COMBINATORICS

Combinatorics is the newsletter of the Combinatorial
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dual non-members and institutions in $A4. All
enquiries should be directed to the C.M.S.A., c/-
Department of Mathematics, University of Newcastle,
New South Wales, 2308, Australia.

There has been a national conspiracy of combinatorial mathe-maticians in Australia for several years, and this informal group has organised an annual conference since 1972. The most recent meeting was held in Armidale in August, 1978. The combinatoricists present there decided to constitute a formal society, which would be charged with the duties of conducting an annual conference and in other ways promoting combinatorics. A constitution was adopted and an inaugural Annual General Meeting held. In recognition of the attendance of New Zealanders at the conference and their enthusiastic support, the society was made Australasian.

This newsletter will be the major source of information dissemination in the society. In general, anything will be acceptable which will be of interest to Australasian combinatoricists and is neither libellous nor actionably obscene. One important feature will be the notices of the forthcoming Australian Conference on Combinatorial Mathematics. An attempt has been made in this issue to indicate some types of item which we wish to publish; your suggestions are welcome.

Current plans are to publish four or five issues of *Combinatorics* in 1979, comprising 60 or 70 pages. The next issue will appear in early May.

HIGHER DEGREES

It is planned to list higher degrees by thesis on combinatorial subjects which are taken in Australasian institutions. Details should be sent to Dr. Anne Penfold Street, Department of Mathematics, University of Queensland, St. Lucia, Qld. 4067, *and should include the name of supervisor, date of award, and a* short *abstract.*

In order to compile a complete record, we request details of any past theses as well as future ones.

AUSTRALASIA

In the interest of precision, we thought it advisable to check on the definition of "Australasia". The School Oxford Dictionary does not admit the word, and the Illustrated Oxford is vague. Webster's says: "a division of Oceania comprising Australia, Papua, Tasmania, New Zealand, and neighbouring islands", whilst Messrs Funk and Wagnall list "Australia, Tasmania, New Zealand, New Caledonia, The New Hebrides, Samoan Islands, the Marquesas, the Fiji islands, and a large part of the Malay Archipelago". Any comments from Tasmanian readers would be welcome.

FIRST NOTICE

SEVENTH AUSTRALIAN CONFERENCE ON

COMBINATORIAL MATHEMATICS

The seventh Australian Conference on Combinatorial Mathematics will be held at the University of Newcastle in the week 20th - 24th August, 1979. All those interested are cordially invited to attend. Contributed papers will be welcome in all areas of pure and applied combinatorics. The first Annual General Meeting of the Combinatorial Mathematics Society of Australasia will be held at the Conference.

Invited speakers include R.C. Mullin (University of Waterloo) and N.L. Biggs (Royal Holloway College). Other featured speakers will be announced in the next notice.

The organizing committee welcomes any suggestions for mathematical activities (special interest sessions, instructional lectures, forums ....) or other proposals for the conference.

The second notice of the conference will appear in the next issue of *Combinatorics*, in May; non-members of the Combinatorial Mathematics Society of Australasia who wish to receive the notice should write to one of us, at the Department of Mathematics, University of Newcastle.

R.W. Robinson,
G.W. Southern,
W.D. Wallis,
Organizing Committee.

NEW PUBLICATIONS

We wish to publish a chronicle of publications by members of the Society and other combinatoricists in Australasia. Authors are requested to contribute lists of publications from 1978, and in future to send lists of publications on appearance, to *Dr. D.A. Holton, Department of Mathematics, University of Melbourne, Parkville, Vic. 3052.*

Note: In this issue *CM* stands for *Combinatorial Mathematics, Proceedings of International Conference on Combinatorial Theory*, Canberra (Springer-Verlag, 1979)

M.D. Atkinson and C.E. Praeger, On the normal structure of a one-point stabilizer in a doubly transitive permutation group, *J. Austral. Math. Soc. 25A*, 1978, 145-166.

K. Chidzey, Fixing subgraphs of $K_{m,n}$, *CM*, 116-125.

J. Cooper, J. Milas and W.D. Wallis, Hadamard equivalence, *CM*, 126-135.

P. Eades, On the existence of orthogonal designs, *Bull. Austral. Math. Soc.* 18, 1978, 157-160.

R.B. Eggleton and A. Hartman, A note on equidistant permutation arrays, *CM*, 136-147.

I. Enting, The combinatorics of algebraic graph theory in theoretical physics, *CM, 148-156*.

C. Godsil, Graphs, groups and polytopes, *CM*, 157-164.

C.D. Godsil and B.D. McKay, A new graph product and its spectrum, *Bull. Austral. Math. Soc.* 18, 1978, 21-28.

F. Harary, R.W. Robinson and N.C. Wormald, Isomorphic factorisations III: Complete multipartite graphs, *CM*, 47-54.

F. Harary, W.D. Wallis and K. Heinrich, Decompositions of complete symmetric digraphs into the four oriented quadrilaterals, *CM*, 165-173.

A. Hedayat and W.D. Wallis, Hadamard matrices and their applications, *Ann. Statist.* 6, 1978, 1184-1238.

K. Heinrich and W.D. Wallis, Hamiltonian cycles in certain graphs, *J. Austral. Math. Soc., 26A,* 1978, 89-98.

D.A. Holton, Reconstruction, *Austral. Math. Soc. Gazette, 5,* 1978, 15-19.

D.A. Holton and J. Sims, The cartesian product of two graphs is stable, *Lecture Notes in Mathematics,* No. 642, Springer-Verlag, Berlin, 1978, 286-303.

D.A. Holton and J.A. Richard, Brick packing, *CM,* 174-183.

R. Hubbard, Colour symmetry in crystallographic space groups, *CM,* 184-192.

H.C. Kirton and Jennifer Seberry, Generation of a frequency square orthogonal to a 10×10 Latin square, *CM,* 193-198.

J-L. Lassez and H.J. Shyr, Factorisation in the monoid of languages, *CM,* 199-205.

C.H.C. Little, On graphs as unions of Eulerian graphs, *CM,* 206-209.

S. Oates Macdonald and A. Penfold Street, The analysis of colour symmetry, *CM*, 210-222.

S.O. Macdonald and A.P. Street, The seven friezes and how to colour them, *Utilitas Math., 13,* 1978, 271-292.

B.D. McKay, Computing automorphisms and canonical labellings of graphs, *CM,* 223-232.

G.P. Munro and D.E. Taylor, On multiply transitive permutation groups, *J. Austral. Math. Soc., 26A,* 1978, 57-58.

E.J. Morgan, Construction of block designs and related results, *Bull. Austral. Math. Soc., 19,* 1978, 139-140.

E.J. Morgan, On a result of Bose and Shrikhande, *CM,* 233-239.

R.C. Mullin, A survey of extremal (r, λ)-systems and certain applications, *CM,* 106-110.

R.C. Mullin and D. Stinson, Near-self-complementary designs and a method of mixed sums, *CM,* 59-67.

M.J. Pelling and D.G. Rogers, Further results on a problem in the design of electrical circuits, *CM,* 240-247.

M.J. Pelling and D.G. Rogers, Stein quasigroups I: Combinatorial aspects, *Bull. Austral. Math. Soc., 18,* 1978, 221-236.

C.E. Praeger, On doubly transitive permutation groups, *Bull. Austral. Math. Soc. 18,* 1978, 465-474.

R. Razen, Transversals and finite topologies, *CM*, 248-254.

R.W. Robinson, Asymptotic number of self-converse oriented graphs, *CM*, 255-266.

D.G. Rogers and L.W. Shapiro, Some correspondences involving the Schröder numbers and relations, *CM*, 267-274.

J. Seberry, A computer listing of Hadamard matrices, *CM*, 275-281.

J. Seberry and K. Wehrhahn, A class of codes generated by circulant weighing matrices, *CM*, 282-289.

G.J. Simmons, An application of maximum-minimum distance circuits on hypercubes, *CM*, 290-299.

T. Speed, Decompositions of graphs and hypergraphs, *CM*, 300-303.

R.G. Stanton, The Doehlert-Klee problem, *CM*, 89-100.

D.E. Taylor and R. Levingston, Distance-regular graphs, *CM*, 313-323.

H.N.V. Temperley and D.G. Rogers, A note on Baxter's generalization of the Temperley-Lieb operators, *CM*, 324-328.

N.C. Wormald, Triangles in labelled cubic graphs, *CM*, 337-345.

RESEARCH ANNOUNCEMENTS

This department will publish research announcements, announcements of forthcoming publications and so forth. An asterisk (*) indicates that preprints are available. Please send contributions to Dr. D.A. Holton, Department of Mathematics, University of Melbourne, Parkville, Vic. 3052.

I.R. Beaman and W.D. Wallis, Pairwise orthogonal symmetric Latin squares, *Proc. of the Ninth Southeastern Conf. on Combinatorics, Graph Theory and Computing,* Boca Raton, 1978.

*R.B. Eggleton and D.A. Holton, Path realizations of multigraphs, I. The disconnected case.

*R.B. Eggleton and D.A. Holton, Path realizations of multigraphs, II. The connected case.

K. Heinrich and W.D. Wallis, Graphs with symmetric automorphism group, *J. Graph Theory* (to appear).

K. Heinrich, G.H.J. van Rees and W.D. Wallis, A general construction for equidistant permutation arrays, *Graph Theory and Related Topics,* Proceedings (to appear).

S.O. Macdonald and A.P. Street, Balanced binary arrays II: the triangular grid, *Ars Combinatoria* (to appear).

A.P. Street and S.O. Macdonald, Balanced binary arrays I: the square grid, *Proc. Sixth Austral. Comb. Conf.,* Armidale, 1978.

W.D. Wallis, Spouse-avoiding mixed doubles tournament, *Ann. N.Y. Acad. Sci.,* New York, 1978.

ABSTRACTS

Members of the Society are invited to send abstracts of recent results and reports on research-in-progress to Dr. L.A. Holton, Department of Mathematics, University of Melbourne, Parkville, Vic. 3052. *Please indicate if preprints are available.*

ANNOUNCEMENTS

Under this heading we shall publish short news items for the information of members. All contributions should be sent to Professor R.W. Robinson, Department of Mathematics, University of Newcastle, N.S.W., 2308. *Typical "announcements" might include news of new appointments in Combinatorics, availability of lecture notes, honours, overseas visitors, and so forth.*

Springer-Verlag announce the publication of *Combinatorial Mathematics, Proceedings of the International Conference on Combinatorial Theory, Canberra*, edited by D.A. Holton and J. Seberry, as Lecture Notes in Mathematics #686.

Oxford University Press will soon publish *Projective Geometries over Finite Fields*, by J.W.P. Hirschfeld.

The Second Australian Number Theory Conference will be held at Macquarie University, August 26 to September 1. Further details may be obtained from Dr. John Loxton, School of Mathematics, University of New South Wales, Kensington, N.S.W., 2033.

David Glynn's address, until at least March 1, 1980, is Mathematisches Institut, Universität Erlangen-Nürnberg, Bismarckstrasse $1\frac{1}{2}$, 8520 Erlangen, West Germany.