# THE JOURNAL OF

## THE AUSTRALIAN MATHEMATICAL SOCIETY

### **VOLUME XXII-(SERIES A)-PART 1**

#### **AUGUST 1976**

R. B. EGGLETON and	Consecutive integers with no large prime	
J. L. SELFRIDGE	factors	1
A. J. van der Poorten	Hermite interpolation and p-adic exponential polynomials	12
JIM TOTTEN	Embedding the complement of two lines in a finite projective plane	27
ANNE PENFOLD STREET and W. D. Wallis	Sum-free sets, coloured graphs and designs.	35
E. S. Barnes and M. J. Cohn	On the reduction of positive quaternary quadratic forms	54
K. Mahler	On a class of non-linear functional equations connected with modular functions	65
JOAN COOPER and JENNIFER SEBERRY WALLIS	Using cyclotomy to construct orthogonal designs	119

### Published for THE AUSTRALIAN MATHEMATICAL SOCIETY

by Jerusalem Academic Press - Jerusalem - Israel

#### THE JOURNAL

The Journal of the Australian Mathematical Society began publication in 1959, and from 1975 appears in two series, Series A (Pure Mathematics) and Series B (Applied Mathematics). Information about Series B may be found on the inside back cover.

#### SERIES A PURE MATHEMATICS

Two volumes of four parts are published annually at a price of A \$36 per volume, in 1976. Manuscripts for publication (two copies) should be accompanied by an abstract and sent to the Editor or to the appropriate Associate Editor. Authors are asked to follow the instructions in the American Mathematical Society publication: A manual for authors of mathematical papers except as indicated on the back cover of this Journal.

#### Editor of the Journal, Series A (Pure Mathematics)

J. N. CROSSLEY, Department of Mathematics, Monash University, Clayton, Australia 3168.

#### Associate Editors

J. GANI - Probability and Statistics. Division of Mathematics & Statistics. C.S.I.R.O. P.O.Box 1965. Canberra City. Australia 2601.

T. E. Hall - Semigroups. Department of Mathematics, Monash University. Clayton, Australia 3168.

M. F. NEWMAN - Groups. Department of Mathematics. RSPS. Australian National University, P.O.Box 4. Canberra, Australia 2600. J. PITMAN - Number Theory, Department of Pure Mathematics, University of Adelaide. Adelaide, Australia 5001.

N. SMYTHE- Topology. Department of Pure Mathematics, SGS, Australian National University, SGS, Australian National P.O.Box 4. Canberra, Australia 2600.

R. H. STREET - Categories, School of Mathematics & Physics, Macquarie University, North Ryde, Australia 2113.

E. STRZELECKI — Analysis, Department of Mathematics. Monash University. Clayton, Australia 3168.

H. LAUSCH - Algebra, Department of Mathematics. Monash University. Clayton, Australia 3168.

N. S. TRUDINGER-Differential Equations, Department of Mathematics. University, P.O.Box 4, Canberra, Australia 2600.

J. VIRSIK - Differential Geometry. Department of Mathematics. Monash University, Clayton, Australia 3168.

W. WALLIS - Combinatorics, Department of Mathematics. University of Newcastle, Newcastle, Australia 2308.

Papers in Logic and any areas not covered by the Associate Editors above should be sent to the Editor.

#### Assistant Editors

J. R. J. GROVES. Department of Mathematics, University of Melbourne, Parkville, Australia 3052.

D. K. Ross. Department of Mathematics, La Trobe University. Bundoora, Australia 3083.

Correspondence concerning the printing of papers after their acceptance for publication should be addressed to one of the Assistant Editors