



NEWSLETTER

CONTENTS

Publisher's Notice.	2
NZMS Council and Officers.	2
Newsletter Correspondents.	2
Local News.	3
Notices.	10
New Colleagues	18
Grantee Reports	20
President's Report	24
Centrefold: Jim Ansell	28
Book Reviews	30
Secretarial: Minutes of 33rd Council Meeting	32
Minutes of Nineteenth Annual General Meeting	36
Financial Statements	39
Visitors	42
Conferences.	45
Constitution and By-Laws of the Society	51
Updated Electronic Mail Addresses	55
Crossword.	56

PUBLISHER'S NOTICE

The Newsletter is the official organ of the New Zealand Mathematical Society Inc. This issue was assembled at the University of Auckland and offset printed in Dunedin. The official address of the Society is:

The New Zealand Mathematical Society,
c/o The Royal Society of New Zealand,
P O Box 598, Wellington, New Zealand.

However, correspondence should normally be sent directly to the Secretary:

Dr Margaret Morton,
Department of Mathematics,
University of Auckland, Private Bag 92019, Auckland, New Zealand.

NZMS COUNCIL AND OFFICERS

President	Prof Marston Conder (University of Auckland)
Immediate Past President	Prof Derek Holton (University of Otago)
Secretary	Dr Margaret Morton (University of Auckland)
Treasurer	Dr Kee Teo (Massey University)
Councillors	Dr Margaret Morton (University of Auckland), to 1994 Dr Graham Weir (IRL, AM, Wellington), to 1994 Dr Robert Chan (University of Auckland), to 1995 Assoc-Prof Michael Hendy (Massey University), to 1995 Dr Rick Beatson (Canterbury University), to 1996 Assoc-Prof Ernie Kalnins (Waikato University), to 1996 Dr Mark McGuinness (Victoria University), to 1996
Membership Secretary	Dr John Shanks (University of Otago)
Newsletter Editor	Dr David Smith (University of Auckland)
Legal Adviser	Dr Peter Renaud (University of Canterbury)
Archivist	Prof John Harper (Victoria University of Wellington)
Publications Convenor	Dr Ingrid Melchert (Waikato University)
Visitor Liaison	Dr David Robinson (Canterbury University)

NEWSLETTER CORRESPONDENTS

Sub-Editors

Book Reviews	Mr David Alcorn (Auckland University)
Conferences	Dr Michael Carter (Massey University)
Visitors to New Zealand	Dr David Robinson (Canterbury University)

Honorary Correspondents

Robert Aldred	Mathematics and Statistics (University of Otago)
Greg Arnold	Statistics (Massey University)
Rick Beatson	Mathematics (University of Canterbury)
Douglas Bridges	Mathematics and Statistics (Waikato University)
John Burnell	(Industrial Research Ltd, Lower Hutt)
Michael Doherty	Department of Statistics (Wellington)
John Harper	Mathematics (Victoria University)

Harold Henderson
John Maindonald
Robert McKibbin
Donald Nield
Peter Smith
Garry Tee

(Ruakura Research Centre, Hamilton)
(HORTRESEARCH, Auckland)
Mathematics (Massey University)
Engineering Science (University of Auckland)
Statistics and Operations Research (Victoria University)
Mathematics (University of Auckland)

LOCAL NEWS

UNIVERSITY OF AUCKLAND Mathematics and Statistics

In February 1994, this Department will undergo spontaneous fission into a Department of Mathematics (headed by David Gauld) and a Department of Statistics (headed by George Seber). Those departments will collaborate closely with each other and with the Department of Computer Science, within the School of Mathematical and Information Sciences.

Professor Boris Pavlov, of the University of St Petersburg, has been appointed to a Personal Chair in Mathematics, and he is scheduled to arrive for the start of the 1994 academic year.

Dr Michael Thomas, from the University of Warwick, is now a Lecturer in the Mathematics Education Unit.

Dr Paul Bonnington, from Auckland, has been appointed as Lecturer in the Department of Mathematics, and he will be based at the Tamaki Campus.

Dr Stephen Taylor, from Auckland, has been appointed as Lecturer in the Applied and Computational Mathematics Unit, and he will be based at the Tamaki Campus.

Dr L. Aggoun (from University of Alberta), Dr Karla Ballman (from McAllister College, Minnesota), Dr Brian Eastwood (from Dalhousie University), Dr Vera Eastwood (from Acadia University) and Dr Renata Meyer (from Aachen University) have been appointed as Lecturers in the Department of Statistics. Dr Ballman will be based at the Tamaki Campus.

Associate-Professor Marston D. E. Conder has been promoted to Professor of Mathematics. At the NZMS AGM, he was awarded the Research Award for his applications of computers for solving problems in algebra and combinatorics.

In the Department of Computer Science, Dr Peter Gibbons has been promoted to Associate-Professor.

Kerry Short has been appointed as Technician for the computing laboratories, and Werner Schmidt has been promoted to Programmer.

Dr Peter J. Smith, a graduate from Auckland, is visiting the Statistics Unit from the Royal Melbourne Institute of Technology until December 1993. Prof. Roland Thomas, from Carleton University at Ottawa, is visiting the Statistics Unit until May 1994. Dr Karel in 'tHout has returned to Leiden University after his year here as Post-Doctoral Fellow in the Applied and Computational Mathematics Unit, and has been succeeded by Dr Philippe Chartier from INRIA, Rennes.

At the 1994 Colloquium at the University of Canterbury in August, papers were contributed by:

Jianbei An, "Dade's conjecture for several finite groups of Lie type",

Ken Ashton, "Pattern matching, case grammar, semantical logic",

John Butcher, "Algebra and numerical mathematics",

Marston Conder, "Some unexpected results on arc- and path-transitivity in graphs and digraphs",

David Gauld, "Volterra spaces",

Horst Gerlach, "Closure properties of sets of lines",

Paul Hafner, "Constructions of dense graphs and digraphs",

Peter Johnston, "Investigation of a special class of Type 3 DIMSIMs",

Vivien Kirk, "Competition between heteroclinic cycles",

Peter Lorimer, "Some 3-dimensional geometries",

Tim Marshall, "Volume formulæ for spherical simplices",

David McIntyre on "Questions related to Souslin's hypothesis",

Margaret Morton, "Generalized Steinhilber graphs",

Ivan Reilly, "Pre-Lindelöf spaces",
Arkadii Slinko, "On the Ostrowski problem",
Garry Tee, "Fermat's Little Theorem generalized to algebraic integers", and
M. K. Vamanamurthy, "Jacobi products and quasiconformal maps".

Following the Colloquium, Bill Barton, Jill Ellis, Margaret Morton, Matt Regan, Barbara Reilly and Ivan Reilly attended the NZAMT Conference in Christchurch.

At the NZSA Conference at the University of Canterbury in August, Ross Ihaka and Robert Gentleman spoke on "A fast computational kernel for data analysis" and Peter J. Smith spoke on "Renovated scatterplots". Alastair Scott was then in Florence, to attend the ISI Council Meeting.

John Butcher was a plenary lecturer at the 16th Congresso Nacional de Matemática Aplicada e Computacional, held at the Universidade Federal de Uberlândia, Brazil, from September 6th to 9th.

Gaven Martin has returned from his latest trip, during which he gave invited addresses on "Analytic and geometric aspects of hyperbolic geometry" and "Complex dynamics" (both at Durham), and on "Nonlinear PDE's and geometry" (at Brisbane). He spent time at Warwick University, Durham University, Imperial College, Australian National University, Melbourne (where he gave 2 colloquia at the University of Melbourne) and at the University of Queensland.

Chris Triggs has returned from the University of Washington in Seattle, Constance Brown spent 5 weeks in Japan and USA, Chris Wild is on leave at the University of Waterloo, and Margaret Morton is going on leave to the University of North Texas. Colin Fox is on leave for the second half of the year at the University of Virginia, Clarkson University, UCSB, University of Washington and Université de Maine.

Barbara Reilly has been awarded a Claude MacCarthy Fellowship, to attend the ICME Congress in Sweden.

Patricia Metcalf has been awarded her PhD in statistics, and she is now a Post-Doctoral Fellow at Chapel Hill. Tony Cole, a Temporary Tutor for the second half of this year, has now completed his PhD (University of Melbourne) on graph theory. Paul Turner, a Temporary Tutor in 1991, has now completed his PhD at the University of Manchester on algebraic topology. He has been awarded a Humboldt Fellowship for 1 year at Heidelberg University, to be followed by 1 year at the Max Planck Institute in Bonn.

Dr Nick Wormald, formerly a Lecturer in this Department and now at the University of Melbourne, has won (jointly with Dr Peter Forrester) the 1993 Australian Mathematical Society Medal, for his work on asymptotic enumeration of paths in graphs.

Seminars (given by visitors)

Dr Andrew McDougall (Rutgers University), "Categorical time series and the spectral envelope".

Dr Robert M. Corless (University of Western Ontario), "Error backward".

Dr Robert Molzon (University of Kentucky), "Relationships between analytic and geometric symmetry".

Dr Ronald Rust (Vanderbilt University), "Reliability and expected loss – a unifying principle".

Prof. Rob F. Churchhouse (Cardiff), "The Achilles heel of the ENIGMA cipher machine and some of its consequences", and "The relation between mathematics and computing".

Dr Hugh Edgar (San Jose University), "Arithmetic, geometric and harmonic numbers", and "Some problems and results on the exponential Diophantine equation $1 + a + a^2 + \dots + a^{x-1} = p^y$ ".

Prof. Rod Downey (VUW), "Computable algebra".

Prof. Ioan James (Oxford), "James Joseph Sylvester".

Dr Len Bos (University of Calgary), "On Markov- and Sobolev-type inequalities on singular derivatives".

Dr Tony Gardiner (University of Birmingham), "Symmetric embeddings of graphs on surfaces" and "Imprimitivity in cubic graphs."

Prof. P. L. Kannappan (University of Waterloo) "Abel functional equations", and "Applications of functional equations in physics, economics etc."

Prof. Peter Hilton (Otago, on leave from SUNY Binghamton), "The Hopf invariant", and "Code breaking in World War II".

Prof. Jean Pedersen (Santa Clara) and Prof. Peter Hilton (Binghamton), "The Euler characteristic and Descartes angular deficiency".

Dr John M. D. Thompson (Department of Pediatrics), "The New Zealand cot death study: from design to prevention".

Prof. Yuichi Komori (Shizoka), "Syntactical investigations in BI logic and BB'I logic".

Dr Masami Okada (Sendai), "Elementary stochastic control theory", "Stochastic integrals and the Dirichlet principle", and "Explicit heat kernels on networks, graphs and on cones".

Prof. Charles Broyden (Bologna), "A taxonomy of conjugate gradient methods".

G. J. Tee

UNIVERSITY OF CANTERBURY Mathematics and Statistics

The demographic wave continues -- Frank Gair has announced that he also is taking early retirement at the end of this year. We will miss Frank's contributions to the department. These included running our big Stage 1 course, and escorting various departmental visitors to the local ski-fields.

The process of screening applications for the first lecturer position, and interviewing short-listed applicants has begun. The ordeal for the short listed includes an interview, and both an undergraduate lecture and a research seminar.

The University has recently given the go-ahead for a new building to be shared with Computer Science. This is very good news, as we are currently desperately short of space. A departmental committee is working very hard refining the specifications.

As most of you will know the Colloquium was held here in August. Our thanks to all who participated! Many favourable comments have been received concerning the large number of interesting invited and contributed talks presented.

Audrey Tan has left for Cambridge University. Steve McDowell has left for the University of Washington, where he will be working with Victor Klee. Chris Robertson has left for Brown University. Chris Price will be leaving shortly for a position with the Department of Defence, in Auckland.

Rick Beatson presented a paper at the Oberwolfach conference on Multivariate Approximation Theory in August. John Deely presented a paper at the conference in honour of Dennis Lindley's seventieth birthday at University College London. While there John saw "the body" for the first time. Bill Baritomba is currently on conference leave in the U.S. and will present a paper at a Global Optimisation conference in Arizona.

Seminars

Krystof Pawlinowski (Computer Science), "Automation of quantitative parallel stochastic simulation."
Andrew Devlin, "Factorial Experiments Applied to Industry."
Rua Murray and Chris Stephens, "Depth First Global Optimization."

Rick Beatson

MASSEY UNIVERSITY Mathematics

At the time of writing, the Department is in shocked dismay at the sudden death in a car accident of Adrian Swift's wife, Jan Whitwell. She was a Senior Lecturer in Economics at VUW, having been a mathematics student at Victoria University, and then she spent many years here at Massey. Adrian is in hospital, but is expected to make a full recovery from his injuries.

On a more cheerful note, David Bulger (MSc student in Mathematics here in 1992) has won the 1993 NZ Mathematics Society predoctoral thesis competition. His thesis, entitled "Existence and uniqueness results for non-linear functional differential equations", was completed under the supervision of Dr Bruce van Brunt. Marijcke Vlieg (thesis title: "Transformation properties of certain partial differential equations, solutions and integrability") and Mark Byrne ("Aspects of the vehicle routing problem with pickup and delivery") have now both qualified for their PhD degrees. Simon Woodward has submitted his PhD thesis and is celebrating with a two-month trip to the People's Republic of China.

Gillian Thornley and Gordon Knight travelled to Sweden during October to attend the ICMI Study on Gender and Mathematics Education, where they presented a joint paper with the intriguing title "Is there a female Mathematics? A view from the New Zealand supermarket and garden". Gillian also contributed a paper on women mathematicians in New Zealand. John Giffin and Peter Frizzell presented a joint paper on vehicle routing at the OR Society of America/Institute of Management Science conference in Phoenix, Arizona in early November.

It is now confirmed that the new degree, BSc(MathInf), will be offered at both of our campuses (Palmerston North and Albany) in 1994. An endorsed version of the current BSc, the degree will require students to undertake a significant amount of study in at least three of the four subject areas taught by the departments

within the School of Mathematical and Information Sciences. Majors available at Albany next year will be Computing, Information Systems, Mathematics and Statistics; these majors are also available at Palmerston North, together with Computer Science, Electronics, Mathematical Physics and Operations Research.

Seminars

Mathematics

Mr Antony van Dyk (Resene Paints Ltd) "Metal corrosion under paint films: a diffusion-adsorption competition model"

Mrs Glenda Anthony (Massey) "Learning strategies in the Mathematics classroom"

Prof. Thomas W. Davies (Exeter University) "Some approximate solutions to practical non-linear conduction problems using the heat-balance integral technique"

Ms Marijke Vleig (Massey) "The Korteweg-de Vries equation"

Prof. R.F. Churchhouse (University of Wales) "A classical machine: the Enigma. Some aspects of its history and solution"

Dr Ranjam Ray (University of British Columbia) "Nesting demographically-extended flexible demand functional forms"

Dr Michael Carter (Massey) "Mathematics: Much Ado About Nothing?"

Prof. Wolfgang Vogel (Massey) "The number of equations defining an algebraic set of zeros in n-space"

Dr Hong Wang (Massey) "Independent cycles and sub-graphs"

Dr Fordyce Davidson (Heriot-Watt University) "Global bifurcation in the Brusselator system"

Prof. Peter Hilton (State University of New York) and Prof. Jean Pedersen (University of Santa Clara) "Partitions and surjections", "Introduction to the geometry of fractals"

Mr Easwaran Balakrishnan (Massey) "Results on path-following of a combustion problem with new variables"

Dr Peter Gill (Chemistry, Massey) "The probability of drawing a significant sample from a known population"

Prof. Kenneth Gross (University of Vermont) "Ramanujan's Master Theorem: then and now"

Dr Vivien Kirk (University of Auckland) "A competition between heteroclinic cycles"

Mathematical Physics

Dr Charles Little (Massey) "The dimer problem of crystal physics"

Prof. Graeme C. Wake (Massey) "Fourier transforms of generalised functions", "Stochastic differential equations"

Robert McKibbin

OTAGO UNIVERSITY **Mathematics and Statistics**

We are being kept busy by the usual examination turmoil but have many other things happening as well.

First off we are very pleased to have Caryn Thompson joining our staff. Caryn has recently arrived from North America to take up a lecturing position in Statistics.

On the teaching front we have been successful in gaining new computer equipment to accommodate the inclusion of computer packages in the teaching of our large first year calculus course, the new Computer-aided mathematics courses, as well as running MatLab in our new second-year matrix algebra course.

As the 1994 academic year will be officially divided into two semesters, many of our courses have been altered to fit in with the new structure. We hope that the new-look courses will offer greater scope to students.

Visitors to the department include Jean Pedersen of Santa Clara College in California and Peter Hilton of SUNY Binghamton who are here giving a wide range of mathematical interaction in many areas of algebra, geometry and combinatorics. They have been here since August and will remain until December. Also with us until December is Paul Bland from Eastern Kentucky University, who is working on Torsion Theories with John Clark.

Seminars

The seminar series here has been quite lively and since people have complained about a lack of details on our seminars, I have included a list for the year to date. Here goes!

- Michael Meylan (University of Otago) 19 Feb, "A model for the motion and bending of an ice floe in ocean waves".
- Prof Andreas Dress (University of Bielefeld) — 1993 NZMS Visiting Lecturer 8 March, "One more shortcut to Galois theory," and 9 March, "A mathematical theory of equivariant tilings".
- Nick Dudley Ward (University of Otago) 18 March, "On a theorem of Fenton and asymptotic functions".
- Raymond Webster (University of Otago) 19 March, "Skewness-corrected confidence intervals for stratified random sampling".
- Jean Thompson (JAD Associates, Wellington) 30 March, "Statistics? Who cares?".
- Prof. Roger Penrose (University of Oxford)— 1992 Forder Lecturer 6 April, "Cosmology, quantum theory and the arrow of time", 7 April, "Magic dodecahedra and the mystery of quantum entanglement" and 8 April, "Computability and the mind".
- Prof Paul Smith (University of Washington) 21 April, "Polynomial solutions to constant coefficient differential equations".
- Roger Littlejohn (AgResearch, Invermay) 23 April, "Methods for analysing hormone profiles".
- Aimo Hinkkanen (University of Illinois) 5 May, "Convergence groups and Möbius groups".
- Bill Robinson (NZ Inst Industrial Research)) 11 May, "Seismic isolation".
- Michael Stiassnie (Israel Institute of Technology)) 24 June, "Fractal analysis and applications".
- Russell Millar (Israel Institute of Technology)) 25 June, "Counter-examples to the likelihood principle/systematic sampling in two dimensions".
- Mike Porteous (University of Otago) 1 July, "Perfect matchings with selected included and excluded edgesets".
- Bryan Manly (University of Otago) 9 July, "The computer program RT for randomization tests".
- Dennis Trewin (Deputy Government Statistician) 23 July, "Measuring change in official statistics — the role of time series analysis".
- Klaus Schilling (Polytechnic of Revensburg-Weingarten) 26 July, "Autonomous acquisition of cometary material samples".
- Hugh Edgar (San Jose State University) 27 July, "The exponential Diophantine equation".
- Prof R. F. Churchhouse (University of Wales, Cardiff) 28 July, "Computers and mathematics", and 29 July, "The Achilles heel of the Enigma cipher machine and some of its consequences".
- Bastow Wilson (University of Otago) 6 Aug, "Orthogonal intrinsic guilds in plant communities".
- Iain MacPhee (Durham University) 11 Aug, "Looking for a Leprechaun".
- Tony Gardiner (University of Birmingham) 9 Sept, "Regular embeddings of graphs on surfaces".
- Bill Barton (University of Auckland) 23 Sept, Mathematics foundation courses".
- Megan Clark (Victoria University), 29 Sept, "Gender issues in Mathematics and Statistics".
- Peter Hilton (State University of New York)—(8 talks in a series of seminars, Sept to Nov),"Some new results on nilpotent groups".
- Peter Hilton (State University of New York) & Jean Pedersen (Santa Clara University), 4 Nov, "Partitions, surjections and phylogenetic trees".

Robert Aldred

VICTORIA UNIVERSITY Mathematics

John Harper now has a personal Chair in Applied Mathematics. He is busy as treasurer of the IASPEI geophysical conference in January, trying to achieve a 1-1 correspondence between (a) people overseas who say they have paid and (b) evidence from the bank. If you ever have to do this job yourself, encourage the use of credit cards, cheques or bank drafts. And don't book people into hotels which go out of business before your conference...

Rod Downey has been promoted within the Readers' scale. He gave an invited lecture at the miniconference on theory in computer science and a seminar in the Mathematics and Statistics Department at Auckland

University in August, and had another visit to the University of Victoria, B.C. in September.

Geoff Whittle is now a Senior Lecturer. He will be at Louisiana State University and Pennsylvania State University for three weeks from 24 November as an invited visitor.

Vladimir Pestov is also now a Senior Lecturer. He recently spoke at the 22nd Conference on Differential Geometric Methods in Theoretical Physics at Ixtapa-Zihuatanejo (a tropical seaside resort in Mexico), and then spent a week at the Centro de Investigacion en Matematicas (Guanajuato, Mexico, high country), where he did some joint research and gave a seminar.

Irina Pestov will have her turn at leaving a spouse looking after the family in February. She will be in Australia, at the Applied Mathematics Conference in the Hunter Valley and the Mathematics-in-Industry Study Group at Newcastle.

Mark McGuinness will give a talk at the Geothermal Workshop in Auckland in November, showing some of his results as a computer-generated video.

J. F. Harper

Institute of Statistics and Operations Research

Lots of news this time, so choose your favourite chair, get a glass of whisky ready and pin back your ears!

Megan Clark, currently at a conference in Sweden, has received a grant from the Suffrage Centennial Year Fund to produce a report on "Women: Performance, Choice and Participation in Mathematics Examinations." This is a joint project with Thora Blithe and Sharleen Forbes. In addition Megan has been awarded one of the Suffrage Centennial Medals. Well Done!

Life in the ISOR Consulting Group has been busy recently. Firstly, Sathi drove into the back of Steve Haslett's car. Given that Steve's the Director of the Group, Sathi can hardly be accused of buttering up the boss! In response to an inundation of cranky letters and calls about Lotto, Ross Renner let slip the following remark which was published in *The Dominion*: "Ross Renner who is the Lottery Commission's chief number cruncher indiscreetly observed that Lotto was a tax on stupidity". Alistair Gray and Helen Stott recently had their first baby, Finnian Padraig. Rumours that Alistair reads Wittgenstein to Finnian at bed-time are completely unfounded. Peter and Anna Smith had their second daughter, Lucy Isobel, around the same time. Rumours that Pete's never heard of Wittgenstein are probably true.

What about TRAVEL, CONFERENCES, STAFF MOVEMENTS etc? Well, Tony Vignaux maximized entropy at Santa Barbara, David Vere-Jones is still away in Europe but returns soon, Peter Thomson is away for 3 months in Japan and Washington (Bureau of the Census). Ray Brownrigg's been to Sydney to the AUUG Annual Conference. A chocolate fish to anyone who knows that this means the Australian Unix Users Group. Abel Ige, Yu Hayakawa, Thomas Mikosch and Zhu Nan attended the NZSA and/or the NZORS Conferences. Yu will be visiting her old haunts (Berkeley and Japan) over the summer. Sathi had a brief visit to Sri Lanka. Zhu Nan has left for Waikato and Wang Qiang is expecting to leave for the Meteorological Institute in Saskatchewan. Paul O'Connor, one of our programmers, has left for a job with the Department of Health. We wish them all well in their new positions.

Visitors included Wolfgang Runggaldier from the University of Padua who gave seminars on aspects of stochastics in Finance. Currently visiting and keeping Thomas in line is Professor Claudia Klueppelberg. She is working on non-standard time series as part of the FORST project.

David Harte is settling in well, despite being bombarded by neutrons in his office in the Physics Building. I understand that his Ph.D research is on the frightening topic of multifractals. And you thought long division was tricky. Abel Ige, from Ilorin Nigeria, is working on several consulting projects related to survey design and analysis including work for NZ Post, The Justice Department and the Manufacturers Federation.

Lastly, the miscellaneous. Tony organized the ISOR Open Day contributions, including talks, simulation displays and graphics presentations. ISOR has a regular volleyball team and will challenge all comers. The Computing System is now enhanced by a colour printer and a dual processor desk top Sparc Station 10. Finally the decider in the sporting series between ISOR and the Department of Statistics is scheduled for this summer.

Peter Smith

UNIVERSITY OF WAIKATO

Department of Mathematics and Statistics

Waikato Centre for Applied Statistics

Douglas Bridges was acting Dean of Computing and Mathematical Sciences for several months while Ian Graham was on leave. Douglas has now proceeded to Cornell until round the end of the year, where he will be studying computational complexity. Alfred Sneyd meanwhile has been and will be acting head of department.

Working with Alfred is Dr Takeshi Sugimoto from the Saitama Institute of Technology, Japan. He's working on optimizing the lift distribution on a yacht sail, taking into account heeling and yawing. He arrived the beginning of April and will be at Waikato for one year.

Jeff Knowlton left at the end of the first term to return to his original position in US industry. He will be sorely missed. His position, together with a position in algebra, will probably both have been filled by the time this Newsletter goes to press. More details on the successful candidates next issue.

Heather Rae has, we regret, had to take a period of sick leave. Our best wishes for a complete recovery and thanks to John Turner and Mark especially for stepping into the breach.

Professor Wilf Malcolm has announced his retirement from his position as Vice-Chancellor of the University for personal and professional reasons from 1 July 1994. We wish him well in the years that follow and begin, without relish, the task of finding a replacement equal to the daunting task of getting more and more out of less and less (income of course for those too buried in a check of the proof of Fermat's Last Theorem to have noticed the cuts in University funding).

Professor Richard Fateman of the University of California at Berkeley Department of Computer Science visited Kevin Broughan, and they worked together on fast numeric processing with Common Lisp.

Ingrid Risma-Melchert presented a paper entitled "Storing Sparse Sets: theory and practice" at the 9th Australasian Conference on Combinatorial Mathematics and Combinatorial Computing at the University of Adelaide in July.

Nye John of the Centre for Applied Statistics has left for the University of Queensland where he will be on Study leave for 6 months working with Professor John Eccleston on aspects of experimental design.

There has been a significant increase in the number of post-graduate students in the department who now number eight. They produce a buzz of activity and enthusiasm.

On the academic structure front there has been considerable interaction between the School of Science and Technology and Computing and Mathematical Sciences with the outcome being the possibility of students taking a B.Sc in the latter school. The 4 year BCMS remains as an optional programme. It is envisaged that this new possibility should be available from the start of the 1994 academic year.

There have been developments also on the graduate course front: for example complex analysis is to be included in the Advanced Analysis course.

The mathematical software project continues with its active development of Senac features: large sparse linear programming with algebraic interactive input, global optimization and finite element analysis are some of the recent new-generation extensions. The most active moving front is currently automatic mesh generation in two dimensions. A PC port is almost complete.

In January John Turner took over from Exscite (Hamilton's up-market continuing science exhibition) responsibility for planning and presenting in Hamilton the touring exhibition Common Threads. The theme of the exhibition is textiles and related mathematics; some concepts explored within the crafts and textiles context are number, symmetry, coding, patterns and design, and transformations. It originated in London, and toured Britain for two years before being sent to NZ by its chief sponsor, the British Council. It ran in Hamilton, at the Gardens Pavilion, in April and May and attracted close to 2000 school children and some 500 other visitors. Andy Begg of the Centre for Science and Mathematics Education Research was a member of the organising committee as were several local High School Mathematics Teachers. It was generally agreed that the exhibition was very successful in Hamilton; in particular that it struck a blow for more feminine-oriented topics in the curriculum. Substantial documentation was produced: for details contact John Turner.

Seminars

Ingrid Risma-Melchert, Bill Teahan and Ian Witten, "Storing Sparse Sets: theory and practice".

Douglas Bridges, "The nth power formula for the derivative in a ring".

Mark Schroder, "Infinitesimals - the 'Ghosts of departed quantities' begin to take shape".

Cristian Calude (University of Auckland), "Three theories of Computational Complexity".

Cristian Calude (University of Auckland), "Randomness as a universal invariant"

Roger Penrose (University of Oxford), "Computability and the mind", "Cosmology, Quantum Theory and the arrow of time", and "Twistors and integrable systems".
 Jeff Knowlton, "Minimum bias designs for exploratory computer experiments".
 B. D. McKay (Australian National University), "Recent advances in Graph Ramsey Theory".
 Andreas Dress (University of Bielefeld), "Trees, Buildings and Matroids", and "A shortcut to Galois Theory".
 Douglas Bridges, "Abstract complexity and the speed-up theorem".
 Andreas Dress (University of Bielefeld), "Cellular Automata".
 Marston Conder (University of Auckland), "Graphs with no small circuits".
 James Lyness (Argonne National Laboratory), "Multidimensional extrapolation quadrature: an overview".
 Ivan Reilly (University of Auckland), "Non-Hausdorff spaces".
 Greg Chaitin (IBM Yorktown Heights), "The LISP halting probability".
 Richard Fateman (University of California at Berkeley), "A proposal for automated integral tables".
 Kevin Broughan

NOTICES

1994 NEW ZEALAND MATHEMATICS COLLOQUIUM AND MATHEMATICS EDUCATION DAY The University of Waikato, Monday 9 – Thursday 12 May, 1994

The Colloquium will be held from May 9-11 and will incorporate the annual meeting of the New Zealand Mathematical Society, and also the annual meeting of ANZIAM (N.Z. Branch). A mathematics education day, organised by the Centre for Science and Mathematics Education Research, will be held on May 12.

First circulars were distributed in early October. However, if you did not get the first circular and wish to receive the second (registration) circular, please contact: The Colloquium Secretary, Department of Mathematics and Statistics, University of Waikato, Private Bag 3105, Hamilton, New Zealand. (E-mail: nzmc94@hoiho.math.waikato.ac.nz) The second circular will be distributed in February 1994.

To date, the following speakers have accepted invitations to give talks at the Colloquium:

Ian Sloan (UNSW, Sydney, ANZIAM-NZ speaker) Numerical Analysis.
 Mitchell Taibleson (Washington University, St. Louis) Analysis.
 Wolfgang Vogel (Massey University) Algebra.

We look forward to welcoming as many of you as possible to the Colloquium and Mathematics Education day in May!

Student Financial Support

To encourage student participation in the Colloquium, there will be some financial support available from the New Zealand Mathematical Society for students who would otherwise be unable to attend. This support is intended for expenses such as travel and accommodation. Although the funds will be limited, it is expected that up to \$200 per student will be available for about five students. Preference will be given to students who have not previously had support from the New Zealand Mathematical Society and whose travel expenses to Hamilton would be high.

Students wishing to apply should do so in writing to the Colloquium Secretary at the address above. There is no formal application form. Each application should include the following information:

- (a) the degree for which the student is enrolled,
- (b) their thesis or dissertation title,
- (c) whether they intend to present a paper at the Colloquium,
- (d) whether they have previously had financial support from the New Zealand Mathematical Society,
- (e) how much funding is required.

Applicants should also include a statement from their Head of Department or supervisor that the details of their

enrolment given in the application are correct.

The closing date for receipt of applications is **31 March 1994**. Applicants will be notified the result of their application no later than 30 April 1994.

GROUPS & GEOMETRY CONFERENCE **University of Auckland, 16–20 May 1994**

A conference on Groups and Geometry is planned for the week 16–20 May 1994 at the University of Auckland, New Zealand. Invited speakers are likely to include the following: Jianbei An (Auckland), Fred Gehring (Michigan), Don James (Penn State), Gus Lehrer (Sydney), Murray Macbeath (St Andrews), Colin Maclachlan (Aberdeen), Mike Newman (Canberra), Alan Reid (Cambridge), and Hyam Rubinstein (Melbourne). Enquiries may be directed to the organisers: Marston Conder & Gaven Martin, Department of Mathematics, University of Auckland, Private Bag 92019, Auckland, New Zealand (email conder@mat.aukuni.ac.nz or FAX 0064–9–3737457).

20TH AUSTRALASIAN CONFERENCE ON COMBINATORIAL MATHEMATICS AND COMBINATORIAL COMPUTING **University of Auckland, 5 - 9 December 1994**

Originally scheduled to be held at the University of Waikato, the 20th ACCMCC will now be held at the University of Auckland (City Campus) from 5 - 9 December 1994.

An enthusiastic conference organising committee consisting of Peter Gibbons, Peter Lorimer, Marston Conder, Paul Bonnington, Margaret Morton, and Paul Hafner has been formed, and is planning for a balanced program of contributed and invited talks covering a wide range of combinatorics. Invited speakers who have confirmed their attendance so far are:

Paul Bonnington (Auckland)
Charlie Colbourn (Waterloo)
Dominic de Caen (Queen's)
Vaughan Jones (Berkeley)
Rudi Mathon (Toronto)
Brendan McKay (Australian National University)
Cheryl Praeger (Western Australia)
Ralph Stanton (Manitoba)

The committee is attempting to attract two further distinguished speakers. An announcement will be made about this later.

Accommodation has been booked at O'Rorke Hall, a modern student hostel within 5 minutes walk of the conference venue. Further details, along with details of registration and the social programme, will be published towards the middle of 1994.

Further information may be obtained from Peter Gibbons, Department of Computer Science, University of Auckland, Private Bag 92019, Auckland, New Zealand (email: p_gibbons@cs.auckland.ac.nz).

A C AITKEN CENTENARY CONFERENCE **University of Otago, Dunedin 28 August to 1 September, 1995**

This five-day conference, incorporating the 3rd Pacific Statistical Congress and the Annual meeting of the New Zealand Statistical Association, is to celebrate the 100th anniversary of the birth of the famous New Zealand mathematician A C Aitken, who was born in Dunedin on 1 April 1895. In keeping with Aitken's own interests, the conference will include invited and contributed papers on the three general themes of Actuarial

Mathematics, Numerical Methods, and Statistics.

For further information and to be put on the mailing list, contact: The Aitken Conference Secretary, Department of Mathematics and Statistics, University of Otago, PO Box 56, Dunedin, New Zealand. Telephone: 64-3-479-7774. Fax: 64-3-479-8427. Email: casm@maths.otago.ac.nz

XXXIV INTERNATIONAL MATHEMATICAL OLYMPIAD Istanbul

New Zealand was represented at the 34th IMO by a team of six high school students as follows: Bonnie Law, St Cuthbert's College, Auckland; Evan Barlow, James Hargest High School, Invercargill; Andrew Firth, Otago Boys' High School; Todd Nicholson, Napier Boys' High School; Brendan Riley, Avondale College, Auckland; and Malcolm Taylor, Wanganui Collegiate.

Bonnie Law and Andrew Firth were awarded bronze medals and in the unofficial team tallies, New Zealand came 45th equal out of 73 competing nations. Professors Holton and Hookings of Otago and Auckland Universities were leader and deputy, and the team was also accompanied by Mr A Parris of Lonwood High School, Christchurch.

The questions were harder than usual so that the marks were lower; in fact only two students achieved perfect scores! Herewith the problems:

FIRST DAY

1. Let $f(x) = x^n + 5x^{n-1} + 3$ where $n > 1$ is an integer. Prove that $f(x)$ cannot be expressed as the product of two polynomials, each of which has all its coefficients integers and degree at least 1.

2. Let D be a point inside the acute angled triangle ABC such that

$$\angle ADB = \angle ACB + 90^\circ$$

and

$$AC \cdot BD = AD \cdot BC$$

(a) Calculate the value of the ratio $\frac{AB \cdot CD}{AC \cdot BD}$

(b) Prove that the tangents at C to the circumcircles of the triangles ACD and BCD are perpendicular.

3. On an infinite chessboard, a game is played as follows. At the start, n^2 pieces are arranged on the chessboard on an $n \times n$ block of adjoining squares, one piece in each square. A move in the game is a jump in a horizontal or vertical direction over an adjacent occupied square to an unoccupied square immediately beyond. The piece which has been jumped is then removed. Find those values of n for which the game can end with only one piece remaining on the board.

SECOND DAY

4. For three points P, Q, R in the plane, we define $m(PQR)$ to be the minimum of the lengths of the altitudes of the triangle PQR (where $m(PQR) = 0$ when P, Q, R are collinear).

Let A, B, C be given points in the plane. Prove that, for any point X in the plane,

$$m(ABC) \leq m(ABX) + m(AXC) + m(XBC).$$

5. Let $N = \{1, 2, 3, \dots\}$.

Determine whether or not there exist a function $f: N \rightarrow N$ such that

$$\begin{aligned} f(1) &= 2 \\ f(f(n)) &= f(n) + n \quad \text{for all } n \in N \end{aligned}$$

and

$$f(n) < f(n+1) \quad \text{for all } n \in N.$$

6. Let $n > 1$ be an integer. There are n lamps L_0, \dots, L_{n-1} arranged in a circle. Each lamp is either ON or OFF. A sequence of steps $S_0, S_1, \dots, S_i, \dots$ is carried out. Step S_j affects the state of L_j only (leaving the state of all other lamps unaltered) as follows:

- if L_{j-1} is ON, S_j changes the state of L_j from ON to OFF or from OFF to ON;
- if L_{j-1} is OFF, S_j leaves the state of L_j unchanged.

The lamps are labelled mod n , that is,

$$L_{-1} = L_{n-1}, \quad L_0 = L_n, \quad L_1 = L_{n+1}.$$

Initially, all lamps are ON. Show that

- (a) there is a positive integer $M(n)$ such that after $M(n)$ steps all the lamps are on again;
- (b) if n has the form 2^k then all the lamps are ON after $n^2 - 1$ steps;
- (c) if n has the form $2^k + 1$ then all the lamps are ON after $n^2 - n + 1$ steps.

NEW ZEALAND JOURNAL OF MATHEMATICS

Report to NZMS AGM

The Journal is now being published according to the originally proposed schedule, ie one volume of two issues per year, totalling about 200 pages. [It will be recalled that last year we published the invited lectures from the Dunedin Colloquium in a single-issue volume totalling 160 pages.] We continue to be committed to a fine quality of reproduction. The first issue of Volume 22 appeared in February 1993 and contained 13 papers and 107 pages. The second issue of Volume 22 is now almost ready to go to the printers and will contain 8 papers and about 95 pages. We have a range of subjects and types of papers from strict mathematical research to survey articles, giving a blend which I hope satisfies our breadth of readership.

At its annual general meeting last year, the New Zealand Mathematical Society decided to include a subscription to the Journal as one of the membership privileges of ordinary members of the Society. While this decision is expected to be fiscally neutral, it does mean that we have a wider range of readers, and it requires us to seek a breadth of subject matter. As part of this breadth and recognising that the membership of the Society includes a number of statisticians, it was decided to include mathematical statistics as a subject in which we might publish papers. In view of this broadening, Professor David Vere-Jones was invited to join the editorial board, an invitation which he accepted.

The Journal is now receiving papers of high quality from many parts of the world. Authors are invited to submit papers either through the editor or through any member of the editorial board, and members of the board are able to accept papers. While we welcome papers from local authors, we apply the same standards to papers whatever their origin. Papers received now would, if accepted reasonably quickly, appear next year.

David Gauld
Editor

NZMS VISITING LECTURESHIP Announcement and Call for Nominations

Each year the NZMS coordinates and provides some financial support for a tour of New Zealand universities by a visiting mathematician. Usually this person—known as the NZMS Visiting Lecturer—will spend 2 to 3 days at each of the six main university centres (Dunedin, Christchurch, Wellington, Palmerston North, Hamilton and Auckland), and give at least two lectures at each place: one for a general audience, and one more closely tied to his or her own particular research interests.

Recent NZMS Visiting Lecturers have included Professor John Loxton (Macquarie University) in 1992, and Professor Andreas Dress (University of Bielefeld) in 1993.

The NZMS Council has chosen **Dr Colin Maclachlan** (University of Aberdeen) as NZMS Visiting Lecturer for 1994. Dr Maclachlan's interests are in geometry, group theory and low-dimensional topology. His tour is likely to take place during April 1994, and will be organised by Marston Conder (whose email address for enquiries is "conder@mat.aukuni.ac.nz").

Nominations are now being called for the 1995 NZMS Visiting Lectureship. Names of suitable candidates should be sent, together with a brief description of their current position and field(s) of interest, to the NZMS Secretary, Dr Margaret Morton, Department of Mathematics, University of Auckland, Private Bag 92019, Auckland, no later than 1 May 1994.

FORDER LECTURER 1993

On behalf of the co-organisers (the London and New Zealand Mathematical Societies) I am pleased to provide this brief report on the visit of Professor Roger (and Mrs Vanessa) Penrose, University of Oxford who visited New Zealand as the fourth Forder Lecturer in April-May 1993. I acted as the NZ-based organiser on the invitation of NZMS.

The visit of such an eminent mathematical physicist such as Professor Penrose, provided an opportunity to promote the role of mathematics in cosmology, computer science and in science generally. The two high-profile talks in the two areas "Computability and the mind" and "Quantum theory, cosmology and the arrow of time" drew large audiences in most centres. News media interest was high and without exception positive. Roger's willingness to cooperate in publicity ventures was appreciated.

Professor Penrose provided a list of 6 talks, and 3-4 talks were given in each of the six University centres. This provided a heavy schedule for the incumbent, and over 5 weeks this is at the limit of what can be asked. The fact that the Penroses came up on top of it all provides real evidence of stamina and commitment. Thank you Roger and Vanessa for a most successful visit. We await with excitement the news of Forder 1995.

I thank the Departmental contacts who were:

Dr John Shanks, University of Otago
Dr Peter Waylen, University of Canterbury
Dr Geoff Whittle, Victoria University of Wellington
Associate-Professor Ernie Kalnins, Waikato University
Professor Gaven Martin, University of Auckland.

These people together with Dr Mike Steel, postdoctoral fellow at Massey (and sometime resident at Canterbury) helped me put together a good national event. The mix of social events and professional occasions were very worthwhile.

Warm thanks must be extended to

- (i) The British Council (through Mr Francis King) who provided a grant (of £3800) for overseas travel for the Penroses to travel from UK to NZ and return;
- (ii) The London Mathematical Society for helping set up this tour;
- (iii) The British High Commission in Wellington for hosting a dinner in honour of Professor and Mrs Penrose (Professor John and Mrs Margaret Harper, my wife and myself represented the NZMS at this

event). Mr Iain Orr, Deputy High Commissioner, and Mrs Orr were the gracious hosts for this occasion.

Costs were a major responsibility of myself. Local costs including accommodation were the responsibility of the host institution, and other internal costs were as follows:

<u>Costs</u>	Internal travel (rental car)	\$2004.97
	Flights	\$293.87
	Publicity not covered elsewhere	\$80.00
	<i>Total</i>	<i>\$2378.84</i>

Subsidies which covered these:

	Massey University grant	\$293.87
	Department contributions:	
	6 @ \$250 (less some GST)	\$1472.22
	NZMS grant(\$750 - \$137.25 refund)	\$612.75
	<i>Total</i>	<i>\$2378.84</i>

Graeme Wake
Massey University

NZMS RESEARCH AWARD 1993

Marston Conder

At the NZMS Annual General Meeting held in August at Christchurch, the NZMS Research Award was presented to Marston Conder (University of Auckland), with the accompanying citation:

"for research exhibiting insight and originality in solving problems in algebra and combinatorics, in which, by his outstanding skills in machine computation, he has demonstrated the effectiveness of the computer when guided by real intelligence."

The focus of Marston's research lies in computational approaches to the solution of problems in algebra, combinatorics, and their applications. He has answered a number of long-standing questions in these areas, and in the course of doing so he has developed new methods (or new variants of existing methods) for investigating the structure of groups and their images. He has made extensive use of computer algebra systems (CAYLEY) in his work.

The purpose of this award (instituted in 1990) is to foster mathematical research in New Zealand and to recognise excellence in research carried out by New Zealand mathematicians. Applications and nominations are normally called for in the August issue of the NZMS Newsletter. The award round for 1994 is being co-ordinated by the NZMS Outgoing Vice-President, Derek Holton (University of Otago).

This is the third time the award has been made. Previous recipients of the award are John Butcher (Auckland) and Rob Goldblatt (VUW) in 1991, and Rod Downey (VUW) and Vernon Squire (Otago) in 1992.

RSNZ FELLOWSHIP

Derek Holton

Derek Holton, Professor of Mathematics at the University of Otago, has been elected a Fellow of the Royal Society of New Zealand. Derek was born in England, brought up in Australia, studied for his Ph.D. in Canada and has been in New Zealand since 1985. While his main field of research is Graph Theory, he has a general interest in Combinatorics. His principal topics of research have been the relationship between the structure of graphs and their automorphism groups, degree sequences of graphs, planarity cycles through specified points and edges in graphs and problems of extending independent edges to matchings. He has taken an interest in Mathematics Education, particularly in the training of the New Zealand Olympiad teams. Congratulations, Derek.

NZ SCIENCE AND TECHNOLOGY GOLD MEDAL

Roy Kerr

This medal was instituted in 1990 by the New Zealand Government to recognise those who have made a significant contribution to the advancement of science and technology in New Zealand. The first recipient was Professor Vaughan F R Jones.

Roy P Kerr FRSNZ, Professor Emeritus of Mathematics at Canterbury University, is the recipient of the Gold Medal in 1992-93. Professor Kerr is internationally known for discovering the mathematical solution of Einstein's equations which represent a rotating black hole. He was awarded the Hughes Medal of the Royal Society London in 1984 for his paper describing the discovery which has become known as the Kerr Solution. His solution has had a profound effect on theoretical physics. Professor Kerr now lives in Auckland. Congratulations, Roy.

MATHEMATICAL SCIENCES COUNCIL OF NEW ZEALAND

The Mathematical Sciences Council of New Zealand was established on Friday 5th March 1993 by representatives of the NZMS, the NZ Statistical Association, the NZ Association of Mathematics Teachers and the Operations Research Society of NZ.

The Council's mission is to foster and coordinate the promotion of the mathematical sciences in New Zealand, by

- providing a combined voice at the national level for professional societies representing the various branches of the mathematical sciences
- facilitating communication and cooperation between these societies on matters of common interest (such as education and funding)
- establishing a network for the interchange of ideas and information among its members
- raising public awareness of the role of the mathematical sciences, by contact through the news media and careers brochures
- encouraging education and research programmes at all levels
- promoting high standards within its organisation(s) so as to foster the proper use of mathematical sciences in the wider community.

Its vision is of a New Zealand in which the vital role played by the mathematical sciences in the life of the nation is appreciated by all, and where its citizens can understand and apply quantitative thinking in their everyday life and work.

Current members of the Mathematical Sciences Council are: Marston Conder (President NZMS), Derek Holton (Vice-President NZMS), Harold Henderson (President NZSA), Jean Thompson (Past President NZSA), Bill Ellwood (President NZAMT), Sylvia Bishton (Representative NZAMT), Jonathon Lermitt (Vice-President ORSNZ), Grant Read (Representative ORSNZ), and Graeme Wake (Math. Sciences Representative on the Interim Board of the Royal Society of NZ).

The Council met for the second time on Wednesday 25th August during the NZ Mathematics Colloquium at Christchurch. Among the issues it discussed were the following: membership of constituent societies, links with the NZ Computer Society, RSNZ restructuring and the election of the Mathematical Sciences representative, the NZMS/NZSA careers brochure, and the cost category for tertiary EFTS funding of mathematics and statistics.

The next meeting is tentatively planned for May 1994 (around the time of the NZ Mathematics Colloquium) in Hamilton. Any enquiries and/or suggestions concerning the Council's activities would be welcomed by its current President, Marston Conder (e-mail: conder@mat.aukuni.ac.nz or FAX 9-3737457).

NZMS 1993 VISITING LECTURER REPORT

Andreas Dress

After one stop over at LA to visit Mike Waterman at USC and another stop over at Fiji Islands to visit the University of the South Pacific, my wife and I arrived via Auckland in Christchurch on a beautiful day in very early March. At the airport we were welcomed by Mike Steel and Cheryl, who guided us to the Edwardian home just at the river banks, Mike had booked us in.

Right there, under the chestnut and apple trees, we began to talk mathematics as Mike was just working on an interesting problem relating to the identification of evolutionary kinship relations from present day data. We also started to set up travel arrangements according to the schedule which brought me to Otago at March 8/9, to Canterbury at March 11/12, to Victoria at March 15/16, to Massey at March 18/19, to Waikato at March 29/30, and finally to Auckland at April 1/2. I soon realized that -- just as I had expected -- Mike Steel and Mike Hendy had organized everything optimally and that there was absolutely nothing left we could wish to be changed.

Scientifically, the journey through all six NZ universities proved to be very rewarding: I had been asked to report on my new simple approach to classical Galois theory in Dunedin, Christchurch, Hamilton, and Auckland and to report on some new approaches to basic results in finite group theory in Wellington and Palmerston North. I was very pleased and a bit surprised to find that much interest in Algebra, an originally rather 'German', though indeed very fundamental branch of mathematics and I got many valuable comments.

In addition, I had been asked to report on matroids in relation to (a) the Greedy Algorithm and (b) Tits Buildings and Trees in Dunedin, Wellington, Palmerston North, and Hamilton and to report on equivariant tilings in Christchurch and in Hamilton. Also these talks went very well and received more interest and comments than I had expected.

Finally, I had offered a 'multimedia' talk on "Cellular Automata: a Simplistic Approach to Complex Pattern Formation", which had been chosen as the 'popular' talk at Christchurch, Palmerston North, Hamilton, and Auckland. This talk has always been a success, thanks in particular to the nice transparencies and the video, produced by my former Ph.D. students Heike Schuster and Martin Gerhardt. Still, the subject as such is full of fascinating unsolved mathematical questions and I was very glad to be able to explain these questions and, hopefully, to raise some interest in working on them at so many places in NZ.

In addition to giving all these talks, my journey through NZ enabled me to make many new contacts and to develop older ones in relation to my present main occupation: the application of mathematics in the analysis of data provided by molecular biology. At Dunedin I met a rather active group of molecular biologists studying many important questions, though being mainly concerned with the overall organization of the sheep genome, at Palmerston North I was host of Mike Hendy's group (including my host Mike Steel at Christchurch and the botanist David Penny from Massey). So the visit in Palmerston North was clearly the center part of my visit to NZ. We had ample opportunity to introduce each other into our individual methods and to discuss their merits and shortcomings. And we started to design research projects for further scientific cooperation.

As I found out in the meantime, there is a very good chance to get support through the Scientific and Technological Co-operation Agreement between NZ and the Federal Republic of Germany for research in biomathematics and I would be very happy, if my visit to NZ this (northern) spring could be considered as a starting point for such kind of scientific cooperation.

My overall impression from my visit to all of NZ's math departments is a very lively one. In spite of its geographic isolation NZ is as good a place to do mathematics as every other place in the world. I only would like all NZ mathematicians to realize just that and, in particular, to keep their Ph.D. students in NZ and accordingly to develop appropriate graduate programs for them in their home country (with, say, occasional visits from two to six months somewhere outside their home university). As I understand, such projects are well under way at some NZ universities and my impression is that those universities have a much more intense and vigorous mathematical life than those which still tend to send their best students abroad.

Andreas Dress
Universitat Bielefeld
Fakultat fur Mathematik
Postfach 10 01 31
4800 Bielefeld 1
Germany

NEW COLLEAGUES

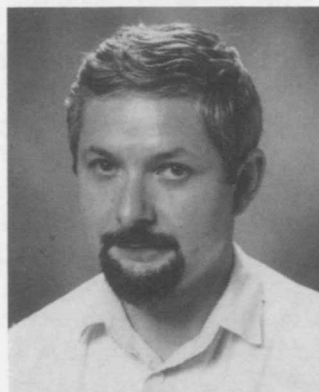
JULIE FALKNER



Julie Falkner has recently been appointed to a lectureship in the Mathematics Department at Massey University. Her research interests include set partitioning and graph partitioning problems and linear programming applications and she will strengthen the Operations Research offerings at Massey.

Julie graduated from the University of Auckland with a BSc in Mathematics and Computer Science in 1985, and a PhD in Engineering in 1989. In 1991 she flew from a New Zealand summer into a Canadian winter to take up a postdoctoral fellowship in the Department of Combinatorics and Optimisation at the University of Waterloo. She spent eighteen months there, working with Professor Henry Wolkowicz.

CRISTIAN CALUDE



Dr. Calude has been appointed Associate-Professor of Computer Science within the Computer Science Department at Auckland University. His research areas include Recursive Function Theory, Computational Complexity and Algorithmic Information Theory, where he has published eleven books and more than 100 research papers. His results have been widely quoted and used. His last monograph *Information and Randomness: An Algorithmic Perspective* will be published by Springer-Verlag.

Romanian born and educated, Dr. Calude is on leave from Bucharest University; he was also a Visiting Professor with the Computer Science Department, The University of Western Ontario, Canada. Dr. Calude lectured in many universities in Europe, Japan, New Zealand and North America. In 1986 he received the Computing Reviews Award (ACM) and in 1988 he won the G.Lazar Mathematical Prize from the Romanian Academy, for his monograph *Theories of Computational Complexity* published by North-Holland.

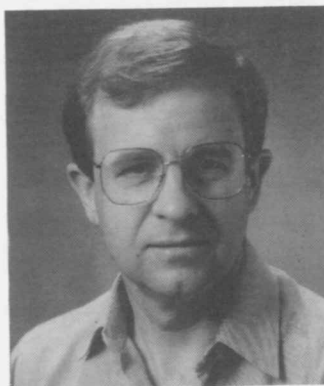
ARKADII SLIN'KO



Dr. Arkadii Slin'ko was recently appointed to a Lectureship in the Department of Mathematics and Statistics at Auckland University. Born in Russia, he was a senior staff member of the Institute for System Studies in Moscow and a part-time associate-professor at Moscow M.V.Lomonosov State University before coming to New Zealand. He gained MA from Novosibirsk State University, and a PhD and DSc from the Institute of Mathematics at the Siberian Branch of the USSR Academy of Sciences.

Dr. Slin'ko's research interests lie in topological algebras, non-associative structures (such as Lie and Jordan algebras and their generalizations), and educational issues associated with mathematics competitions for high school students.

MICHAEL THOMAS



Dr. Michael O. J. Thomas has recently taken up an appointment as a Lecturer in the Department of Mathematics and Statistics at Auckland University.

Born in Britain, Michael has a BSc (Hons) in Pure Mathematics and MSc and PhD degrees in Mathematics Education, from Warwick University. Michael has taught mathematics in secondary schools in Britain for 21 years, including 10 years as a Director of Computer Studies. He was at Bablake School in Coventry for 16 years. He has spent the last 10 years researching and writing about the value of the computer paradigm for enhancing the teaching and understanding of mathematics, working with David Tall and Rolf Schwarzenberger. His PhD looked at methods of improving children's conceptual understanding of algebra (generalised arithmetic) using programming and computer software to give them a mental model of a variable with which to build and test algebraic concepts.

His research interests include investigating further how the computer may be used to improve students' conceptual understanding of algebraic expressions and equations and the effect of symbolic manipulators and calculators on students' understanding of algebra and calculus. Michael is also particularly interested in the way that the brain processes mathematical thought through the interaction of its hemispheres and the pedagogical implications of this for promoting versatile learning in mathematics.

GRANTEE REPORTS

PETER DONELAN

Mathematics Department, Victoria University of Wellington

The purpose of the grant I received from NZMS was to help with the costs of visiting Dr Chris Gibson at the University of Liverpool, to complete a collaboration on a problem in mathematical robotics. I was in Liverpool from 20 July to 12 August this year. Apart from the mathematics, the weather was consistently warm and sunny and Liverpool itself I found an intriguing mixture of once elegant Georgian buildings, redbrick Victorian terraces and modern moonscaped estates. The Department of Pure Mathematics is housed in a 30-year-old building at the end of its lifespan. It is fenced around to protect pedestrians from falling concrete.

The Department is a very active research centre, especially in singularity theory (in which 6 of the 14 staff work). It was the connections with singularity theory that gave rise independently to our interests in kinematics and robotics. The project we worked on was the structure of the hierarchy of screw systems. We were able to clarify the classification and prove some important technical results and we are currently writing these up. This antipodal collaboration is made much easier by TeX and e-mail but would have been impossible without the direct contact facilitated by this grant.

There are many interesting mathematical problems in this area, involving singularity theory, algebraic geometry, dynamics, computer graphics and so on. Robotics is a very active area of research internationally and it would be nice to see it develop in New Zealand. I mention this because I was struck by the way the Department in Liverpool was flourishing as a result of having a coherent research direction. This enables them to maintain a strong postgraduate program, with 20 to 30 students, and to attract significant research grants from national and international agencies. If the Universities' entry into the PGSF is a sign of future research-funding directions here and mathematics is to be an active part of that, we will also have to develop particular strengths. For the most part, mathematics research in New Zealand is fragmented with very few people working in any particular area. In consequence, most of our best students go overseas for postgraduate study, which is probably in their best interests but not ours. One way to get over this may be to have students jointly enrolled in NZ and at an overseas institution, spending time in both.

A final point of interest - the proportion of women undergraduates in pure mathematics at Liverpool had risen to nearly 50%. What's more, over half the postgraduate students (but only one permanent member of staff) are women. Though I am not clear about the dynamics that achieved this situation, the lesson seems to be that, while it remains difficult to attract women staff (only one out of 50 applicants for the last position at Victoria), encouraging more women into postgraduate work is an achievable goal that would help provide good role models for undergraduate students and increase the pool of prospective women lecturers.

Footnote: This report was submitted shortly after returning from Liverpool in 1992. It got lost somewhere in the system. Some of the things I mentioned then are already starting to happen here. The joint paper on the hierarchy of screw systems has been accepted for publication in *Acta Applicandae Mathematicae* and will I believe lead to further research in spatial kinematics.

NORM LEVENBERG

Mathematics and Statistics Department, University of Auckland

In 1992 I applied to the NZMS Council for a grant toward the expenses of several visitors to Auckland. The grant of \$500 was used as follows:

- R. MOLZON of the Univ. of Kentucky (USA) visited Auckland and presented two seminars; one involving differential geometry and symmetrization and the other on an interesting volume-area inequality using multilinear algebra. Molzon's areas of specialization include several complex variables and differential geometry; we had many valuable discussions on generalizations of the Schwarzian derivative he developed (with K. Pinney) and on characterizations of algebraic submanifolds (my work with L. Bos). Indeed, Molzon's comments inspired a reformulation of the main theorem in my paper "Tangential Markov inequalities characterize algebraic submanifolds of \mathbf{R}^N " (see L. BOS below).

- August 21 - Sept. 3: L. BOS of the Univ. of Calgary (Canada) visited Auckland and presented a seminar on Markov and Gagliano-Nirenberg-Sobolev type inequalities. During his visit, we essentially completed the bulk of our work on two projects: "Tangential Markov inequalities characterize algebraic submanifolds of \mathbf{R}^N " and "A Jackson-type theorem for elliptic operators". The latter paper will be submitted soon to (probably) the *Journal of Approx. Theory*; the former will appear soon in electronic preprint form in the Several Complex Variables Electronic Library and will be submitted in the near future to a yet-to-be-determined research journal. We also compiled a list of approximately 10 questions for future study.
- Sept. 21 - Oct. 4: M. OKADA of Tohoku Univ. (Sendai, Japan) visited Auckland and presented three seminar talks on stochastic control theory, Markov processes and the Dirichlet problem, and explicit heat kernels on graphs and networks. We discussed several questions in pluripotential theory and made a little progress. No immediate publications will result but we have a TeX file of our findings on which we hope to build.
- U. CEGRELL of Umea Univ. (Sweden) was supposed to visit in November but he will visit Auckland for approximately one month starting next March.

SIMON WOODWARD PhD Student, Massey University

This August was first time I have attended the NZMC, as I have had prior commitments in the May vacations these last few years. Travelling to Christchurch for the colloquium gave me the opportunity to visit my grandmother in Sumner, and by God's grace I was also able to be at the funeral of my great aunt prior to the colloquium, which I appreciated.

I really enjoyed the colloquium and would very much like to attend it again next year in Hamilton. Educationally I found the the invited talks very interesting and lively, and appreciated the opportunity to hear short talks on other topics. The Mathematics in Biology Day, at which I presented a paper, was also of particular interest to me, as my research area is agricultural modelling.

The most valuable aspect of the colloquium for me was the opportunity to meet other mathematicians from universities and research institutes around New Zealand, which I found very encouraging. This has increased my enthusiasm about the prospect of becoming a mathematician in the present research climate in New Zealand.

I also enjoyed staying in the hostels with other delegates as this gave additional opportunity for socialising and mixing, especially later in the evenings. The several shared dinners and the very enjoyable wine trail were also good for this. The unseasonably good weather made the whole time especially pleasant.

As a student I found some of the expenses difficult to justify especially the high costs of the hostel accommodation and conference dinner, so the generous grant from the Maths Society is really appreciated. I estimate the total cost of the colloquium for me, including \$109 return airfare from Wellington, was \$386.

MIKE STEEL Mathematics and Statistics, Massey University

No riots outside my apartment this time, nor the emergency stop-over in Fiji, but at least this visit to the US was as productive as my rather eventful one in 1992. In fact, one paper (with Dr F. "Buck" McMorris, of the University of Louisville) has already been submitted, and two are soon to be.

I spent 6 weeks in the US, mostly working in Los Angeles, with Professor Mike Waterman and Dr Larry Goldstein of the University of Southern California; this time we solved a problem which has been of concern in theoretical biology for several years, namely to determine the null distribution of the "parsimony length" of a tree, in order to evaluate the statistical performance of the maximum parsimony method—the most widely-used method by which biologists reconstruct evolutionary trees. On July 9, I drove down to UC Irvine for an international conference on molecular genetics, and on July 14 and 21 gave a two-hour seminar, and a follow-up one-hour seminar for specialists in tree reconstruction at USC.

On July 24-26 I headed East -to Albuquerque, New Mexico, to see Hungarian colleague, Dr Laszlo Szekely. We have some recent results, which we are now writing up with Dr Mike Hendy of Massey University. I also worked with Dr Tandy Warnow, and gave a talk to her group at Sandia National Laboratory, after getting the

necessary security clearances, eventually convincing them that my New Zealand drivers license (with no photo, and expiring in 2032) was for real. July 28; I was invited to UCLA to meet Dr Charles Marshall and colleagues. July 31; I returned to Albuquerque to continue my collaboration with Dr Szekely.

On August 1, after trying unsuccessfully for 17 hours to get to Penn State University, using my dubious Delta standby "Discover America" air pass, I jumped ship around midnight in Louisville, Kentucky. Here I spent the week working with Buck McMorris on a problem we had discussed during his visit here last December. By the end of the week we had not only worked out a solution, but had also succeeded in emptying his prized bourbon collection. I also described the recent results of Dr Warnow and myself with McMorris's co-workers who had been wondering about similar problems.

On August 7 I was again on the standby-by merry-go-round, but this time made it to San Francisco in time to present an invited paper at the annual meeting of the American Statistical Association. This was a huge meeting (several thousand participants), and an excellent opportunity to meet a number of leading statisticians (such as Prof Terry Speed, of Berkeley) and discuss ideas of how to apply new techniques to problems of interest in evolutionary biology. My talk generated much feedback, leading to an invitation to Berkeley the following day to give a further talk. It was encouraging to find that the very active and enthusiastic group of post-docs at Berkeley under Professor Slatkin had just been studying in detail the recently published Hadamard technique due to Hendy/Penny of Massey. I returned to Berkeley a second day for a meeting with Prof. Eugene Lawler, who recently turned his impressive computer science talents towards computational biology.

On Aug. 11 I returned to Los Angeles, for some much needed rollerblading, useful discussions with Dr Amt von Haeseler (visiting from Munich), and an invitation to join the Editorial Board of the soon-to-be-launched periodical *Journal of Computational Biology*. On August 12 I returned to New Zealand; directly this time (no unscheduled stop over in Fiji with complimentary pool-side drinks, alas). Thanks to the NZ Mathematical Society for supporting my trip.

CHRIS PALLISER PhD student, Massey University

The grant from the council of the N.Z.N.S. was used to pay for my travel to the N.Z. Mathematics Colloquium held at the University of Canterbury in August. This was my first attendance at a colloquium. I enjoyed meeting and talking with mathematicians from other parts of the country for the first time, and attending many interesting presentations. I liked the informal atmosphere of the colloquium and the social activities provided throughout the three days. I left Christchurch feeling refreshed and looking forward to further studies in mathematics.

Thank you very much to the council of the N.Z.M.S. for making this trip to Christchurch possible.

DINGJUN LOU PhD Student, Otago University

In May of 1992 I was honoured and grateful to receive NZ\$500 from the New Zealand Mathematical Society to support me to attend the 18th Australasian Conference on Combinatorial Mathematics and Combinatorial Computing, held from 6 July to 10 July in Perth. During the conference, I gave a talk "N-extendability of Line Graphs, Power Graphs and Total Graphs", and I met many famous graph theorists from Australia, New Zealand and some other countries. I also discussed some problems with a few experts and sought cooperation with them in the future. I benefit much by attending the Conference. So I would like to thank NZMS again for their providing me financial support.

E BALAKRISHNAN PhD student, Massey University

I appreciated the opportunity to present a joint paper at the Colloquium with Mr A. Swift of Massey University. This opportunity gave me a chance to meet other mathematicians and graduate students from all

over New Zealand. This helped me gain an insight into other current areas of research, in particular mathematical modelling in Biological Sciences.

I also enjoyed being able to catch up with my university friends from Canterbury where I did my Masters degree. Finally, I would like to thank the Mathematical Society for partly funding my travel.

MICHAEL A. CHARLESTON **Department of Mathematics, Massey University**

Earlier this year I attended two conferences in Australia. They were Robertson Symposium: Frontiers of Molecular Evolution, at ANU, Canberra, 27-29 January 1993; and Boden Research Conference: Molecular Systematics of Gene Families, at Thredbo Alpine Hotel, near Canberra, 1-3 February 1993.

I was enabled to attend these two conferences by a grant from the New Zealand Mathematical Society, and also from sources within Massey University.

The first conference was the more formal of the two, with 3 full days of seminars. The linked conference at Thredbo was more casual, with 2 days of seminars and one half-day "brain-storming session" in which the participants discussed what problems we considered were useful and tractable, both biologically and mathematically. For both the conferences the flavour was mixture of mathematics and molecular biology, with some computing --- there was at the Robertson conference an impressive display of the power of computers in showing complex protein molecules --- and statistics.

The conferences were both well organised and very informative. The approximately 60 participants were from Australia, England, Ireland, Japan, Spain, the United States, and the small (but dynamic!) contingent from New Zealand of myself, Mike Steel (University of Canterbury) and David Penny (Massey University).

At the first conference I displayed a poster showing some results from my computer simulation work in the area of phylogenetic inference, and at the second I delivered a seminar (to the largely biologically oriented audience) entitled "A beginner's guide to computer simulation of numerical phylogenetic methods". Both of these were well received.

At the conferences I had the good fortune to meet many of the scientists whose articles I have read and whose phylogenetic methods I have been investigating in my own studies. Among these were Masatoshi Nei (Penn. State University, USA), Mark Chase (Kew Gardens, UK), Lloyd Allison (Monash University, Australia), and Erko Stackebrandt (University of Queensland, Australia).

The trip was most enjoyable and enlightening.

ILZE ZIEDINS **Department of Statistics, University of Auckland**

In June and July of 1993 I visited Europe and the UK. The primary purpose of the visit was to attend two consecutive conferences on stochastic processes.

The first was the Conference on Applied Probability in Engineering, Computer and Communication Sciences, organised by INRIA/ORSA/TIMS/SMAI, from June 16-18. Since my research has particular application to telecommunication networks, this conference was of fundamental interest for me. It was very intensive, with 7 parallel sessions for most of the day. I would frequently have liked to attend at least two or three of these simultaneously, but unfortunately time-space constraints make this difficult!

The second conference was the 22nd Conference on Stochastic Processes and their Applications held in Amsterdam, held under the auspices of the Bernoulli Society, in the following week. This is an annual movable feast. A feature of both conferences was the large number of participants from Eastern Europe and the CIS.

The last part of my leave was spent in the UK, visiting Edinburgh, Durham and, finally, Cambridge, where I was fortunate to be able to attend the first week of a two-week NATO Conference on Probability Theory of Spatial Disorder and Phase Transition, that opened a six-month programme on Random Spatial Processes at the Isaac Newton Institute.

I am most grateful to the New Zealand Mathematical Society and to my department for helping to defray the costs of this trip, which was extremely valuable for me.

PRESIDENT'S REPORT 1992 - 93

Over the last couple of years I have wondered on more than one occasion why we have a New Zealand Mathematical Society. Sometimes I feel that it is something that we have but don't really know why we have it. What does it do? What should it be doing? Do we need it? Has it outlived its usefulness? These thoughts are reinforced when we have the annual difficulty of getting nominations for Council vacancies and we go into the highways and byways in arm-twisting mode.

I don't think that I have got these things clear in my own mind. However, I do think that they are questions that need answering. And here are a couple more. Why do we have a separate Colloquium? Couldn't we simply call the Colloquium the Annual Meeting of the Society? Should we join with the Australian Mathematical Society and form an Australasian Mathematical Society?

I guess I have answers for some of those questions. At the moment I don't see any point, for instance, in combining forces with the Australians. This is not because I have any problem with Australians (my best friend is an Australian), but rather because I think that they and we have quite separate problems (though the word "politics" probably covers both sets of problems). Neither they nor we, would gain a great deal from a closer union at this stage.

On the other hand, I think that the two societies should keep in close contact with each other. I have tried to encourage representatives of both societies to attend the other's council meetings. This should help us keep abreast of problems on both sides of the Tasman and see how the other solves them. That way we might have a better way of solving our own.

I also think that we should have more professional links with the AMS. We now have a New Zealand section of the Applied Maths division, so there are some contacts there. But I have always thought it a pity that the joint meeting idea has died. We don't need one every year but every fourth year I think would be of mutual value. I hope that this is one of the things that the Incoming President will address.

I suppose the reason that the Colloquium and the Society are different is that the Colloquium came first. It seems to me unlikely that the nature of the Colloquium will change in the foreseeable future. I think it has to be organised by a local committee. However, it might be easier not to have to move the Colloquium bank account from place to place. If the Colloquium was part of the Society, then the finances could be administered by a permanent assistant treasurer. Savings may even be made, through GST, for example, if the two organisations were combined. If the Colloquium organising committee were a sub-committee of the Council, then there could be some continuity by having past organisers remain to help the next hosts. Again, I think that maybe it is time to think this one out loud and make a decision for the next five years or so.

Policy

Over a year ago, I had to provide an NZMS Policy for FOSTS (the Federation of Scientific and Technological Societies). It was for this reason that the Policy document presented at this meeting was written. While producing it, I was very much aware of the questions raised in my first paragraph. Having sent it off to FOSTS, it seemed to me important that the Society should have a policy and that that policy should be ratified by the Society. Consequently it was aired in the Newsletter, after being tabled at the last AGM. I find it hard to believe that the document is perfect but there were few responses to the request for comments. I assume then, that it will be passed without comment. But please give a moment's thought, as you board your flight home, as to whether these are the kinds of thing that you think this Society ought be trying to do.

Finance

I suppose that money is the bane of us all. It certainly is a worry to the Society and to our long-suffering treasurer Kee Teo. There are several reasons for this. First, a couple of years ago the Inland Revenue Department thought that we should be taxed on all the interest that we had earned in those heady days of high inflation. After long and protracted discussions, we believe we will eventually obtain a formal exemption. However, as a first step to achieving this, we will need to make some minor amendments to our Constitution. Kee will present these at this meeting. After these have been passed we hope that the RSNZ will endorse our application for exemption from paying tax and that they will forward a letter to the IRD to that effect.

Second, it seems to me that accountants like to balance books. This balancing act though, does not always necessarily help laymen. Sometimes it has not been clear how much money we actually had that we could spend. This can make it hard to plan Society activities. This has been one of Kee's problems in the past, which now seems to have been overcome.

Which leads me naturally into the Societies finances. We are certainly in a healthy position, but we have had to rethink slightly a policy decision on donations that started in the high interest era. This decision was that we would run the Society from the income from the annual subscriptions and help students and staff to conferences from the interest on our capital. As a result of the current relatively low interests rates, this year we only had \$8750 to dispense. Clearly this will not cover all the requests. Consequently, this year the Council decided to prioritise the categories under which grants would be made. So first, money will be allocated to graduate students attending the Colloquium, second to visitors to New Zealand, third to conferences organised here, and fourth to academic staff, with priority to be given to younger staff and staff who have not had previous grants from the Society. It should be noted that the \$2500 for the 1994 Colloquium includes \$1000 for past graduate students. This is to be designated the NZMS Postgraduate Travelling Grants, is to be advertised in the announcements of the next Colloquium and the recipients determined by them next hosts. In this way it is to be hoped that students will know in advance that they have received a grant.

The details of the grants for May 1993 to April 1994 are as follows

Regular commitment

Colloquium (1994)	\$2500
NZMS Visiting Lecturer	\$750
Total	\$3250

Research Fund

4 staff travel grants	\$1500
NZMS Research Award expenses	\$ 50
Total	\$1550

Post Graduate Student Travel Fund

For travel to Colloquium 1993	\$750
Other conferences	\$750
Total	\$1500

Other Grants

NZ Journal of Mathematics	\$2000
NZ Mathematical Olympiad	\$500
Total	\$2500

Total to be spent	\$8800
-------------------	--------

Funds available	\$8750
-----------------	--------

In order to show you that the Council is acting responsibly, I should report that in December we met via teleconference line. The travel costs saved were approximately \$1000. It was a little surprising that, while face to face meetings have lasted five hours or more, the teleconference was over in just over one. I am not sure that the quality of the debate was necessarily high; I personally found that there was less exchange of views over the phone. However, I think that this may have to be a regular means of conducting the Society's business between Colloquia, simply because of the expense of a meeting in Wellington.

Perhaps part of the reason we have had to be more careful this year is the support that we have given to the *NZ Journal Of Mathematics*. In order to get the journal established, the Society pledged to give it \$3000 in the first year and then \$2000 for the next two years of its operation. I believe that this is money well spent. The first issues of the journal are of high quality and are a credit to the editor, David Gauld, and the management committee.

While on the Journal I should point out that a few members of the Society, who are also members of other bodies such as the NZSA and the ORSNZ, have been unhappy about paying for the Journal in their subscriptions. The Council considered the option of reciprocal membership for such people but the Constitution requires reciprocal members to be resident overseas. Consequently we have determined that any member of the NZSA or ORSNZ who wishes, may be exempt from the Journal part of the NZMS subscription. This exemption can be obtained by writing to the Membership Secretary, John Shanks.

If anyone has any brilliant ideas for raising money, please let me know.

In conclusion, here, I would like to thank Kee very much for all his work on behalf of the Society. He would like to retire before the end of the year, so if anyone is interested in the position, they should get in touch with Kee or Marston. Kee tells me that things are now running smoothly so it shouldn't be as onerous a task as it was earlier on.

Awards

I am glad to announce Marston Conder as winner of the Society's 1993 Research Award. The citation on the Award certificate says

"for research exhibiting insight and originality in solving problems in algebra and combinatorics, in which, by his outstanding skills in machine computation, he has demonstrated the effectiveness of the computer when guided by real intelligence."

Congratulations, Marston.

This year's Pre-doctoral Thesis winner is David Bulger for his Masters thesis from Massey. The runners up are Stephen McDowall and David Mawson. I would like to thank the assessors of both awards for the time and effort that they expended on the Society's behalf.

Publications

(1) Newsletter. Once again a great deal of thanks are due to David Smith for getting the Newsletter out on time and to John Shanks for overseeing its printing and distribution. Thanks should also go to the many people who have contributed to the Newsletter in some way. If you have something that you are burning to say, send it along to David for the next issue.

(2) Books. As a source of revenue for the Society, the sale of textbooks has nearly dried up. If you have some notes that you think might prove to be a successful text, then please let us know about it.

RSNZ Interim Board

During the year, we elected Graeme Wake to the Interim Board of the Royal Society of New Zealand. As you know, the Royal Society is to undergo a transformation, probably in the life of the next parliament. Hence a new interim board was established around electoral colleges. We, of course, are in the Mathematical Sciences college (although this name is likely to change to Mathematical and Informatics Sciences), along with the Statistical Association. Jean Thompson acted on behalf of the college until we were able to hold an election. I am pleased to say that a large number of you voted. Graeme's report is given elsewhere.

As a result of the establishment of the RSNZ college system, it was decided that there should be a closer liaison between the mathematically-related professional societies in this country. Consequently, a meeting in Wellington in March this year led to the establishment of the Mathematical Sciences Council of New Zealand. The bodies represented on this council are The NZ Statistical Association, The NZ Association of Mathematical Teachers, The Operations Research Society of NZ and ourselves. Some members of the computer society have also shown interest. The council is likely to meet twice a year and, among other things, will organise the college election for the RSNZ Board. A report on the council is to be found in the April issue of the Newsletter.

Visiting Lecturers

This year's Society Visiting Lecturer was Professor Andreas Dress of the University of Bielefeld. He gave a large number of interesting talks at all universities except Lincoln. I would like to thank Mike Hendy for arranging Andreas' visit. Discussions are currently under way for next year's Visiting Lecturer and I hope to be

able to make an announcement soon.

Professor Roger Penrose was our stimulating Forder Lecturer for 1993. Many non-mathematicians went to his lectures and we now all know more about the emperor's new mind, among other things. I am very grateful to Graeme Wake for organising Roger's grand tour.

Personal

First I would like to offer my condolences to the family of Jim Ansell, whose sudden death was a shock to us all. He will be missed by his many friends and colleagues.

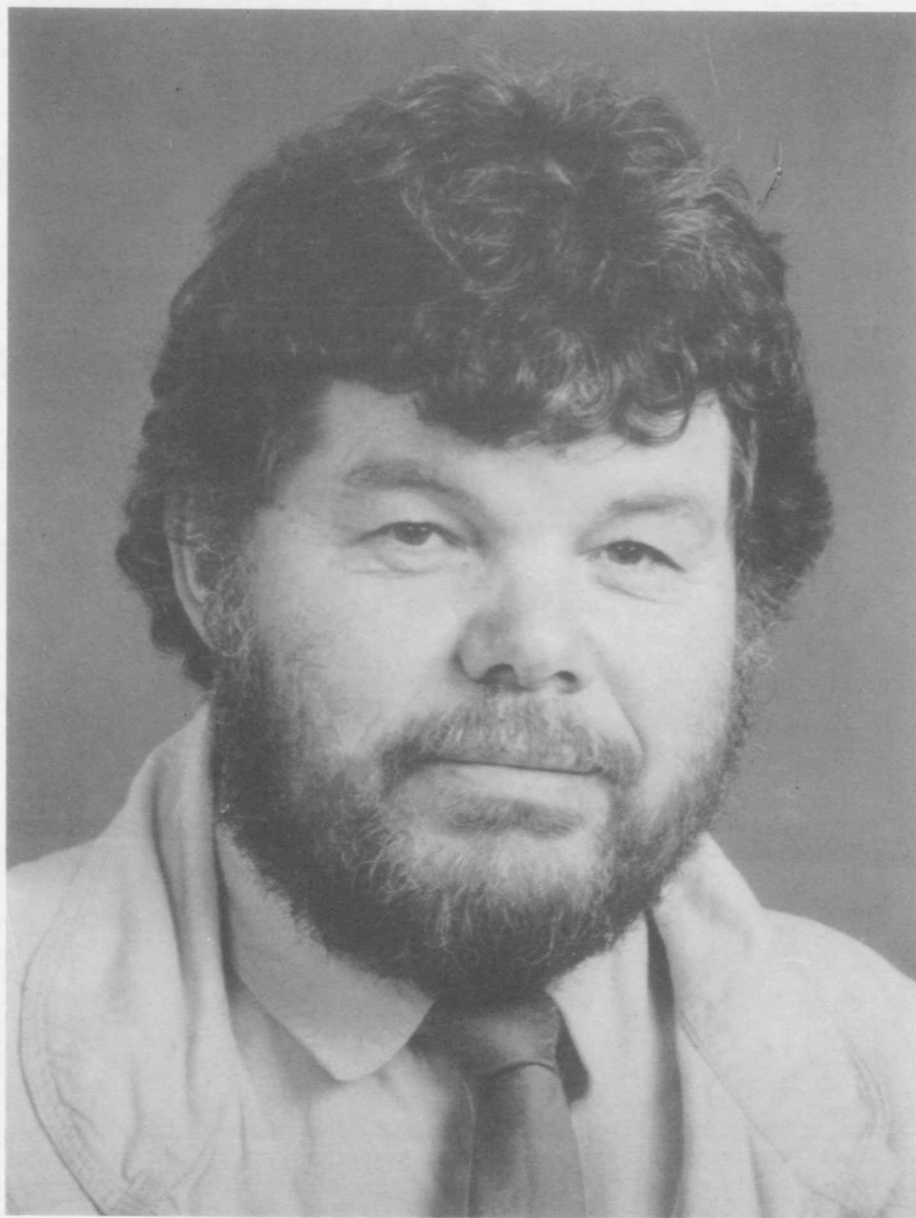
On a Professorial note I would like to congratulate John Harper for his personal chair, Graham Wood for his Queensland Chair and Wolfgang Vogel for the chair in Pure Mathematics at Massey. Congratulations also go to Ernie Kalnins who became a Fellow of The Royal Society of New Zealand in the past year.

One person who has had to work overtime, especially in the months leading up to the Colloquium is Robert Aldred. As Secretary, his hair went grey preparing for this year's Council meeting, while I enjoyed myself on leave in The United States. He has done a tremendous job for the last two years and I owe him a great deal of thanks for keeping me up to the mark. Thank you Tank.

Finally, I would like to first thank Marston Conder for helping Tank to run the ship while I was away and also to wish him a pleasant period as President. If he manages to answer the questions I raised at the start of this report he will have done a tremendous job. Knowing Marston, he will probably do that and more.

Derek Holton

CENTREFOLD



Professor Jim Ansell

JAMES ANSELL (1942-1993)

by Graeme Wake

One of the most colourful figures in the NZ Mathematics community died suddenly in Wellington of a heart attack on 28 July 1993. Although he was due for an operation later in 1993, his condition was not thought to be serious until he was suddenly taken ill the night before.

Jim's contributions to his profession covered a large number of areas. In this valued part of the media it should be noted that he was the first-ever Editor of this Newsletter and was a strong supporter of the formation of the NZ Mathematical Society in 1974. Perhaps buoyed with this success, he then proceeded to help form later the NZ Geophysics Society—recognising his becoming more of a geophysicist in recent years.

In 1961 Jim, like myself, joined the annual migration from sunny Hawkes Bay to begin university in Wellington helped by success in the nationwide scholarship examination. Jim immersed himself fully in the University life of the sixties and of course emerged with the accolade of 1st class honours in Mathematics in 1964. Always a rebel at heart (where are they now?) Jim identified with "seemingly lost" causes and provided a spark in many dark corners. I have vivid memories of the midnight motorbike journeys during holidays between Wellington and Hawkes Bay when we returned to then easily obtained vacation work in the factories and freezing works of Hawkes Bay! [I was always the pillion passenger on Jim's 500-cc motor-bicycle]. We used to always be going too fast! I can still hear his voice imploring me to "lean further" as we approached the next corner.

Another regular migration of those days (before high fees) was that of students to UK, and in 1965 Jim joined the merry band of NZers to study for his PhD in applied mathematics at Cambridge. It was there—not in shaky NZ!—that it was suggested that he study seismology. He is quoted in the VUW News of 2 August 1993 as saying:

"It's a bit ironic that I was born in Napier and went to university in Wellington, yet the impetus for me to get involved in earthquake research came from the people at Cambridge—they suggested it as an appropriate subject for my PhD thesis" he recalled later.

At Cambridge he tackled and solved a long-standing problem concerning the diffraction of seismic waves by the Earth's core. Subsequently at Uppsala in Sweden he tested his theoretical solution against observations of seismic waves from earthquakes in Indonesia, and found substantial agreement.

Returning to Victoria University of Wellington, Jim Ansell lectured in mathematics but also became part of the Institute of Geophysics. He was appointed Professor of Geophysics in 1989, and until late last year was also chairperson of the Research School of Earth Sciences.

Much of his research was focussed on the application of mathematical theory to the study of seismic wave propagation.

Other interests included earthquake hazard, the structure of the subducted plate under the eastern North Island, satellite measurement of the deformation of the Earth's surface by earthquakes, and wave propagation along the Tonga-Kermadec seismic zone.

Professor Walcott of Victoria University said the characteristic feature of Professor Ansell's personal research was the combination of theoretical and observational seismology with the continual testing of theory by observation.

"This has led to a much better knowledge of the subducted plate under the North Island of New Zealand that dominates our tectonic setting".

Jim was very active in organising joint research projects with overseas institutions, most recently the University of Leeds and Memphis University, and was to be an invited speaker at the 1993 Mathematics Colloquium—this being prevented by his untimely death.

Recently he had been working on arrangements for a meeting of the International Association of Seismology and Physics of the Earth Interior to be held at Victoria University next January.

Jim's contribution in research was equally matched by his enthusiastic approach to teaching, his ability to get students involved and interested in research, and for success in getting mathematics out of the textbook and into the real world. A steady stream of research students flowed into and out of his realm.

His interests included an intense involvement in the Labour Party fuelled of course by his instinctive sympathy for the underdog. He sought and failed, unfortunately for his likely constituents, the Labour nomination for the parliamentary seat of Napier over 10 years ago and was a key person in the Labour Party in the Island Bay electorate in which he lived. His loyalty was such that he kept up this involvement during the extremism introduced by Rogernomics in the last decade. Always a fervent debater, we all recall the late night debates, often by candlelight at his home.

Jim was always an optimist, a counter-example to the archetypal style of the introverted mathematician, who pursued relentlessly his ideal world and many impossible dreams. He is sorely missed by his colleagues and his large number of friends. The mathematical community has indeed lost one of its leading figures at the height of achievement in his career. He is survived by his wife Mary-Jane and three daughters, Rebecca, Emily and Kate, two of whom are currently students at Victoria University.

BOOK REVIEWS

Representation Theory, by W. Fulton & J. Harris. Graduate Texts in Mathematics, 129 (Readings in Mathematics), Springer-Verlag, 1991, xv + 551pp, DM 48. ISBN 3-540-97495-4.

Representation theory is the study of the ways in which groups act on vector spaces. The theory really is a cornerstone of 20th century mathematics and is one of the most active and respected areas of modern mathematical research. Various aspects of the theory pervade mathematics to such an extent that few important areas of mathematics these days are untouched by it (I can say this since I don't work in the area!). Many of us would like to know more about representation theory, what it's good for and where it's going. But if, like me, you've picked up a few books with the intent of learning the subject in a bit more depth and been put off by the prerequisites, then this is the book for you! The prerequisites are very basic indeed. I did read in one of Springer's advertising blurbs that you could read a lecture a night in bed, but I must say that for me even the best math books make deadly dull night-time reading. I think the best way to learn from this book is to teach a graduate course from it (or get some-one else to and sit in, but make sure you do the exercises!).

This book is one of the first few books in a subseries (?) of books in the hugely successful Graduate Texts in Mathematics and are subtitled "Readings in Mathematics". These really are intended as books to learn from. The book is put together as a series of (somewhat detailed and extended) lectures, 26 in all. In fact the book evolved from lectures given by Harris. Each lecture is prefaced by a brief paragraph pointing out the important results and where they will be useful in the sequel. The text concentrates on examples and problems, and there are plenty of them to try for the keen reader, to motivate the more general abstract theory.

The book starts out by considering the classical representation theory of finite groups (first 6 lectures) particularly concentrating on the aspects that are useful in the representation theory of the classical Lie groups. Thus for instance more is done on representations of the symmetric groups than might otherwise be usual. Then some general material on Lie groups and Lie Algebras is given along with a "rough" classification (the classification for the 3-dimensional (over \mathbb{C}) Lie Algebras is completely worked out in one lecture). Some of the representation theory is discussed, but mainly a lot of examples are given. For instance the unique irreducible representation of given highest weight of $\mathfrak{sl}_2\mathbb{C}$ and later $\mathfrak{sl}_3\mathbb{C}$ together with their multiplicities. This of course motivates the general representation theory of the semisimple complex Lie algebras (lectures 14-20). Turning the representation theory of Lie Algebras into the representation theory of Lie Groups is the fourth part of the book (lectures 21-26). Thus lectures 14-26 form the heart of the book and most of the important material is to be found there. The book concludes with a sequence of appendices dealing with proofs of general Lie algebra facts or other results used which were not central, or which would have been to much of a diversion to prove, in the actual text.

This book deals only with finite dimensional representation theory, no analysis on symmetric spaces, discrete & principal series etc., there is none of the arithmetic theory and no automorphic forms. That is to say there's an awful lot of good stuff that is missed out. But this book has modest aims which are more than adequately fulfilled. Hopefully after reading this book one will venture further, and there are plenty of good books dealing with some of these omissions (e.g. Knapp's book).

In summary this is a very good book from which one can learn the basics of finite dimensional representation theory. It's well written, well thought out and well presented. Enough is done so that the reader should be acquainted with the main ideas in the area, from a modern viewpoint, and able to tackle more advanced texts. I'd recommend it to anyone wanting to learn something of the area, from an experienced professional mathematician to a beginning graduate student (the former being generally slower to learn!).

Gaven Martin
University of Auckland

Normal Families, by Joel L. Schiff. Universitext, Springer-Verlag, 1993, xii + 236pp, DM 58. ISBN 3-540-97967-0.

In advanced analysis courses and later on throughout our mathematical careers while reading research texts and papers, we often see the phrase: "by a normal families argument it follows that..." A better than cursory understanding of normal families would be a nice thing to develop at an early stage; the desire to extract a convergent subsequence is generally one of our most passionate wishes, ranking right up there with the desire to differentiate under the integral sign or interchange the order of integration. Indeed, the Arzela-Ascoli and Montel theorems, as well as the Fundamental Normality Theorem (well, at least for *complex* analysts), should be in the standard "bag of tricks" of any respectable analyst.

In *Normal Families* Joel Schiff has produced a text which should alleviate the fears of those of us who, out of ignorance, either considered the concept of normal families as something dark, difficult, and mysterious or as something which is completely contained in the Arzela-Ascoli and Montel theorems. With the ever-increasing popularity of dynamics and iteration theory, a solid background in using normal families arguments will be in growing demand. This book may be used as a text for a topics course in complex analysis and can serve as a bridge towards many subjects, e.g., complex dynamics. But, as is clearly evident upon reading the book, the subject of normal families is, by itself, a rich research field which has room for further development, such as, e.g., normal families of quasi-regular mappings or normal families in several complex variables. Thus Schiff's book will be a welcome addition to the library of any researcher in analysis.

The first chapter gives all the background and preliminary results necessary to make the book completely self-contained: the hyperbolic metric, elliptic modular function, the first and second fundamental theorem of Nevanlinna theory as well as other standard results are presented. Chapter two describes normal families of *analytic* functions. The classical Montel theorem—a locally bounded family of analytic functions in a domain Ω forms a normal family in Ω —and standard offshoots, such as a proof of the Riemann mapping theorem, are given. Section 2.3 provides the reader with 10 well-chosen examples of normal families of analytic functions. The *Fundamental Normality Test* (FNT): *a family of analytic functions on Ω which omit two fixed values $a, b \in \mathbb{C}$ is normal in Ω* is proved in the first of five ways here, immediately yielding the big and little (or great and first) Picard theorems and other results.

In chapter three the shift is to the more natural setting of *meromorphic* functions. Now, of course, FNT yields the normality of families of meromorphic functions omitting *three* distinct values. Marty's theorem, that a family of meromorphic functions f in a domain Ω forms a normal family in Ω precisely when the *spherical derivatives* $f^\#(z) = \frac{f'(z)}{1+|f(z)|^2}$ (extended by continuity to the poles of f) are locally bounded, leads into the use of the Ahlfors-Shimizu characteristic of f to characterize normality.

At this stage, an analyst might say: that's all very well and good, but what's the advantage of three chapters of this book versus, say, 9 pages of Ahlfors' classic text or one chapter in volume II of Hille? All this stuff is relatively old and classical. The first response is that this material is finally organized in one place, but this alone is not sufficient to justify the book's existence. One sees how normal families can be used to prove *other* results in complex analysis than just the Riemann mapping theorem; the Schottky and Landau theorems, including generalizations to meromorphic functions, as well as results on asymptotic values, are already included in this portion of the text. And there's lots more to come!

The fourth chapter is the most demanding on the reader. Most of these results, unlike the previous chapters have been accomplished within the past 25 years or so. Titled the "Bloch principle", this refers to the heuristic principle which, loosely stated, says that any property \mathcal{P} which forces a meromorphic function in \mathbb{C} to be constant will force a family of meromorphic functions possessing that property in a domain Ω to be normal in Ω . A trivial example is boundedness. A more precise formulation, due to Robinson and Zalcman, is presented in section 1; section 2 contains counterexamples of Rubel to the loosely stated Bloch principle; and section 3 gives a version of the Robinson-Zalcman formulation due to Minda. These are light appetizers for the main course: the developments due to Drasin, using primarily lots and lots of Nevanlinna theory. Probably only the reader well-versed in univariate value distribution theory will appreciate the proofs and estimates here, but the results can be read and understood by all.

The reader is now rewarded with a glimpse at some old and new applications of the theory of normal families in the final chapter. For the reader who has skipped over the Drasin approach, rest assured that this is not needed here. The standard lip-service is given to extremal problems (perhaps not so important after Bieberbach-de Branges): lengthier mention is given to complex dynamical systems, normal families of *harmonic* functions, and discontinuous groups. A brief appendix on so-called *quasi-normal* families is also

provided.

It seems unfair that it has taken 65 years for such a book to be written. Fortunately the author has researched his subject well. He has included historical vignettes and references to further work throughout; the extensive bibliography included page numbers in the text where the references are mentioned. Hopefully this book will not only remind us of the rich past of the subject but will also inspire us to develop a profitable future in this area.

Norman Levenberg
University of Auckland

SECRETARIAL

MINUTES OF THE THIRTY-THIRD COUNCIL MEETING Sunday 22 August 1993

The meeting was held at University Hall, Christchurch and began shortly after 1:00 p.m.

PRESENT: Robert Aldred, Marston Conder, Rob Goldblatt, Mike Hendy, Derek Holton (Chair), Margaret Morton, David Robinson, Kee Teo, David Smith and Graham Weir.

APOLOGIES: Robert Chan, Bill Ellwood and Ingrid Rinsma-Melchert.

1. MINUTES OF THE THIRTY-SECOND COUNCIL MEETING:

It was moved from the chair that the minutes of the previous meeting be received and signed as a true and accurate record. The motion was carried without dissent.

2. REPORTS:

- (a) The Treasurer, Kee Teo, reported on the state of the Society's funds. He noted that the falls in interest rates and book sales would affect the income of the Society. He also indicated some anomalies currently experienced with the sales of books and how these were represented in the balance sheets.

As a result of consultations with the RSNZ and Inland Revenue it seems likely that the Society's tax problems will be solved in the future by some small changes to the wording of the constitution. The back tax issue may still have to be resolved.

It was also suggested that the subscriptions at their current rate covered the day to day running of the Society and it was felt that no increase should be put forward at the AGM.

The question of subscription to the Journal for members whose primary allegiance lies elsewhere was raised and discussed.

It was moved from the chair that ordinary members who are also members of NZSA and/or ORSNZ may apply for exemption from subscribing to NZJM. The motion was carried.

The distribution of the Society's funds were detailed as in the Treasurer's statement. Discussion took place on the amount of funds available for distribution for conference travel etc.

It was moved from the chair that as a priority, money should be awarded to graduate students and other students wishing to attend the colloquium and other conferences. Then in descending order of priority money should be awarded to New Zealand conferences being organised/the IMO, visitors to New Zealand, members

wishing to travel overseas to conferences etc. (with priority given to new staff over old). The motion was carried.

(b) MEMBERSHIP: Due to unfortunate circumstances an official membership report was unavailable but hearsay had it that numbers remain steady.

(c) PUBLICATIONS: Nil report.

(d) NEWSLETTER: Nil report.

3. APPLICATIONS FOR FINANCIAL ASSISTANCE:

Research, conference and travel support applications were received and discussed. Following these discussions it was decided that

The sum of \$1500 be put toward the organization of the 1994 colloquium.

The sum of \$750 be set aside for support of the 1994 visiting lecturer.

The NZMOC should be granted \$500 towards the costs of the New Zealand Mathematics Olympiad effort.

Mr. E. Balakrishnan of Massey University be granted \$250 toward the cost of attending the 1993 colloquium.

Mr. P. Frizzell of Massey University be granted \$500 toward the cost of attending a conference in the United States.

Mr. C. Palliser of Massey University be granted \$250 toward the cost of attending the 1993 colloquium.

Ms. I Pestov of Victoria University be granted \$250 toward the cost of attending a workshop in Auckland.

Mr. S. Woodward of Massey University be granted \$250 toward the cost of attending the 1993 colloquium.

Dr. M. Clark of Victoria University be granted \$250 toward the cost of attending a conference in Sweden.

Dr. N. Levenberg of the University of Auckland be granted \$500 toward the cost of supporting international visitors to his department.

Dr. Mike Steel of Massey and Canterbury Universities be granted \$250 towards the costs of attending conferences in the United States.

Dr. I. Ziedins of the University of Auckland be granted \$500 toward the cost of attending conferences in Europe.

In addition it was agreed that a commitment of \$500 from next year's budget be made to Dr. P. Gibbons in support of the Combinatorial Mathematics Society of Australasia meeting to be held in Auckland in December 1994.

All other applicants were unsuccessful in obtaining funds from the Society.

It was moved from the chair that in future a sum should be given to colloquium organizers specifically for

NZMS student travel grants for students to attend the colloquium. A description of the means by which the funds should be distributed would be provided by the NZMS Council, and the colloquium committee asked to report on the allocation of funds. The motion was carried.

4. *NEW ZEALAND JOURNAL OF MATHEMATICS:*

A report from David Gauld detailing the journal's current situation was read.

It was moved from the chair that the report be accepted. The motion was carried.

5. FOSTS:

A report from Graeme Wake in which it was explained that the role of FOSTS was largely being taken over by the Interim Board of the restructured RSNZ.

6. RSNZ:

Marston Conder reported on the formation of the Mathematical Sciences Council of New Zealand. So far only a preliminary meeting has been held at which the role and vision of the council were discussed, and a second meeting would take place during the 1993 colloquium.

7. STATEMENT OF POLICY:

It was reported that no new comments had been received on the NZMS Policy Statement circulated to members and that a vote would be held at the AGM to determine its acceptance.

8. COUNCIL NOMINATIONS:

It was noted that several members of the Council were about to retire and that there would be positions to fill. It was also noted that a replacement Treasurer should be sought as a matter of urgency.

9. NZMS VISITING LECTURER:

A report from the 1993 Visiting Lecturer, Andreas Dress, was tabled. The report was largely favourable although some problems had arisen with cost sharing between universities.

Nominations for the 1994 Visiting Lecturer were discussed and it was decided to approach Colin Maclachlan of the University of Aberdeen.

A call for nominations for the 1995 Visiting Lecturer will be put in the Newsletter.

10. FORDER LECTURER:

It was reported that the names of six nominees had been sent to the LMS and that a decision would be made following the October meeting of the LMS council.

11. NZMS RESEARCH AWARDS:

A report from the judges of the NZMS Research Awards for this year was read and the name of this year's

recipient was announced.

12. AITKEN CELEBRATIONS:

It was reported that, due to difficulties with dates, the Aitken conference for 1995 has not been fixed yet. Other arrangements are progressing satisfactorily.

13. JIM CAMPBELL TEACHER'S AWARDS:

A recent meeting of NZAMT has decided that the awards are a good idea and should continue. A method for nominating and deciding the awards was read out from an NZAMT communication.

Margaret Morton agreed to attend part of the NZAMT meeting to be held after the colloquium.

14. CAREERS PAMPHLETS:

Ingrid Rinsma sent a report on the current state of the careers pamphlets, indicating that no further progress could be made without committing an appreciable sum of money for the design layout. Marston Conder agreed to liaise with Ingrid and approve expenditure as appropriate.

15. ACADEMY OF HUMANITIES:

It was duly noted that the interests of the Society were more closely concerned with the RSNZ and the Mathematical Sciences Council than with the proposed Academy.

16. ANY OTHER BUSINESS:

- (a) A report on the Predoctoral Thesis Competition was tabled. It was decided to notify the winners by mail and announce their names in the NZMS Newsletter. For those winners present at the colloquium, a presentation would be made.
- (b) It was noted that there are some prominent retirements coming up in the near future and that thought should be given to some honorary memberships.
- (c) The need for a new Treasurer was again stressed as well as the need for a new Publications Officer and a new Newsletter Editor.
- (d) It was mentioned that efforts should be made to enable wider access to updated lists of e-mail addresses for mathematicians and statisticians. It was also decided to raise the matter at the HODs meeting.
- (e) It was reported that few recipients of financial support from the Society were providing reports for the Newsletter. It was decided that the need for such reports be emphasised to recipients.

The meeting ended at 5:30 p.m.

MINUTES OF THE NINETEENTH ANNUAL GENERAL MEETING 24 August 1993

The meeting was held on Tuesday 24 August in the Science Lecture Block of the University of Canterbury and started at 6:08 p.m.

PRESENT: Derek Holton (in the Chair), David Alcorn, Robert Aldred, Alan Boyd, K.A. Broughan, Peter Bryant, David Bulger, John Butcher, Marston Conder, David Gauld, Rob Goldblatt, Dean Halford, John Harper, Mike Hendy, Mark Hickman, Murray Jorgensen, Ernie Kalnins, Charles Little, Peter Lorimer, Steve McDowall, Mark McGuinness, Allan McInnes, David McIntyre, Robert McKibbin, Margaret Morton, Vladimir Pestov, Ken Pledger, Ivan Reilly, David Robinson, David Smith, Vernon Squire, Mike Steel, Adrian Swift, Garry Tee, Kee Teo, Graeme Wake (and others who didn't sign)

APOLOGIES: Robert Chan, M.K. Vamanamurthy, Gillian Thornley.

1. PRESENTATION OF AWARDS:

The NZMS Research Award was presented to Marston Conder.

The Predoctoral Thesis Competition Prizes were awarded to: David Bulger (First Prize); David Mawson and Steven McDowall (Special Merit Awards).

2. MINUTES OF THE SEVENTEENTH AGM:

It was moved from the chair that the minutes be accepted as a true and accurate record. The motion was carried.

3. MATTERS ARISING FROM THE MINUTES:

There were no matters arising from the minutes.

4. PRESIDENT'S REPORT:

The President's report was delivered to the meeting and the following points were made.

While the NZMS is and should be separate from its Australian counterpart, the AMS, it is a pity that so long had passed since the last combined meeting and that it would be nice to hold a joint meeting every four years or so.

The financial and taxation situations were outlined, and the need was indicated to rank applications for financial assistance according to a predetermined order of priority: students, conferences, visitors, staff.

Brief mention was made of the interim board of the RSNZ and how it would act to bring various societies together.

Congratulations were extended to newly appointed professors (Wolfgang Vogel, Graeme Wood and John Harper) and to Ernie Kalnins on his election to a fellowship of the FRSNZ.

Finally, the President thanked those who had helped during his term.

5. TREASURER'S REPORT:

Kee Teo presented the financial statement and explained some of the current problems with publications and the funds associated with them. It was mentioned that although interest income was falling, the Society had recorded a slight increase in the value of its assets.

Indications are that the current subscriptions remain sufficient to cover the day to day costs of running of the Society.

Mention was made of the hope that changes to the constitution would bring about an end to our taxation problems.

It was moved by John Butcher and seconded by Marston Conder that the report be accepted. The motion was carried.

It was moved by Kee Teo and seconded by Dean Halford that the current auditors be appointed again for next year. The motion was carried.

After some discussion, a motion was put by Kee Teo and seconded by David Gauld that the subscription rates should stay the same for next year, and this was carried.

6. ELECTIONS OF COUNCIL MEMBERS:

Rick Beatson, Ernie Kalnins and Mark McGuinness were elected to the Council. Margaret Morton will take over as Secretary of the Society and calls have been made for a new Treasurer.

7. NEW ZEALAND JOURNAL OF MATHEMATICS:

Reports were delivered from the NZJM Committee by David Alcorn and from the Editor by David Gauld.

It was moved by John Harper and seconded by Graeme Wake that these reports be accepted. The motion was carried.

8. INTERIM BOARD OF THE RSNZ:

Graeme Wake delivered his report on the Interim Board explaining how the board will operate after the restructuring of the RSNZ. In anticipation of the widening of adhering bodies to the electoral college covering the mathematical sciences, it was moved by Graeme Wake and seconded by Mark McGuinness that the Society endorse the action suggested in item 2 of his report: that the name of the electoral college by which we are affiliated with the RSNZ be confirmed as Mathematical and Information Sciences. The motion was carried.

9. MATHEMATICAL SCIENCES COUNCIL OF NEW ZEALAND:

Marston Conder reported briefly on the first meeting of the Mathematical Sciences Council of New Zealand. It was reported that the main function of the Council was to foster communication and act as a combined voice for the constituent societies.

10. CHANGES TO THE CONSTITUTION:

To reaffirm the Society's main objective as being a Scientific Research Promoter and thereby qualify it for tax-free status the following amendments to the Constitution were moved from the chair.

ARTICLE II: OBJECTS

The clause,

“(1) To promote the development, application and dissemination of mathematical knowledge within New Zealand.”

be replaced by,

“(1) To promote research in mathematical sciences and to promote the development, application and dissemination of mathematical knowledge within New Zealand.”

The clause,

“(2) To assist mathematicians in New Zealand to maintain effective cooperation with one another and with mathematicians and mathematical societies in other countries.”

be replaced by,

“(2) To assist mathematicians in New Zealand to maintain effective cooperation with one another and with mathematicians and mathematical societies in other countries, and to facilitate collaborative research in the mathematical sciences as a consequence of such cooperation.”

ARTICLE XI: DISSOLUTION

The last sentence,

“Any assets remaining after all the debts have been paid shall be given to organizations whose objects are similar to those of the Society.”

be replaced by,

“Any assets remaining after all the debts have been paid shall be given to organizations established mainly to promote or encourage scientific or industrial research.”

ARTICLE XIII: AMENDMENTS

At the end of this article insert,

“Notwithstanding the foregoing provision, no amendment to the clauses relating to pecuniary interest (Article II)* and dissolution (Article XI) provisions, including this clause, is permitted.

*The Society shall be administered with these ends in view and not for the purpose of financial gain for the members.”

The motion was carried.

11. NZMS POLICY:

A policy statement was tabled and it was moved from the chair that the statement be accepted. The motion was carried.

12. ANY OTHER BUSINESS:

A motion of appreciation and congratulations to the outgoing council members and officeholders was put by Marston Conder. The motion was carried by acclamation.

The meeting closed at 7:04 p.m.

FINANCIAL STATEMENTS
For the year ended 31st December 1992

Book Trading Accounts

	1992	1991
<u>Maths/Calculus</u>		
Sales	12,910	11,248
Less Cost of Sales		
Opening Stock	8,784	2,662
Purchases/Expenses	<u>2,532</u>	<u>13,537</u>
	11,316	16,199
	<u>2,568</u>	<u>8,784</u>
	<u>8,748</u>	<u>7,415</u>
Gross Profit from Maths/Calculus Books	4,162	3,833
<u>Maths/Statistics</u>		
Sales	3,041	4,416
Less Cost of Sales		
Opening Stock	9,366	12,054
Purchases/Expenses	<u>1,294</u>	<u>1,411</u>
	<u>3,464</u>	<u>4,099</u>
Gross Profit(Loss) from Maths/Statistics Books	(423)	317
<u>Secondary School Maths</u>		
Sales		1,042
Less Cost of Sales		
Opening Stock	-	6,389
Purchases/Expenses	-	<u>334</u>
	-	6,723
Gross Loss from Secondary School Maths Books	-	(5,681)
<u>Linear Algebra</u>		
Sales	9,227	6,596
Less Cost of Sales		
Opening Stock	2,628	6,596
Purchases/Expenses	7,612	966
	10,240	7,680
	<u>2,758</u>	<u>2,628</u>
	<u>7,482</u>	<u>5,052</u>
Gross Profit from Linear Algebra Books	1,745	1,544

Modelling Activities

Sales		611	1,120
Less Cost of Sales			
Opening Stock	3,696		4,136
Purchases/Expenses	155		149
	3,851		4,285
Closing Stock	<u>3,414</u>		<u>3,696</u>
		<u>437</u>	<u>589</u>
Gross Profit from Modelling Activities Books		174	531
Gross Profit from Books		5,658	544

Income and Expenditure Account

		1992	1991
Income			
Donations	-		500
Interest Received	8,325		9,541
Miscellaneous Receipts	14		-
Subscriptions	4,773		5,249
Gross Profit from Books	<u>5,658</u>		<u>544</u>
		18,770	15,834
Less Operating Expenses			
Accountancy and Audit Fees	900		881
Affiliation Fees	1,056		-
Donations	2,500		1,500
Forder Lecturer	-		463
Mathematics Prizes & Awards	520		1,005
Newsletter	1,579		1,717
NZAMT Share of Publication Profits	1,457		(1,000)
NZ Journal of Mathematics Grant	3,000		-
Miscellaneous	5		-
NZMS Lecturer	200		684
Postage & Stationery	720		393
Travel & Research Grants	2,230		5,036
Travel/Council Expenses	<u>622</u>		<u>3,061</u>
		14,789	13,840
Excess of Income over Expenditure		3,981	1,994
Plus Accumulated Funds at Beginning of Year		<u>126,584</u>	<u>124,983</u>
		130,565	124,983
Less			
Transfer of Massey (Aitken) Account out of Books		-	393
Accumulated Funds at End of Year		130,565	126,584

Balance Sheet

	1992	1991
Accumulated Funds	130,565	126,584
Represented by:		
Current Assets		
Petty Cash Imprest	-	3
Bank - General Account	3,804	1,657
- Text Book Account	93	21
- Wellington Account	-	279
BNZ Autocall Account	6,007	6,548
Accounts Receivable	2,387	4,204
Book Stock on Hand (Note 2)	15,936	<u>24,474</u>
GST Refund Due	<u>169</u>	
	28,396	37,186
Investments		
BNZ Investment	<u>116,255</u>	<u>103,509</u>
TOTAL ASSETS	144,651	140,695
CURRENT LIABILITIES		
Accounts Payable	3,501	4,058
Owing to NZAMT	<u>10,585</u>	9,128
GST Payment Due		<u>922</u>
	<u>14,086</u>	<u>14,108</u>
NET ASSETS	130,565	126,587

Notes to the Financial Statements

1. STATEMENT OF ACCOUNTING POLICIES

General Accounting Policies

The following general accounting policies have been adopted in the preparation of the financial statements.

(i) The measurement has adopted is that of historical cost and reliance is placed on the fact that the business is a going concern.

(ii) The matching of revenue earned and expenses incurred using accrual accounting concepts, except for subscriptions income which is accounted for on a cash basis.

Specific Accounting Policies

Inventories. Inventories have been valued at the lower of cost on a first in first out basis or net realisable value after due allowance for damaged and obsolete stock. Stocks of Secondary School Maths texts have all been written off as they have become obsolete.

Accounts Receivable. Accounts receivable are recorded as net realisable value.

Goods and Services Tax. The financial statements have been prepared stating all income and expenditure items exclusive of GST.

Changes in Accounting Policies. There have been no changes in accounting policies. All policies have been applied on bases consistent with those used last year.

2. BOOKS ON HAND

	1992		1991	
	No.	\$	No.	\$
Maths/Calculus 214	2,568	732	8,784	
Maths/Statistics 514	7,196	669	9,366	
Linear Algebra 134	2,758	146	2,628	
Modelling Activities	<u>194</u>	<u>3,414</u>	<u>210</u>	<u>3,696</u>
	1,056	15,936	1,757	24,474

Auditor's Report

We have examined the accompanying Balance Sheet and Income and Expenditure Account of the New Zealand Mathematical Society and have obtained all the information and explanations we have required.

In common with other organisations of similar nature, control over income (except interest received) prior to its being recorded is limited, and there are no practical audit procedures to determine the effect of this limited control.

Subject to the possible effect of the limited control over income referred to in the preceding paragraph, in our opinion the Balance Sheet and Income and Expenditure Account respectively give a true and fair view of the financial position of the New Zealand Mathematical Society at 31 December 1992 and of the results for the year ended on that data.

McKenzie McPhail
Chartered Accountants
Palmerston North

MATHEMATICAL VISITORS TO NEW ZEALAND

List No. 36 : 1 November 1993

One of the main purposes of this list is to enable other institutions to invite visitors to spend time with them. Anyone wishing to issue such an invitation should do so through the principal contact person.

The information for each item is arranged as follows:

Name of visitor; home institution; whether accompanied; principal field of interest; dates of visit; principal host institution; principal contact person; comments.

#####

Professor Glen Anderson; Michigan State U; wife and child; complex analysis; January to July 1994; University of Auckland; A/Prof MK Vamanamurthy.

Dr Philippe Chartier; Université de Beaulieu, France; wife and children; numerical analysis; September 1993 to September 1994; Auckland University; Prof. J Butcher.

- Dr Tony Cole; University of Melbourne; unaccompanied; minimal network theory; July 1993 to January 1994; Auckland University.
- Professor Richard Cormack; University of St Andrews, Scotland; statistics; December 1993; University of Otago; Prof Bryan Manly.
- Dr Larry Cox; US Environmental Protection Agency; statistics; December 1993; University of Otago; Prof Bryan Manly.
- M. Fellows; University of Victoria, B.C. Canada; combinatorics, complexity, theoretical computer science; second half 1993; Victoria University of Wellington; R. Downey; probable.
- Dr Thomas Forster; logic; March to April 1994; Canterbury University; W Taylor.
- Dr J Gao; University of Science and Technology of China; unaccompanied; statistics; 1 February 1994 to 31 January 1995; Auckland University; Prof Seber.
- Professor Fred Gehring; University of Michigan; wife; complex analysis; February to May 1994; Auckland University; Dr Martin.
- Professor Chris Godsil; University of Waterloo; algebraic combinatorics; March 1994; University of Auckland; A/Prof Marston Conder.
- Professor Ken Goodearl; University of California Santa Barbara; wife (Professor Birge Zimmermann q.v.); noncommutative ring theory; December 1993; University of Canterbury; Dr Kevin O'Meara.
- Professor Robert Hemminger; Vanderbilt University, Nashville, Tennessee, USA, unaccompanied, graph theory, July to December 1993; University of Otago; Prof. Derek Holton.
- Professor John Herzog; Pacific Lutheran University; statistics; September to December 1993; University of Canterbury; Prof J. J. Deely
- Professor Peter Hilton; SUNY at Binghamton, New York, USA; accompanied by Prof. Jean Pedersen (q.v.); nilpotent group theory and nilpotent homotopy theory algebraic topology, homological algebra, categorical algebra and maths education; September to December 1993; University of Otago; Prof. Derek Holton.
- Professor Don James; Pennsylvania State University; algebra; January to June 1994; Auckland University; Professor Lorimer/Dr Morton.
- S. Lempp; Univ. of Wisconsin, Madison; recursion theory; January 1994, for two weeks; Victoria University of Wellington; R. Downey; probable; supported by NSF under a US/NZ binational grant.
- Dr Colin Maclachlan; University of Aberdeen, Scotland; accompanied by wife (Dorothy); group theory and topology; February to August 1994; University of Auckland; A/Prof Marston Conder.
- Dr Lyman McDonald; WEST Inc, Denver USA; statistics; December 1993; University of Otago; Prof Bryan Manly.
- Professor Jean Pedersen; Santa Clara University, California, USA; accompanied by Prof Peter Hilton (q.v.); geometry, combinatorics, number theory, mathematics education; September to December 1993; University of Otago; Prof. Derek Holton.
- Dr Burkard Polster; Universität Erlangen - Nürnberg; incidence geometry; October 1993 to October 1994; University of Canterbury; Dr D. Glynn.

Mary Ellen Rudin; University of Wisconsin; husband (next entry); February to March 1994; topology; Auckland University; Prof Reilly / Prof Gauld.

Walter Rudin; University of Wisconsin; wife (previous entry); February to March 1994; complex analysis; Auckland University; Prof Reilly / Prof Gauld.

R. Shore; Cornell University; recursion theory; January 1994, for two weeks; Victoria University of Wellington; R. Downey; probable; supported by NSF under a US/NZ binational grant.

Dr Peter Smith; Royal Melbourne Institute of Technology; accompanied by family; statistics; June to December 1993; Auckland University; Prof A. J. Scott.

M. Stob; Calvin College; recursion theory; January 1994, for two weeks; Victoria University of Wellington; R. Downey; probable; supported by NSF under a US/NZ binational grant.

Professor Takeshi Sugimoto; Saitama Inst. of Technology; 1 April 1993 to 31 May 1994; University of Waikato; Assoc. Prof. Alfred Sneyd.

Professor M. H. Taibleson; Washington University; Analysis; May to August 1994; University of Canterbury; Dr H-Q Bui; Visiting Erskine Fellow.

Professor Roland Thomas; Carleton University, Ottawa, Canada; accompanied by wife and son, statistics; August 1993 to June 1994; University of Auckland; Prof. Alistair Scott.

Dr Nicholas Tuffillaro; Center for Non-linear Studies, Los Alamos National Laboratory, New Mexico; chaos; June 14 to December 17 1993; University of Otago; Professor Vernon Squire; temporary lectureship.

Professor Steve Watson; York University, Toronto, Canada; wife and child; topology; January to February 1994; Auckland University; Prof Reilly / Dr McIntyre.

Professor Birge Zimmermann; University of California Santa Barbara; husband (Professor Ken Goodearl q.v.); noncommutative ring theory; December 1993; University of Canterbury; Dr Kevin O'Meara.

When arranging visits it might be useful to remember the following conferences in New Zealand:

- Statistics in Ecology and Environmental Modelling. Centre for Applications of Statistics and Mathematics; University of Otago 13 to 17 December 1993
- New Zealand Mathematics Colloquium. University of Waikato; 9 to 12 May 1994.
- Conference on Groups & Geometry, University of Auckland, 16-20 May 1994.
- 20th Australasian Conference on Combinatorial Mathematics and Combinatorial Computing; University of Auckland; 5 to 9 December 1994.

Please note: Production of these lists is dependent on my receiving information. When you know about a visit (whether it be definite, very likely, or possible), would you please forward the details to me at the earliest convenient time. Thank you.

David Robinson
N.Z. Mathematical Society Visitors' Co-ordinator
Department of Mathematics
Private Bag 4800
University of Canterbury
email: dfr@math.canterbury.ac.nz
fax: (03) 364 2587

CONFERENCES

** 1994 **

January 5-7 (Hobart) Conference on Semigroup Theory

Contact Dr. P. G. Trotter, Department of Mathematics, University of Tasmania, Hobart 7001, Tasmania, Australia.
email: trotter@hilbert.maths.utas.edu.au

January 31-February 4 (Armidale, New South Wales) The 10th Mathematics-in-Industry Study Group

Contact Dr. Kerry Landman University of Melbourne, Melbourne, Australia
email: misg@mundoe.maths.mu.oz.au

February 6 - 10 (Hunter Valley, New South Wales) 1994 Applied Mathematics Conference Contact Brian F. Gray, School of Mathematics and Statistics, University of Sydney, NSW 2006, Australia.

April 5-11 (Santander, Spain) Effective Methods in Algebraic Geometry (MEGA '93)

Contact T. Recio, Dept. de Mat., Estadística y Computación, Universidad de Cantabria, E-39071 Santander, Spain.

April 10-16 (Oberwolfach, Germany) Numerical Linear Algebra with Applications

Contact MFOG: see (1) below.

April 11-15 (Waterloo, Ontario) The Fields Institute Workshop on L-Functions and Automorphic Forms Contact Victor Snaith, Department of Mathematics and Statistics, McMaster University, 1280 Main St.W., Hamilton, Ontario, Canada L8S 4K1.

email.snaith@mcmaster.ca

April 13-15 (Winchester, U.K.) CSG 94: Conference on Constructive Solid Geometry Contact John Woodwark, Information Geometers Ltd, 47 Stockers Avenue, Winchester S022 5LB, U.K.

email.a.bowyer@bath.ac.uk

April 17-23 (Oberwolfach, Germany) Designs and Codes

Contact MFOG: see (1) below.

April 24-26 (Manhattan, Kansas) Conference on Applied Statistics in Agriculture

Contact James R. Schwenke, Kansas State University, Department of Statistics, Dickens Hall, Manhattan, Kansas 66506-0802, U.S.A.

April 24-30 (Oberwolfach, Germany) Geschichte der Mathematik

Contact MFOG: see (1) below.

May 1-7 (Oberwolfach, Germany) Gruppentheorie

Contact MFOG: see (1) below.

May 2-6 (Minneapolis, Minnesota) IMA Workshop on Image Models (and their Speech Model Cousins)

Contact IMA: see (3) below.

May 2-6 (Hamilton, Ontario) International Conference in Topological Vector Spaces, Algebras and Related Areas

Contact E.T. Sawyer, Department of Mathematics and Statistics, McMaster University, 1280 Main Street W., Hamilton, Ontario Canada L8S 4K1.
email.sawyer@mcmaster.ca

- May 8-14 (Oberwolfach, Germany) **Variationsrechnung**
Contact MFOG: see (1) below.
- May 9-12 (Hamilton, New Zealand) **1994 New Zealand Mathematics Colloquium and Mathematics Education Day**
Contact The Colloquium Secretary, Department of Mathematics and Statistics, University of Waikato, Private Bag 3105, Hamilton, New Zealand.
e-mail: nzmc94@hoiho.math.waikato.ac.nz
- May 15-21 (Oberwolfach, Germany) **Critical Phenomena in Spatial Stochastic Models**
Contact MFOG: see (1) below.
- May 16-20 (Auckland, New Zealand) **Conference on Groups & Geometry**
Contact: Marston Conder or Gaven Martin, Department of Mathematics, University of Auckland, Private Bag 92019, Auckland, New Zealand.
e-mail: conder@mat.aukuni.ac.nz FAX 0064-9-3737457
- May 16-20 (Minneapolis, Minnesota) **IMA Workshop on Stochastic Models in Geosystems**
Contact IMA: see (3) below.
- May 16-20 (Marseille, France) **Géométrie Algébrique**
Contact CIRM: see (8) below.
- May 22-28 (Oberwolfach, Germany) **Diskrete Geometrie**
Contact MFOG: see (1) below
- May 24-27 (Isle of Rügen, Germany) **Conference on Hermann G. Grassman (1809-1877)**
Contact G. Schubring, Institut Für Didaktik der Mathematik, Universität Bielefeld, Postfach 100131, D-W 4800 Bielefeld, Germany.
- May 29-June 4 (Oberwolfach, Germany) **Singulare Störungsrechnung**
Contact MFOG: see (1) below.
- May 30-June 4 (Haifa, Israel) **Workshop on Group Representation Theory**
Contact D. Chillag, Dept. of Mathematics, Technion, Israel Institute of Technology, Haifa 32000, Israel.
email: math555@technion.bitnet
- May 31-June 3 (Minneapolis, Minnesota) **IMA Minisymposium on Phase Transitions in Catalytic Surface Reaction Models**
Contact IMA: see (3) below.
- June 1-7 (Sant Feliu de Guíxols, Spain) **1994 Barcelona Conference on Algebraic Topology**
Contact 1994 BCAT, CRM, Apartat 50, 08193 Bellaterra, Centre de Recerca Matemàtica Institut d'Estudis Catalans, Barcelona, Spain.
- June 5-10 (Alicante, Spain) **5th Valencia International Meeting on Bayesian Statistics**
Contact Professor Jose M. Bernardo, centro de Documentacion y Analisis, Presidencia de la Generalidad, Caballeros 9, 46001-Valencia, Spain.
- June 6 - 10 (Linköping, Sweden) **Conference on Applied and Industrial Mathematics**
Contact Camilla Pettersson, Department of Mathematics, University of Linköping, S-581 83 Linköping, Sweden
email: vlmaz@math.lin.se
- June 12-18 (Oberwolfach, Germany) **Nichtlinearitäten vom Hysterestyp**
Contact MFOG: see (1) below.

- June 13-17 (Port-à-Mousson, France) **European Conference on Elliptic and Parabolic Problems**
Contact C. Bandle, Mathematisches Institut der Universität, Rheinsprung 21, CH-4051 Basel, Switzerland.
- June 13-17 (Stony Brook, New York) **5th International Conference on Hyperbolic Problems Theory, Numerical Methods and Applications**
Contact T. Mills, Dept. of Applied Mathematics, University at Stony Brook, Stony Brook, New York 11794-3600, U.S.A.
- June 13-17 (Minneapolis, Minnesota) **IMA Workshop on Classical and Modern Branching Processes**
Contact IMA: see (3) below.
- June 19-25 (Oberwolfach, Germany) **Quantenmechanik von Vielteilchen Systemen**
Contact MFOG: see (1) below.
- June 19-25 (Oberwolfach, Germany) **Integrable Systems from a Quantum Point of View**
Contact MFOG: see (1) below.
- June 20-24 (Marseilles, France) **Probabilités Quantiques**
Contact CIRM: see (8) below.
- June 20-25 (Amarante, Portugal) **Conference on Semigroups, Automata and Languages**
Contact Professor J. Almeida, Grupo de Matematica Pura, Faculdade de Ciencias, Universidade do Porto, P.Gomes Teixeira, 4000 Porto, Portugal.
email: sal@merlin.fc.up.pt
- June 20-25 (Chapel Hill, North Carolina) **55th Annual IMS Meeting and 3rd World Congress of the Bernoulli Society**
Contact M.R. Leadbetter, Statistics Department, University of North Carolina, Chapel Hill, NC 27599, U.S.A.
- June 25 - July 2 (Boulder, Colorado) **Symposium on Diophantine Problems in Honor of Wolfgang Schmidt's 60th Birthday**
Contact D. Grant, Department of Mathematics, Campus Box 395, University of Colorado, Boulder, CO 80309, U.S.A.
email : meetings@euclid.colorado.edu
- June 26 - July 2 (Lake St Wolfgang, Austria) **Inverse Problems**
Contact H.W. Engl, Johannes Kepler Universität, A-4040 Linz, Austria.
email : engl@indmath.uni-linz.ac.at
- June 26-July 2 (Oberwolfach, Germany) **Graphentheorie**
Contact MFOG: see (1) below.
- July 3-9 (Oberwolfach, Germany) **Analysis und Geometrie Singuläre Räume**
Contact MFOG: see (10) below.
- July 4-8 (Armidale, New South Wales) **38th Annual Meeting of the Australian Mathematical Society**
Contact Dr C. Radford, Department of Mathematics, Statistics and Computing Science, University of New England, Armidale, NSW 2351, Australia.

- July 4-8 (Clayton, Victoria, Australia) **12th Australian Statistical Society Conference**
 Contact Dr R.C. Griffiths, Mathematics Department, Monash University, Clayton Victoria 3168, Australia.
 email: apm466b@vaxc.cc.monash.edu.au
- July 5-29 (Minneapolis, Minnesota) **IMA Summer Program on Molecular Biology**
 Contact IMA: see (3) below.
- July 10-16 (Oberwolfach, Germany) **Freie Randwertprobleme**
 Contact MFOG: see (1) below.
- July 11-15 (Atlanta, Georgia) **14th IMACS World Congress on Computational and Applied Mathematics**
 Contact W. F. Ames, World Congress 14, School of Mathematics, Georgia Institute of Technology, Atlanta, GA 30332-0160, U.S.A.
- July 12-22 (Durham, UK) **Geometry and Cohomology in Group Theory**
 Contact P. H. Kropholler, School of Mathematical Sciences, Queen Mary and Westfield College, Mile End Road, London E1 4NS, U.K.
 email: p.h.kropholler@qmw.ac.uk
- July 17-23 (Oberwolfach, Germany) **Algebraische Zahlentheorie**
 Contact MFOG: see (1) below.
- July 17-23 (Marseilles, France) **Conférence Internationale de Topologie**
 Contact CIRM: see (8) below.
- July 24-30 (Oberwolfach, Germany) **Complex Geometry: Moduli Problems**
 Contact MFOG: see (1) below.
- July 25-29 (Marseille, France) **Representation des Groupes Reductifs p-adiques**
 Contact CIRM: see (8) below.
- July 25-30 (Marrakesh, Morocco) **4th International Conference on Teaching Statistics (ICOTS 4)**
 Contact Mr El Ghazali Abdelaziz, Chair of the Local Organizing Committee, INSEA, PO Box 6217, Rabat-Instituts, Rabat, Morocco.
- July 31-August 6 (Oberwolfach, Germany) **Mechanics of Materials**
 Contact MFOG: see (1) below.
- August 1-5 (Chiba, Japan) **3rd World Congress on Computational Mechanics**
 Contact T. Kawai, WCCM III Office, Dept. of Electrical Engineering, Science University of Tokyo, 1-3 Kagurazaka, Shijukuku, Tokyo 162, Japan.
- August 3-11 (Zürich, Switzerland) **The International Congress of Mathematicians 1994**
 Contact R. Jeltsch, Seminar für Angewandte Mathematik, ETH, CH-8092 Zürich, Switzerland.
- August 7-13 (Oberwolfach, Germany) **Effiziente Algorithmen**
 Contact MFOG: see (1) below.
- August 8 - 12 (Hamilton, Ontario) **17th International Biometric Conference**
 Contact IBC 94 Local Organizing Committee, Department of Mathematics and Statistics, McMaster University, Hamilton, Ontario, Canada L8S 4K1
 email : ibc 94@mcmaster.ca

- August 13-17 (Plovdiv, Bulgaria) **Third Colloquium on Numerical Anaysis**
 Contact Secretary Stoyan Zlatev, Mathematical Faculty of the Plovdiv University, Tsar Assen Str. 24,
 Plovdiv 4000, Bulgaria.
- August 14-20 (Oberwolfach, Germany) **Nonlinear Evolution Equations**
 Contact MFOG: see (1) below.
- August 15-19 (Ann Arbor, Michigan) **15th International Symposium on Mathematical Programming**
 Contact 15th International Symposium on Mathematical Programming Conferences and Seminars, 541
 Thomson Street, Room 112, University of Michigan, Ann Arbor, MI 49109-1360, U.S.A.
- August 18-23 (Plovdiv, Bulgaria) **Fifth Colloquium on Differential Equations**
 Contact Secretary Stoyan Zlatev, Mathematical Faculty of the Plovdiv University, Tsar Assen Str. 24,
 Plovdiv 4000, Bulgaria.
- August 18-25 (Pusan, South Korea) **3rd International Conference on the Theory of Groups (Groups-Korea 1994)**
 Contact Professor Ann Chi Kim, Department of Mathematics, Pusan National University, South Korea.
 email: ackim@hyowon.pusan.ac.kr.
- August 20-26 (Shijiazhuang, China) **International Conference on Rings and Radicals**
 Contact Y. S. Zhu, Hebei Teachers University, Dept. of Math., Shijiazhuang, China 050016.
- August 21-27 (Oberwolfach, Germany) **Mathematical Models in Phase Transitions**
 Contact MFOG: see (1) below.
- August 28-September 3 (Oberwolfach, Germany) **Komplexe Analysis**
 Contact MFOG: see (1) below.
- September 4-10 (Oberwolfach, Germany) **Topologie**
 Contact MFOG: see (1) below.
- September 11-17 (Oberwolfach, Germany) **Homotopietheorie**
 Contact MFOG: see (1) below.
- September 18-24 (Oberwolfach, Germany) **Risk Theory**
 Contact MFOG: see (1) below.
- September 19-23 (Marseille, France) **3ème Atelier International de Théorie des Ensembles**
 Contact CIRM: see (8) below.
- September 25-October 1 (Oberwolfach, Germany) **Mathematical Methods in Tomography**
 Contact MFOG: see (1) below.
- October 2-8 (Oberwolfach, Germany) **Randelementenmethoden: Anwendungen and Fehleranalysis**
 Contact MFDG: see (1) below.
- October 16-22 (Oberwolfach, Germany) **Geometrie**
 Contact MFOG: see (1) below.
- October 30-November 5 (Oberwolfach, Germany) **Finite Volume Methods**
 Contact MFOG: see (1) below.
- November 13-19 (Oberwolfach, Germany) **Komplexitätstheorie**
 Cotact MFOG: see (1) below.

November 20-26 (Oberwolfach, Germany) **Mathematical Aspects of Computational Fluid Dynamics**

Contact MFOG: see (1) below.

December 5-9 (Auckland, New Zealand) **Twentieth Australasian Conference on Combinatorial Mathematics and Combinatorial Computing**

Contact Peter Gibbons, Department of Computer Science, University of Auckland, Private Bag 92019, Auckland, New Zealand.

email: p_gibbons@cs.auckland.ac.nz FAX 0064-9-3737457

December 18-23 (Oberwolfach, Germany) **Asymptotic Hochdimensionaler Statistischer Modelle**

Contact MFOG: see (1) below.

**** 1995 ****

(Italy) **Second International Conference on Numerical Methods for Volterra and Delay Equations (A conference to celebrate the 100th anniversary of Volterra's birth.)**

Contact A. Feldstein, Dept. of Math., Arizona State University, Tempe, Arizona 85287, U.S.A.

April 23-25 (Manhattan, Kansas) **Conference on Applied Statistics in Agriculture**

Contact James R. Schwenke, Kansas State University, Department of Statistics, Dickens Hall, Manhattan, Kansas 66506-0802, U.S.A.

**** 1996 ****

April 28-30 (Manhattan, Kansas) **Conference on Applied Statistics in Agriculture**

Contact James R. Schwenke, Kansas State University, Department of Statistics, Dickens Hall, Manhattan, Kansas 66506-0802, U.S.A.

July 1-5 (Amsterdam) **18th International Biometric Conference**

Contact Paul Koopman, Secretary, Netherlands Region of the Biometric Society, fax 02940-13906

July 7-12 (Sydney) **Sydney Statistical Meetings**

email: sydney96@syd.dms.csiro.au

Special Contact Addresses:

- (1) **MFOG:** Mathematisches Forschungsinstitut Oberwolfach Geschäftsstelle, Alberstrasse 24, W-7800 Freiburg in Breisgau, Germany.
- (2) **MSRI:** I. Kaplansky, Director, MSRI, 1000 Centennial Drive, Berkeley, California 94720, U.S.A.
- (3) **IMA:** Institute for Mathematics and its Applications, University of Minnesota, 514 Vincent Hall, 206 Church Street S.E., Minneapolis, Minnesota 55455, U.S.A.
- (4) **RIMS:** Research Institute for Mathematical Sciences, Kyoto University, Kitashirakawa, Sakyo-ku, Kyoto 606, Japan.
- (5) **ICTP:** International Centre for Theoretical Physics, P.O. Box 586, 34100 Trieste, Italy.

- (6) **SIAM:** SIAM Conference Coordinator, 3600 University City Science Center, Philadelphia, Pennsylvania 19104-2688, U.S.A.
- (7) **IMA:** Miss Pamela Irving, Conference Officer, The Institute of Mathematics and its Applications, 16 Nelson Street, Southend-on-Sea, Essex SS1 1EF, England.
- (8) **CIRM:** Centre International de Rencontres Mathematiques, Case 916, Luminy, 70 Route Leon-Lachamp, 13288 Marseille, Cedex 9, France.
- (9) **CRM:** S. Chenevert, Centre de Recherches Mathématiques, Université de Montréal, CP 6128-A, Montréal, Quebec H3C 3J7, Canada.
- (10) **FIRMS:** E. Reidt, The Fields Institute for Research in Mathematical Sciences, 185 Columbia St. West, Waterloo, Ontario N2L 5Z5, Canada.

M.R. Carter

CONSTITUTION AND BY-LAWS OF THE NEW ZEALAND MATHEMATICAL SOCIETY INCORPORATED

ARTICLE I: NAME

The name of this organization shall be the New Zealand Mathematical Society Incorporated (hereinafter referred to as "the Society").

ARTICLE II: OBJECTS

The purposes for which the Society shall be established are

- (1) To promote research in mathematical sciences and to promote the development, application and dissemination of mathematical knowledge within New Zealand.
- (2) To assist mathematicians in New Zealand to maintain effective cooperation with one another and with mathematicians and mathematical societies in other countries, and to facilitate collaborative research in the mathematical sciences as a consequence of such cooperation.

The Society shall be administered with these ends in view and not for the purpose of financial gain for its members.

ARTICLE III: MEMBERS

The membership of the Society shall consist of three classes of members - ordinary, honorary, and institutional members. Ordinary membership shall be open to any person interested in the objects of the Society. Election to ordinary membership shall be by vote of Council (Article V) upon written application and upon payment of the annual subscription. However, a person who is not normally resident in New Zealand and who is a member of a Society with which the New Zealand Mathematical Society maintains a reciprocity agreement shall, upon application to Council, be admitted as and remain an ordinary member of the New Zealand Mathematical Society at a reduced subscription. An honorary member shall be any person of distinction in the field of mathematics or any other person whose work or whose services to the Society are judged by the Council to merit election to honorary membership. There is no subscription for honorary members. Institutional membership may be granted by the Council to Institutions, Associations, business enterprises and other organizations interested in the objects of the Society.

The Annual General Meeting shall set the subscription for the following financial year (1 January to 31 December) for ordinary members, which shall be payable in advance. The subscription for Institutional

members will be determined by Council in each case.

Resignations from membership of the Society shall be made in writing. Any person more than two years in arrears in subscription is no longer a member of the Society.

ARTICLE IV: BRANCHES

With the approval of the Council (Article V), regional branches may be formed from members of the Society normally residing in a particular region. Each such regional Branch shall elect annually a Convenor and a Secretary (who may be the same person) and other officers from among its members. The persons so elected shall constitute the Committee of the Branch, and shall arrange meetings, including an Annual General Meeting, and otherwise conduct the business of the Branch.

Each Branch may send a delegate to each meeting of the Council. Delegates shall be allowed to speak but not to vote.

ARTICLE V: THE COUNCIL

The Council shall be the governing body of the Society. It shall consist of the President, one Vice-President (Article VI), and seven elected members. The elected members shall each serve for three years. These members may be available for re-election but shall not serve for longer than six years in succession. If a current Council member is elected to the office of Incoming Vice-President (Article VI) the vacancy will be filled by the election of a further Council member for a term of three years. In this event if there are insufficient nominations to Council to cover this circumstance, then extra nominations will be called for immediately at the Annual General Meeting. Editors of any journals the Society may publish, if they are not already members of the Council, shall have the right to attend meetings and vote on matters pertaining to their journals. Council may co-opt further members for limited periods for specific purposes. In addition to the above members, one Council member will be a representative appointed by the New Zealand Association of Mathematics Teachers.

The Council shall determine the policies of the Society and shall supervise the affairs of the Society according to such by-laws as the Council may adopt. A by-law or amendment or repeal thereof shall come into effect thirty days after notification to the membership in a publication of the Society or otherwise in writing, unless during this thirty day period twenty members of the Society shall so petition and the by-law or amendment or repeal thereof shall then be submitted to a vote of the membership and shall not come into effect unless approved by a majority of those voting. However, this restriction shall not apply to those by-laws adopted by the time this constitution is first ratified.

The Council may enter into working arrangements and reciprocity agreements with other societies and organizations.

The Council shall meet at least once a year, and at other times if requested by the President or at least three members of Council. Members of Council shall be notified at least two weeks before any such Council meeting. In addition, a special meeting of the Council shall be held as soon as possible after the Annual General Meeting (Article VII) to appoint a Secretary and a Treasurer (Article VI) who shall be chosen from among the seven elected members of Council. Five members of the Council shall constitute a quorum, provided that at least one of the members present shall be the President or the Vice-President. Meetings of the Council shall normally be chaired by the President, if present, or by the Vice-President. All matters at Council meetings shall be decided by a majority vote of members of Council present and voting. In the case of a deadlock, the Chairperson shall have a casting vote.

Any vacancy in the Council or Offices (Article VI) occurring other than by the normal expiration of a term of office, may be filled by an appointment of the Council. Officers and members thus appointed shall hold office until the next Annual General Meeting. When the vacancy is in the office of President of the Society (Article VI) the Vice-President shall be appointed President. In the event of the Incoming Vice-President resigning during his/her term of office, the next President shall be elected at the following Annual General Meeting.

ARTICLE VI: OFFICERS

The Officers of the Society shall be as follows:

- (1) The President
- (2) The Vice-President
- (3) The Secretary
- (4) The Treasurer.

The term of office of the President shall be two years. The Vice-President shall normally be either the person who held the office of President immediately before the President in office (in which case he/she shall be known as the 'Immediate Past President') or the person elected towards the end of the first year of a President's term of office to succeed the President in the following year (in which case he/she shall be known as the 'Incoming Vice-President'). The term of office of the Vice-President shall be one year. The term of office of the Secretary and Treasurer shall be one year, but these officers shall be eligible for re-election.

The President shall be ex officio a member of all committees, and shall deliver the Annual Report of the Council at the Annual General Meeting (Article VII). The Secretary shall be responsible to the Council for the records of meetings and correspondence of the Society. The Treasurer shall be responsible to the Council for the records of membership and the management of the financial affairs of the Society in accordance with the policies determined by the Council. The Treasurer shall keep the Society's financial records and prepare the necessary financial statements.

ARTICLE VII: MEETINGS

There shall be an Annual General Meeting of the Society at such a time and in such a place as the Council may determine. The business of the Annual General Meeting shall be:

- (1) To receive the Annual Report of the Council.
- (2) To receive the duly audited Annual Statement of the income and expenditure and assets of the Society.
- (3) To elect the Incoming Vice-President in alternate years (Article VI).
- (4) To elect members of Council.
- (5) To appoint an Auditor for the ensuing year.
- (6) To transact any other business of which notice in writing has been given to the Secretary at least six weeks prior to the Meeting.

Special General Meetings may be convened at any time by the Secretary or the President under the direction of the Council or upon the requisition of a petition of not less than 20 members of the Society to discuss only those matters specified in the petition.

Four weeks' notice of any Annual General Meeting or Special General Meeting shall be given to members.

At every Annual General Meeting or Special General Meeting the Chair shall be taken by the President, if present, or by the Vice-President. If both President and Vice-President are absent, a Chairperson shall be nominated from members of the Council by the persons present at the Meeting. The quorum for General Meetings of the Society shall be twenty members. All business shall be decided by a majority vote of those present and voting. In the case of a deadlock the Chairperson shall have a casting vote.

For election of officers voting shall be done by secret ballot; other matters shall be voted by voice, or by a show of hands if called for by any members of the Society present at the meeting.

ARTICLE VIII: AMENDMENTS

An amendment to the Constitution may be proposed by five members of the Society.

An amendment shall be adopted by a majority of not less than three-fourths of the members who vote on the amendment by mail or at a General Meeting, provided the amendment has been duly proposed and the membership notified at least four weeks before the vote is taken.

Notwithstanding the foregoing provisions, no amendment to the clauses relating to pecuniary interest (Article II) and dissolution (Article XI) provisions, including this clause, is permitted.

ARTICLE IX: COMMON SEAL

There shall be a Common Seal of the Society which shall be that as appointed by the Council which shall be responsible for the safe custody and control thereof. Whenever the Common Seal of the Society is required to be affixed to any deed, document, writing or other instrument, the Seal shall be affixed pursuant to a resolution of the Council or of the Society by the President or Secretary and any two other members of the Council. The person so affixing the Seal shall at the same time sign the document to which the Seal is so affixed.

ARTICLE X: CONTROL AND INVESTMENT OF FUNDS

All monies received by or on behalf of the Society in an account with any bank or savings bank from time to time to be fixed by the Council and all cheques or withdrawal slips drawn on the account shall be signed by any two of the President, Secretary and Treasurer. The Society may from time to time invest and reinvest in such securities and upon such terms as it shall think fit, the whole or any part of its funds which shall not be required for the immediate business of the Society.

ARTICLE XI: DISSOLUTION

The Society may be wound up voluntarily if the members, at a Special General Meeting duly called for the purpose, pass a resolution requiring the Society to be so wound up and the resolution is confirmed at a subsequent General Meeting called together for that purpose and held not earlier than thirty days after the date on which the resolution so to be confirmed was passed. Any assets remaining after all debts have been paid shall be given to organizations established mainly to promote or encourage scientific or industrial research.

BY-LAWS

(as at October 1993)

1. Date of the Annual General Meeting:

The Annual General Meeting shall be held during the NZ Mathematics Colloquium at the same venue as the Colloquium.

2. Subscription Dates:

The annual subscription shall be payable in advance and is due on 1 January in each year.

3. Subscription Rates:

The subscription for Ordinary Members for any calendar year shall be determined at the Annual General Meeting in the previous year. The subscription for Institutional Members will be determined by the Council in each case.

4. Dates for Taking up Office:

The Council and elected officers shall take up their positions on 1 June in each year.

5. Geographical Distribution:

At least two of the Council members shall be residents of the North Island, and at least two shall be residents of the South Island.

6. Nominations:

Each nomination of an Ordinary or Honorary member for the office of Incoming Vice-President, for a vacancy on Council or a nomination for the position of Auditor shall be put forward by two Ordinary or Honorary members of the Society. The written nominations, countersigned by the nominee, should be received by the Secretary not less than six weeks before the General Meeting at which elections are to be held. The Secretary after consultation with Council shall prepare a complete list of nominations, which list shall be circulated to all members of the Society at least four weeks before the General Meeting.

UPDATED ELECTRONIC MAIL ADDRESSES

UNIVERSITY OF AUCKLAND

Private Bag 92019, Auckland. Telephone: (09) 373-7999.

Department of Engineering Science

Telephone: Extn. 8392.	Facsimile: (09) 373-7468.
BULLIVANT David 5807	d.bullivant@auckland.ac.nz
BYRNE Susan 7906	s.byrne@auckland.ac.nz
COLLINS Ian 7910	collins@auckland.ac.nz
DANG Chuangzin 8387	c.dang@auckland.ac.nz
GOLDIE Andrew 5806	a.goldie@auckland.ac.nz
GREENSLADE Jim 8390	j.greenslade@auckland.ac.nz
HUNTER Peter 8395	p.hunter@auckland.ac.nz
LIM Tiong 8369	t.lim@auckland.ac.nz
MASON Andrew 7909	a.mason@auckland.ac.nz
NIELD Donald 7908	d.nield@auckland.ac.nz
NIELSEN Poul 8391	p.nielsen@auckland.ac.nz
NOKES Roger 7907/5808	r.nokes@auckland.ac.nz
O'SULLIVAN Michael 8393	m.osulliva@auckland.ac.nz
PHILPOTT Andrew 8394	a.philpott@auckland.ac.nz
PULLAN Andrew 8399	a.pullan@auckland.ac.nz
RONNQVIST Mikael 7225	m.ronnqvist@auckland.ac.nz
RYAN David 8398	d.ryan@auckland.ac.nz

OTHER MATHEMATICIANS:

DAVIES Robert (04) 475-3346	robertd@kauri.vuw.ac.nz
JORDAN Brian (04) 560-5628	jorbri@topemail
SPENCER Hamish (03) 479 7981	h.spencer@rivendell.otago.ac.nz

This list updates the list published in the August 1993 Newsletter. Further changes and corrections should be notified to John Shanks, Dept of Maths and Stats, University of Otago, P.O. Box 56, Dunedin. e-mail: jshanks@maths.otago.ac.nz

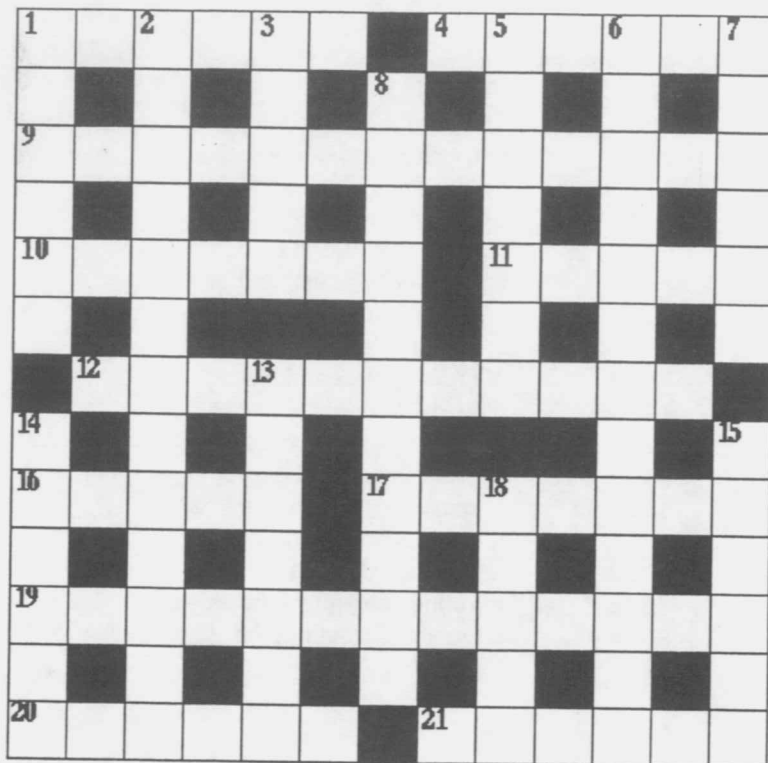
SOLUTION TO CROSSWORD NO. 40

A	C	E	O	F	S	P	A	D	E	S	E	A
A	R	E	D	N	T	A	L	C				
G	R	A	C	E	S	C	A	R	D	R	E	
D	I	S	M	S	H	O	L	T	O			
F		N	A	I	L	S	E	O	F			
O	B	O	E	O		T	W	E	L	F	T	H
U	F	I	N	C	U	R	L	C	E			
R	E	D	S		U	U		M	O	R	A	
O	I	N	R	O	M	P	S	R	R			
F	L	A	V	I	N	S		O	S	K	A	T
C	M	N	E		O	N	Z	E		S		
L	O	O	S	E	S	I	T	A	U			
U	N		O	F	S	C	O	T	L	A	N	D
B	I	D	S	L	E	O	A	D				
S	S	C	O	L	L	I	N	G	W	O	O	D

CROSSWORD

No 41

by Matt Varnish



Across

Down

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. See short measure for fruit. (6) 4. Rustic lovers have Western Australia batting on board. (6) 9. Latent talent given long odds comes through endured threat. (3,10) 10. Issued and said. (7) 11. The rondo about the bird. (5) 12. Cambridge booby prize. (6,5) 16. For case of old year she has hesitation. (5) 17. The average of the army's years for their bargain captive? (7) 19. Miscarriage of justice in experimental method? (5,3,5) 20. Set, she misread papers found on ships and beds? (6) 21. Fair of hair sloppy in the damp. (6) | <ol style="list-style-type: none"> 1. Chemists' paper burning greek letters. (6) 2. Form shown by 6 possibly, in quiet reason. (13) 3. Purloiner of Rizpah and Ishbosheth's irritant. (5) 5. Wash, rip into, aggressive vessel. (7) 6. Enquiring latin lady makes one cross after holding gun in fear. (13) 7. Being partisan at the minor stop. (6) 8. Principal worker is usually West. (7,4) 13. Intake contains member and party for charming depression. (7) 14. Now TSE? (for his barren places). (6) 15. Four fifths cedar on another tree. (6) 18. Rest say letter by letter. (5) |
|--|--|