

COMBINATORICS

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Combinatorics is the newsletter of the Combinatorial Mathematics Society of Australasia, and is published by the Society.

The annual subscription rate for individual non-members and institutions is \$A5.00.

During 1985, all enquiries should be directed to the CMSA, C/- Dr. J. Seberry, Department of Computer Science, University of Sydney, Australia, 2006.

If the box is marked your subscription is now due



Your conference reply form has been received



1. KILLAM PRIZE WON BY RALPH STANTON

(As announced in Vol 6 (1984) Number 2, p14)

Dr. Ralph Stanton, Head of the Department of Computer Science, is one of four Canadians to receive the 1985 Canada Council Isaak Walton Killam Memorial Prizes.

The prizes, worth \$50,000 each, were presented by Maureen Forrester, chair of the Canada Council, at the University of Quebec at Montreal on April 9.

The memorial prizes are the most prestigious Killam awards of the Canada Council and recipients are selected from among nominations submitted to the 15-member selection committee.

Established in 1981 with three prizes, and one annually since then, the Killam prizes were increased to three annually in 1985 with an award in each of three categories: health sciences, natural sciences, and engineering.

The 1985 selection committee, confronted with four deserving candidates, decided to award four Killam memorial prizes instead of the previously announced three.

The prizes are supported from funds donated to the Canada Council by Dorothy J. Killam before her death and reflect her interest in science, medicine, and engineering. The prizes were created to honor Canadian scholars active in research, whether employed in industry, government or university. The prize is not for a specific accomplishment, but recognises distinguished lifetime achievement in the field of specialisation.

Dr. Stanton, according to the statement from the Canada Council, is being honored for his contributions to several fields of mathematics - statistical design theory, algebra, numerical analysis, computer science, and combinatorics.

Throughout his career, his publications have been noteworthy for the breadth of topics he has dealt with and the ingenuity of the methods he employs.

Dr. Stanton's fundamental contributions to combinatorics (notably on room squares, near-coverings, and covering and packing designs) not only have advanced theory, but also have stimulated further research and advances by others ...

In addition to his research activities, Professor Stanton is credited with developing and building up world class research groups in statistics, computer science and combinatorics at the University of Waterloo, between 1957 and 1966.

Since leaving Waterloo, he has built up similarly strong groups in computer science and combinatorics at the University of Manitoba. Largely due to Professor Stanton's efforts at Waterloo and Manitoba, Canada is internationally recognised as one of the leading countries in the important new field of combinatorics.

Dr. Stanton is a graduate of the University of Western Ontario and the University of Toronto. A fellow of the Royal Statistical Society, he also holds the rank of life master in the American Contract Bridge League and is an authority on the Portuguese epic.

Dr. Stanton was named a distinguished professor of the University of Manitoba last year.

2. THE THIRTEENTH AUSTRALASIAN CONFERENCE ON COMBINATORICAL MATHEMATICS AND COMPUTING

(i) Contributed Papers

Papers are well in all areas of pure and applied combinatorical mathematics and computing. If you intend to present a paper and have not done so please send a typed abstract immediately.

(ii) Overseas Visitors

The following overseas visitors will attend:

Professor P. Erdos (Hungary)  
Professor C.A. Colbourne (University of Waterloo, Canada)  
Professor C.A. Rodger (Auburn University, USA)  
Professor R.G. Stanton (University of Manitoba, Canada)  
Professor D. Skillicorn (Queen's University, Canada)

We hope too that Professor V. Sos (Hungary) will be speaking.

(iii) Proceedings

The proceedings of the XIth ACCMC will be published as a special volume of the Ars Combinatoria. All papers will be refereed. Contributors may submit their manuscript in final form at the conference, or, failing this, should send the final form of their manuscript by 30 September 1985 to:

The Editor,  
Ars Combinatoria,  
Department of Computer Science,  
University of Manitoba,  
Winnipeg, Manitoba,  
Canada, R3T2N2.

Printing will be done by photo-offset directly from the typed sheets submitted by the authors. No attempt can be made to make these submissions uniform except in layout. It would be much appreciated if the simple conditions indicated below could be followed.

1. Title in capitals.
2. Author's name and address (in lower case)
3. Paper (spaced 1.5 except where the symbols require a larger spacing) following on the same page as the title.
4. The margins all around can be made uniform by using the special grid paper supplied by the publisher. This paper can be obtained from Dr. J. Seberry, together with a sheet of instructions for its use. It is very important to use this paper (or to use it as a guide, as explained on the special instruction sheet).
5. Do not type in the page numbers. Indicate the page numbers in pencil on the backs of the sheets of paper.

PLEASE SUBMIT THE ORIGINAL TYPESCRIPT OF YOUR PAPER IN ORDER THAT THE PUBLISHED VERSION BE AS CLEAR AS POSSIBLE. WE ALSO REQUEST THAT YOU SUBMIT ONE COPY WITH THE ORIGINAL (THIS IS FOR THE REFEREE).

(iv) Accommodation

Accommodation has been reserved at International House. Full board from dinner Sunday 25th till lunch, Friday 30th is available at \$40.00 Aust. per day.

The Conference Dinner on Thursday evening costs \$A20.00.

- \* Registrants are asked, if possible, to arrive at International House between 4 and 6 p.m. on Sunday 25th August as the door and desk will be attended for these times.
- \* The Sunday evening mealtime is 5.30-6.30 and is cafeteria style. A wine and cheese party will be held afterwards.
- \* All other evenings mealtime is 5.45-7.00 p.m.
- \* Participants are asked to vacate their rooms by 10.00 a.m. on Friday 30th August (due to the return of students for third term) but baggage can be stored in the Wool Room.

(v) Registration and Accommodation Fees

Registration fees are payable at the conference (but may be sent ahead of time) and are:

\$A60.00 for members of the Combinatorial Mathematics Society of Australasia (CMSA).

\$A65.00 for non-members (giving membership for the rest of the year).

\$A20.00 accommodation deposit is required to secure accommodation (which may be tight). We must know by 31st July if you require accommodation in International House.

All accommodation fees are payable by the Society and will be collected at time of registration.

Students or others unable to get funding should apply to the Committee.

(vi) Weather

While the temperatures in August are usually 20-30<sup>o</sup> there is often a strong wind which you may need to rug up against.

3. SUBSCRIPTION RENEWAL

Members are reminded that the 1985 subscriptions for the Combinatorial Mathematics Society of Australasia fall due on 1 January. The rates are \$A5.00 for those in full-time employment and \$A3.00 otherwise. Prompt payment would be appreciated. Please make cheques, drafts, etc., payable to the CMSA and post with full name and address to Mr. D. Sarvate Treasurer, CMSA, C/- Department of Applied Mathematics, University of Sydney, NSW, Australia 2006. Receipts will be issued. Those remitting in US\$ send US\$6 (to allow for bank charges).

4. CONFERENCE SINGAPORE MAY 1986?

We have had only a handful of responses to our request for comments. Members from New Zealand and some from Australia say they cannot get funding to go to Singapore.

Members from other overseas countries have been enthusiastically in favour.

If we don't get any other input we will assume the next conference will be held in Australia in August 1985.

5. OTHER CONFERENCES

Four members of CMSA, Dr. A.P. Street and Professors V. Chvatal, D.A. Holton, R.W. Robinson and W.D. Wallis are speaking at the THIRD INTERNATIONAL CONFERENCE ON COMBINATORIAL MATHEMATICS, held under the auspices of The New York Academy of Sciences, June 10-14, 1985.

CRYPTO '85 will be held in the University of California, at Santa Barbara, 18-22 August 1985. The conference is organised by the International Association for Cryptologic Research. For further information contact Carol A. Patterson, Sandia National Laboratories, Org. 1640, Albuquerque, NM, 87 185, USA.

Graph Theory (Japan, early June 1986 - more details please).  
Sino-American Conference on Graph Theory (1986?).

COMBINATORICS WORKSHOP

A four week seminar/workshop is planned for the period June 17 - July 12, 1985 at Simon Fraser University. The theme of the meeting will be enumeration, with some emphasis being placed on problems arising in Physics and Chemistry. As it is a workshop, rather than a conference, talks will only take place on Tuesdays and Thursdays. Invited participants include:

E. Bender	B.D. McKay
R. Canfield	B. Richmond
I. Coulden	R. Robinson
D. Jackson	G. Viennot
G. Labelle	D. Welsh
P. Leroux	G. Williamson

For further information contact:

Dr. C.D. Godsil  
Department of Mathematics  
Simon Fraser University  
Burnaby, B.C.  
Canada  
V5A 1S6

6. JOB ! JOB! JOB! JOB!

UNIVERSITY OF AUCKLAND

Department of Mathematics and Statistics

A Postdoctoral Fellowship is being offered in the field of Combinatorial Mathematics for a period of up to twelve months, to be taken up before 31 January 1986. To be eligible for appointment, candidates must have successfully completed the requirements for a PhD or equivalent degree, preferably within the last four years. A monthly allowance of \$NZ1,968.50 will be paid, and a return airfare provided. Further information is available from Dr. N. Wormald, Department of Mathematics and Statistics. Conditions of Appointment and Application Forms are available from the Assistant Registrar, Academic Appointments, University of Auckland, Private Bag, Auckland, New Zealand. Applications should be forwarded as soon as possible but not later than 15 July, 1985.

7. NEW APPOINTMENTS AND CHANGES OF ADDRESS

Wal Wallis has accepted appointment as Senior Professor of Mathematics and Computing, Southern Illinois University, Carbondale, Illinois, 62901, U.S.A.

David Billington has been appointed lecturer in Computing and Information Studies, School of S.I.A., Griffith University, Nathan, Queensland, 4111.

Dr. K.L. McAvaney will be visiting the Department of Mathematics and Statistics, Simon Fraser University from 1st August 1985 to 31 January, 1986.

Professor V. Chvatal is visiting Australia in June 1985.

8. HONOURS

Paul Erdos is now a corresponding member of the Australian Academy of Science.

9. CONFERENCE PAPERS

The following papers will be given at the conference.

- |                   |   |
|-------------------|---|
| • Peter Eades     | Heuristics for drawing 2-layered Networks   |
| • Doug Grant      | Subgraphs and Degrees 1   |
| • Derek Holton    | Cycles in graphs  |
| • Ingrid Janjic   | The constructability of floor plans with given outerplanar adjacency graph and room areas |
| • Margaret Morris | Using Dirichlet polygons in the design of an intercropping experiment                     |
| • Richard Taylor  | Some reconstruction problems  |
| • K. Vijayan      |   |
| • J. Seberry      | Crypto designs  |
| • D.G. Savate     | Block designs   |
| • W. de Launey    | Survey of generalised Bhaskar Rao designs.  |

10. CMSA and AMS

Kevin McAvaney has forwarded to me a copy of the constitution of CMSA which was drafted in 1978, at the 6th Australian Conference on Combinatorial Mathematics in Armidale, to formalise the handling of money for what had become annual conferences.

The constitution says ...

"The 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 convened for one of those purposes".

I believe that the motion passed at the AGM which would have the effect of making us a special interest group within the AMS is a change of constitution. As it did not gain a 2/3 majority the motion was lost. I shall put this opinion to the AGM this year. If the AGM resolves that the motion which was supported by just over half of those present is declared not to be a constitutional amendment then I give notice that I will move the following:

RECISSION MOTION: I move that the motion to make CMSA a special interest group within the AMS be recinded.

I also give notice of the following motions:

1. That this AGM reaffirms the aim of the Society is "to promote Combinatorial Mathematics in Australasia".
2. That the aim of the constitution be ammended to read "to promote Combinatorial Mathematics and Computing in Australasia".
3. The name of the Society be changed to the "Combinatorial Mathematics and Computing Society of Australasia".
4. That the Society's relationship with AMS remain friendly and informal.



11. REPORT FORWARDED BY J.E. DAWSON ON BICENTARY PLANS

"Planning Committee for 1988 Mathematical Sciences Congress".

1. Background

At its Fifty-seventh Meeting, Council of the Australian Mathematical Society decided that its 1988 Annual Meeting should be the basis for the first ever Mathematical Sciences Congress in Australia and thereby one of its contributions to the 1988 Bicentennial Celebrations. This proposal had previously been supported by the Statistical Society of Australia and endorsed by the National Committee for Mathematics at its meeting in late 1983. In addition, the Australian Bicentennial Authority has recently endorsed the immediate past President's (Professor G.B. Preston) proposal that the Society's 1988 Annual Meeting be an approved Bicentennial Activity.

In September 1984, invitations to participate in the Congress were sent to a wide variety of potentially interested groups. Today positive replies have been received from:

- (i) The Division of Applied Mathematics (DAM) of the Australian Mathematical Society (AusMS);
- (ii) The Statistical Society of Australia (SSA);
- (iii) The Combinatorial Mathematics Society of Australasia (CMSA);
- (iv) The Australasian Association of Logic (AAL);
- (v) The Australian Association of Professors of Computer Science (AAPCS).

It is expected that other groups approached will agree to participate. The Econometric Society declined because they had already agreed to participate in an Economics Congress.

2. Advanced Preparations

- (i) The Australian Mathematical Society has paid a deposit of \$5.00 each on 400 rooms at Bruce and Ursula Colleges, Australian National University, for the period May 16-20, 1988 (the Universities' proposed common week).
- (ii) On behalf of the Australian Mathematical Society, the Department of Mathematics, Faculties, Australian National University, has booked all the lecture and tutorial rooms available in the Hayden Allen complex for the period May 16-20, 1988.
- (iii) The appointees of the various participating groups to the Planning Committee are:

<u>Society</u>	<u>Appointee</u>
Aus MS	Professor G.B. Preston (Monash)
DAM	Dr. R.S. Anderssen (DMS CSIRO)
SSA	Professor C.C. Heyde (Melbourne)
	Dr. D. Daley (Australian National University)
CMSA	Dr. J. Dawson (Australian National University)
AAL	Dr. M. McRobbie (Australian National University)
AAPCS	Professor R.P. Brent (Australian National University)

3. Proposed Congress Format

The morning sessions will be of a general nature and will address topics of broad significance of interest to all Societies involved. The remainder of each day would be devoted to more specialised topics, each participating Society providing its own program.

4. Special Bicentennial Activities

At this stage, the suggestions are:

- (i) invite eminent Australian mathematical scientists living overseas to address plenary sessions of the Congress. (Peter Cameron suggested; what about Neil Sloane? any other suggestions?).
- (ii) invite appropriate overseas mathematical sciences groups to send representatives.

12. RECENT PAPERS/REPRINTS

Elizabeth J. Billington, Balanced ternary designs with block size three, any  $A$  and any  $R$ , Accuaciones Math. (to appear).

Elizabeth J. Billington, On Mendelsohn and directed triple systems with repeated element allowed in triples, J. Statistical Planning and Inference (to appear).

Joseph Hammer and Dinesh G. Sarvate, Encryption using Hungarian rings (preprint).

Dinesh G. Sarvate, Block designs without repeated blocks (preprint).

Joseph Hammer and Dinesh G. Sarvate, On the introduction of block designs by graphs (preprint).

W. de Launey and D.G. Sarvate, Non-existence of certain GBRD's, Ars Combinatoria 19 (1984), 5-20.

D.G. Sarvate, A note on equineighbourled block designs (preprint).

Warwick de Launey, On the non-existence of generalised Hadamard matrices, J. Statistical Planning and Inference 10 (1984) 385-396.

D.B. Skillicorn, The performance of mega-microprocessor networks (to appear).

Jennifer Seberry and Albert Leon Whiteman, New Hadamard matrices and conference matrices obtained via Mathon's construction (preprint).

Jennifer Seberry, A new construction for Williamson-type matrices (preprint).

Jennifer Seberry, Generalised Hadamard matrices and colourable designs in the construction of regular GDDs with two or three association classes, (preprint).

Warwick de Launcy and Jennifer Seberry, New group divisible designs obtained via matrices associated with generalised Hadamard matrices (preprint).

Dinesh G. Sarvate and Jennifer Seberry, Colourable designs and new group divisible designs (preprint).

Terry C. Jones and Jennifer Seberry, Authentication without secrecy (preprint).

Jennifer Seberry, Generalised Bhaskar Rao designs of block size three. J. Stat. Planning and Inference 11 (1985) 373-380.

Please send details to the Director.

13. INFINITY SONG:

My apologies: the author of "The Infinity Song" of last issue was Marta Sved.