pattern recognition and medical statistics. Please look over the details and bring them to the attention of any colleague who might be interested: remember, the more people who attend SRI 1988, the more successful it will be, professionally and socially.

The distinguished invited speakers in applied statistics are:

Professor Keinosuke Fukunaga (5 lectures: 1-5 February), Professor of Electrical Engineering at Purdue University. Professor Fukunaga's interests lie in Pattern Analysis and the extraction of features from data. He has published widely in the field, and has at least one book (which has appeared in three languages) on the matter. He's also a consultant for research laboratories and technology firms. His lecture series is entitled "Nonparametric Approaches to Pattern Recognition". Professor Fukunaga's visit will be supported by B.H.P. in Newcastle.

Summer Research Institute 1988

Professor Timo Hakulinen (four-day workshop, 20-23 January 1988), from the Finnish Cancer Registry and the University of Tampere, Finland. He will give an intensive workshop entitled "A Short Course in Cancer Survival Analysis", as an adjunct to the Summer Research Institute. This is expected to attract a number of physicians, statisticians, computerscientists and others in the health professions working on survival analysis of cancer patients, or with an interest in such work. Registration for this course will be separate from that for the Summer Research Institute, and limited to 20 participants.

Professor David Matthews (probably 3 lectures in the week 25-29 January), from the Department of Statistics and Actuarial Science, University of Waterloo. His lecture series is entitled "Multi-state Models for Biostatistical Problems".

Professor James W. Vaupel (5 lectures: 25-29 January), Director of the Center for Population Analysis and Policy, University of Minnesota. Professor Vaupel is a statistician with major interests in Decision Analysis, Population Analysis, the analysis of Health and Environmental Policy, and the demography of lifesaving.

Invite a Graduate Student

We now make a special appeal to you: Do you know a graduate student who would benefit from attending SRI 1988? If so, please make sure that student knows about SRI 1988, and please investigate to what extent your department can help fund that student to attend. After all, the primary aim of a Summer Research Institute is to bring internationally distinguished speakers to a venue accessible to members of the Australian Mathematical Society, and have these speakers present a short series of lectures in one of their areas of special expertise, including up-to-date developments. This is a valuable learning opportunity for all participants, and especially so for the young graduates who are able to attend.

Registration fees for SRI 1988 have been kept at a fairly modest level (\$85, with several concessional categories, such as \$50 for graduate students). This recognises the fact that participants have travel, meals and accommodation expenses to meet. Accommodation will be available in Edwards Hall, as well as several venues off campus, in a cost range which will include options suitable for graduate students' pockets.

Your Last Chance

Because the Australian Mathematical Society is shifting its emphasis to short special-interest meetings, it is expected that SRI 1988 will be the last of the Summer Research Institutes. The organising committee is working hard to make it "bigger and better than ever", and confidently invites you to attend. All serious participants are welcome, regardless of their affiliations.

For further information, please write to: Secretary, SRI 1988, Department of Mathematics, University of Newcastle, N.S.W. 2308.

3. CMSA Constitution.

Some people were concerned that some recent developments may have been unconstitutional. Attached is a copy of the constitution.

4. Books.

We would like to make the following announcement.

Combinatorics of Experimental Design

Anne Penfold Street, Professor of Mathematics, University of Queensland,
and Deborah J. Street, Lecturer in Biometry, Waite Agricultural Research
Institute, South Australia

This textbook, aimed at advanced first-degree students in mathematics and statistics, breaks new ground at this level in relating recent developments in combinatorial theory to the practical needs of statisticians in formulating designs suitable for experimental programmes. For the statistician, it gives a coherent account of direct and recursive methods of construction of combinatorial designs; for the combinatorialist, it explains the statistical motivation for studying particular finite structures, and suggests open problems in the construction of new designs with useful properties for the experimentalist.

Contents: Notation and terminology; Numbering; Introduction; Balanced incomplete block designs; Difference set constructions; Isomorphism and irreducibility; Latin squares and triple systems; Mutually orthogonal Latin squares; Further results on Latin squares; Resolvable designs and finite geometries; Symmetrical factorial designs; Single replicate factorial designs; Designs with partial balance; Existence results: symmetric balanced designs; Existence results; designs with index 1 and given block size; Designs balanced for neighbouring varieties; Competition designs; References; Index.

5. CMSA 1990

The 1990 Australasian conference on Combinatorial Mathematics and Computing is planned for December 3-7, 1990 at Massey University. If you become aware of any foreign combinatorial mathematicians who may be in the Antipodes at that time, please contact Dr C.H.C. Little, Department of Mathematics and Statistics, Private Bag, Palmerston North, NEW ZEALAND.

Combinatorial Mathematics Society of Australasia

Annual General Meeting, August 25th 1987

1. Apologies

None

2. Minutes

of the previous meeting held in Dunedin in December 1986 were accepted.

(B.H. Neumann/Debbie Street)

3. Matters arising

It was noted that the Proceedings of the Singapore and Dunedin Conferences were now published.

4. Affiliation with the Australian Mathematical Society

By a postal vote of 7 For, 21 Against it was agreed to not affiliate at this time.

5. Treasurer's report

The Treasurer's reports for 1985 and 1986 were presented and accepted.

6. Conferences

- 1988 (1) SRI, Newcastle 20 Jan to 5 Feb. Although this is not a CMSA - related event it will have a strong combinatorial flavour.
(For details see sheets attached to these minutes)
- 1988 (2) The National Mathematical Sciences Congress will be held in Canberra, 16-20 May. Two sessions will be available for CMSA participation.
- 1989 (1) Australian Mathematical Society's Annual Meeting will be held at Melbourne University 3-7 July.
- 1989 (2) CMSA, University of Queensland, 10-14 July.
- 1990 CMSA, Massey University

(Charlie Colbourn/Debbie Street)

Two difficulties on future CMSA conference timing were noted. First, now that most Australian Universities are on a Semester system there is to be a common week in July. CMSA will possibly be competing for this week with the Australian Mathematical Society. Other common weeks will be less acceptable to combinatorialists in the Northern Hemisphere.

Second, because of Massey's extra-mural program it is not possible to obtain accommodation on campus till the end of Term 3. Thus the 1990 conference will most likely not take place till November or December.

7. Director

7.1 From August till end of 1987 - Dr B.D. McKay

(Roger Eggleton/Curt Lindner)

7.2 From January 1988 till July 1989 - Professor Anne Street

(Curt Lindner/Peter Eades)

8. Other Business

8.1 Treasurer: Dr R. Duke.

(Peter Eades/Curt Lindner)

8.2 Annual General Meeting to take place at the National Mathematical Sciences Congress, May, 1988.

(Anne Street/Liz Billington)

COMBINATORIAL MATHEMATICS SOCIETY OF AUSTRALASIA

CONSTITUTION

- Aim:** To promote Combinatorial Mathematics in Australasia.
- Membership:** Ordinary Membership is open to anyone paying the prescribed membership fee.
- Fees:** These are to be determined at the Annual Meeting of the Society.
- Annual Meeting:** This will be held at the Annual Conference of the Society. An audited account of the financial transactions of the Society for the previous calendar year, must be given at the Annual meeting.
- Officers:** The Annual Meeting shall elect a Director, Secretary, Treasurer and other members of the Committee of the Society as it sees fit.
- Committee:** The Committee of the Society shall be responsible to the Society for:
- (1) the general business of the Society; and
 - (2) the organisation of the next Annual Conference.
- The Committee shall have power to coopt.
- Voting:** A quorum at a meeting of the Society shall consist of ten members. Any contentious issue shall be determined by a simple majority vote of the members present, except the alteration of the Constitution or the termination of the Society, both of which require a two thirds majority. Notice of intent to change the Constitution or to terminate the Society must be posted to the Membership one calendar month before the Annual Meeting or a meeting specially convened for one of those purposes.
- Termination:** In the event of the Society being terminated, all residual funds and assets of the Society shall be donated to the Australian Mathematical Society.