THE NEW ZEALAND
MATHEMATICAL SOCIETY (INC.)

NEWSLETTER

CONTENTS

NUMBER 63 April 1995 ISSN 0110-0025

PUBLISHER'S NOTICE

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

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NZMS COUNCIL AND OFFICERS

NEWSLETTER CORRESPONDENTS

EDITORIAL

I have broken with tradition in this issue by producing two centrefolds. Although you might argue that only one is actually at the centre, this is a compromise to honour two of our mathematicians. You will find an obituary for Peter Bryant, whose unexpected death was noted in a stop press in the previous issue. You might have noted that Peter had been the author of the "Centrefold" article on Brian Woods in that issue. Peter had been a long time member of the Society and contributor to the Newsletter. Also, this month marks the centenary of the birth of A.C. Aitken, and I had a commitment to the organisers of the Aitken Centenary Conference at Otago to celebrate the anniversary later this year. Hence the compromise.

In this issue, you will see a list of Masters students who have graduated in "mathematical sciences" at New Zealand universities since the last NZMS survey in 1983. Clearly the list is not complete, I received no response from the southern universities, and the definition of the scope has been left to the respondents. Together with the PhD list published in issue #62, and the 1994 graduates listed in issue #61, these continue the tradition begun with the supplements to this Newsletter in 1977(#10), 1979(#18) and in 1983(#32). I hope to see a continuation of this record of New Zealand Mathematical Sciences research graduates in future issues of the newsletter. It is my intention, while Editor, to honour our current graduates in the August issue each year. I would like to thank the correspondents from the universities who have supplied me with this material, and ask for any additions or corrections to these lists to be supplied to me. I intend to list these together with the annual return each August.

It is pleasing as an editor, to get some feedback on an issue raised in an editorial. I had several comments returned to me regarding the editorial "Reassuring Headlines?" I wrote in the last issue. These offered explanations for the confusing statistics regarding the gender difference in the average number of reported sexual partners among a US sample. One respondent suggested that in the US only "significant encounters" would be reported, and that what might be significant for males may be less so for females! Other comments included:

"This problem has been addressed by Martina Morris (Nature, 365(1993)437-40) in a paper which demonstrates that common sense as well as statistics should be applied to survey data. Prof. Morris noted that the ratio of male to female reported partners dropped from 3.2 to 1.2 when those reporting more than 20 were excluded. A simple histogram of the data reveals the problem, the distribution looks like a stingray: the barbs on the tail being reports of 20, 25, 30, 40, 50 and 100 partners with almost no respondents claiming numbers in-between. In other words, if you think the number is more than 20 you say 30 etc. This demonstrates once again that before analysing data it is essential to draw a graph and think".

"I agree that the means should be equal, for numbers of sexual partners. However, they probably used the median for their "typical" number of partners - this is really a more appropriate measure anyway, as it removes excessive influence of outliers. A simple example shows how the medians can differ: imagine a town containing one prostitute and many celibate women, e.g. 3 men and 3 women with these pairings: M1-F1 M2-F1 M3-F1 M2-F2 while F3 has no man. Then the men's numbers are 1,2,1 with a median above 1, while the women have 3,1,0 with a median of 1. All it needs is a well-skewed distribution for the women."

"While you have given a number of reasons for the reported statistics that a "typical" women has 2 sexual partners while a "typical" man has 6, there remains another plausible explanation. It is of course possible that we are dealing with the median here rather than the mean. If this were indeed the case it would seem to indicate that many women have a low number of sexual partners, while those with a high number of partners have a very high number of partners. On the other hand fewer men have either very high or very low numbers of partners".

Mike Hendy
e-mail: m.hendy@massey.ac.nz

LOCAL NEWS

UNIVERSITY OF AUCKLAND

SCHOOL OF MATHEMATICAL & INFORMATION SCIENCES

Dr Alex McNabb, a refugee from DSIR, has been appointed as a Part-Time Research Fellow in Applied Mathematics.

DEPARTMENT OF COMPUTER SCIENCE

By the end of enrolment week for 1995 the enrolments were equivalent to 599 EFTSs, an increase of 32 (6%) from 1994.

Cristian Calude's book "Information and Randomness, An Algorithmic Perspective", with Forewords by Gregory J. Chaitin & Arto Salomaa, has been published by Springer-Verlag.

Prof. Sheng Yu is visiting, and will teach a graduate course on Theoretical Aspects of Cellular Automata. Prof. Ion Tomescu is visiting, and will teach a course on Data Structures.

A student team from the Department of Computer Science has been placed first in the ACM South Pacific Region Scholastic Programming Contest, and will compete in the World Finals in USA this (southern) summer. The team "The Masked Interrupts" comprises Carl Johansen, Matthew Weir and David Brennan, with Mike Lennon as Faculty Advisor.

Seminars

Dr David Andreae (VUW), "Learning to recognise physical objects".

Xiaosong Li (University of Auckland), "Petri Net-based graphical user interface specification tool".

Dr John Cleary (Waikato University), "The architecture of an optimistic CPU: The WarpEngine".

Dr Paul Ashton (Canterbury University), "The Interaction Network".

Dr Valtteri Niemi (University of Vaasa, Finland), "How to prevent buying of votes in computer elections".

Dr Ari Renvall (University of Turku, Finland) "Zero-knowledge and r-blobs".

Professor Hanan Samet (University of Maryland, College Park), "Sorting in space".

Dr Alan Davidson (University of Stockholm/Royal Institute of Technology, Sweden), "Public-key cryptography for people who don't care".

DEPARTMENT OF MATHEMATICS

Ken Ashton underwent a second major operation on March 8th, and is recovering well. Peter Lorimer is back after sick leave, and is teaching a Stage 3 algebra paper.

By the end of enrolment week for 1995 the enrolments were equivalent to 933 EFTSs, an increase of 77 (9%) from 1994.

Philip Sharp has been appointed as Head of Applied and Computational Mathematics Unit, from 1995 to 1998. Ivan Reilly has been re-appointed as Head of Mathematics Education Unit, from 1995 to 1998.

Barbara Miller-Reilly is a Senior Tutor in the Student Learning Centre (which is not formally part of the SMIS), and in the Mathematics Education Unit. Barbara is on leave this year, and so Dr Rosemary Segedin is organizing the mathematics and science courses for 1995 at the SLC. Rosemary's father, Emeritus-Professor Cecil Segedin, retired from the Department of Theoretical & Applied Mechanics in 1980, and he now finds that he has some spare time available. Accordingly, he is currently teaching a course on Calculus at the SLC, and is assisting with the tutoring there.

Joel Schiff's book on "Normal Families" was published by Springer-Verlag, in 1993.

In January 1995, John Butcher gave a lecture at the conference honouring Germund Dahlquist on his 70th birthday, at the Royal Institute of Technology in Stockholm. Also, he gave lectures at Arizona State University in Tempe, and at Imperial College in London.

Boris Pavlov gave a graduate course, NZ-style, at St Petersburg University, on "Non-selfadjoint operators".

Arkadii Slinko gave a lecture on "Lie coalgebras" at Moscow State University, and also at the Universidad de Oviedo (Spain). He participated in the First Granada Meeting on Algebraic Models in Analysis at the

Universidad de Granada, and he gave a short course of lectures on "Algebras, coalgebras, bialgebras and quantum groups" at Universidad de Zaragoza.

Sergey Fedorov visited St Petersburg, and at the Weizmann Institute of Science (in Israel) he delivered a course of lectures on Harmonic analysis in multiply-connected domains, and on Lax-Phillips scattering theory for some periodic operators.

Robert Chan is on leave from 1994 November to 1995 November, at Universitaire de Beaulieu, Stanford University, University of Trondheim, Universita' di Trieste and Leiden University, et cetera et cetera.

Dr Graham Baird, who was a Senior Lecturer here from 1974 to 1984, is here on leave until June from the School of Mines at Kalgoorlie, which is now a branch of the Curtin University of Technology at Perth.

Professor Jan Jaworowski (Indiana State University) has returned here on leave until June, in exchange with Norm Levenberg. He will be teaching the accelerated Stage 1 course.

Professor Tudor Zamfirescu (Dortmund University) is visiting until May. Dr David Spence (of Imperial College & Oxford) visited recently.

In recent NZMS Newsletters, Prof. Glen Anderson was described as a visitor from the University of Michigan - but in fact he is at Michigan State University.

Warren Moors, having completed his PhD at the University of Newcastle, takes up an NZ Government Repatriation Post-Doctoral Fellowship here for 2 years.

Brent Everitt has gained his PhD for his thesis on "Images of hyperbolic reflection groups", and he is now a temporary lecturer in this Department. Tim Marshall went to Melbourne for his oral examination on his thesis "Hyperbolic geometry of reflection groups" (supervised by Gaven Martin), and has gained his PhD.

Seminars

Dr Alexander Isaev (ANU), "Spherical tube hypersurfaces in C_n".

Dr Alla Kolganova (LaTrobe University), "Chaotic group actions".

Kath Truran (University of South Australia), "Children's perceptions of their control over the behaviour of random generator".

Professor W. Wistar Comfort (Wesleyan University, Conn.) "The arithmetic of infinite cardinals", and "Some cardinal numbers associated with topological groups".

Professor Wolfgang Vogel (Massey University), "Buchsbaum rings in algebraic geometry, topology and combinatorics".

Professor Hubert Flenner (University of Goettingen), "Acyclic surfaces and plane cuspidal curves".

Professor Rudolph Mynhard, (University of Pretoria), "Group invariance of global generalized solutions of nonlinear PDEs in the Dedekind order completion method".

Professor Yvonne E. Walus (University of Pretoria), "Group invariance of global generalized solutions of nonlinear PDEs obtained through the algebraic method".

Stuart Laird (Rangitoto College), "Mechanical schema in the learning of algebra".

Linda Haggarty (University of Reading), "Some unresolved problems in initial teacher education".

Professor Lawrence Zalcman (Bar-Ilan University, Israel), "Morera's Theorem - a hundred years later", and "New light on normal families".

DEPARTMENT OF STATISTICS

Matt Regan is in Auckland Hospital.

By the end of enrolment week for 1995 the enrolments were equivalent to 689 EFTSs, an increase of 158 (30%) from 1994. Recent visitors include Professor John N. K. Rao from Carleton University at Ottawa, Prof. David Brillinger from Berkeley and Dr Ian McPhee from University of Durham. Andrew Balemi, Odundo Nyamgomo and Paul Murrell are now registered as PhD students.

Seminars

Katrina Sharples (Otago Medical School), "Developing AIDS projections for NZ".

Professor Peter Danaher (University of Auckland), "Optimal television programming using choice modelling".

Dr R. Mathar (Aachen University of Technology), "Multidimensional scaling".

Professor John N. K. Rao (Carleton University), "Small area estimation".
Dr John Petkau (UBC), "Human health studies at UBC".
Dr J. Steinebach (University of Marburg), "Invariance principles for renewal processes".
Dr Ian McPhee (University of Durham), "Optimal pricing in a simple network".

Garry J. Tee

DEPARTMENT OF ENGINEERING SCIENCE

The sad news is that Roger Nokes has left us to take up a position at Nelson Polytechnic. Roger was recognized as an outstanding teacher. He was also an excellent organiser and committee man, and his research was also going well.

Roger's position has not yet been filled. Rob Willink is a temporary tutor. Rob is a New Zealander who has just completed a PhD at the University of Leicester. Andrew Pullan has been promoted to Senior Lecturer. Peter Hunter has been elected to a FRSNZ. Ian Collins and David Ryan are away on leave.

Seminars

Jerzy A. Filar (University of South Australia), "Systematic theoretical approach to the greenhouse effect".
Professor Ren Potts (University of Adelaide), "The mating habits of buses: Why do buses tend to pair?".
Assoc. Professor Donald Nield, "Forced convection in a porous medium channel".
Professor Richard E. Rosenthal (Naval Postgraduate School, Monterey, CA), "'Integerizing' real-world problems".
Assoc. Professor Peter Hunter, "Development of a microstructurally based constitutive law for myocardium".
Curt Hjorring, "The VRP and local search metaheuristics".
Dr Alistair Young, "Validation of magnetic resonance tagging to measure soft tissue deformation".
Dr Steve Butt (Dept. Math. & Stats.), "Facility location in the presence of forbidden regions and congested regions".
Professor George Zahalak (University of Washington in St Louis) "The effects of non-axial deformations on active muscle stress: A generalized Huxley theory".
Shane Blackett, "Particle tracking for experimental fluids".
Dr Andrew Philpott, "A mathematical model for daily hydro-electricity generation".
Erik Astrand and Anders Astrom (Linkoping University), "Image processing of wood defect detection and optimization in crosscut applications in forestry".
Dr Paul Charette and Poul Nielsen, "Full-field mechanical testing of biological membranes based on laser speckle pattern interferometry".
Dr Fred Reinholtz, "Fibre optic based confocal microscopy".
Professor John L. Casti (Tech. University Vienna and Santa Fe Institute, NM), "The geometry of data".
Professor Thomas L. Geers (University of Colorado), "The boundary element in transient acoustics".
Professor V.G. Rumchev (Curtin U. Tech), "INAMAPLA II: An interactive model-based system for manpower planning and decision support".
Professor Artur Geoffrion (UCLA), "Evolutionary trends in logistic system design and their implications for model management".
Professor W.B. Thompson (University of Utah), "Interactive feature-based reverse engineering of mechanical parts" and "Vision-based navigation in unstructured, outdoor terrain".
Dr Radu Nicolescu (Div. Sci. Tech., U.A.), "Vehicle routing and scheduling problems with time windows".
Professor Daniel Granot (University of British Columbia), "Cost and revenue problems in optimization methods".

D.A.Nield

UNIVERSITY OF CANTERBURY

DEPARTMENT OF MATHEMATICS

The winning plan has been selected for the proposed mathematics and computer science building. This plan was the clear favourite with members of the department and contains many good features. It is far, far more appealing and workable, than the long grey concrete rectangle we feared we would get.

Mike Steel has been awarded the Hamilton Memorial Prize for 1994 by the Royal Society of New Zealand. This prize is an annual award to encourage young researchers and was awarded to Mike for his contribution to the mathematics of phylogenetic trees.

Mark Hickman and Frank Lad are now both back from study leave. Mark spent time at the Universities of New Mexico, Minnesota and British Colombia. Frank spent time at the University of Minnesota and in Sicily. David Wall and Bill Baritompa are currently on study leave, and David Glynn is away on a short leave.

The department has had another successful non-commercial rafting trip, led by David Wall. Those going were a mix of staff, postgrads, staff children and visitors. We went down the Rangitata which unfortunately was in quite low flow. The trip was enlivened by many dastardly water fights and paddle stealings.

Ian Coope is the incoming president of the staff club.

Brian Woods has been called back to do some teaching, filling part of the gap caused by several unfilled positions.

Rick Beatson and Burkhard Polster recently gave talks at the 8th Texas conference on Approximation Theory. Also there, was Shayne Waldron, an ex-Canterbury student who has just completed his Ph.D. under Carl de Boor at Wisconsin. Shayne has secured a postdoc working with Allan Pinkus at the Technion.

Currently Professor Dan Tanberg of the University of New Mexico is visiting, working with John Deely. Prof. Peter Graves-Morris is visiting on an Erskine Fellowship, working with Ian Coope. Prof. M.J.D. Powell has just left after a visit from mid-January.

Seminars

Dr Charles Little, (Massey University), "3-Graphs".

Prof M.J.D. Powell, (Cambridge University), "The thin-plate spline method for warping calculations in 2-dimensions".

Prof Duane Porter, (Wyoming), "The teaching of linear algebra in the United States".

Prof Peter Graves-Morris, (Bradford), "A Pade approximation" - a series of four lectures.

Chris Tuffley and Michael Burns, (Canterbury), "Happy hours in the sun".

Dr Robert Wisbauer, (Dusseldorf), "The bimodule structure of rings".

Rick Beatson

MASSEY UNIVERSITY

DEPARTMENT OF MATHEMATICS

The most dramatic news here is that Graeme Wake, Professor of Applied Mathematics at Massey, has resigned to take up a position as Foundation Professor in Industrial and Applied Mathematics at the University of Auckland. To be based at the Tamaki campus, Graeme will take up his new position on 1 September. Needless to say, it will be a great loss for our Department and for Massey University, on which he has stamped his forthright and inimitable character, and where research in Applied Mathematics is now firmly and strongly established. Julie Falkner, whose specialty is Operations Research, is also leaving us in June. Julie is to go to Canada; her departure will be strongly felt by the small team which teaches in the OR area. It is anticipated/hoped that replacements will be approved for these two positions.

The New Zealand Royal Society's Hamilton Memorial Prize for 1994 has been awarded to Dr Michael Steel, lecturer in Mathematics at the University of Canterbury. His research on the mathematics of phylogenetic trees has been used overseas to address a variety of biological problems including human origins, the AIDS virus and plant chloroplasts. Dr Steel was a PhD student in the Department of Mathematics during 1987-89 under the supervision of Professors Mike Hendy and David Penny (Plant Biology and Biotechnology). After completing his PhD, Dr Steel spent some time as a postdoctoral fellow in Germany, USA and again at Massey before taking up a lectureship in Canterbury in 1994.

Meanwhile, Glenda Anthony, who has just been awarded her PhD in mathematics education, has begun her appointment as Lecturer in Mathematics Education in the Department. She will work on the PN campus and complements the Mathematics Education activities of Gordon Knight at Albany. Dr Yow-Tzong Yeh has started his Lectureship at the Albany campus, where another position is currently being advertised.

Just over a year ago, the then School of Mathematical and Information Sciences (now a Faculty) commissioned a post-graduate history student to write a History of the School from its beginnings as a Mathematics Department in the early sixties up to the

formation of the School in 1991. This has now been published with the title "Strength in Numbers". Anyone interested can have a copy (free of charge) by contacting Mike Carter, Department of Mathematics, Massey University (email M.Carter@massey.ac.nz).

How many Mikes in Maths? Mike Hendy has been awarded a DADD Fellowship to spend 3 months in Germany working with the research team led by Professor Andreas Dress, University of Bielefeld. Mike will be joined there by two of his former students, the "Mikes" Steel and Charleston. "Mike the elder" will be away from NZ from May 10 until September 21. A 3-day workshop/conference is being planned at Bielefeld to bring other European researchers to collaborate with them. [Mike Carter will not be there!]

Early in February, Adrian Swift ventured across the Tasman Sea and the Nullarbor Desert to join others attending ANZIAM '95, which was held near Busselton, 240 km south of Perth. They all stayed in the Broadwater Holiday Resort so were able to combine mathematics, swimming (some less hardy souls were put off swimming by the 'Busselton Stinger', a small jellyfish, but Kiwis are made of sterner stuff!), sunbathing, etc. in some proportion. But yes, Adrian did have some time to present a paper on some joint work he is doing with Easwaran Balakrishnan and Graeme Wake on "Multiple steady state solutions in non-Class A geometries for a combustion problem".

Wolfgang Vogel was invited to visit several universities in Japan: Tokyo Metropolitan University, Meiji and Tokai Universities (both in Tokyo) and Kyoto University. It was a busy trip; Wolfgang delivered about 17 hours of seminars and colloquia on Intersection Theory and Fermat's Last Theorem, Bezout's Theorem and other aspects of algebra and geometry.

We are very proud of Koryn Grant, a Masters student in this department, who has been awarded a Commonwealth Scholarship tenable in the UK, in a year when few such scholarships were made to NZ. He intends to begin study towards a PhD in October this year, working under Professor Peter Clarkson at Kent University in Canterbury. Koryn's research interests include group symmetry methods for finding solutions to differential equations, and differential geometry. Koryn has recently completed a first-class honours degree in Mathematics here, and, by the time he departs in September, anticipates completing an MSc thesis in similar areas.

Professor Graeme Wake has been elected President of ANZIAM on his return from leave in the California sun and the Yorkshire snow. Robert McKibbin and Alex McNabb will be travelling to Florence to present papers on various aspects of mathematical modelling of geothermal systems at the 1995 World Geothermal Congress during May.

Seminars at Palmerston North

Professor Roy Leipnik (University of California, Santa Barbara) "Heat and diffusion theory: On the Onsager Method, with Fokker-Planck supplements".

Professor Robert Wisbauer (University of Dusseldorf) "Bimodule structure of algebras".

Professor Gerry Stephenson (University of New Mexico) "Neutrino halos".

Dr Robert McLachlan (Massey) "Symmetry and integrability in dynamical systems".

Dr Robert McKibbin (Massey) "Fluid and heat flow in porous media".

At Albany

Dr Lars Jansson (University of Manitoba) "Advances in Mathematics Education in Manitoba".

Robert McKibbin

DEPARTMENT OF STATISTICS

Stephen Haslett arrived at the end of last year, and the new Applied Statistics Consulting Centre was launched with free drinks and nibbles on the 20th March.

Bruce Dunning has moved from Massey's Learning Support Network to join us. Bruce has special responsibility for first year teaching.

Cynical readers may see a common pattern in these two appointments. Are the Massey Statisticians contriving to relieve themselves of all the unpleasant chores of University life? Of course nothing could be further from our intentions. We expect that total Departmental effort will increase in these two important areas, but perhaps be a little less crisis ridden, a little more predictable and, particularly with consulting, a little more profitable.

Doug Timmer left for an unrefusable offer back in the States after little more than a year

with us. We wish him well, together with Michelle and baby New Zealander Paul.

In February the Palmerston North campus hosted a Workshop on stochastic processes, taking advantage of Ralph Disney's (from Texas A&M University) stay with us. This small, specialist gathering was very worth while. Why do we not do more of this sort of thing?

Albany grows, and a very impressive new Study Centre is now in use, 1.2 km from the offices at Oteha Rohe. At 7.20 on a Monday morning a suspicious-looking fellow sneaks a PC and monitor into his car - it's Barry McDonald preparing for a Minitab demonstration at his 8 a.m. lecture at the Study Centre. Rumour is that the university spent nearly $140k on electrical fittings and equipment in the Study Centre auditorium, but someone in admin vetoed buying a computer to run in it.

Albany now has (officially?) the most complex timetabling scheme on Earth, with lectures and tutorials at Oteha Rohe starting on the half-hour, at the Study Centre starting on the hour, and with everyone given half-an-hour in-between to fit 300 cars into 100 car-parks.

Space for people is the main problem at Palmerston North, but Albany sees some benefits. Staff there are rejoicing at the Library's purchase of some of Dick Brook's old journals (JRSS etc) as a start to our reference collection. Dick was forced to sell because of being shunted into a smaller office.

Seminars

Dr S Ganesh, "Minitab for Windows: A demonstration".

Dr Josef Steinebach, (University of Marburg), Germany, "Invariance tools for renewal processes".

As part of the stochastic process workshop:

Ralph Disney, (Texas A&M University), "Four problems in queuing".

Ilze Ziedins, (Auckland University), "Loss networks - Asymptotics and control".

David Harte, (ISOR, Victoria University), Wellington, "Dimension estimation for spatial point patterns with special emphasis on earthquakes".

Mark Bebbington and Chin Diew Lai, (Massey University), "On non homogeneous models for volcanic eruptions".

Greg Arnold

UNIVERSITY OF OTAGO

MATHEMATICS AND STATISTICS

The frantic scenes of enrolment are settling down now as we launch into yet another academic year. Students have until St. Patrick's Day to change their courses with financial impunity so the figures we have to hand at present are likely to change. The indications are, though, that our overall numbers are perhaps slightly down on last year. On a year by year breakdown, we have approximately the same number of first year students, fewer second year students and slightly more third year students than last year. We'll know more soon.

In February, Bryan Manly conducted a workshop on "Environmental and ecological sampling and the estimation of biological population sizes". The workshop was very popular indeed and was quickly oversubscribed.

Workshop notes were sold to interested persons unable to be fitted into the programme. Pausing only to draw breath, Bryan has recently undertaken to teach another similar workshop in California. Even as I type he returns to the department from this most recent venture but I dare not pester him for details.

Over the summer we have had several visitors to the department including Professor Nguyen Viet Dung of Hanoi, Professor Kent Fuller of Iowa and Professor Dr Robert Wisbauer of Düsseldorf. All three have primarily worked with John Clark on Rings and Modules. Professor Fuller is a William Evans Visiting Fellow.

On leave this year are Vernon Squire who will spend time at Cambridge and in Toronto, and David Fletcher who will be visiting Professor Tony Underwood at the Institute of Marine Ecology at the University of Sydney.

The Aitken Centenary Conference will be held here in late August. Get your registrations in quickly. For details see the advertisement in this issue.

Robert Aldred.

VICTORIA UNIVERSITY

DEPARTMENT OF MATHEMATICS

Roger Cliff has been appointed a half-time Computing Consultant, Mike Doyle having gone down from full to half-time to do his MSc.

We have three new Teaching Assistants, all doing Masters' theses as well: Geoff Thorpe, Charles Semple and Alister Wilson. Other new graduate students are Freda Goodall, Alica Karvelas and Ko Ha.

Sandra Chapman has submitted her MSc thesis, and will be farewelled this afternoon (10 March) at a function in the Department which will also welcome the new Honours and research students.

INSTITUTE OF STATISTICS AND OPERATIONS RESEARCH

What's new at ISOR? Staff movements include the departure of Steve Haslett to Massey. Leigh Roberts has crossed the tracks to the Faculty of Commerce where Financial Mathematics is now taught. Jim Neyland (Mathematics Education) and Jane Gilbert (Science Education) arrived recently and form with Megan Clark the newly established Mathematics and Science Education Centre sponsored by BP New Zealand and Mitsubishi Motors NZ Ltd. In addition we are delighted to have a new secretary Edith Hodgen working in the office. A very warm welcome is extended to all the new arrivals. A recent batch of Masters students have also moved on after successfully completing their degrees: best wishes to Vidya, Howard Silby and Geoff Grimwood.

Now to overseas news. Alistair Gray is away in the States for a conference, Peter Thomson is heading to Sydney on a research project and David Harte is planning a European trip. Tony has returned from Oxford where he completed his book on forensic scientific evidence with Bernard Robertson. Rumours that the swing to the left in English politics is due to Bernard's influence are probably unfounded. Overseas visitors include Tohru Ozaki (Institute of Statistical Mathematics, Tokyo), Rolf Turner (University of New Burnswick, Canada), Ofer Zeitonui (Technion, Israel), Goran Einarsson (Royal Institute of Technology, Sweden). Lastly all at ISOR extend their best wishes to Andrew Bruce and Deborah Donnell in Seattle who recently adopted a daughter, Nicola!

On the social side the ISOR cricket team wish to deny that their recent loss against Statistics New Zealand was due to late night partying or any of the other pursuits that have plagued our national team. This was the first year we played for a cup - a highly prestigious item which is now held by Stats NZ. Other highlights include a wine tasting run by Master of wine, Alistair Gray, an Indian meal and Jenny Wollerman's leaving song (Jenny a well known NZ soprano was temping in the office).

John Harper

UNIVERSITY OF WAIKATO

DEPARTMENT OF MATHEMATICS AND STATISTICS

Mark Schroder and Murray Jorgensen have both returned from leave. Fay Sharples retired in early February. Yves Fautrelle visited the department in December. Jerry King from Lehigh University (Birmingham Pensylvania) is currently visiting. His research area is analysis: he is working with Professor Douglas Bridges and is leading discussions on topics dealt with in his book "The art of mathematics" and based around the theme "The nature and practice of mathematics". Graham Rickard is back in the department again as a Visiting Fellow. Graeme Williams and Lynne Hunt are Teaching Fellows.

Professor Bridges travelled to Japan (with his son Hamish at age 11) where he was an invited speaker at a conference on Computability, Constructivity, and Language, and also at the Nonstandard Logics '94 Conference.

Jeff Knowlton (Oregon) is visiting the Centre for Applied Statistics working in experimental design. John Nelder will be visiting in April. Further announcements will be made later since his brief visit is expected to create significant interest. Professor Vladimir Kuznetsov is visiting with Professor Ernie Kalnins.

A new arrival for Alison and Ian Hawthorn: Benjamin was born on 28th January and

tipped the scales at 9lb 6oz - something of a record.

Student numbers are approximately the same as for 1994. We currently have 12 DPhil students. Planning for the semester system continues.

The old Common Room Club has been closed and then reopened as a fine restaurant "The Station" with excellent food and gracious dining.

Seminars:

V. B. Kuznetsov (University of Amsterdam and St Petersburg University), "Integrable time discretization of the Ruijsenaars-Schneider model".

Y. Walis and M. Rudolph "Group variance of global generalized solutions of non-linear PDEs obtained through algrebraic and order completion methods".

D. Billinghurst (Calmaco Research, Melbourne) "The work of the Cell Modelling group at CRC".

J. King (Lehigh University) "Approximation, summability, and the tossing of biased coins".

A. Zwart (University of Waikato) "An example of interfacial waves caused by a rotational force field".

A. Kolganova (La Trobe University) "Chaotic group actions".

CENTRE FOR APPLIED STATISTICS

J. N. K. Rao (Carleton University) "Applications of experimental designs in sampling surveys".

J. Knowlton (Specta-Physics USA) "Trouble shooting defective assemblies with designed experiments".

M. Jorgensen (University of Waikato) "The role of the EM algorithm in statistical modelling".

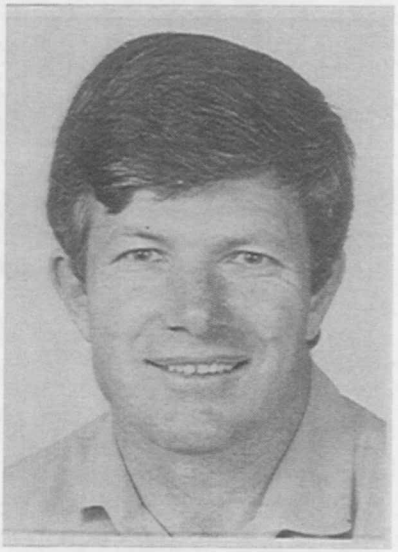
Kevin Broughan

NEW COLLEAGUES

Glenda Anthony has recently taken up an appointment as a Lecturer in the Department of Mathematics at Massey University. Her experience in mathematics teaching includes Secondary Schools, Polytechnic, College of Education and Massey's School of Aviation. Teaching led naturally to an interest in mathematics education. Glenda completed a MPhil in 1991 and PhD in 1994 at Massey University, both in mathematics education. Her research interests include distance education, learning strategies, metacognition, accelerated learning programmes and students' attitudes towards mathematics and mathematics learning.

Bruce Dunning has taken up a position as Lecturer in the Statistics Department at Massey University in February 1995. Born at Warkworth, Bruce attended Auckland University obtaining a MSc Degree in Mathematics. Subsequently he obtained a BA in Economics extramurally through Massey. Bruce has taught at a number of NZ secondary schools with an overseas stint in India.

Bruce was employed as a Mathematics Tutor in the Learning Support Network for the past six years and was involved closely with first year students encountering mathematics and statistics. His research interests focus on student learning of statistics. His teaching will be in the service courses.



Stephen Haslett has recently taken up the position of Associate Professor and Director of the Applied Statistics Consulting Centre at Massey University. He moved from the Institute of Statistics and Operations Research at Victoria University in December last year to take up his new appointment which involves half-time statistical consulting duties and half-time lecturing of courses within Massey's Department of Statistics. The position is part of the newly established Centre which will provide a focus for statistical advice from within the Department of Statistics. The Centre will be providing a service both within and outside the University with an initial focus on the internal consulting.

Mathematics Research Graduates

[An earlier list of NZ research graduates appeared in issue #62. An annual list of mathematical research students graduating in the previous 12 months is planned for insertion in each August issue of the Newsletter, commencing with issue #61, 1994.]

The format is: Name; Degree; Supervisor(s); Title.

AUCKLAND UNIVERSITY
Department of Computer Science

1983 James, Bruce Stephen; MSc; R J Lobb; "An interactive structured BASIC compiler";
McGlashan, Paul John Lawrence; B Hutton; "The language 'B', a definition, compiler and virtual machine".
Miller, Lex Cameron; MSc; G. A. Creak; "LOVE - Learning from Observations converted into Examples".
Sell, Glen; -; R. W. Doran; "Memory mapping algorithms".
Wong, Chin May; MSc; R J Lobb; "The controller hardware interface for the LSI-11/23".

1984 Bell, Graeme John; MSc; R W Doran; "A sequential circuit organisation tutor".
Mugridge, Warwick Bruce; MSc; J Hosking; "Frame-based knowledge representation".
Nicholson, Bryan Conway; MPhil; .J C Butcher; "Control issues in logic programming".
Palmer, Bruce; MSc; R W Doran; "An interactive simulator for logic circuits".
Thornley, John; MSc; B Hutton; "An implementation of the Pascal programming language".

1985 Carter, Paul John; MSc; B Hutton; "Program analysis using lists and code optimisation".
Yam, Fong; MSc; R J Lobb; "A dynamic program loader based on segmentation".

1986 Anderson, Ian Geoffrey; MSc; R. W. Doran; "Improved addressing with a decoupled architecture".
Buis, Martin; MSc; J Hosking & W B Mugridge; "The construction of an expert system".
Hendrikse, Kim Francis; MSc; B Hutton; "'K' - a modular language".

1987 Booth, Lee Colin; MSc; G A Creak; "Qualitative reasoning".
Carter, Christopher John; MSc; J C Butcher; "Efficient implementation of Runge-Kutta methods for stiff ordinary differential equations".
Clare, Gordon Leo; MSc; B Hutton; "STEM: an extensible language".
Clement, Ross Peter; MSc; J Hosking; "The automatic generation of expert systems from examples".
Flavell, Kelvyn John; MSc; P Fenwick; "Local area networks".
Lincoln, Philip David; MSc; R J Lobb; "Image rendering using ray tracing".
Pirus, Jean-Francois; MSc; R W Doran; "A Macintosh sequential circuit simulator specifically designed for introducing students to sequential logic".
Solanki, Umesh Chandra; MSc; G A Creak; "Environment for computing complicated logical expressions simply".
Teh, Liew Ping; MSc; B Hutton; "PDB, an interactive assembly-level debugging system".

1988 Chew, Robert; MSc; G A Creak; "Matching techniques to tasks in expert systems".
Clerk, Robert Shane; MSc; G A Creak; "A robot simulation".
Dales, B; MSc; J N Brownlee; "Writing a code generator for C on the VAX".
Lomas, Steven; MSc; J Hosking & W B Mugridge; "An expert system for a seismic loadings code".
Qualtrough, Paul; MSc; J Titheridge; "Digital control and data collection for the IPS-42 ionosonde".
Reddy, Paul James; MSc; R J Lobb; "Solving the hidden surface problem".

1989 Clausen, J.; MSc; J Hosking & W B Mugridge; "User interface and control issues in expert systems".

Halstead, Mark Arthur Buchler; MSc; R J Lobb; "Exploiting coherence in ray tracing".
Hawkins, Stephen John; MSc; R J Lobb; "Hidden surface removal in object space".

1990 Benson, Bruce; MSc; R W Doran; "Graphical programming in a general-purpose simulation system".
Cooksey, C; MSc; R J Lobb; "A practical ray tracer that exploits ray coherence"
Handley, Simon; MSc; R J Lobb; "The automatic exploitation of coherence".
Idicula, Poricottal John; MSc; P B Gibbons & N Wormald; "Drawing trees in grids".
Ivanov, N; MSc; G A Creak; "Design and implementation issues in a natural-language help system".
Matthews, Graham Yakov; MSc; G A Creak; "GHOLA - a language for modelling and simulation in general systems".
Scherp, Catherine; MSc; P B Gibbons; "Parallel sorting algorithms".

1991 Ashby, Kemp W; MSc; G A Creak; "Pattern recognition using neural networks".
Brodsky, Mark; MSc; G A Creak; "Expert systems in factory control"
Grundy, John Collis; MSc; J Hosking; "A visual programming environment for object-oriented languages".
Lau, Lawrence; MSc; J C Butcher; "A study of parallelism".
Plumpton, David James; MSc; R J Lobb; "Image rendering by radiosity techniques".
Wells, Kevin J; MSc; R J Lobb; "Exploitation of coherence in animation".
Wilson, Maurice Grant; MSc; P B Gibbons; "Graphical illustration of a generalised simulation system".
Zheng, Qun; MSc; R W Doran; "Registers and cache memories: an architecture investigation".

1992 Asgari, A; MSc; R J Lobb; "The Ethernet performance monitor: traffic analysis of the Campus network".
Davies, Roy; MSc; G A Creak; "The development of a robotic teaching aid".
Diack, Michael N; MSc; R J Lobb; "Domestic communications network".
Kryzewski, Adrian; MSc; P Fenwick; "Knowledge-based solutions in automated manufacturing"
Gutmann, Peter Claus; MSc; P Fenwick; "Practical dictionary/arithmetic data-compression synthesis".
Roche, Guyton; MSc; R J Lobb; "Image rendering without point sampling".
Wylie, Christopher Peter; MSc; R J Lobb "Studies in coherent ray tracing".

AUCKLAND UNIVERSITY
Department Of Engineering Science (formerly Theoretical and Applied Mechanics)

1970 Edmonds F. David; ME; I C Medland; "The flexural response of framed columns".
Jackson, Peter S.; ME; M J O'Sullivan; "The focussing of earthquakes".
Moore, Victor H.F; ME; E J List; "Water table changes caused by seepage from a source".
Tattle, Robert B; ME; E J List; "The development and application of a smoothing technique".

1972 Hunter, Peter J; ME; M J O'Sullivan; "Numerical simulation of arterial blood flow".
Roper, Selwyn J; ME; M S Rosser; "A simulation study of single-lane roundabout flow".

1973 Gough, Andrew; ME; M J O'Sullivan; "A simulation of a dam burst".
Hodder, Stewart B; ME; I C Medland; "Static analysis of elastic cable networks".

1975 Fisher, R. Ian; ME; I C Medland; "The Stefan problem: A finite element approach".
Wong, Owen; MPhil; M S Rosser; "A computer simulation of a single line railway system".

1977 de Pont, John J; ME; M C Forster; "Simulation of a dial-a-bus system".
Fowler, Graeme F; ME; G B Sinclair; "Dynamic response of embedded piles under vertical loading".

1980 Brennand, Antony W; ME; I C Medland; "Elasticity stability analysis of shear loaded stiffened infinitely long rectangular plates".
Copsey, Simeon; ME; M J O'Sullivan and R N Horne; "Geothermal convection with a strongly dependent viscosity".

1981 Milne, A. Ross; ME; M S Rosser; "The use of probability theory for priority intersection modelling".

1982 Johnston, Donald J; MPhil; M S Rosser; "Improvement upon adaptive response rate exponential smoothing".

1983 Anderson, Iain A. ME; P J Hunter and B H Smaill; "Cardiac heat transfer".
Clarke, David J; ME; M J O'Sullivan and P J Hunter; "Numerical modelling of tidal flows".
McCrae, Ian R; ME; I F Collins; "The mechanics of the McMurdo ice shelf".
Tavener, Simon J; ME; D M Ryan and E A Harris; "Multiple breath inert gas washout theory and practice"
Williams, Brennan K; ME; I F Collins; "Axisymmetric slipline field analysis of tube draining".

1985 Herd, Michael A; ME; R McKibbin; "Mathematical modelling of subsidence above geothermal reservoirs".
Wing, Stanley; ME; M J O'Sullivan; "An application of the shooting method to the geothermal well test equations".
Wong-Toi, David; ME; M S Rosser and C Patterson; "The effect of prior delay on driver gap acceptance at traffic intersections".
Young, Alistair A; ME; P J Hunter; "Image processing of coronary angiograms".

1986 Castillo, Rudolfo; MPhil.; M J O'Sullivan; "Modelling of geothermal well test in fractured reservoir".
Shacklock, Antony J; MPhil; P J Hunter and B H Smaill; "Biaxial testing of cardiac tissue".

1987 Salera, Jesus R.M; MPhil; M J O'Sullivan; "Computer modelling studies of the Tongonan geothermal field, Leyte, Philippines".

1988 Hookings, Alistair G; ME; P J Hunter; "A computer model of the electrical activation of the heart".
McPheat, Fiona M; ME; P J Hunter; "A finite element analysis of yacht sails".
Mendrinos, Dimitrios; ME; M J O'Sullivan; "Modelling of Milos geothermal field in Greece".
Rowe, Martin J; ME; S J Byrne and M S Rosser; "Optimisation of vehicle-actuated traffic signal controllers by simulation experiment".
Sta.Ana, F.X.M; ME; M J O'Sullivan; "Modelling of the Palinpinon geothermal field, Southern Negros, Philippines".
Sullivan, Richard M; ME; P S Jackson and A B Philpott; "Yacht velocity prediction".

1989 Clarke, Rachel J; ME; A B Phillpott; "Crew rostering using assignment algorithms".
Davies, Neil S; ME; P S Jackson and A B Philpott; "A real-time yacht simulator".
Noor, S. Anita J; MPhil; M J O'Sullivan; "A study of current techniques used in geothermal well testing".
Ohms, Stephen J; ME; P J Hunter; "In vitro and mathematical models of the extravascular diffusion of amsacrine".

1990 Larsen, Naomi F; MPhil; A B Philpott and S J Byrne; "Customer behaviour and analysis and network planning for a voice-call network".
Pedder, Stephen J; ME; A B Philpott; "An integer model for scheduling and routeing a groceries distribution delivery fleet".

1991 Hughes, Graham O; ME; R I Nokes; "Coherent horizontal motions on a diffusive interface".
Pemberton, Gary J.L; MPhil; R I Nokes; "Sediment erosion and mixing in turbulent channel flow".

1992 Ives, Colin; ME; D M Ryan and A B Philpott; "Coastal tanker distribution of petroleum oil products in New Zealand".
Mansell, Steven; ME; I F Collins; "Analysis of the dog-bone phenomenon in the hot rolling of slabs".
Mawson, David A; ME; P J Hunter and D S Loiselle; "A model of the oxygen consumption of the isolated, saline perfused guinea-pig heart".
Uka, Champa; MPhil; A B Philpott; "Capacity expansion planning in a telecommunications network with uncertain demand"
Weichel, Nyree S; MPhil; S J Byrne; "A simulation and scheduling study of the processes from the slabcaster to the hot strip rolling mill at New Zealand Steel".

1993 Blackett, Shane A; ME; R I Nokes; "Particle tracking velocimetry".

1994 Tidey, S W Bruce; ME; R I Nokes; "The role of secondary currents in open channel mixing".

AUCKLAND UNIVERSITY
Department of Mathematics and Statistics

1991 Johnston, Peter B; MSc; J C Butcher; "Local truncation error estimation and dense output for Runge-Kutta methods"

MASSEY UNIVERSITY
Department of Mathematics

1982 Joe, Stephen; MSc; A Swift; "A Survey of Numerical Methods for Solving Simultaneous Nonlinear Equations"

1984 McCall, Janet; MSc; C H C Little; "Some properties of bases for the cycle spaces of complete bipartite graphs".

1985 Bingham, Nigel; MSc; S Byrne, A Swift; "Numerical Methods for Solving Systems of Nonlinear Equations of a Model for a Turbulent Bed Contactor".

1988 Parshotam Aroon; MPhil; R Bhamidimarri, G C Wake; "Mathematical Analysis of the Reaction - Diffusion Processes occurring within a Biofilm".

1989 Byrne, Mark D; J W Giffin; "The Vehicle Routing Problem with Pickup and Delivery".

1990 Frizzell, Peter W; MA; J W Giffin; "The Bounded Split Delivery Vehicle Routing Problem with Grid Network Distances".
Keehan, Michael D; MPhil; W Giffin; "Interior Point Algorithms for Linear Programming".

1991 Anthony, Glenda J; MPhil; G H Knight; "Learning approaches and study patterns of Distance Education students in Mathematics".
Kelly, Patrick J; MSc; G C Wake; "Multiplicity of Solutions of a Nonlinear Boundary Value Problem Arising in Combustion Theory".
Sleeman, Maree; MSc; M R Carter; "The Population Dynamics of Bovine Tuberculosis in Possums".

1992 Bulger David W; MSc; B van-Brunt; "Existence and Uniqueness Results for Solutions to Initial Value Problems in Scales of Banach Spaces".
Copeland Dale D; MA; W Giffin; "Route Planning by Hand: A Manual of Manual Methods".

Kelly, Daniel J; MSc; G H Knight; "Intuitive Transformation Geometry and Frieze Patterns".
Smale, Paul N; MSc; W Giffin; "The Multi-Depot vehicle routing problem with backhauls and loadsplitting".

1993 Scotter, Miguel D; MSc; A Swift, G C Wake; "Path-following Methods for Boundary Value Problems and their Applications to Combustion Equations".

MASSEY UNIVERSITY
Department of Statistics

1977 Reynolds. John; R J Brook; "Some alternatives to least squares estimation in linear modelling".

1982 Bacica, Lynn; MA; R J Brook; "Further analysis of the teacher career and promotion study".
Cooper, Tony; MSc; R J Brook; "Linear regression using biased samples".
Parkin, Peter ; MSc; R J Brook; "Comparing measures of agreement between two raters".

1983 Mary Mendis (nee Perera); MA; H P Edwards; "Statistics".

1984 Treadwell, Doune; MSc; R J Brook; "Graphical analysis of Massey University graduate numbers and employment trends".
Shane Wood; MSc; H P Edwards; "Bayesian approach to statistics: A review of the methodology with selected applications".

1986 Craig, T M; MSc; -; "Some aspects of queues and storage processes".
Graham, Patrick; MSc; C D Lai; "Time Series".
Hannagan G Mark; MA; P J Thompson; "Estimation for ARMA models".

1987 Anderson, Julie ; MA; W D Stirling; "A review of some models for the analysis of contingency tables".

1989 Dixon, Shirley; MSc; R J Brook; "The New Zealand Census: Some technical and historical aspects".
Koolaard, John; MSc; R H Morton; "Training parameters for competitive athletes: A simulation study".

1991 Ming Tan; MSc(Dist); R J Brook; "An analysis of New Zealand Suicide attempts".
Madgwick, Jenni ; MSc; G Arnold; "Multivariate Mixture Experiments".

1992 Pledger (Smith), Megan ; MSc(Dist); Hugh Morton; The Analysis of Designed Experiments for Mean and Dispersion Effects and its Application to the Aluminium Smelting Industry.
Lim, Tiew Kim; MSc; C R O Lawoko; "Comparison of Linear and Euclidean Discriminant Functions".

VICTORIA UNIVERSITY
Department of Mathematics

1984 Adams, D. A; MSc; J H Ansell; "Some methods of analysis of geodetic data and their applications to the measurement of crustal deformation".
Cordue, Patrick; MSc; W G Malcolm; "An algebraic approach to modelling humanistic processes".
McGavin, Trevor; MSc; J McGregor; "Application of Mie scattering to radiative transfer in an aerosol-laden atmosphere".

1985 Kelly, Susan M; MA; R I Goldblatt; "Characterisations of Lorentz transforms".

1987 Goulter, Stephen William; MSc; D Vere-Jones; "The predictability of New Zealand's climate: the failure of some statistical methods and a new physical approach".
Herrington, Garry John; MSc; G C Wake; "Aspects of the temperature distribution in a Frank-Kamenetski sphere".

Lie, Wong Siong; MSc; J H Ansell; "On the search for functionals of variational principles with applications in elasticity".

1988 Bebbington, Mark; MSc; D Vere-Jones; "Bond percolation processes".
Nguyen, Linh Bao; MSc; P J Thomson; "Time series regression techniques and applications to radon data".

1989 Kirkwood, Mark R. R; MSc; C J Grigson; "Quark confinement in quantum chromodynamics".
Waugh, Edward Apostolis; MSc; J H Ansell; "Aspects and examples of synthetic seismograms".

1990 Chen, Song-Xi; MSc; P J Smith; "Variance reduction techniques in the simulation of digital systems".

1992 Scott, Christopher Philip; MSc; P S Donelan; "Real inflexions of the four-bar coupler curve".

WAIKATO UNIVERSITY
Department of Mathematics and Statistics

1984 Davys, John; MSc; 1984; A D Sneyd, R J Hosking; "Waves in floating ice plates",
Grant, Anthony; MSc; K A Brougham; "Symbolic Integration"

1986 Schulkes, Ruben; MSc; A D Sneyd, R J Hosking; "Waves in floating ice plates due to a steadily-moving load".

1987 Waugh, Darryn; MSc; A D Sneyd and R J Hosking; "Viscoelastic response of a floating ice plate to a steadily-moving load".

1988 Willcock, Diane Koorey; K A Broughan; -; "A polynomial factorisation package".

1989 Modh Noor Bin Saad, MSc; A D Sneyd; "Generation of fluid motion in a channel by an applied magnetic field moving at constant velocity".
Schou,Wayne; MSc; K A Broughan; "An integration package for transcendental functions".

1990 Smith, Andrea; MSc; K A Broughan; "Four-colouring planar graphs,".

1992 Shepherd, Richard; MSc; K A Broughan; "An implementation of Grobner Bases and their applications."

BOOK REVIEW

Catalan's Conjecture: Are 8 and 9 the Only Consecutive Powers?, by Paulo Ribenboim. Academic Press, Boston, 1994, 16 + 364 pages. ISBN 0-12-587170-8.

The subtitle specifies the subject of this book.

The eminent astronomer Levi ben Gerson (1288-1344) proved that the only consecutive powers of 2 and 3 are $2^3 = 8$ and $3^2 = 9$. In 1738, Euler proved that if the difference between a square and a cube of rational numbers is ± 1, then those powers are $3^2 = 9$ and $2^3 = 8$.

In 1844, Catalan conjectured that the exponential Diophantine equation

$$x^m - y^n = 1$$

has only one solution in integers $m, n, x, y > 1$, namely; $3^2 - 2^3 = 1$. Catalan's conjecture has stimulated an enormous amount of research. In 1850, V. A. Lebesgue (not Henri Lebesgue) proved that the equation $x^m - y^2 = 1$ has no solution in positive integers x, y with $m > 2$. Very many mathematicians have made further advances towards resolving Catalan's conjecture, determining ever more stringent conditions which any integer solution (m, n, x, y) of Catalan's equation must satisfy, and steadily increasing the lower bounds for any non-trivial solution. Ribenboim gives a detailed technical survey of researches relevant to that conjecture, with a lengthy bibliography (pages 331-357) in chronological order of publications by many researchers, including several by himself.

The author shews what a remarkable variety of techniques have been used for investigating Catalan's conjecture, and related matters. Some significant results have been achieved by elementary techniques. For example, Lagrange (in 1777) found the complete integer solutions of the quartic equation $2X^4 - Y^4 = Z^2$, by a very ingenious application of Fermat's method of descent to that quartic equation together with the related equations $X^4 - 2Y^4 = Z^2$ and $X^4 + 8Y^4 = Z^2$, whose complete integer solutions were also found. However V. A. Lebesgue (in 1853) proved Lagrange's results for the equation $2X^4 - Y^4 = Z^2$, in a proof which is long (pages 152-164) and intricate, but which uses only elementary methods throughout. Also, for the equation $x^2 - y^n = 1$, many partial results had been found by various sophisticated techniques (pages 89-91); but Chao Ko (in 1960 and 1964) "with sharper insight but still with elementary methods", proved that that equation has no solution in positive integers (pages 92-94).

But many advanced concepts have been applied with some success to various cases of Catalan's conjecture; including Gaußian sums, rings of Gaußian integers, cyclotomic fields, binary quadratic and binary cubic forms, algebraic geometry of elliptic curves, Diophantine approximation, Fermat's Last Conjecture, powerful numbers, and Catalan's equation over fields, over domains and over function fields of projective varieties.

The most important result proved to date for Catalan's conjecture is Tijdeman's proof (in 1976) that the 4 integers in Catalan's equation are each bounded by an effectively computable positive constant. Indeed, Langevin shewed (in 1976) that

$m, n < e^{245}$, $\quad x, y < exp(exp(exp(exp(730))))$,

and several subsequent researchers have managed to reduce somewhat the bound on m and n. But those results have not settled Catalan's conjecture, since the bounds are far too large for the testing of all sets of 4 integers within those bounds to be computationally practicable.

Some emendations should be made in later printings of this book. For example;

p.39 "are both odd" should be "are not both odd".

p.77 "Lebesque" should be "Lebesgue" (twice).

Cont'd on P24

CENTREFOLD

Alexander Craig Aitken

Alexander Craig Aitken was born on 1 April 1895 in a rented house in Short Street, Dunedin. William, his father, had been born at Maungatua, a small settlement on the Taieri Plain about twenty miles from Dunedin. William's parents were rural Scots, strong, intelligent people and immensely hardworking. They settled on a small farm at Sandymount on the Otago Peninsula, an area which possessed even into recent years an enchanting separateness in which flora, fauna and human individuality could flourish beyond common expectation. William left the farm to take up a position as a grocer's assistant in Dunedin. There he met and later married Elizabeth Towers, the daughter of his landlady. Elizabeth had arrived in New Zealand at the age of 7; little is known about her. The Aitkens' circumstances were straitened even by the standards of the time.

It was nevertheless a loving and harmonious family, infused with a deep but tolerant religious sensibility that derived from William's commitment to Methodism. The qualities for which Aitken later gained a not entirely welcome tabloid fame, his memory and calculating ability, were present from his earliest years. His father possessed similar qualities and the two of them would do the shop's accounts together, one adding up the column, the other down as a check, both

working mentally. It was in his later years at Otago Boys' High School that Alec, in his own phrase, "took off" under the influence of W J Martyn, the mathematics master. He began to cultivate mental computation almost as a kind of meditation: his descriptions of it and certain other experiences are frequently expressed in mystical terms. He learned the *Aeneid* by heart, evidence of his passion for literature no less than of his breathtaking memory. The turbulence of adolescent self-discovery, the beginning of a vast and complex inner life, was accentuated by his mother's death in 1910, an event that devastated him. It is notable that Aitken, whose memory was so retentive that he was tormented throughout his life by images he could not discard, should have claimed to have no particular memory of his mother.

During school holidays Aitken stayed with his grandparents on the Peninsula. He could wander as he wished and the Peninsula became a theatre in which he acquired and played out a transcendent love of the natural world. In his relationship with nature Aitken was a true romantic. At the same time he developed, perhaps according to some classical ideal, other elements of his personality of permanent significance. He trained in athletics (he won both the high jump and pole vault at the Otago Championships in 1923) and in his last year at school began to teach himself to play the violin. He was described by Eric Fenby, Delius's amanuensis, as the most accomplished amateur musician he had known.

Aitken entered the University of Otago in 1913, enrolled for Mathematics, French and Latin. He was interested in languages no less than mathematics, and the influence of D J Richards, the Professor of Mathematics who achieved the unlikely pedagogical feat of convincing Aitken that he would never understand integral calculus, tended to push him towards languages. Aitken's studies were interrupted by the outbreak of war. His experiences at Gallipoli and in northern France, where he was wounded in one of the futile engagements that made up the Battle of the Somme, are recounted in his memoir *Gallipoli to the Somme*.

For the rest of his life, at five yearly intervals on "Somme anniversaries", Aitken fell into periods of insomnia and depression.

Aitken was invalided home in 1917 and resumed his studies the following year. He was elected President of the Students' Association in 1919, becoming one of its most effective presidents. The same year he published a brief, anonymous version of his war diary. Aitken's final results were disappointing, a consequence of an examination system not yet freed from colonial subservience: first class honours in languages but only a second in mathematics. He determined to have no more to do with mathematics and took himself for a time to a secluded bay in Stewart Island, "Robinson Cruso'ing it" he said.

In 1920 Aitken married Winnifred Betts, a brilliant student of Botany who became the first female lecturer appointed to the University of Otago. Aitken took a job teaching at Otago Boys' High School. He also tutored at the University and was encouraged by R J T Bell, Richards' successor, to consider study overseas. He was awarded a scholarship to study at Edinburgh under E T Whittaker, which he took up in 1923. His thesis, on the graduation of observational data, was considered to be of such unusual merit that he was awarded a DSc rather than the customary PhD. He was appointed to the staff at Edinburgh in 1925 as Lecturer in Actuarial Mathematics, was elected FRS in 1936, and when Whittaker retired in 1948, was invited to take up the Chair of Pure Mathematics; "my real line" as he put it. In the late 1950s Aitken wrote: "Just as the first part of my academic career, up to my arrival in Edinburgh, was quite chaotic and unorthodox, so the second half has been conventional, and could easily be reconstructed by anyone with the indications in *Who's Who*". Aitken was never dull but in a sense he was right: at Edinburgh he grew into his reputation.

Aitken died in 1967 after a protracted illness. His achievements in mathematics and statistics and the honours they brought him are described in a long and affectionate obituary in the Edinburgh Mathematical Society *Proceedings*. Undoubtedly he possessed grandeur - full, sweeping mental power and elegant refinement, but he is remembered no less for his natural grace, his simplicity and humility that place him at the heart of the human condition.

Peter Fenton

OBITUARY

Peter John Bryant

Peter Bryant, a Reader in the Department of Mathematics and Statistics, died suddenly and unexpectedly on the twenty-fifth of November, at the age of fifty-seven. With this, the University of Canterbury, his Department, and the New Zealand mathematical community lost the services, which had been consistently and unsparingly given to the day of his death, of one of their most effective researchers, teachers and administrators. Many of us, both within and outside his Department, lost a good and steadfast friend. Peter leaves a widow, Dr Gill Bryant, and three sons: John, David and Andrew.

Peter was born in Wellington, but brought up largely in Nelson, a province with which his family had many connections: he once told me with some pride that the Bryant Range, which looks down on Nelson City, was named after a grandfather. He went from Nelson College to Canterbury College, as it then was, and graduated MSc with first class honours in 1959. He spent the first part of 1959 as an Assistant Lecturer in the

Mathematics Department of Otago University, before going to the University of Cambridge. There he was obliged, as all New Zealand students then were, to obtain a BA by completing parts 2 and 3 of the Mathematical Tripos - in this he obtained first class honours and distinction - before proceeding to his doctorate. His first research, which led to a doctorate in 1966, was on the generation of water waves by wind, a topic of legendary difficulty, and one which could hardly be said to be resolved even today.

He returned to Canterbury as a lecturer in 1965, and rose to Reader in a relatively short time. Although he did not pursue problems of wind generation beyond two publications from his thesis, he settled on problems of non-linear water waves in general as a programme of research, and this programme led to a steady flow of papers, published only in journals of the highest standing. Periods of leave taken in the University of California at San Diego resulted in a fruitful collaboration with John Miles, the distinguished American applied mathematician. Perhaps the first papers involving the modish concept of chaos to be published by a member of his University came out of this joint work. (Members of this Society may recall his invited talk to the 1992 Colloquium on Chaos in Dynamical Systems.)

More recently Peter formed another very productive collaborative association with Michael Stiassnie of the Technion at Haifa, which led to his last paper in which new solutions for the classical problem of standing waves in water were presented. The visits which these international contacts led to were of great value to his department.

Peter's teaching will be remembered by the students of almost three decades for its clarity, impeccable organisation and presentation, and relevance. He had an enviable rapport with students of all levels of ability, and was generous with the time he gave to them. In particular, many of the more mathematically inclined engineering students, who had passed through his stage three classes, would return to him in their masters and doctorate years with questions on mathematics and modelling techniques, often to be set well on the way to the solutions of their problems.

In matters of Departmental and University administration, Peter was equally generous with his time; but also very effective and efficient, particularly in situations where his qualities of quiet tenacity and attention to detail were called for. An instance of this facet of Peter's work was given when he acted as Director of the 1991 Australasian Applied Mathematics Conference, held at Hanmer Springs. In the past six years these qualities had also been at the disposal of the Burnside High School Board of Trustees, of which Peter was elected chairman. His performance in this chair, at a time when the secondary school system has been suffering the most serious and prolonged "reforms", while the administration of schools has become increasingly the responsibility of the Boards, was widely recognised as exemplary.

Peter was very much a New Zealander; I can think of few of our colleagues who passed through Cambridge (or any other British university for that matter) who so completely escaped the little stigmata that a superior English education bestows. When younger, he enjoyed the outdoor life that he had been brought up to; more recently, he had given up tennis and squash, and his tramping expeditions were more circumspect; but he continued to enjoy a regular game of golf and to attend to his garden with the combination of enthusiasm, intelligence and effectiveness that marked everything he did. His whole working life, and a strong but undemonstrative loyalty, was devoted to his University and its Mathematics Department, and it is appropriate that his widow, Dr Gill Bryant, has proposed that as a memorial to Peter, a prize in Mathematics be established.

Brian Woods

Cont'd from p19

p.95 "Lebesque" should be "Lebesgue".

"$(x, y) = (4, 3)$" should be "$(x, y) = (4, 2)$".

p.96 "$\mathbf{X}^m - \mathbf{Y}^3 - 1$" should be "$\mathbf{X}^m - \mathbf{Y}^3 = 1$".

p.97 "$x - x - 1$" should be "x and $x - 1$".

"$(\varepsilon - 1\tau)^9$" should be "$(\varepsilon^{-1}\tau)^9$".

p.125 "$3^m = 2^n = 1$" should be "$3^m - 2^n = 1$".

p.134 "$1\frac{u+v}{1-uv}$" should be "$1 = \frac{u+v}{1-uv}$".

p.145 "*sizes*" should be "*sides*".

p.226 "*(5. 7)*" should be "*(5, 7)*" (twice).

p.288 "$2H + h$" should be "$2N + h$" (twice).

And there are minor misprints (mostly in spelling and accenting of names) on pages 7, 65, 136, 243, 245, 326, 338, 341, 346, 347, 360, 361, 362, 363.

The question still remains open, whether Catalan's exponential Diophantine equation $x^m - y^n = 1$ has any solution in integers greater than 1, other than $3^2 - 2^3 = 1$. This book provides an extremely useful basis for further research into that very hard question.

Garry J. Tee, University of Auckland

SPRINGER-VERLAG PUBLICATIONS

Information has been received about the following publications. Anyone interested in reviewing any of the books should contact

David Alcorn
Department of Mathematics
University of Auckland
(email: alcorn@mat.auckland.ac.nz)

Applications of Mathematics: Stochastic Modelling and Applied Probability

29. Elliot RJ — Hidden Markov models. 361pp.

Graduate Texts in Mathematics

151. Silverman JH — Advanced topics in the arithmetic of elliptic curves. 525pp.
152. Ziegler GM — Lectures on polytopes. 370pp.
154. Brown A — An introduction to analysis. 278pp.
155. Kassel C — Quantum groups. 531pp.
158. Roman S — Field theory. 272pp.

Probability and its Applications

Bass RF — Probabilistic techniques in analysis. 392pp.

Texts in Applied Mathematics

17. Marsden JE — Introduction to mechanics and symmetry. 500pp.

Undergraduate Texts in Mathematics

Anglin WS — Mathematics: a concise history and philosophy. 261pp.
Ebbinhaus H-D — Mathematical logic. (2nd ed) 290pp.

Universitext

Ramsay A — Introduction to hyperbolic geometry. 287pp.

Miscellaneous

Bakelman IJ — Convex analysis and nonlinear geometric elliptic equations. 510pp.
Bourbaki N — Elements of the history of mathematics. 301pp.

CONFERENCES

A.C. Aitken Centenary Conference

3rd Pacific Statistical Congress
Annual Meeting of the New Zealand Statistical Association
1995 New Zealand Mathematics Colloquium

28 August – 1 September 1995, University of Otago, Dunedin, New Zealand

For registration/conference details, contact The Conference Administrator, Dept of Maths & Stats, University of Otago, P.O. Box 56, Dunedin (e-mail: *casm@maths.otago.ac.nz*). Send the message "index" to *maiser@maths.otago.ac.nz* to receive the latest programme.

Reminders:
- **The registration deadline is 31st May (to avoid a penalty fee), but early registrations would be appreciated.**
- **The deadline for submission of papers is also 31st May.**

Student Prizes

NZMS Aitken Prize: This prize, awarded by the NZMS and worth $250, will be given for the best talk or paper presented at the Colloquium by a student (enrolled this year at a tertiary institution in New Zealand). The topic can be from any branch of the mathematical sciences. Entrants should clearly indicate that they wish to be considered for this prize when they register their intention to present a paper at the Aitken Conference. They should also inform the NZMS Secretary (Dept of Maths, University of Auckland, Private Bag 92019, Auckland) by 1 August.

SPSS Statistics Prize: This prize, awarded by Hoare Research Software and worth $250, will be given for the best statistics talk or paper presented at the Conference by a student (enrolled this year at a tertiary institution). Entrants should clearly indicate that they wish to be considered for this prize when they register their intention to present a paper at the Aitken Conference.

Student Travel Grants

Applications are invited from currently enrolled students for both **NZMS Student Travel Grants** and **Hoare Research Software Student Travel Grants**, which will provide financial assistance towards the cost of travel in attending any part of the Aitken Conference. Applications should be made to The Conference Administrator, Dept of Maths & Stats, University of Otago, P.O. Box 56, Dunedin.

TRUTH IN MATHEMATICS

A conference on the above subject will be held in Mussomeli, Sicily, on September 13-20, 1995. Among the invited speakers are D S Bridges (Waikato), V Jones (UC, Berkeley), A Macintyre (Oxford), Yu Manin (Bonn and Moscow), D A Martin (UCLA), P Martin-Löf (Stockholm), Y Moschovakis (UCLA), and W H Woodin (UC, Berkeley). The President of the Conference will be Michael Dummett (Oxford). For further particulars and application forms contact Professor H G Dales, School of Pure Mathematics, University of Leeds, Leeds LS2 9JT, England (email: pmt6hgd@gps.leeds.ac.uk).

Douglas Bridges, University of Waikato

* * 1995 * *

May 29-June 1 (Brunei Darussalam) **International Conference on Mathematical Modelling (Physical, Biological, Engineering and Social Systems)**
Contact the Organising Secretary, International Conference on Mathematical Modelling 1995, Department of Mathematics, Universiti Brunei Darussalam, Gadong 3186, Brunei Darussalam.

June 19- 23 (Singapore) **23rd Conference on Stochastic Processes and their Applications**
Contact Louis Chen, Department of Mathematics, National University of Singapore, Lower Kent Ridge Road, Singapore 0511, Republic of Singapore.
e-mail: matspa95@leonis.nus.sg

July 3-7 (Hobart) **39th Annual Meeting of the Australian Mathematical Society**
Contact Dr Barry Gardner, Department of Mathematics, University of Tasmania, Box 252C, GPO, Hobart, Tasmania 7001, Australia.
e-mail: gardner@hilbert.maths.utas.edu.au

July 3-7 (Melbourne) **CTAC95 - 7th Biennial Computational Techniques and Applications Conference** Contact Associate Professor Alan Easton, Department of Mathematics, Swinburne University of Technology, Hawthorn, Victoria 3122, Australia.
e-mail: ctac95@swin.edu.au
(Note that the dates for this conference have been changed from those announced in the previous Newsletter)

July 8-10 (Hobart) **Mathematica in Mathematics Research and Education**
Contact D Fearnley-Sander, Department of Mathematics, University of Tasmania, Hobart, Tasmania 7001, Australia.
e-mail: mathematica_conference@hilbert.maths.utas.edu.au

July 10-14 (Geelong, Victoria) **21st Australasian Conference on Combinatorial Mathematics and Combinatorial Computing**
Contact Dr Kevin McAvaney, School of Computing and Mathematics, Deakin University, Geelong, Victoria 3217, Australia.
e-mail: kevin@deakin.edu.au

August 27-31 (Auckland) **NZAMT 4: Conference of the New Zealand Association of Mathematics Teachers**
Contact Jill Ellis, Department of Mathematics, The University of Auckland, Private Bag 92019, Auckland, Phone (09)3737599 x8605. Fax (09)3737457.

August 28-September 1 (Dunedin) **The A C Aitken Centenary Conference (incorporating the 3rd Pacific Statistical Congress, the 1995 New Zealand Mathematics Colloquium and the Annual Meeting of the New Zealand Statistical Association)**
Contact the Aitken Conference Secretary, Department of Mathematics and Statistics, University of Otago, P O Box 56, Dunedin, New Zealand.
e-mail: casm@maths.otago.ac.nz

September 13-20 (Mussomeli, Sicily) **Truth in Mathematics**
Contact Professor H G Dales, School of Pure Mathematics, University of Leeds, Leeds LS2 9JT, England.
e-mail: pmt6hgd@gps.leeds.ac.uk

November 19-22 (Bahrain) **International Conference on Pure and Applied Mathematics**
Contact Professor A Q M Khaliq, Conference Secretary - ICPAM95, Department of Mathematics, University of Bahrain, P O Box 32038, Isa Town, Bahrain.
e-mail: ICPAM95@isa.cc.uob.bh

November 27-December 1 (Perth) **1995 IEEE International Conference on Neural Networks**
Contact ICNN '95 Conference Management, Centre for Intelligent Information Processing Systems, University of Western Australia, Nedlands, WA 6009, Australia.
e-mail: icnn95@ee.uwa.edu.au or icnn95-request@ee.uwa.edu.au

November 29-December 1 (Perth) **1995 IEEE International Conference on Evolutionary Computing**
Contact ICEC'95 Conference Management, Centre for Intelligent Information Processing Systems, University of Western Australia, Nedlands, WA 6009, Australia.
e-mail: ec95@ee.uwa.edu.au or ec95-request@ee.uwa.edu.au

December 4-6 (Cairns, Queensland) **6th Annual International Symposium on Algorithms and Computation (ISAAC95)**
Contact Dr Bob Cohen, Department of Computer Science, University of Newcastle, Callaghan, NSW 2308, Australia
e-mail: isaac95@cs.newcastle.edu.au

December 18-21 (Singapore) **1st Asian Technology Conference in Mathematics**
Contact Dr Fong Ho Kheong, Chair, ATCM 95 Organising Committee, C/- Nanyang Technological University, National Institute of Education, 469 Bukit Timah Road, Singapore 1025.
e-mail: fonghk@nievax.nie.ac.sg

*** * 1996 * ***

February 4 - 8 (Masterton, New Zealand) **32nd Australian Applied Mathematics Conference (AMC 96, also referred to as ANZIAM 96)**
Contact Professor Graeme Wake, Department of Mathematics, Massey University, Private Bag 11222, Palmerston North, New Zealand
e-mail: G.Wake@massey.ac.nz

July 8 - 12 (Sydney) **Sydney International Statistical Congress**
[Comprising: 13th Australian Statistical Conference, July 8 - 12
Computer Science and Statistics: 28th Symposium on the Interface (July 8 - 10)
IMS Special Topics Meeting on Contemporary Nonparametrics (July 10-12)]

Contact Director, SISC-96, CSIRO Division of Mathematics and Statistics, Locked Bag 17, North Ryde, New South Wales 2113, Australia.
e-mail: sydney96@syd.dms.csiro.au

July 15 - 19 (Graz, Austria) **Seventh International Conference on Fibonacci Numbers and their Applications**
Contact John Turner, Department of Mathematics and Statistics, University of Waikato, Private Bag 3105, Hamilton, New Zealand.

Mike Carter, Massey University

NEW ZEALAND MATHEMATICAL SOCIETY (INC)
MATHEMATICAL VISITORS TO NEW ZEALAND

List No. 40: 1 March 1995

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.

##########

Afzal Ahmed; Chichester Institute of Higher Education; accompanied by Honor Williams (see below); maths education; 18 March to 3 April 1995; University of Otago; Prof Derek Holton; supported by British Council.

Professor Roger Alexander; Iowa State University; numerical analysis; 1 February to 30 June 1995; University of Auckland; Prof John Butcher.

Dr Graham Baird; Western Australia School of Mines, Kalgoorlie; not accompanied; vibrations caused by explosive sources; 1 February to 30 May 1995; University of Auckland; Prof David Gauld.

Professor Jim Berger; Purdue University; accompanied by wife (Ann); bayesian statistics; July 16 to August 16 1995; University of Canterbury; Prof. J J Deely; Erskine Fellow.

Professor David Borwein; University of Western Ontario; accompanied; sequence spaces; 13 to 20 June 1995; University of Auckland; Dr Warren Moors and Dr Garnesh Dixit.

Professor Len Bos; Calgary, Canada; approximation theory; 1 July 1995 to 31 October 1995; University of Auckland; Dr Norman Levenberg.

Professor P. Cholak; University of Notre Dame; logic; February 1995, 3 weeks, possibly 3 months; Victoria University of Wellington; Prof. Rod Downey.

Ubiratan D'Ambrosio; Brazil; Ethno-mathematics; 25 to 29 June 1995; University of Auckland; Mr Bill Barton.

Professor Ralph L Disney; Texas A&M University; accompanied by wife (Lois); Applied Probability; January to February 1995; Massey University; Prof Jeff Hunter; March to April 1995; University of Canterbury; Dr Don McNickle; Erskine Fellow.

John Fauvel; Open University, UK; History of Mathematics; 18 to 29 June 1995; University of Auckland; Mr Bill Barton and Mr Garry Tee.

Dr Sergey Federov; St Petersburg University; functional analysis; February 1994 to February 1996; Auckland University; Prof B Pavlov.

Mike Fellows; University of Victoria, British Columbia; theoretical computer science, combinatorics, mathematical education; July 1995 for about ten days; Victoria University of Wellington; Prof. R. Downey.

Dr Jim Filliben, Senior statistician, US National Institute of Standards & Technology; statistical package DATAPLOT; August 1995; Applied Mathematics Group, Institute of Industrial Research, P.O. Box 31-310, Lower Hutt; Dr Kit Withers (email: c.withers@irl.cri.nz)

Professor Kent Fuller; accompanied by wife; University of Hawai'i at Manoa; rings and modules; 27 January to 19 March 1995; University of Otago; Dr John Clark; William Evans Visiting Fellow.

Prof Charles ('Chuck') Gates; Texas A&M University; accompanied by wife; applied statistics and biometrics; July to October 1995; Massey University; Jeff Hunter.

Dr K Govindaraju; Bharatheiar University, India; unaccompanied; statistical quality control; July to October 1995; Massey University; Professor Jeff Hunter; probable.

Professor Peter Graves-Morris; Bradford University ;accompanied; approximation theory; March to April 1995; University of Canterbury; Dr Ian Coope; Erskine Fellow.

Dr Jim Hartman; The College of Wooster, Ohio, USA; applied statistics; May 1995 to May 1996; University of Otago; Prof. Bryan Manly.

Professor Jan Jaworowski; Indiana University; accompanied by Wanda and Eva; topology; December 1994 to June 1995; Auckland University; Prof. David Gauld.

Professor J. Bert Keats; Arizona State University; unaccompanied; statistics; May 9 to June 16 1995; University of Canterbury; Professor J Deely.

Professor Jerry King, Lehigh University USA; complex variables, philosophy of mathematics; 24 January to 31 March 1995; Waikato University; Prof. D Bridges; author of "The Art of Mathematics".

Clifford Konold; University of Massachusetts, USA; 17 to 28 April 1995; University of Auckland; Ms Maxine Pfannkuch.

Colette Laborde; Grenoble University; Cabri geometry; 30 April to 6 May 1995; University of Auckland; Mr Bill Barton.

Dr Vadim Kuznetsov; St.Petersburg University (currently at Amsterdam University); unaccompanied; integrable systems, special functions quantum algebras; February 18 to March 15 1995; University of Waikato; Professor E.G. Kalnins.

Jan de Lange; Freudenthal Institute, Netherlands; secondary curriculum; 26 August to 16 September 1995; University of Auckland; Mr Bill Barton.

Professor Douglas Lawson; Laurentian University, Ontario, Canada; accompanied; numerical analysis, university administration; 17 March to 13 May 1995; University of Auckland; Prof John Butcher.

Professor Curt Lindner; Auburn University; steiner triple systems; 3 April to 14 April 1995; University of Canterbury; Dr Derrick Breach.

Dr Marti McCracken; Universidad De Concepcion, Chile; statistics; 1 July to 31 December 1995; University of Otago; Prof Bryan Manly.

Dr Ann Mitchell; Imperial College; unaccompanied; Statistical Inference; July to October 1995; Massey University; Professor Jeff Hunter.

Dr Garry Newsam; Defence Science and Technology Organisation, Salisbury, South Australia and Research Centre for Sensor Signal and Information Processing; accompanied by wife; radial basis functions and applications to image processing; September 1995 (?); University of Canterbury; Dr R K Beatson.

Professor Wolfgang Polasek; University of Basle; accompanied by wife and two children; statistics; July 10 to August 18 1995; University of Canterbury; Professor J Deely.

Professor Fred Richman; Florida Atlantic University; accompanied by his wife (Sue); constructive mathematics, foundations of mathematics, infinite abelian groups; April 27-June 11 1995 (tentative); University of Waikato; Professor Douglas Bridges.

Professor Chris Rodger; Auburn University, Alabama; accompanied by wife and two daughters; combinatorics, steiner systems, graph theory, coding theory; 5 May to 17 June 1995; University of Canterbury; Dr Derrick Breach; Erskine Fellow.

Professor Robert Russell; Burnaby, Canada; applied mathematics; 1 September 1995 to 30 August 1996; University of Auckland; Dr Vivien Kirk.

Michelle Selinger; Centre for Maths Education; teacher education; 24 to 29 April 1995; University of Auckland; Ms Jill Ellis

Christine Shiu; Open University UK; Year one maths courses; 17 July to 6 September 1995; University of Auckland; Mr Bill Barton.

Professor Dan Tandberg; Department of Emergency Medicine, University of New Mexico, Albuquerque; accompanied by wife (Nancy) and two children; medical statistics; January to June 1995; University of Canterbury; Professor J J Deely.

Margaret Taplin; University of Tasmania; problem solving; 16 to 21 March 1995; University of Auckland; Mr Bill Barton.

Professor Ioan Tomescu; Bucharest University, Romania; unaccompanied; combinatorics, graph theory; February to June 1995; Department of Computer Science, University of Auckland; Professor Cris Calude; very likely.

Honor Williams; Chichester Institute of Higher Education accompanied by Afzal Ahmed (see above); maths education, 18 March to 3 April 1995, University of Otago; Professor Derek Holton; supported by British Council.

Professor R Wisbauer; University of Dusseldorf; module theory, 18 February to 31 March 1995; University of Otago; Dr John Clark.

Professor Shen Yu; University of Western Ontario, Canada; unaccompanied (?); formal language theory, cellular automata; February to June 1995; Department of Computer Science, University of Auckland; Professor Cris Calude; very likely.

Dr Yang Yue; National University of Singapore; recursion theory; July 1995 for two weeks; Victoria University of Wellington; Professor Rod Downey; probable.

Professor Lawrence Zalcman; Bar Ilan University, Israel; accompanied by wife; complex analysis; 5 March 1995 to 12 March 1996; University of Auckland; Dr Joel Schiff.

Professor Tudor Zamfirescu; University of Dortmund, Germany; accompanied; convex geometry; 1 February to 30 June 1995; University of Auckland; Prof Ivan Reilly.

Professor Zelmanov; University of Chicago; not accompanied; algebra; 1 to 10 July 1995; University of Auckland; Professor Marsden Conder and Dr Arcadi Slinko; Foundation Visitor.

Please note: Production of these lists is dependent on me 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 and Statistics,Private Bag 4800
University of Canterbury,Christchurch, New Zealand
email: d.robinson@math.canterbury.ac.nz, fax: (03) 364 2587

NOTICES

NOTICE OF ANNUAL GENERAL MEETING

The Annual General Meeting of the New Zealand Mathematical Society will be held on Tuesday 29 August 1995, beginning at 5.00pm, at the 1995 N.Z. Mathematics Colloquium held in conjunction with the A.C. Aitken Centenary Conference at the University of Otago in Dunedin.

Items for the Agenda should be forwarded to the NZMS Secretary, Dr Margaret Morton, Department of Mathematics, University of Auckland, Private Bag 92019, Auckland (Fax (09) 373-7457 or e-mail "nzms@mat.auckland.ac.nz").

CALL FOR NOMINATIONS FOR NZMS COUNCIL POSITIONS

The terms of office of two Council members (Robert Chan and Mike Hendy) come to an end in 1995, and nominations are called for the resulting vacancies. The term of office of a Council member is three years. Members may hold office for two (but no more than two) consecutive terms. Nominations should be signed by two proposers and the nominee, all of whom should be current members of the NZ Mathematical Society. Please forward nominations to the NZMS Secretary, Dr Margaret Morton, Department of Mathematics, University of Auckland, Private Bag 92019, Auckland (Fax (09) 373-7457), by 1st August 1995.

FORDER LECTURESHIP

The Forder Lectureship was established in 1985 following a bequest to the London Mathematical Society from the late Professor Henry George Forder (Professor of Mathematics at the University of Auckland 1934-55). Under the terms of the Lectureship, every two years a prominent UK mathematician is selected (by the London Mathematical Society in consultation with the NZMS Council) to tour New Zealand for a period of three to four weeks and to give lectures in most NZ universities.

The first Forder Lecturer was Professor Christopher Zeeman in 1987, and was followed by Professor Sir Michael Atiyah in 1989, Professor Peter Whittle in 1991, and Professor Roger Penrose in 1993.

The Forder Lecturer for 1995 will be Professor Elmer Rees, of the University of Edinburgh. Professor Rees is the current holder of the Chair held by Alexander Craig Aitken, the centenary of whose birth in New Zealand is being celebrated in 1995. Further details of the visit by Professor Rees are available from Professor Douglas Bridges (University of Waikato), email: douglas@waikato.ac.nz. The NZMS is grateful to the British Council and to the London Mathematical Society for supporting this visit.

NZMS VISITING LECTURESHIP

The NZMS Council requests nominations for the 1996 NZMS Visiting Lectureship (see the item in the November 1994 issue of this Newsletter). 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 1995.

NZMS STUDENT PRIZE

The NZMS Council has decided to establish an annual prize for the best talk or paper presented by a student at the NZ Mathematics Colloquium.

This prize will be known as the Aitken Prize, in honour of the New Zealand born mathematician Alexander Craig Aitken, and will be offered for the first time at the Colloquium held in conjunction with the A.C. Aitken Centenary Conference at the University of Otago during the week 28 August to 1 September 1995.

The prize will consist of a cheque for NZ$250, accompanied by a certificate.

Entrants for the prize must be enrolled (or have been enrolled) for a degree in Mathematics at a university or other tertiary institution in New Zealand in the year of the award. They should give a talk or present a paper on a topic in any branch of the mathematical sciences, during the Colloquium.

A judging panel will be appointed by the NZMS Council, and make recommendations to the NZMS President and Vice-President for the award. Normally the prize will be awarded to one person, but in exceptional circumstances the prize may be shared, or no prize may be awarded.

Entrants should clearly indicate their willingness to be considered for the award when they register their intention to contribute a paper at the Colloquium. For the 1995 Colloquium, they should also indicate this by writing to the NZMS Secretary, Dr Margaret Morton (C/- Department of Mathematics, University of Auckland, Private Bag 92019, Auckland), Fax (09) 373-7457 or e-mail "nzms@mat.auckland.ac.nz", by 1 August 1995.

APPLICATIONS FOR NZMS FINANCIAL ASSISTANCE

The NZMS Council invites applications for financial assistance, in particular for grants from its Student Travel Fund, Research Fund, and South Pacific Fund.

Students who wish to apply for financial assistance to attend the NZ Mathematics Colloquium should contact the organisers of the Colloquium, who have been empowered to distribute funds on behalf of the NZMS. Students who wish to attend other conferences should apply to the NZMS Council using the form which is printed in this issue of the NZMS Newsletter (pp37-38).

Ordinary members of the NZMS may apply for financial assistance with the costs of hosting mathematical visitors, organising conferences or workshops, attending conferences, and any other mathematical research-related activity. They too should apply to the NZMS Council using this form.

A relatively high priority will be given to applications involving contact between the mathematical communities of New Zealand and the islands of the South Pacific. The Council normally considers applications at its meetings in May and November each year, but applications may be considered at other times in exceptional circumstances. Completed application forms should be sent to the NZMS Secretary, Dr Margaret Morton, Department of Mathematics, University of Auckland, Private Bag 92019, Auckland.

20TH AUSTRALASIAN CONFERENCE ON COMBINATORIAL MATHEMATICS AND COMBINATORIAL COMPUTING

Auckland, New Zealand, 5-9 December 1994

This conference was held in gloriously fine weather on the City Campus of the University of Auckland. The conference talks covered a wide range of areas in combinatorics and computing. Eight invited speakers, including Fields Medal winner and avid windsurfer Vaughan Jones, each gave one-hour presentations. In addition there were 49 contributed 20-minute talks, packed into two streams. The following is the complete list of invited talks, presented in speaking order:

Cheryl Praeger, University of Western Australia, "Block-transitive designs"
Paul Bonnington, University of Auckland, "Growth and Separation in Graphs"
Neal Brand, University of North Texas, "Pseudo--Random Graphs"
Alex Rosa, McMaster University, Canada, "Orthogonal Resolutions of Triple Systems"
Brendan McKay, Australian National University, "Some advances in computational design theory"
Vaughan Jones, University of California (Berkeley), "A subfactor approach to combinatorics"
Ralph Stanton, University of Manitoba, "Classic Packings and Exact Packings"
Charles Colbourn, University of Waterloo, Canada, "Transversal designs with higher index"

The main conference excursion was a boat trip to nearby Rangitoto and Motuihe islands in the Hauraki Gulf. Other social events included a welcoming reception, a conference banquet, and a survivors' party attended by a large proportion of hardy individuals.

The conference was notable for its friendly atmosphere and the high quality of the presentations. The Director acknowledges the support of the sponsors which included the New Zealand Mathematical Society. He also thanks fellow members of the organising committee, Paul Bonnington, Marston Conder, Brent Everitt, Paul Hafner, Peter Lorimer, Margaret Morton, and John Pearson, for their initiative and effort in ensuring the smooth running of the conference.

Peter Gibbons, Director, 20th ACCMCC

Grantee Report

On behalf of the NZ Mathematical Olympiad Committee I wish to thank the New Zealand Mathematical Society most sincerely for the grant of $500 towards the expenses of the team to the 35th IMO. This is greatly appreciated by all members of the Committee and of the team. A short report follows:

New Zealand was represented at the 35th IMO in Hong Kong by Derek Holton (Team Leader), Arkadii Slinko (Deputy Team Leader), John Hannah (Manager/Observer), Kirk Alexander, James McGowan, Timothy McLennan, Brendan Riley, Kevin Ross and Peter Sedcole (Team Members). From our point of view it was a very successful Olympiad. Indeed I think that we can say without contradiction, that it was our most successful Olympiad to date. We won four Bronze Medals and gained an Honourable Mention. The only member of the team who went home empty handed gained a double figure score and was awarded marks on every question. This effort gave us a grand total of 116 points and put us 29th equal out of 69 teams.

From the point of view of numbers of medals, total score and position on the international table, this was by far our best Olympiad of the seven in which we have participated. Below are the team scores.

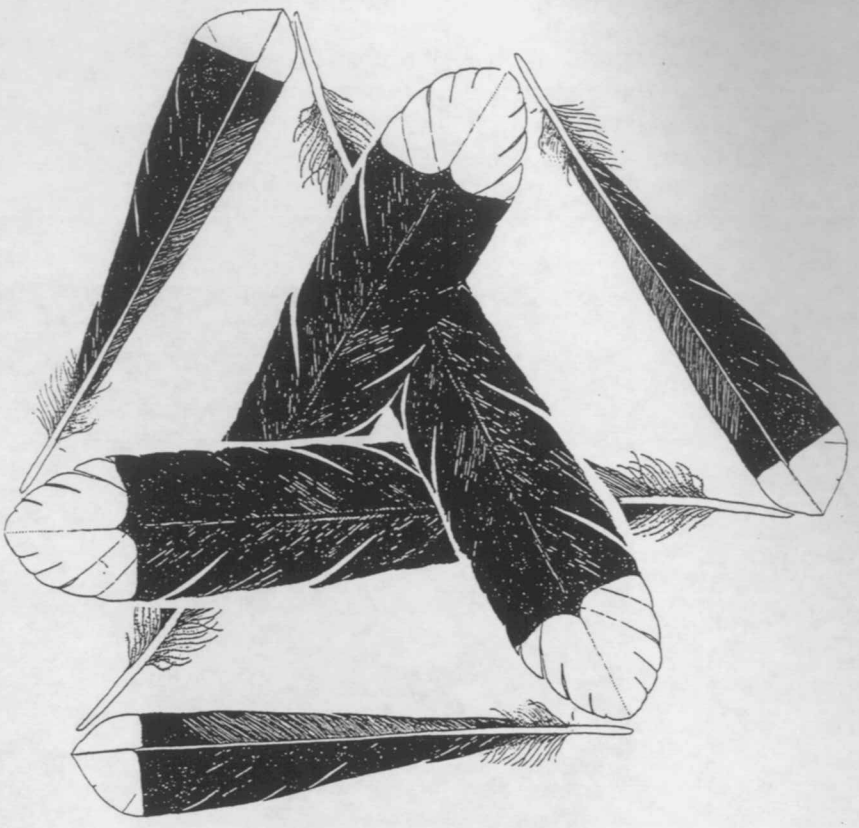
	Q1	Q2	Q3	Q4	Q5	Q6	Total	Award	
Kirk Alexander	0	7	6	7	5	0	25	Bronze	Ashburton College
James McGowan	1	7	7	3	2	2	22	Bronze	Burnside High School
Tim McLennan	3	0	7	1	2	0	13	Hon. mention	Riccarton High
Brendan Riley	5	7	4	2	0	5	23	Bronze	Avondale College
Kevin Ross	1	2	4	2	2	3	14		Burnside High School
Peter Sedcole	7	0	7	2	3	0	19	Bronze	St Andrews College

It has to be admitted that this year's questions were easier than last year's. This becomes obvious when you realise that last year a Bronze was awarded for 11 marks, while this year it took 19 (so Peter just squeaked in). However, the questions were the same for all students and it is clear that, relatively, the team did exceptionally well.

Gordon Hookings

HUIA KNOTS AND NODES

The Department of Mathematics of the University of Auckland held a Mathematical Workshop at the Kiwanis Huia Camp, from 1994 December 10th to 20th 1994. The larger section consisted of Knots@Huia, organized by Professor David Gauld, with Professor Vaughan Jones as the chief stirrer for the brainstorming sessions on Knot Theory. The smaller section Nodes@Huia, on Numerical methods for Ordinary Differential Equations, was organized by Professor John Butcher.



Vaughan Jones is based at Berkeley, and as Alumni Distinguished Professor of the University of Auckland he spends some time here each year. The following mathematicians also attended: Nathan Habegger (the Universite de Nantes), Rob Kirby and Ted Stanford (the University of California at Berkeley), Jim Hoste (Pitzer College, Claremont, California), Cameron Gordon (the University of Texas at Austin), Keith Worsley (McGill University Statistics Department, formerly a fellow-student here with Vaughan), Walter Neumann, Jane Paterson and Hyam Rubinstein (the University of Melbourne), Chris Atkin and Vladimir Pestov (VUW), John Hudson (Massey University), Andrew Macfarlane (Unitech) and Rod Ball (HortResearch). A number of local staff and graduate students also attended

For the Nodes sessions, Irene Pestov and Mark McGuinness came from VUW, Roger Alexander (on leave in Auckland) came from Iowa State College, Robert McLachlan came from Massey University, and Claus Bendtsen came from Universite de Geneve. Several members of our Department of Mathematics attended. Some delegates had partners and children who stayed at the Camp with them.

The Kiwanis Huia Camp, at Huia Bay inside the northern headland to Manukau Harbour, provides cabin accommodation for up to 50 people. On each of the 10 nights, between 20 and 40 people stayed overnight; and on each

day several local people attended without staying overnight.

A few semi-formal lectures were delivered each day, with much informal discussion. Vaughan Jones (the Temperley-Lieb algebra), Cameron Gordon (surgery), Nathan Habegger (topological quantum field theory) and Rob Kirby (4-manifolds) each gave a series of lectures covering recent research. Rob also gave an outline of some very recent work on gauge theory. There were also shorter talks to do with knots and related topics by the other overseas visitors. John Butcher told of his recent work on numerical methods for ordinary differential equations. Robert McLachlan told of some remarkable advances (by himself and others) in extremely stable computation of long-term solution of differential equations of Hamiltonian form, e.g. in computing the motions of the planets over billions(!) of years.

For relaxation, people went walking in the Waitakere Ranges and the surrounding coastline, wind-surfing on Manukau Harbour, or swimming at Whatipu. Louise Gauld coped admirably with the cooking (with occasional assistance from others). In particular, she baked a loaf in the form of the Conway knot 6_2, which was ceremonially eaten by the participants. Inspired by that event, many of the delegates arranged themselves into a tableau of a Conway knot (which has trivial Alexander polynomial but non-trivial Jones polynomial), lying on the brick courtyard. Professor Gaven Martin and his wife Dianne provided a barbecue evening at their home in Titirangi, and a more formal dinner was held at Lopdell's in Titirangi.

The camp was funded in such a way that the delegates were not charged anything.

At that time a virulent virus was rampant in the Auckland region, and many of those attending the camp suffered its effects. Despite that, most people regarded the camp as a success, and welcomed the prospect of another such camp in a year's time.

Garry Tee

MATHEMATICS WORKSHOP AT TOLAGA BAY

Earlier in this issue you will be able to read about the successful workshop held at Huia from 10 to 20 December, 1994. This workshop was proposed by Vaughan Jones as a way of contributing to New Zealand mathematics and I think that all who attended would agree that it succeeded in doing so very well. It was also very enjoyable in many other ways, a point which Vaughan considered to be of importance when choosing the site and programme for the workshop.

There are two further significant points to be made about the workshop: it is intended for all members of the New Zealand mathematical community; it is intended to be an annual event.

Regarding the first of these, we were pleased to welcome mathematicians from Massey and Victoria Universities at Huia but we would like others to think that they are most welcome too. To help this the topics will cycle around mathematics, giving participants the opportunity to find out what is going on in a range of fields. We will also try to organise to hold the workshop in an attractive place so that participants will feel happy to bring along their families for a pleasant summer holiday. While the initial impetus for holding the workshops was the mathematics, the programme is planned so that mathematicians can spend time with the non-mathematical members of their families.

As for the second, the next workshop is to be held approximately from 5 to 13 January, 1996 at Tolaga Bay. Tolaga Bay is a pretty bay about 50 km north of Gisborne. Vaughan visited it early this year and made contact with enthusiastic locals who are now organising the accommodation and other matters for us.

So chalk up that time to have a combined pleasant holiday with some interesting mathematics in a beautiful part of New Zealand. More details will be made available to Mathematics Departments as well as through the Newsletter as they come to hand.

David Gauld.

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Preliminary enquiries of an academic nature, regarding this position may be made to Dr P F Renaud, Head, Department of Mathematics and Statistics: Telephone (03) 3642696 or Fax (03) 3642587, email: p.renaud@math.canterbury.

Applications close on 31 May 1995. The salary for Lecturers is on a scale from $40,000 to $50,000 pa.

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Further particulars and Conditions of Appointment may be obtained from the undersigned. Applications should be addressed to:

Mr A W Hayward, Registrar, University of Canterbury, Private Bag 4800, Christchurch, NZ.

Palmerston North

Tutor/Senior Tutor
Department of Mathematics/Certech Learning Centre (Joint Position)
Massey University

Applications are invited for the position of Tutor/Senior Tutor in Mathematics jointly in the Certech Learning Support Centre and the Department of Mathematics. The University is endeavouring to increase its effort in teaching courses at the secondary-tertiary interface and the increasing need of students in the service areas is to be met by the provision of foundation courses and tutorial support of established courses. Scope is available for the development of further custom-built courses in specific areas of mathematics and its applications.

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Enquiries of an academic nature can be made to either Professor Wake, Head of Mathematics Department, tel (06) 350-5081, e-mail G.Wake@massey.ac.nz or Mr Malcolm Bowling, Coordinator of Certech, tel (06) 350-5011, e-mail M.Bowling @massey.ac.nz.

Applications enclosing a full curriculum vitae and the names of three referees with their fax numbers should be received by the closing date of 21 April 1995 by Mrs V B Bretherton, Academic Appointments Officer, Human Resources Section, Massey University, Private Bag 11-222, Palmerston North. Reference No NZMS/95 should be quoted.

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THE NEW ZEALAND MATHEMATICAL SOCIETY (INC.)

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Type of assistance sought	Amount
(a) Student Travel Grant	.....
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Please list any supporting documents or other evidence (attached to your application):

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Supporting statement from supervisor or Head of Department (for student applicants only):

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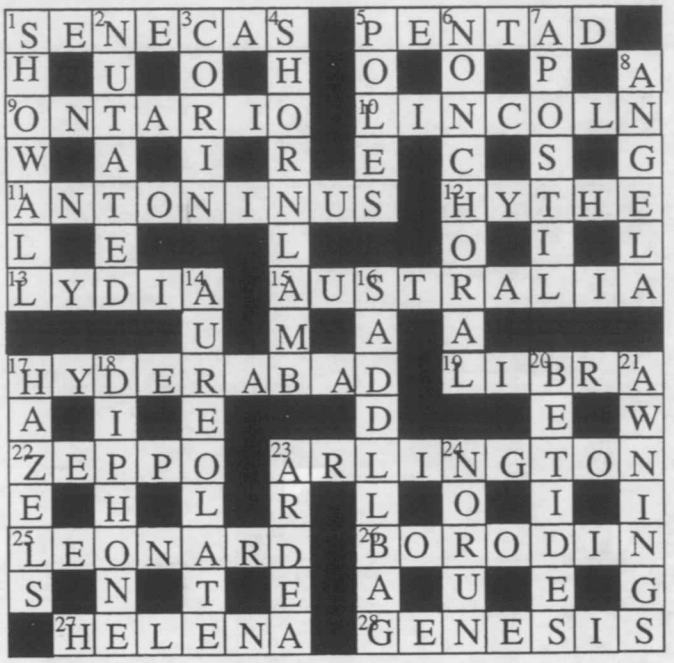
Please send this application (and any supporting documents or other evidence) to:

Dr Margaret Morton, Secretary, N.Z. Mathematical Society,
Department of Mathematics, University of Auckland, Private Bag 92019, Auckland

The NZMS Council normally considers these applications at its meetings in May and November each year, but applications may be considered at other times in exceptional circumstances.

Crossword No 44 FIVE ACROSS by Matt Varnish



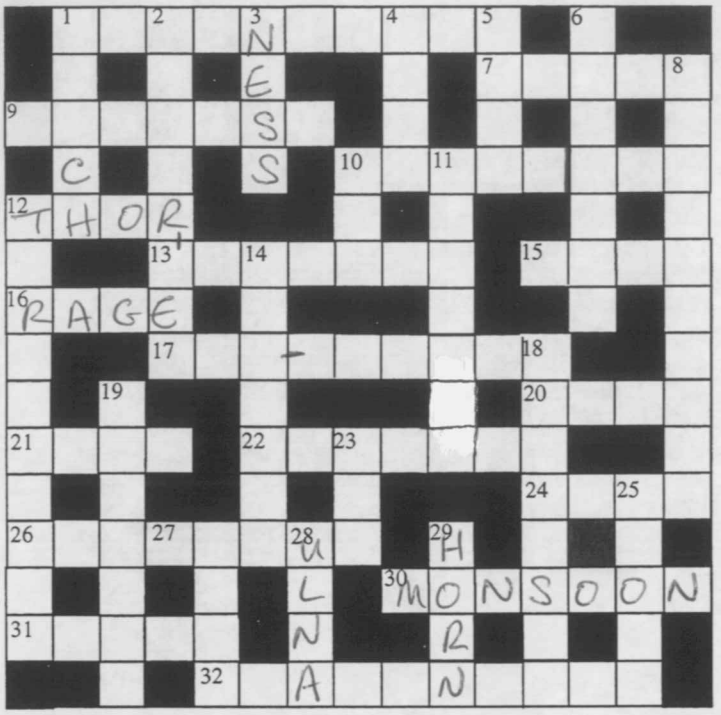
Across

1. Cayugas, Oneidas, Onondagas, Mohawks (7)
5. Classically apt end for title (6)
9. Erie, Huron, Michigan, Superior (7)
10. Nottingham, Leicester, Derby, Stamford (7)
11. Nerva, Trajan, Hadrian, Marcus Aurelius (9)
12. Dover, Sandwich, Hastings, Romney (5)
13. Elizabeth, Jane, Kitty, Mary (5)
15. India, South Africa, Canada, The Old Country (9)
17. Kashmir, Mysore, Gwalior, Baroda (9)
19. Semi-as, as, denarius, solidus (5)
22. Chico, Groucho, Harpo, Gummo (5)
23. Clifford, Ashley, Buckingham, Lauderdale (9)
25. Julius, Arthur, Herbert, Milton (7)
26. Balakirev, Cui, Borodin, Mussorsky, Rimsky-Korsakov (7)
27. Victoria, Alice, Louise, Beatrice (6)
28. Exodus, Leviticus, Numbers, Deuteronomy (7)

Down

1. Shall hold painful response to hide nothing (4, 3)
2. One of 17 an Edward nodded in precession (7)
3. Modified Quirinus (before a red grave?) (5)
4. Barbered offspring proverbially with tuning wind (5, 4)
5. Measures clichéd apart (5)
6. Unsing epithet of Beethoven's first eight (3-6)
7. As pilot made marginal note (7)
8. She, heavenly creature, finally alters a traditional vertex (6)
14. Haloed gold about nothing dead (9)
16. Sad sack about misled storage on horseback (6, 5)
17. The girl is nuts (6)
18. Shorthand sign to get hip done (7)
20. Happens to be conspirator's tip in 44 BC? (7)
21. Without right warnings give shade makers (7)
23. After a road east a heron and bittern (5)
24. Broadway flop? Does not count at cricket (2, 3)

Crossword N° 45 CROSS BLOWS by Matt Varnish



Across

1. Sprinter or in a violent bluster (10)
7. Articles about turn shirt in French blow (5)
9. A prosperous storm? (7)
10. Achieve a tan as an aerial Californian saint (5,3)
12. Fulminating god from North without head (4)
13. First person leaves judicial failure with the wind up? (7)
15. Beginnings of an expression really of the atmosphere (4)
16. Throw gear into a fury or storm (4)
17. Wind makes terse and worn (3-6)
20. The attribute in part associated with many across (4)
21. Hot dry European blower soundly furnished by a plant (4)
22. Officer's address to back to back companies is a lot of hot air (7)
24. Under no conditions to include the dreadful doorpost (4)
26. Greeting in kind before American daddy of them all (8)
30. No moons blown away by this (7)
31. Seven deadly swamp down rinses with liquor Northern style (5)
32. Does it make Mona natter as it blows? (10)

Down

1. Bird at church to belch filthy fumes (5)
2. Do they deliver the edition that they work on? (5-3)
3. Head the end of all windiness (4)
4. Thanks cheer property not "Gone With the Wind" for Scarlett? (4)
5. Sped to the joint to behave like 16. (4)
6. Cooking vessel (that goes without the wind) could go after Stanley (6)
8. Ice-cream used on Palatine? (10)
10. Respectful start to 17 (3)
11. Badly weathered tin coil found on the riverbank (7)
12. Triple doom for the feaster with Greek trio (10)
14. Foreign way holy man takes direction about 23 (7)
18. Former part of Africa confused Herodias (8)
19. The musician's shoes (7)
23. Prince of the gods? (3)
25. Hone in on the river in France (5)
27. Eject unaspirated direction blown about (4)
28. Luna funny bone (4)
29. Wind through it for sound; through the winds around it (4)