THE NEW ZEALAND
MATHEMATICAL SOCIETY (INC.)

NEWSLETTER

CONTENTS

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

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

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

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Dr Mark McGuinness (Victoria University), to 1996

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Garry Tee Mathematics (University of Auckland)

EDITORIAL

On Sabbatical

As this newsletter is being composed, I am in the middle of a four month sabbatical leave in Germany. It is with tongue in cheek that I claim editorship of the newsletter as most of the composition is done (as usual) with great efficiency by our departmental secretary Gail Tyson, who receives most of the material by e-mail from our

contributors.

I am here at the University of Bielefeld as guest of Professor Andreas Dress, who many of you will have met during his 1993 NZMS visiting lectureship. The mathematics department here has an enthusiastic attitude for research and provides a stimulating atmosphere for collaboration. Having not previously taken such a period of sabbatical leave (for logistic and financial reasons) I would now recommend it for any serious researcher. The exposure to different ideas, knowledge and mathematical culture is a valuable adjunct to the development of new mathematics. And by far the most important, is finding that goodwill and hospitality is universal!

It is also educational to have exposure to a different society, to experience the frustrations of not having a good command of the language, to get a sense of history, and for those of us of a European heritage, to sense a personal connection to events of many centuries past. We have enjoyed a little touring, we made a pilgrimage to Göttingen, the self proclaimed "Navel of the Mathematical world", with its statue of Gauss and Weber in mathematical discussion. We have also retraced the footsteps of the children of Hamelin in their pursuit of the Pied Piper!

There is a romantic appeal among many of the young German people for New Zealand, as an unspoilt paradise. This appeal encourages them to leave their own beautiful country and travel the world as tourists, as students, and as colleagues. I find it disheartening to think that many of the things they see as appealing are either fading or illusory. However it is our responsibility to try to preserve as much as possible the positive features of New Zealand that encourage people to spend more than 24 hours confined to an airline seat, and to alleviate our isolation by their contact. It is very much to our own benefit that we can encourage them to visit.

Mike Hendy

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

NZMS NOTICES

NZMS AWARDS FOR MATHEMATICAL RESEARCH

These awards were instituted in 1990 to foster mathematical research in New Zealand and to recognise excellence in research carried out by New Zealand mathematicians.

The NZMS Research Award(s) for 1995 will be announced during the Aitken Centenary Conference in Dunedin at the end of August this year. Other recipients to date have been John Butcher and Rob Goldblatt (1991), Rod Downey and Vernon Squire (1992), Marston Conder (1993), and Gaven Martin (1994).

Call for nominations: 1995/96 round: Applications and nominations are invited for the NZMS Research Award for 1996. This award will be based on mathematical research published in books or recognised journals within the last five calendar years: 1991-95. Candidates must have been residents of New Zealand for the last three years.

Nominations and applications should include the following:

(1) Name and affiliation of candidate

(2) Statement of general area of research

(3) Names of two persons willing to act as referees

(4) A list of books and/or research articles published within the last five calendar years: 1991-95

(5) Two copies of each of the five most significant publications selected from the list in (4)

(6) A clear statement of how much of any joint work is due to the candidate.

A judging panel shall be appointed by the NZMS Council. The judges may call for reports from the nominated referees and/or obtain whatever additional referee reports they feel necessary. The judges may recommend one or more persons for the award, or that no award be made. No person shall receive the award more than once. The award consists of a certificate including an appropriate citation of the awardee's work, and will be presented (if at all possible) around the time of the AGM of the Society in 1996.

All nominations (which should include also the written consent of the candidate) and applications should be sent to the NZMS Outgoing Vice-President, Marston Conder, Department of Mathematics, University of Auckland, Private Bag 92019, Auckland, by 30 September 1995. Please consider nominating any of your colleagues whose recent research contributions you feel deserve recognition!

MATHEMATICAL SCIENCES SCHOLARSHIPS

We are all aware of the changing face of tertiary education in New Zealand: students are in debt and, while more people are going to university, they are choosing job-targeted subjects such as business and technology. The traditions which we still have in the pure sciences and in the arts will be at risk if the prospect of debt influences a student's choice of degree.

To meet the newly-created demand, many undergraduate scholarships are being set up. Canterbury has been able to raise their target to $10m; other universities now have several individual scholarships, often named after their corporate sponsor. The NZMS has decided on a third way and is seeking to raise an endowment to fund subject-oriented scholarships tenable at any New Zealand university. With the support of the Statistical Association and the (pending) support of the Operational Research Society, the scope has been broadened to the mathematical sciences in general. A successful campaign will attract more students to the subject and enable more of our good students to complete a four-year degree.

A lot of time and paperwork stands in the way, however. A committee has been appointed which will form a charitable trust and eventually call in fundraising consultants. The major problem to be faced is simply getting in touch with, perish the thought, `prospects'. (An even more distasteful term in this business is `the ask'.) Ultimately all New Zealand alumni should be contacted, which will be particulary hard, yet important, for those living overseas. In the U.S., the enthusiastic support of Vaughan Jones and William Pickering has been obtained - more such names will be needed. The NZMS is calling on all its members to support the project: if you have any ideas or comments or experience, or if you've ever played squash with the chairman of Telecom, please contact the committee:

For the NZMS: Douglas Bridges, Waikato

Mark McGuinness, Victoria

Robert McLachlan, Massey

For the NZSA: Charles Lawoko, Massey

LOCAL NEWS

- AgResearch
- University of Auckland
  - School of Mathematical and Information Sciences
  - Department of Computer Science
  - Department of Mathematics
  - Department of Statistics
- University of Canterbury
- HortResearch
- IRL Applied Mathematics
- Massey University
  - Department of Mathematics
  - Department of Statistics
- University of Otago
- Statistics New Zealand
- Victoria University
- University of Waikato

AgResearch

Mick Roberts has returned to Wallaceville after a short overseas trip. He spent two weeks at the Department of Ecology and Evolutionary Biology, Princeton, continuing a joint research project with Andrew Dobson. He then attended and gave a plenary paper at the Fourth International Conference on Mathematical Population Dynamics, Rice University, Houston, before visiting Oxford and Cambridge Universities in the UK, and spending a week working with Hans Heesterbeek at the Agricultural Mathematics Group, Wageningen.

Dave Saville reports:- There are currently five biometricians at the crown research institutes at Lincoln. AgResearch has three, Dave Saville (80% time), David Baird and Lesley Hunt (50%). Crop & Food has one Andrew Wallace. Landcare has one, Jenny Brown. This will change again soon. Jenny is off to the University of Wisconsin at Stevens Point in August, and Landcare are advertising to replace her. Also, Ruth Butler will move from Crop & Food at Levin to join Andrew at Lincoln in December. David Baird is away till mid-July on a Rothamsted (UK) Fellowship, helping to write a Windows interface to Genstat, the statistical computing package most widely used in agricultural

research in "British" countries. Dave Saville and Graham Wood have just finalised a contract with Springer-Verlag for a mini-version of their book on the geometry of statistics; this will be produced in paperback at about (US)$29.95, and should hit the bookshops early next year.

M Roberts

UNIVERSITY OF AUCKLAND

SCHOOL OF MATHEMATICAL & INFORMATION SCIENCES

In April, Ivan Reilly attended the Regional Collaboration in Mathematics Education held at Monash University, sponsored by ICMI. Following that, he visited the 4 tertiary institutions in Melbourne: La Trobe University, Monash University, Royal Melbourne Institute of Technology, and University of Melbourne. In July he visited the Faculty of Mathematics at the University of Waterloo for a week, after which he led the NZ team (of 6 high school students) to the International Mathematical Olympiad in Toronto.

DEPARTMENT OF COMPUTER SCIENCE

Jennifer Lennon went to Vienna, for the oral examination by Hermann Maurer of her thesis on "New Aspects of Hypermedia systems"; and she has now gained her PhD.

Rick Mugridge has gone on leave to California State University at Long Beach; and he has exchanged houses with Dr Slawomir Marian Lodzinski (of the Electrical Engineering Department there), who has come here as a Fulbright Fellow.

SEMINARS

Dr Klaus Hinrichs (Westfalische Wilhelms-Universität), "Plane-sweep algorithms solve proximity problems on sets of convex planar objects elegantly".

Dr Helmut Jurgensen (University of Western Ontario), "The Hierarchy of Codes", Soliton Automata", and "A Theory of Circuit Testing".

Professor Sheng Yu (University of Western Ontario), "Synchronization expressions in ParC (Parallel C)", and "A pumping lemma for deterministic context-free languages".

Professor Tudor Zamfirescu (Dortmund University), "Longest cycles in grid-related graphs".

Professor Ioan Tomescu (University of Bucharest), "Minimum spanning Hypertrees".

Jim Fulton (Network Computing Devices), "Multimedia's evolution towards client-server computing".

Dr Fred Richman (Florida Atlantic University & University of Waikato), "Nontrivial uses of trivial rings".

Professor Clark Thomborson (University of Minnesota)} "Why aren't there more women computer scientists?", "Linearizing the memory hierarchy", and "Finding a good job as a programmer".

Dr Alan Creak (Department of Computer Science), "YAPOOMI: Yet Another Personal Opinion On Machine Intelligence".

Professor Omran Bukhres (Purdue University), "InterBase: an execution environment for heterogeneous software systems".

Dr Richard Lobb (Department of Computer Science), "Smoothing of polyhedra".

Stephen Fenwick (ANU) "Distributed Object Stores and Performance Monitoring".

Gill Dobbie (VUW), "A foundation for deductive object-oriented database systems".

Professor Hubert L. Dreyfus (University of California at Berkeley), "From Socrates to expert systems: The limits and dangers of calculative rationality".

DEPARTMENT OF MATHEMATICS

Ken Ashton has been a Lecturer and then Senior Lecturer here since 1967. He has been an effective lecturer, with research interests in logic and education. In May 1994 he underwent major surgery, and he has been on sick leave since then. Ken had another major operation in March 1995, and in June 1995 he and his wife Annette were able to

make a visit to Tasmania. Ken has now decided to take early retirement, as from 1995 July 31. We have missed his presence during the past year, and we much regret that he will not be working with us again. We all wish Ken a happy and long retirement.

Peter Lorimer continues on sick leave.

Dr Rod Gover (at the University of Adelaide) and Dr Shayne Waldron (at the University of Wisconsin) have been appointed as Lecturers.

Dr Geoff Nicholls has arrived, as Lecturer in the Applied & Computational Mathematics Unit.

Mark Wilson, a graduate of the University of Canterbury who has been appointed as Tutor, has completed his PhD at the University of Wisconsin. Michael Smythe, a graduate of this Department who is now a Tutor, has completed his PhD at the University of Newcastle. Dr Horst Gerlach, who had been a Tutor in the Applied & Computational Mathematics Unit for 5 years, resigned in February in order to return to Germany.

Gaven Martin is on leave for 1995, at ANU, Finland, USA etc. etc.

Norm Levenberg has returned from leave at Indiana State University, and Professor Len Bos (University of Calgary) has come to continue working with him.

John Butcher attended a conference at the University of Arizona, in honour of Bill Gear's 65th birthday. Philip Sharp was at Queen's University (Ontario), for the month of May. Vivien Kirk was at the University of Chicago, in May. Boris Pavlov attended a conference at Brunei in May, and in July he attended some conferences in Europe. Michael Thomas is on leave at Reading University, and Bill Barton is attending a conference at Cairns. Marston Conder took part in a Workshop in Computational Algebra and Set Theory, at Macquarie University in April.

Paul Turner, who was a graduate student here in 1989, has been appointed to a Lectureship at the University of Aberdeen. Paul got his PhD from the University of Manchester, and he works in algebraic topology. Paul is currently at the Max-Planck Institute in Bonn on a von Humboldt fellowship, and he will begin at Aberdeen in January 1996.

VISITORS

Professor J. Douglas Lawson (President of Algoma University College, Ontario), visited the Applied & Computational mathematics Unit for the first term. He delivered the 1995 Aldis Lecture, on "The contributions of F. Wilson to the development of education of indigenous peoples".

Professor Igor Boglaev (formerly at the University of Moscow) is visiting the Computational & Applied Mathematics Unit for 1995. Dr Shangmin Cao, (of Liaocheng Teachers College, Shandong, China) is visiting until the end of September. Professor David Borwein (University of Western Ontario - London) visited for a week, followed 2 weeks later by his son Dr. Jonathan Borwein (Simon Fraser University). Dr John Fauvel (Open University), eminent historian of mathematics, visited in June. Professor Petar Kenderov (Institute of Mathematics, Sofia) is visiting for the second term.

Professor Efim Zelmanov (of Yale University and the University of Chicago), winner of a Fields Medal in 1994 for his solution of the Restricted Burnside Problem in group theory, came for a week as University of Auckland Foundation Visitor and Sir Henry Cooper Fellow. A workshop on "Groups and Lie algebras" was held on July 5th, with the following speakers:

Dr Eamonn O'Brien (ANU), "Minimal presentations for p-groups".

Professor Efim Zelmanov (Chicago/Yale), "Pro p-groups and Lie algebras".

Dr Mike Newman (ANU), "Nilpotent Lie algebras".

Dr Mark Wilson (Auckland), "Lie properties of restricted enveloping algebras".

Dr Ian Hawthorn (Waikato), "Nice results from nasty functions".

Dr Arkadii Slinko (Auckland), "Co-algebraic Lie coalgebras".

SEMINARS

Mark C. Wilson (University of Wisconsin), "Primeness of enveloping algebras".

Dr Margaret Taplin & Dr Jeff James (University of Tasmania), "Mathematics remediation for pre-service teachers".

Professor Jan Jaworowski (Indiana State University), "Antipodal coincidence for maps of spheres into complexes"

Afzal Ahmed & Honor Williams (Chichester Institute of Higher Education), "Can assessment maintain fidelity to the curriculum without exposing teaching quality?".

Dr Graham Baird (Western Australia School of Mines, Kalgoorlie), "Calculus for non-mathematicians: some thoughts".

Professor Colette Laborde (University of Grenoble), "The impact of the computer environment on learning".

Professor Mikhail Shubin, "Semiclassical asymptotics and Morse inequalities", and "Non-commutative 2-torus and Cantor spectra".

Dr Robert Wisbauer (University of Dusseldorf), "Modules over skew group rings", and "Linear topologies and module categories".

Professor Ioan Tomescu (University of Bucharest), "Bonferroni inequalities and negative cycles in large complete signed graphs".

Dr Mike Meylan (University of Otago, joint seminar with Engineering Science), "The motion of flexible structures in waves".

Dr Roger Alexander (University of Iowa), "New tricks for old dogs".

Professor David Borwein (University of Western Ontario - London), "Hardy-type inequali-ties".

Michelle Selinger (Open University), "Keeping in touch: computer communication in a distance-taught initial teacher education course".

Dr John Fauvel (Open University), "Why don't teachers learn the history of mathematics?".

Professor Jonathan Borwein (Simon Fraser University) "Viscosity subderivatives - theory and applications".

Professor Efim Zelmanov (University of Chicago/Yale University). "Solution of the Restricted Burnside Problem".

Dr Emily Stone (Utah State University), "Noise amplification by dynamical systems".

Professor Len Bos (University of Calgary), "The distance between a point and an algebraic hypersurface in C^n".

DEPARTMENT OF STATISTICS

Associate Professor David J. Scott has arrived at Tamaki Campus.

Matt Regan, who had been on sick leave since February, has resumed as Senior Tutor at the Tamaki Campus.

A Director's Award For Teaching Excellence has been founded by Ivan Reilly. At a ceremony on May 30th, he presented the first such Award to the team teaching Stage 1 Statistics. Most of the members of the Department are members of that team, which this year is teaching about 2500 students in the several Stage 1 courses on Statistics.

Ross Ihaka and Robert Gentleman attended a workshop on Design & Implementation of Data Analysis Systems, at Heidelberg in July. Chris Triggs spent 3 months at the University of Seattle, running their Statistical Consulting Service.

Ilze Ziedins attended the Statistic Processes at Massey workshop (SPAM) in February, and the 23rd Conference on Stochastic Processes and their Application and the First INFORMS International Conference, both at Singapore in June. Renate Meyer and Chris Wild attended the joint JMS and Canadian Statistical Society Conference at Montreal, in July.

Siew Choo Soo has completed her PhD with her thesis on "Analysis of correlated categorical data", supervised by Alan Lee and Alastair Scott. She is now a statistician in the Freemasons Geriatric Unit of the School of Medicine.

VISITORS

Recent visitors include Professor Josef Steinebach (University of Marburg), Dr Clifford Konold (University of Massachusetts), Professor Danny Pfeffermann (Hebrew University), Dr Mark Bebbington (Massey University) and Dr Ruth J. Williams (University of California).

SEMINARS

Dr Ralph Disney (Texas A&M, and Erskine Fellow, University of Canterbury), "The sojourn time problem in

queuing networks".

Dr Lakhdar Aggoun (University of Auckland), "Recursive estimation in Capture-Recapture methods".

Dr Mark Bebbington (Massey University), "Computational methods for quasi-stationary distributions".

Professor Danny Pfeffermann (Hebrew University), "Testing distribution functions from complex sample surveys".

Dr Clifford Konold (University of Massachusetts), "Data scope".

Garry J. Tee

UNIVERSITY OF CANTERBURY

DEPARTMENT OF MATHEMATICS AND STATISTICS

The planning for the new building continues, the design competition having generated a very attractive design. Final detailed plans are now being drawn up.

A lecturer level position in Applied Mathematics has been advertised and short listed candidates will be interviewed in August. See elsewhere in this issue for the advertisement for the Chair in Applied Mathematics at Canterbury.

Ian Coope is currently away on an Erskine fellowship visiting several Universities and attending some optimisation conferences. Peter Waylen has just returned from a study leave spent mostly at Monash. David Wall is away on study leave and is currently visiting Gerhard Christensen in Lund, Sweden.

Prof Chris Rodger of Auburn University was here from early May till mid-June supported by an Erskine fellowship. Chris was visiting Derek Breach.

Professor Jim Berger, from Purdue, is currently visiting on an Erskine Fellowship. The Statistics group has also been recently visited by Professor Bert Keats from Arizona State University and is currently being visited by Professor Wolfgang Polasek from Basel, Switzerland.

SEMINARS

Professor Dan Tanberg, University of New Mexico, "How your doctor should think about diagnostic tests".

Rua Murray, Cambridge, "Chaos at Cambridge".

Dr David Glynn, "Representations of combinatorial structures in higher dimensional projective space over a field".

Professor Bert Keats, Arizona State, "A multi-purpose test of hypotheses for the characteristic value of the two parameter Weibull distribution".

Professor C Rodger, Auburn, "How to schedule a week of dinner parties".

Dr A. Panfilov, Utrecht, "Spiral waves in cardiac tissue".

Dr Frank Lad, "How big is your mathematics".

Dr Burkhard Polster, University of Erlangen-Nurberg and University of Canterbury, "Topological Hermite interpolation".

Professor Curt Lindner, Auburn, "Coding Theory made easy".

Dr Alan Andrew, LaTrobe, "Eigenvalues and eigenvectors of vector valued functions".

Professor Jim Berger, Purdue, "Unifying classical and Bayesian theory".

Rick Beatson

HORTRESEARCH,

MOUNT ALBERT, AUCKLAND.

Biometrics. Patrick Connolly joined us earlier this year after completing a Diploma in Financial Mathematics at

Victoria University. His first degree was in mechanical engineering. Melissa Miller has left us to work in market research. Her replacement is Marcus Davy, who is completing an M.Sc. in statistics at Auckland University.

John Maindonald.

IRL APPLIED MATHS

Life at IRL has been very hectic lately, which is why there has been a lack of news recently. Once again we have been restructured, although the impact on the Applied Maths team should be minimal. The group we belonged to, Measurement and Mathematics, has been enlarged to the new Energy Division. As part of this restructuring, some staff in IRL have been made redundant. Consequently feelings of insecurity and uncertainty are easily stirred these days.

A review Applied Mathematics in IRL was commissioned jointly by FRST and IRL. This has not satisfactorily addressed many of the issues at hand, and negotiations with FRST are continuing.

Russ Boyles left in April to return to the US to start his own consultancy. He will continue to work on some projects with staff here. A new staff member was appointed to the OR section, but after accepting the appointment he decided to take a position in the US.

On the scientific front, the most notable feature has been the number of overseas trips. In May, Warwick Kissling, Graham Weir and Steve White attended the World Geothermal Congress in Florence. John Burnell and Steve attended the TOUGH users workshop in Berkeley. Roger Young and Steve had trips to Japan to work with colleagues on geothermal problems. Graham and John went to Australia and the US, respectively, to initiate contacts for a new project on flowing granular materials. Kit Withers has been visiting institutions in the UK and the US for the last two months. David Rhoades recently presented a paper at the IUGG in Colorado.

John Burnell

MASSEY UNIVERSITY

DEPARTMENT OF MATHEMATICS

Inaugural Lecture: Professor Wolfgang Vogel, Massey University's Foundation Professor of Pure Mathematics, delivered his Inaugural Lecture, entitled "Appreciating Apollonius, 2000 years later" on 7 April this year to a large and appreciative audience.

Apollonius of Perga (c. 262-200 BC) was one of the finest mathematicians of the Hellenistic period. His work on conic sections is one of the great masterpieces of Greek geometry. However, some parts of his Book IV, dealing with questions about the intersection of these curves, are relatively little-known and unappreciated. For example, Sir Thomas Heath curtly describes Book IV as "dull", and van der Waerden's "Science Awakening" doesn't even mention it! However, the lecture explained that Apollonius's work on intersecting conics is the starting point of a line of research which still poses significant problems today.

The inaugural lecture discussed the methods used by Apollonius, and followed his works through the current mathematical research including some unpublished results of Professor Vogel.

Staff update: Congratulations to Glenda Anthony who has been awarded a PhD in Mathematics Education. Julie Falkner has now left for Canada. Dr Yow-Tzong Yeh started his Lectureship at the Albany campus at the beginning of the year; his research interests lie in group theory and mathematics education; he has recently been joined by Dr Shaun Cooper whose interests are in special functions and computational mathematics. Mr Derek Christie has joined the PN staff in a joint position as Tutor in the Mathematics Department and in the Certech programme. Richard Rayner, a software analyst with the Department, has left for Wellington; his much-valued technical skills, cheerful disposition and helpfulness have sadly been lost to us, but now become NIWA's assets. Alex McNabb, a Research Fellow with the Department for several years, will depart shortly for the University of Auckland where he takes up a similar position.

Post-doctoral fellow update: Dr Chikashi Miyazaki, who was working with Wolfgang Vogel, has now returned to Japan; Dr Yuji Kamoi has arrived to a similar position, working in algebraic geometry. Dr Simon Watt is currently working with Graeme Wake on dynamical systems with uncertainty (stochasticity), while Dr Soren Perry is expected in September from Bielefeld, Germany, to work with Mike Hendy on evolutionary trees. Dr Kumar Vetharaniam, an AgResearch Post-doctoral Fellow, will move to Auckland as part of the AgResearch Mathematical Biology Unit.

Shane Dye completed his PhD in Operations Research last December, "On a flexible model for New Zealand's hydrothermal electricity generation system". He and his wife Philippa are now in Norway, where Shane has a three-year post-doctoral position at the University of Trondheim, funded by Norwegian Telecom and supervised by

Stein Wallace. Needless to say, the Dyes have been attending as many conferences in warmer countries as possible!

Staff travel/conferences: Marijcke Vlieg presented a paper surveying exact travelling wave solutions to the KdV-Burgers' equation at an international symposium, KdV '95, held in Amsterdam to commemorate the centennial of the publication of the famous equation named after Korteweg and de Vries. Robert McKibbin and Alex McNabb travelled to Florence to present papers on various aspects of mathematical modelling of geothermal systems at the 1995 World Geothermal Congress. Robert also presented a paper at a UNESCO-sponsored international congress at Monash University on engineering education/industry links. Graeme Wake was an invited speaker at conferences on mathematical modelling, one at Brunei University and the other, on natural resources modelling, at the University of Natal in South Africa. Fiona Taylor took part in the first international meeting, in Singapore, of INFORMS, the International Society for Operations Research and Management Science, talking about "Search-and-rescue problems".

Glenda Anthony attended an informative and interesting conference on teaching gifted secondary-level students, and presented a paper on "Learning strategies in Mathematics education" to a Maths Education Seminar Series at the University of Auckland. She has joined a research ream, based at the Auckland Maths Education Centre, involved with a "Mathematics curriculum change longitudinal investigation", and is also taking part in a project examining student perceptions of mathematics education.

Seminars: The Department has been fortunate to have had a steady stream of visitors from overseas and from within NZ. Most have presented seminars, and some of their research interests can be deduced from the seminar titles below. Another successful Mathematical Physics Seminar Series has been completed, the fourth to date; jointly organised by Dean Halford from Maths and Tony Signal from Physics, the annual series is proving a fine contribution to this multi-disciplinary area of teaching and research.

Scholar update: Shaun Hendy, who completed a 1st Class Honours degree in Mathematical Physics in 1992 at Massey, has just received a Canadian Commonwealth Scholarship. The Scholarship will support him in the final two years of his PhD studies at the University of Alberta in Edmonton, After completing his Honours degree, Shaun travelled to Canada to pursue a PhD in Theoretical Physics (in Relativity and Theory of Gravitation) under the supervision of Professor Valery Frolov in the Department of Physics at the University of Alberta. His initial studies were supported by a two-year teaching scholarship.

ANZIAM'96: New Zealand is to host the next ANZIAM (Australia New Zealand Industrial and Applied Mathematics) conference in Masterton in February 1996. Graeme Wake, who has also recently been elected for a term as President of ANZIAM (a division of the Australian Mathematics Society), is the Convenor of the meeting; Robert McKibbin and Adrian Swift are Secretary and Treasurer respectively. A conference notice can be found elsewhere in this issue.

8 x 10 glossies: Robert McLachlan followed up his cover of the Fall 1994 *Mathematical Intelligencer* with the cover of the October 1994 *International Journal of Bifurcations and Chaos*. Producing the computer graphics of three knotted tori, invariant under the flow of a certain differential equation, took him a happy morning playing with a Silicon Graphics workstation, followed by months and months of frustrating hassle trying to fix tiny glitches and get nice output. In New Zealand the journal has a combined circulation of 2.

Seminars at Palmerston North

Professor Michael D Hendy (Massey) "Linear invariants for some stochastic models of sequence evolution".

Professor I Tomescu (University of Bucharest) "Minimum spanning hypertrees".

Professor J Jaworowski (University of Indiana) "Grassmann manifolds".

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

Professor David Gauld (University of Auckland) "Knots at Huia: The workshop and some topology that came out of it".

Dr Mary Barnes (formerly Sydney University) "The use of graphics calculators in teaching calculus".

Dr Rod Downey (Victoria University of Wellington) "Parameterized complexity".

Mathematical Physics

Professor Janez Stepio(s,[[breve]])nik (University of Ljubljana) "Random motion, velocity auto-correlations and measurement of diffusion by NMR".

Professor Graeme Wake (Massey) "A diffusion-reaction model for corrosion of zinc-coated steel under polymer paint films"

Mr Steve Shrimpton (Physics, Massey) "Renormalization of higher twist operators".

Associate Professor Dean Halford (Massey) "Tensors".

Dr Bruce van Brunt (Massey) "Nonlinear hyperbolic PDEs and the Cauchy-Kowalevsky Theorem".

Robert McKibbin

North Island 4, South Island nil

Although to you the World Wide Web might be just another medium by which NZ mathematicians can fail to talk to each other, some of us are being dragged kicking and screaming into the mid-1990s. The Auckland, Waikato, Massey, and Victoria departments now have their own home pages, and Auckland has graciously assumed the responsibility of pointing to these.

The main uses of the Massey page have been for locals to use as a starting place for internet access to maths resources, and for overseas job applicants to easily find out a little about us. So far NZ has not mounted anything like the impressive collection of information provided by the Australian Maths Society.

Massey & OJ Simpson

When I went to a conference at Stanford a few months ago it was brought home to me that the deluge of "America deluged with OJ Simpson stories" stories we were getting here did have a basis in fact. But even I would not have predicted that the august name of Massey University would ever be brought into play. The statistician Bruce Weir was on the staff of the then Department of Mathematics and Statistics for a time in the early 1970s. He then moved to the University of North Carolina, made a name as an expert trial witness, and was hired by the OJ Simpson prosecution. The short TV clip showed him filling a spreadsheet on a whiteboard with entries like "1 in 17.3 million chance".

I don't know if any NZ media had picked up the story at this point. Indeed, perhaps the news feeds only mentioned Dr Weir's nationality when one Monday morning he testified that he had checked his calculations over the weekend and found them to be seriously in error. Yoicks, that's a bit more publicity than you might get in *J. Pure Appl. Stat.* Any publicity is good publicity.

Robert McLachlan

DEPARTMENT OF STATISTICS

Usually our mid winter news is of an exodus to the north, but this year we have an influx. Chuck Gates is coming from Texas A & M University, Ann Mitchell from Imperial College, and Govindaraja from Bharathier University, India. These three will be staying at the Palmerston North campus for the second semester.

One person is heading north. Over 4 months Siva Ganesh is visiting much of the Empire, with a few side trips.

Jeff Hunter's duties as Acting Dean cut back his Winter Escape to two weeks in Singapore - for two conferences and some Massey PR.

Megan Pledger has moved from Wellington to Auckland, but continuing her PhD and teaching duties in Palmerston North. She has become our WWW expert, and thanks to her efforts if you browse around `http://www.massey.ac.nz/` you will find out about the Department and see some attractive photographs of us and of Palmerston North.

We are half way through our first two term (that is, semesterized) year. Generally those in favour of the change think they are working well, others are not so sure. In the interested of educational research we should toss a coin each August to decide which of Palmerston North or Albany should teach in semesters the following year ...

SEMINARS

Individuals are from the Statistics Department unless otherwise stated).

John Koolard, "Some results on discriminant analysis".

Richard Barker, "Single-stratum mark-recapture models with ancillary observations".

Charles Lawoko and Dick Harker (Social Studies in Education), "The application of an hierarchical linear model in the investigation of the effects of schools on student learning".

Mhairi McHugh, "A comparison of some different methods for modelling the future cost of state superannuation".

G. Ganesalingam, "Estimation of the mixing proportion in a mixture of two multivariate normal distributions".

Robin Milne (Department of Mathematics, University of Western Australia), "Simple derivations of properties of counting processes associated with Markov renewal processes".

Mark Bebbington, "Synthetics Seismicity Models".

Greg Arnold

UNIVERSITY OF OTAGO

MATHEMATICS AND STATISTICS

I am afraid that, as usual, this correspondent is late getting the news together for the newsletter. As such, what I lack in detail I shall endeavour to make up for in brevity.

During the course of the first semester we were fortunate enough to have several visitors through the Department at various stages. Derek Holton has been visited by various colleagues in Mathematics Education, including Jim Neyland from Wellington, James Heddens from Florida and currently Warwick Evans from Bognor Regis. There have also been some more transient visitors in this field who have dropped by to contribute to a quite lively seminar series in Maths Education held here in the Department.

Martin Fricke from the University of Arizona in Tucson spent several weeks here working with Gerrard Liddell on a project on the use of diagrams in symbolic computation.

Professor Larry Zalcman from Bar-Ilan University in Israel visited Peter Fenton in March/April to work on Normal Families in Complex Analysis.

Currently visiting us after a period at the Universidad de Concepcion in Chile is Marti McCracken. Marti will be here until December and is teaching two Statistics courses.

Two postgraduate students have completed research degrees this year. They are: Mike Porteous with an MA on "Extendability of matchings in graphs", and Gareth Hegarty whose MSc was in "Symmetries of differential equations".

Gareth is currently presenting a seminar series in Algebraic Topology for staff and senior students in the Department.

SEMINARS

While various seminars have been given during the semester in mathematics, mathematics education and statistics, this poorly organized soul has only the details of the statistics series at hand to include in this bulletin. A list of these talks follows.

Mike Paulin "System identification of apiking aensory neurons using realistically constrained time series models".

Laimonis Kavalieris, "Estimation of the Number of Periodic Signals".

Bryan Manly, "Do animal body size distributions have clumps?".

Ben Smith and J.B Wilson, "The measurement of species evenness: a buyer's guide and some problems".

Ken Dodds, "Genetic probabilities for farmed animals: exclusions and linkage efficiency".

Nikola Kasabov, "Learning, generalisation, approximation and adaptation in artificial neural networks".

Russell Millar, "Community assemblages of demersal fish on the Chatham Rise".

Peter Johnstone, "Ad hoc row columns designs".

Katrina Sharples, "For young statisticians".

When this contribution was put together about 200 were registered for the Aitken Conference to be held in Dunedin in the last week of August. Late registrations will be accepted from anyone wishing to attend but it is too late to give a talk. See you at the conference.

Robert Aldred

STATISTICS NEW ZEALAND

There have been a number of staff changes recently; some resignations, and some staff seconded to the Department's Information Technology project. We are currently recruiting replacements.

Dennis Trewin has returned to the Australian Bureau of Statistics. Mark Jones is now working in the Australian Bureau also. Minoo Meimand has resigned. Troy Kusabs and Bronwyn Anderson joined us in late January.

Visitors in the last 6 months have included John Zarb (from the ABS), John Rao, and Danny Pfefferman.

Sampling Statisticians have been busy with the 2 new surveys (Disability, and Post-Censal Estimation Survey) to be run after the Census.

Judith Archibald and Robert Templeton attended the Bureau of the Census Research Conference in Washington. Karen Wong, Gary Dunnet and Len Cook are off to the ISI in Beijing. Max Wigbout spent a month in Tonga giving a data analysis course for the South Pacific Commission.

Mike Doherty

VICTORIA UNIVERSITY

DEPARTMENT OF MATHEMATICS

John Harper is gadding about on sabbatical for eight months, mostly in the Earth Sciences Department, Cambridge, UK, with a short visit to UC Santa Barbara to warm up before returning to us at the end of January 1996.

Rob Goldblatt spent two weeks in May as a visitor to the Algebraic Logic group at the Mathematical Institute of the Hungarian Academy of Sciences in Budapest, where he gave lectures and held research discussions with colleagues and graduate students. The main topics of interest concerned equational classes of Boolean algebras with operators, especially ultraproducts in the theory of cylindric set algebras.

Geoff Whittle and Charles Semple (doing a masters with Geoff) went to a joint AMS, IMS, SIAM summer conference in matroid theory in early July at the University of Washington in Seattle. Geoff gave an invited talk. Charles presented a poster session entitled "Matroid representations over partial fields". En route they went to different parts of Canada - Geoff to Victoria BC, where one attraction was a five-day coast walk dodging bears and cougars, and Charles to Vancouver and Victoria.

Rod Downey was one of the two principal speakers at the COLORET II (COmplexity Logic and REcursion Theory) conference in beautiful Siena where he gave a series of 4 lectures in May. Then he visited the university of Victoria B. C. for a week. Rod is to give a plenary address on recursion theory and an invited lecture on theoretical computer science at Logic Colloquium 95 in Haifa Israel in August on his way to take up a visiting scholar position at Cornell until late December.

An Operator Theory Study Group for staff and senior students was set up and is running successfully. Vladimir Pestov is the coordinator and Geoff Thorpe (MSc student) is the permanent speaker.

Each year since 1992 Vladimir Pestov has been running an undergraduate seminar for 300-level students. This year the topic is topology, and Geoff Thorpe is assisting in running the seminar.

Irene and Vladimir Pestov (along with their two children) became Kiwi citizens in late May, in an amazing ceremony at the Town Hall.

Vladimir Pestov visited Israel for two weeks during the mid-year break. (His first overseas trip with a brand new NZ passport!) The host institutions were the Bar-Ilan University (located in Ramat-Gan, a suburb of Tel-Aviv) and the Ben-Gurion University of the Negev (Beer-Sheva). The visit, aimed at launching a new joint research program "Dynamics in Function Spaces" with two Israeli mathematicians (Dr A. Leiderman and Dr. M. Levy) was supported by a grant from the NZ Ministry for Research (International Science Linkages Fund), as well as by the two host Universities. Not only was Vladimir fascinated by the beauty of the Land of Israel and the courage and high-spiritedness of her people, but he became convinced that NZ and Israel share much more in common than it is usual to think and that our two countries could mutually benefit from stepping up cooperation in all areas, including maths research: in the wake of the recent wave of emigration from the disintegrating fSU, Israel stands out as a great mathematics power!

Sandra Chapman was farewelled a few months ago, when she handed in her Masters thesis with a sigh of relief, and she is now working for ACC in Wellington. Tina Nguyen left her part-time position in the office to work and study to be an actuary with Prudential in Wellington.

Finlay Thompson, who did his Honours at the department, was awarded a scholarship for PhD study at the International School for Advanced Studies (SISSA), Trieste, Italy. The competition was rather tough, and the main contender was a 19-year-old Russian woman who graduated from Oxford. Finlay leaves for Italy in October this year for three years. He will be doing his PhD research under the guidance of Professor Ugo Bruzzo.

SEMINARS

Rod Downey, "The Chain-Antichain Principle, Ramsey's Theorem and Reverse Mathematics".

Marston Conder (Auckland), "Some Unexpected Results on Arc- and Path-Transitivity in Graphs and Digraphs".

W. Wistar Comfort (Wesleyan University, USA), "Recent Progress and Problems in Topological Groups".

Eugenia Schuchinsky (Wellington), "On Exceptional Values of Wiman Inequalities".

Jan Jaworowski (Indiana University), (1) "Maps of Spheres into Complexes of a Lower Dimension"; (2) "Grassmann Manifolds".

Charles Semple, "Matroid Representation Over Partial Fields".

Sean Oughton (University College, London), "Late-time states of 2D Navier-Stokes turbulence".

Megan Clark, "Raising Achievement of Pacific Island students in Mathematics and Statistics at VUW".

Chris Atkin, "Some ideas of Wojtynski on one-parameter subgroups".

M McGuinness

UNIVERSITY OF WAIKATO

DEPARTMENT OF MATHEMATICS AND STATISTICS

CENTRE FOR APPLIED STATISTICS

DEPARTMENT OF MATHEMATICS AND STATISTICS, CENTRE FOR APPLIED STATISTICS

Our esteemed secretary Jan Stephenson departed in June and has been replaced by Angela Hayward (email now to ahayward@waikato.ac.nz or glenys@waikato.ac.nz) for all matters of consequence. Our senior tutor Guinivere Nalder has been appointed as the Design Power (Wellington) Hydrologist, having recently completed the work for her doctoral degree.

Paul Watson has completed his degree at DAMPT Cambridge with a thesis on "Convective MHD in sunspots" is now a research fellow in the department working on the magnetic field line reconnection problem. Professor Kalnins is on research leave in Russia but is expected back at the start of Semester II.

Professor Bridges spent three weeks in Europe, first giving a lecture to the Gödel Society in Vienna, and working there with Dr Karl Svozil (Institute for Theoretical Physics, Technische Universität Wien), and then moving on to Mangalia, Romania, to give some lectures to a Summer School of the Black Sea University.

The split into a Department of Mathematics and Department of Statistics has been approved by the Academic Board so will take place at the start of 1996. The chairperson has yet to be appointed. The Mathematics Department is to be reviewed with the principal focus being improved funding. A replacement Applied Mathematician for Ian Urch has been approved - see the advertisement elsewhere in this Newsletter or contact douglas@waikato.ac.nz.

Working Parties on our first year program, algebra program and internet usage are meeting. The Waikato participation in the Centre for Discrete Mathematics and Theoretical Computer Science has been approved. For information contact Douglas Bridges.

A Centre for Applied Mathematics and Theoretical Physics to formalize and enhance the relationship between physics and applied mathematics is going through the approval stages. Contact Ernie Kalnins.

The department has recently taken possession of an NT server which possibly divides correctly. Building G (Maths/Stats/Computer Sci/Info Tech Serv) is being rewired with higher speed cable.

SEMINARS

T. Zamfirescu (University of Dortmund) "Adventures on a convex surface".

G. Richard (St Andrews University) "Coronal Heating by Resonant Wave Absorption: natural selection in action".

B. Allen (NIWA Wellington) "MHD Wave Research at NIWA".

F. Richman (Florida Atlantic University) "A circular argument".

N. Kamran (McGill University) "Quasi-exact solvability".

F. Richman (Florida Atlantic University) "Linear Transformations and Polynomials".

I. Hawthorn (University of Waikato) "Nice results from nasty functions".

Kevin Brougham

NEW COLLEAGUE

Dr Geoff Nicholls is now a Lecturer in the Applied & Computational Mathematics Unit of the Department of Mathematics at the University of Auckland. After graduating from the University of Canterbury, he gained a PhD in high-energy particle physics at Cambridge University, and then he worked with Josef Kittler in Kittler's Machine Vision Group at Surrey University. Next he joined Peter Clifford at Oxford University, to work on Bayesian methods in high-level pattern analysis. His research interests concern applied stochastic modelling, artificial intelligence, random planar geometric processes, critical physical phenomena, and general mathematical problems arising from machine vision.

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. A complete archive is being compiled and will appear in a later issue.]

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

UNIVERSITY OF AUCKLAND

SCHOOL OF MATHEMATICAL & INFORMATION SCIENCES

DEPARTMENT OF COMPUTER SCIENCE

1994 MSc *Blackmore, Shaun H*; J.R. Hosking & W. B. Mugridge; "Quantum: a dual constraint propagation and multi-paradigm programming language".

Fenwick, Stephen A; J.R. Hosking; "Visualization system for object-oriented programs".

Li, Xiaoge; W.B. Mugridge; "A polymorphic type system for a Prolog based object oriented language".

McLeod, K; R.J. Lobb; "Functional languages and their application in computer graphics".

Norman, Stephen John; G.A. Creak, "Visual speech: an aid in teaching speech to the deaf".

Sanders, Nicola Jane; W.B. Mugridge; "A new method for the random generation of context sensitive compiler test programs".

Scaletti, Mark Richard; G.A. Creak; "Modular neural networks for object recognition".

Webb, James Anthony; P.B. Gibbons; "Probabilistic algorithms for solving combinatorial optimisation problems".

Yan, Wei-Sheng; P.M. Fenwick ; "Computer network accounting management".

1995 PhD *Lennon, Jennifer A*; H.A. Maurer; "New aspects of Hypermedia systems".

Marshall, Timothy Anthony; G.J. Martin; "Hyperbolic geometry and reflection groups".

MSc *Philpott, Anne;* H. Guesgen; "Fuzzy context switching".

Woolford, Stuart A; P.M. Fenwick; "Vector quantisation and waveletreduced image compression for architectural type image data".

DEPARTMENT OF MATHEMATICS

1994 PhD *Everitt, Brent;* M.D.E. Conder; "Images of hyperbolic reflection groups".

MSc *Lee, Shing-Hoi;* M. Ronqvist & D.M. Ryan; "Lagrangian relaxation and dual based methods for solving crew rostering problems".

DEPARTMENT OF STATISTICS

1995 PhD *Siew, Choo Soo*; A. J. Lee & A.J. Scott; "Analysis of correlated categorical data".

MSc *Alexander, Ross;* J.N. Brownlee & I. Ziedins; "Monitoring analysis and simulation of packet switched network information".

UNIVERSITY OF WAIKATO

DEPARTMENT OF MATHEMATICS

1995 MCMS*Littin*; *Richard*; Kevin Broughan and Bill Rogers; "Pen Input of Mathematical Expressions".

PhD *Schou*; *Wayne;* K. Broughan; "Design Implementation and Application".

MSc *Sharples, Jamie;* A. Sneyd; "The PSC method: current sheet formation by photospheric compression".

PETER DSCHENFFZIG

Working on a research project on refugee mathematicians, Hans Lausch (Department of Mathematics, Monash University, Melbourne) is seeking help from the New Zealand mathematical community. He is interested in obtaining information about the mathematician Peter Dschenffzig.

In 1940, Peter Dschenffzig was transported from England to Australia on the notorious HMT Dunera, as one of about 2000 refugees. Most of those had left Germany or Austria, following harrassment and persecution. Subsequently, Peter Dschenffzig was interned in Hay, NSW; and then he was transferred to a camp in Tatura, Victoria.

Felix Behrend, who had also been on the Dunera and later worked at the University of Melbourne, conducted mathematics courses for the internees. As a result, a few internees could get into the University of Melbourne to begin or to continue their mathematics studies. Among about 40

entries, the name Peter Dschenffzig occurs on the class lists that Behrend kept during the camp schools.

A former Dunera transportee remembers: "Peter Dschenffzig returned to England, became Lecturer of Mathematics (London School of Economics - I think), then took a similar job somewhere in South Africa. He left there a few years later and became a lecturer at a New Zealand University. We had been very good friends at Tatura, and then I lost track of him. One day, probably about 16 years ago, he came through Melbourne on a trip, found me in the phone book and came to see me for a couple of hours. That is how come I know a little of his history - but I have not seen or heard of him since."

Can anyone help with further information?

Garry Tee

SCULPTURES

by

LEIGH CHRISTENSEN

Leigh Christensen learned the Maori tradition of carving totara poles. Later, he examined Charles Babbage's designs for his Calculating Engines (from books in the Rare Book Room of Auckland Public Library, and other reliable sources), and he was much impressed by the beauty of those engineering designs. In November 1994, the Oedipus Rex Gallery in Auckland mounted a small exhibition of 6 works by Leigh Christensen, each carved from totara, kauri or matai, with some metal machine parts incorporated. Five of the works are inspired by Charles Babbage's designs, combined with traditions of Maori art. That exhibition was extensively and favourably reviewed in the NZ Listener, the NZ Herald and several other magazines and newspapers. The Department of Computer Science at the University of Auckland has bought two of Christensen's works, which are now exhibited in the departmental foyer. "The Difference Engine", inspired by Babbage's Difference Engine No.1, is a carved kauri pole nearly 2 metres high, crowned by a Volkswagen cylinder head.

Garry J. Tee

"BESSIE" is inspired by Howard Aiken's Harvard Mark 2 computer "BESSIE", operating with electromagnetic relays. The sculpture is a carved kauri pole, and amongst the relays there is depicted the eponymous "bug" which was found to have been squashed in a relay, thereby making the computer malfunction. Another work at the exhibition was purchased by a Teaching Fellow here; and the exhibition has resulted in the artist receiving some commissions for further works.

BOOK REVIEW

A Recursive Introduction to the Theory of Computation, by Carl Smith, (Graduate Texts in Computer Science). Springer-Verlag, Berlin-New York-London, 1994, 148pp, US$29.95. ISBN 3-540-94332-3.

There is now some general agreement as to what constitutes a reasonable "theory of computation" course. Assuming that it follows one where the students have already met automata, the course should include at least the following.

* A section on *models of computation*.

* A section on *basic recursion theory*.

* A section on basic abstract complexity theory. (Though some would disagree with this.)

* A section on *NP-hardness*.

The section on models of computation introduces the student to several differing models of computation with a view towards establishing Church's Thesis and, more subtly (and implicitly), the idea of a reduction and Church's Polynomial Time Superthesis. Once this fairly messy section is dealt with, one can easily proceed to results like the existence of a universal machine, the undecidability of the halting problem, Rice's Theorem, the recursion theorems recursively enumerable sets, and possibly the arithmetic hierarchy. It is then natural to turn to abstract complexity

theory, beginning with Blum's axioms which analyse the question "what is a complexity measure?", and then the speedup, gap, and compression theorems. One then can prove the classical hierarchy and tradeoff theorems. Finally, one turns to the last item above and works through Cook's Theorem into various concrete NP-completeness results.

This text grew from Carl Smith's Lecture notes from a one semester University of Maryland Computer Science Department course based around the classic out-of-print text "An Introduction to the Theory of Algorithms" by Machtey and Young. It follows the story outlined above more-or-less exactly. It has maintained the mathematical integrity of Machtey and Young's text, while addressing a number of comments to today's students such as comments regarding C++ and UNIX. I would regard the text as perfectly acceptable for either an honours course in computer science or in mathematics. The proofs are clean, efficient, and there seem very few typos. There are a large number of exercises of varying levels of difficulty, as well as solutions to some of the more challenging ones.

Of course, one always has a couple of gripes. First, a couple of the concepts seem to be used before they are defined and some are difficult to place via the index. For instance recursive enumerability is used in an exercise on pages 35 and 36 and yet is not defined until page 59 and the notion of a recursive set is defined on page 54, and used synonymously with decidable set (although this is neither in the index nor explicitly mentioned), yet the index refers the reader to page 59. Personally, I do not like the diagrams that the author uses to diagrammatically represent various internally defined functions. I found them at worst confusing, and at best unhelpful. (Perhaps they are aimed at "real" computer scientists.) I would have liked to have seen some other topics included, such as an application of the halting problem to a concrete problem such as Post Correspondence Systems, or Word problems in Semigroups. I would like to have seen mention of the arithmetical hierarchy, Turing reducibility, and the jump operator. (Here I am sure that the computer science audience at Maryland has affected treatment.) Personally, I always include Post's Problem and the priority method. Finally, I believe that some of the more recent results in structural complexity might be included such as those on inductive counting or interactive protocols.

The text competes with an increasing number of texts such as those of, Lewis and Papadimitriou, Salomaa, and Douglas Bridges. Aside form the few quibbles above, I believe that it does so very well. The only real prerequisite is "mathematical maturity". (In a computer science department, one would assume that students would have met automata and some analysis of algorithms.) Modest yet precise in scope, and very readable, I believe it to be an excellent choice as a text for any advanced first course in the theory of computation. I will certainly have no hesitation in using it in the future in my own course here at Victoria.

Rod Downey

CONFERENCES

1995

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)37375599 x8605. Fax (09)3737457.

August 28-September 1 (Dunedin) **The AC 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, PO 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

September 25-27 (Collangatta, Queensland) **Australasian Biometrics Conference**

Contact K.E. Basford, Department of Agriculture, University of Queensland, Brisbane, Queensland 4072, Australia.

e-mail: k.e.basford@mailbox.uq.oz.au

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, PO 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, WA6009, 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

January 29-February 2 (Melbourne) **1996 Mathematics-in-Industry Study Group**

Contact Dr Kerry Landman, Department of Mathematics, University of Melbourne, Parkville, Victoria 3052, Australia

e-mail: misg@maths.mu.oz.au

February 4-8 (Masterton, New Zealand) **32nd Applied Mathematics Conference (ANZIAM `96)**

Contact ANZIAM `96, Department of Mathematics, Massey University, Private Bag 11222, Palmerston North, New Zealand.

e-mail: anziam@massey.ac.nz

May 29-31 (Wellington, New Zealand) **Science - Women and our future**

Contact Karen Field, 86 Daniell Street, Newon 6002, New Zealand.

e-mail: hancox@actrix.gen.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 41: 1 July 1995

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

The information for each item is arranged as follows:

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

###############

Professor Andrew Barbour; University of Zurich; wife?; stochastic DEs, math biology; 21-25 August 1995; AgResearch Wallaceville; Mick Roberts.

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

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

Professor Don Cohen; Applied Mathematics, California Institute of Technology; February 1996; ANZIAM 96 invited speaker; Professor G C Wake.

Professor Ellis Cumberbatch; Claremont Colleges Graduate School, California; accompanied; applied mathematics; February 1996; ANZIAM 96 invited speaker; Professor G C Wake.

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

Professor Odo Diekmann; University of Utrecht, The Netherlands; mathematical biology; February 1996; Professor G C Wake (also AgResearch Wallaceville; Mick Roberts); ANZIAM 96 invited speaker

Professor Eusebius Doedel; Concordia University, Montreal; Computational Mathematics; February 1996; ANZIAM 96 invited speaker; Professor G C Wake.

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).

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 Brian Gray; School of Mathematics and Statistics, University of Sydney; accompanied; Mathematical chemistry; February 1996; University of Auckland; Professor G C Wake.

Professor J. Haefner; University of Colorado; representation of algebras and group rings, graded rings, general module theory; 1 to 30 June 1996; University of Canterbury; Dr Kevin O'Meara.

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

Professor Peter Hilton, SUNY at Binghamton, NY, USA; accompanied by Jean Pedersen; nilpotent group theory, maths education; 21 August to 1 September 1995; University of Otago; Prof Derek Holton.

Dr Daniel Huson; University of Bielefeld; accompanied by wife (Elke) and baby (Marlon); combinatorics (tiling), biology; February 1996; University of Canterbury; Dr Mike Steel.

Dr Hajime Ishihara; Japan Advanced Institute of Science & Technology, Ishikawa; unaccompanied; constructive mathematics; October-December 1995; University of Waikato; Professor D.S. Bridges; tentative at this stage.

Professor Petar S. Kenderov; Institute of Mathematics, Bulgarian Academy of Sciences; functional and set-valued analysis; 22nd June to 11th August 1995; University of Auckland; Warren B. Moors.

Professor Gerhard Kristensson; Department of Electromagnetic Theory; Lund University, Sweden; sometime 1996; University of Canterbury; Dr David Wall; Erskine Fellow.

Professor Curt C Lindner; Auburn University, Alabama; steiner triple systems; February 1996; University of Canterbury; Dr Derrick Breach.

Professor R Löwen; University of Braunschweig, Germany; accompanied by wife (Irmgard); geometry and topology; 23 February to 5 April 1996; University of Canterbury; Dr Guenter Steinke; Erskine Fellow.

Dr Marti McCracken; Universidad De Concepcion, Chile; statistics; 1July 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 Jeff Paris; University of Manchester; accompanied ???; logic; December 1995; University of Waikato; Graham French; tentative at this stage.

Professor Jean Pedersen, Santa Clara Univ, Calif, USA, accompanied by Prof Peter Hilton, combinatorics, mathematics education; 21 August to 1 September 1995, University of Otago, Prof Derek Holton.

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

Assoc. Professor Reinout Quispel; La Trobe University; Dynamical systems, numerical methods February 1996;Massey University; Dr Robert McLachlan.

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

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

Professor Anne Penfold Street; University of Queensland; combinatorics; February 1996; University of Canterbury; Dr Derrick Breach.

Professor Juergen Stückrad; Department of Mathematics, University of Leipzig, Germany; Algebraic geometry; March 1996; Massey University; Professor W Vogel.

Professor C I Vinsonhaler; University of Connecticut; accompanied by wife (Patty) and 2 children; algebra (abelian groups, partially ordered sets); teaching problem-solving skills; U.S. Calculus Reform Project; 13 May to 28 June 1996; University of Canterbury; Dr Kevin O'Meara.

Dr Tandy Warnow; Department of Computer Science, University of Pennsylvania; probably unaccompanied; phylogenetic tree reconstruction; November 1995; University of Canterbury; Dr Mike Steel; recipient NSF Young Investigator Award.

Richard Wilson; Universidad Autonoma Metropolitana, Mexico; ; topology; early 1997; University of Auckland; David Gauld

Dr Yang Yue; National University of Singapore; recursion theory; July 1995 for two weeks; Victoria University of Wellington; Prof. 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 Efim Zelmanov; Yale University; not accompanied; algebra; 3 to 10 July 1995; University of Auckland; Professor Marston Conder and Dr Arkadii Slinko; Foundation Visitor.

CONFERENCES IN NEW ZEALAND:

When arranging visits it might be useful to remember the following:

New Zealand Association of Mathematics Teachers; Auckland; 27 to 31 August 1995.

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); 28 August to 1 September 1995 Contact the Aitken Conference Secretary, Department of Mathematics and Statistics, University of Otago, email casm@maths.otago.ac.nz

32nd Australian Applied Mathematics Conference (AMC 96 aka ANZIAM 96) at Masterton 4 to 8 February 1996. Contact Professor Graeme Wake, Department of Mathematics, Massey University, Private Bag 11222 Palmerston North, email G.Wake@massey.ac.nz.

May 29-31 (Wellington, New Zealand) **Science - Women and our future.** Contact Karen Field, 86 Daniell Street, Newon 6002, New Zealand.. e-mail: hancox@actrix.gen.nz.

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.

Special note: I have now completed five years as the Visitors Coordinator. As I plan to go on leave throughout 1996, I would welcome any expressions of interest in taking over this position.

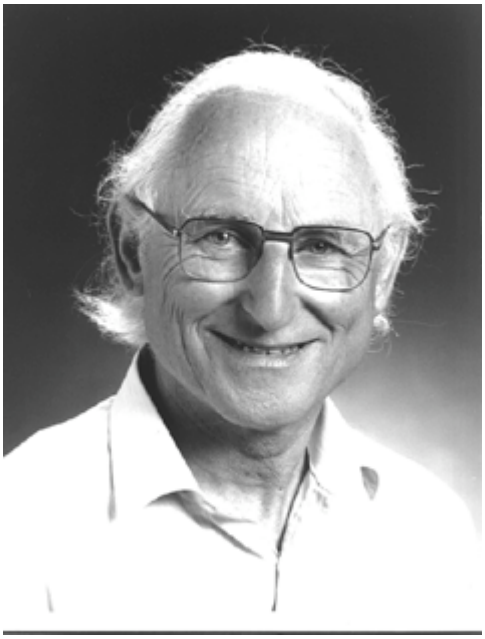
David Robinson, N.Z. Mathematical Society Visitors' Co-ordinator

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

CENTREFOLD



JOHN CHRISTOPHER TURNER

John Turner's professional life shows the same variety as the man himself. Fortunately for me, he wrote some notes on distant places and times now passed. I can hardly improve on them, but the quotation marks do not quite mean what they say, for I had to select passages, and sometimes, shorten them.

A Yorkshire lad from Leeds, he grew up during the war, served in the RASC[1] (1946-1949), and was demobilised just after the Berlin airlift began. He spent two years as a student engineer with Brush Electrical in Loughborough, and ended up as the top student of his year with a Higher National Diploma in Mechanical Engineering.

On the strength of that, he received

a Technical State Scholarship, which enabled him to enter Leeds University and specialise in mathematics.

"At that point, I suppose, I began to understand what it was `to be a mathematician' (I remember devouring E T Bell's `Men of Mathematics' in my first year; that had an inspirational impact on me, which has lasted to the present. We studied for a three-year honours degree, called a BSc (Special Honours Mathematics). In the first year, I took papers in engineering too (one had to take some kind of science as leavening) but thereafter, it was all mathematics. In the final year, we had to `choose' a special topic, Foundations of Mathematics, Applied Mathematics or Statistics. As they were usually allocated in that order, by brightness of the student, I `chose' Statistics!"

On graduating with second-class Honours, "I was immediately offered a post as Statistician, with the rank of Scientific Officer, in the Mathematics Division of the Armaments Research and Development Establishment at Fort Halstead in Kent. On that campus, the first Atomic Energy Division was set up, within a ring of high green barbed wire fencing. A year after I started there, I was permitted to pass through the fencing (armed with an entry pass) to learn to write computer programs for their wonderful FERRARI computing machine[2]. As I recall, it took me several days to learn how to compute values of exponential functions from series expansions - and then it needed three or four engineers to present the programs to the computer and interpret the flashing dots on the screens at the console!"

"My boss, a Principal Scientific Officer, set me to prepare programs to simulate tank battles over a variety of terrains ... in those days, words such as `simulate' and `stochastic process' were not in common use, and very little literature was around. In that year (1955), I invented my first mathematical concepts: I defined `reliability' and `operability' as probablilties of certain kinds of event, and put them in a short paper `Reliability and Operability of Components in Series and in Parallel'. This work resulted from a request from the War Office for knowledge of the likely `trigger time' of an atom bomb released from an aircraft and set to explode later (they were testing explosions at various heights above sea-level)".[3]

"In 1956, a strong desire for travel led me to take a post as Tutor in Mathematics at the Mombasa Institute of Muslim Education, a residential College in Kenya. I taught mathematics and physics for would-be engineers aged 14 to 22, who aimed at the British City and Guilds Examinations. The best students went on to take Ordinary National Certificates, but all students got good practical training in subjects ranging from seamanship to radio engineering, from motor mechanics to advanced electrical trade practice. For three years, I was House Master of Batani House - in fact, all the Houses (Batani, Yunus, Haytham and Jabir) were named after famous Muslim scientists of the past - but to my shame, I did not try to find out what they contributed to our subject.[4] When I left in 1960, I looked back

with pride on their success in the sports and athletic activities that we ran: my House had taken all the silver cups and trophies to be won."

"In Mombasa, I lived amongst the diverse cultures of Africans, Indians and Arabs for four years, perhaps the most enjoyable period of my life: I loved my teaching job; I learned Kiswahili, and how to live in a vastly different culture (as a Colonial `Bwana mkubwa'); I traveled far and wide, in battered old cars on unmade roads through the African bush, to Lake Victoria and Uganda, to the White Highlands around Nairobi, to the game parks of Serengeti; and with a party of friends (well aided by a dozen or so bearers), I climbed to the very top of Mount Kilimanjaro, clambering along its snowy peaks at over 25 000 feet, with views of all Africa (so it seemed to us) laid out below in the morning sunlight."

"In Mombasa too, I acquired my wife Barbara and two stepsons, and my first daughter was born there. From a window in the beautiful hospital, we watched the Arab dhows plying their trade, moving under brown sails in and out of port."

Perhaps lacking mathematical stimulus, they decided to return to Britain, and in 1960, John joined Nottinghamn Technical College as a Lecturer, where he taught Statistics and Pure Mathematics at all levels up to BSc Hons, mainly to engineers. "I spent an exciting and challenging two years there. My toughest course was Solid Geometry: two evenings a week, I lectured for three hours on end, following the London University syllabus, and each weekend, I had to prepare myself and the lectures, find suitable exercises and obtain the answers ... I had 8 students in the class, all doing the degree part-time like this."

"After a couple of bleak English winters, my wife and I heard the call of Africa again." As all three of his applications succeeded, they had a choice - and chose Fourah Bay College, in Sierra Leone. So in August 1962, they set off in a P & O boat through the storms of the Bay of Biscay to the steamy port of Freetown, `the Athens of Africa'. "A taxi brought us up the steep hill from the coast, in the most torrential rain we had ever encountered, to the lovely campus perched on three levels of the hillside. We were allocated to an old colonial-style bungalow, with spacious high-ceilinged rooms and a balcony that ran right across the rear of the house. The view from the balcony was fabulous - worth a millionaire's ransom. For three years, it was the repository for our children's toys; our daughters learnt to tricycle on it, and raced up and down like charioteers, side by side."

There at Fourah Bay College, "I first came to think of myself, with immense pride, as being a `University Lecturer' ... with the duty not only to teach courses but also to produce research, and that was a worry, since I had only my experience as a Scientific Officer behind me. There were about eight on the staff, but no other statisticians or probabilists to help me. I was actually hired as Lecturer in Applied Mathematics, which meant I had to prepare and present courses on any topic in Statistics or Mathematical Physics, towards the Honours Degree (all carefully monitored to high standards by Durham University). I must be a rare bird in University circles this century, having taught in all branches of mathematics up to Honours, and beyond."

"There too, I first came under the sharp eye, logical mind and kindly Headship of Professor Teddy Zulauf (I called him `Sir' in those days). One of his institutions, the weekly seminar, was of immense value to me: he called on each of us to talk. and all staff had to attend, regardless of the topic. I learned the great lesson of listening carefully, however strange the symbols or opaque the material, trying to pick the bones of it, trying to gather some idea that I might apply to my current work. My first seminar was on Markov Chains, two expository talks. I was terrified. However, as I had mugged up enough theory in Nottingham to give a short evening course, I got through the sessions without wishing the ground would swallow me up."

John then found he could use his knowledge of Markov Chains to extend his paper on the Reliability Theory of Networks; by 1966, three years later, this became his research thesis for an extra-mural MSc from Leeds University. "We spent a happy three years in Sierra Leone, but in the end, we began to tire of the climate ... the rainy seasons, the electrical storms ... I applied for a Senior Lectureship at Huddersfield College of Technology[5] and obtained it on the strength of letters of reference alone."

"Thus we returned to my home county of Yorkshire; it was grand for me to hear the broad Huddersfield accents again, though my family had to get used to them. We bought a very old house on a hill overlooking a panorama of smoke-blackened roofs[6] and industrial buildings down in the valley where Huddersfield lay; its solid stone walls, two feet thick, made living very comfortable in both summer and winter."

"In my two years at Huddersfield, I completed my MSc from Leeds, and began my activity as author. I proposed a book `Modern Applied Mathematics', a mix of discrete maths, statistics and operational research for the new courses and first-year curricula under development then, and to my surprise, English Universities Press offered me a contract on the spot. I worked on it for two or three years (mainly in evenings and holidays, because we lectured 21 hours a week in technical colleges), typing its 500 pages (and carbon copies, of course) on a battered old portable. It finally appeared in print in 1970, it remained in print for 20 years (its Spanish translation is still on sale, I believe), and the British Council selected it for a special issue to third-world countries."

"In 1966, the British Government began to convert about 30 Technical Colleges into Polytechnics (to develop degree courses and research in new areas of technology). Huddersfield got the thumbs down, but a College in Leeds, 25

miles away, advertised for a Principal Lecturer with responsibilities in Statistics and Operational Research, a post which seemed tailor-made for me. I decided to have a go: I was only 39, the corridors of power were beckoning (and on joining the `boss class', my lecture load would fall to 15 hours a week). So in 1967, we moved into a three up and down terrace house in Mapperley, an old-established suburb of Leeds."

"In my three years at the new Leeds Polytechnic, I learnt a great deal about politics, among Departments and among Polytechnics too, for we competed with one another to get our courses and degrees approved by the CNAA (the Council for National Academic Awards), a spider-like organisation in London with supreme authority over the plans of us hicks in provincial Polys. After two years planning, report-writing and committee work, I succeeded in establishing a four-year Honours Degree, the BSc in Operational Research with Computing, a strange title that emerged like a camel from a CNAA committee[7]. Burdened by this work, by other projects, by research and by the heavy teaching load, I began to feel `something had to give'."

"Early in 1970, out of the blue, I received a letter from Professor Zulauf. He told me he had left Africa three years earlier to join Waikato University, then hardly two years old, as Reader in Pure Mathematics, vowing he had his fill of being Head of Department and `running things' - but when his Head, Professor Sawyer, resigned in 1970, the Vice-Chancellor had prevailed on him to take the Chair. He had agreed to do so only if he could appoint two senior people, and with their help, develop a full Mathematics Department, offering courses in Pure Mathematics, Mathematical Physics and Statistics. Would I like to apply for the post in Statistics, at the level of Professor or Reader? Barbara and I read the letter twice, thought it over for half an hour, and said `We would!' Having missed the deadline, I fired off an aerogramme in return, and scribbled a CV on the back - I never did follow it up with a proper CV! Without a Doctorate, I dared not apply for a Professorship, but the Readership entailed a drop in salary, a point that seemed worth making. In the end, the Registrar offered me the post, and that August, we packed up all our possessions, including a piano, and boarded the glorious ocean liner, the MV Oriana."

"She set sail from Southampton on a bright sunny day, bunting flying and horns sounding, but we didn't get past the Isle of Wight! An engine room caught fire, and the Captain had us all up on deck in our orange life-jackets ... Apparently it was touch and go; we made the national papers and the TV screens, with helicopters buzzing overhead. The ship was towed back to Southampton, and the company looked after us, entertaining us on board for two weeks while repairs were made. Even so, fire broke out again in mid-Atlantic, but the crew finally fixed the gremlins, and we sailed through the Panama Canal to Vancouver and then to Auckland, a very pleasant five-week voyage. However, overeating and inactivity combined with a game of deck quoits on the last day to give me an extremely painful slipped disc. Thus began my career at the University of Waikato - and as they say, the rest is history."

As these notes attest, John led a varied and even adventurous life before we knew him, in situations that usually demanded the flair and perseverance of the true pioneer. Now let me remind you of some of his works since arrival in New Zealand.

(A) For three years, 1970-3, he served as Director of Computer Services, overseeing the expansion from an IBM 1132 (quite a big machine then, though its 8K memory sounds tiny now) to the network of large BURROUGHS machines that bedeviled all NZ Universities for several years.(Later, he urged the early UDI which led to our family of VAXen.)

(B) His experience with computers and with large courses on introductory statistics convinced him of the urgent need for a simple reliable statistics package. In 1972, he designed and, with Bill Rogers' help, implemented the language STATUS. It enabled the student hordes to gain realistic statistical and computing experience, using marked-sense cards; it also did general statistical work very well, because of its simplicity, generality and linked modes of operation. It remained in use until 1985. (Its main competitor, MINITAB, also emerged in the early 70s, but STATUS had several advantages - except market success.)

(C) In 1976, he, Don Joyce and Roger Hosking wrote their `First Steps in Numerical Analysis'. It appeared in Braille too, and more recently, in a Bahasa translation for Malaysia.

(D) In the 80s, he designed a large system of computer-aided learning for basic mathematics and statistics courses, and also for revision and remedial work. With its help, most of our students became familiar with the use of computer terminals. (Now that our labs have MACs and PCs instead of terminals, we have no comparable support material to put in place!)

(E) With Kevin Broughan, he undertook the academic planning and political struggles that established a new four-year degree pattern [another one - see Leeds Polytechnic too] for Mathematics and Computer Science within a new School, against the often negative prognistications and activities of many in other subjects (and some in our own). He consolidated this work with a four-year stint[8] as Foundation Dean of the School.

(F) By 1980 too, John's interest in graphs and network processes led him to forsake research in statistics, and in 1984, he completed his Doctorate with `A Study of Knot-Graphs'. This led him to a long and productive collaboration with George Schaake on braids. Their theory provides the first coherent system for describing and classifying braids; it also embodies explicit algorithms for constructing braids of any chosen design. These methods have now been adopted by expert craftsmen throughout the world.

Since 1984, he developed theories of number sequences and number trees (often jointly, with overseas collaborators). One discovery, which attracted international interest, was a method of solving quadratic Diophantine equations (and Pythagoras' equation, in particular), based on analysis of the rational number tree. This work gained him international note: John had several invitations to speak ... at Special Sessions of the AMS on Number Theory in Maine (1991) and Vancouver (1993), and at a Conference on Combinatorics and Lattice Theory in Delhi (1994).

(G) Perhaps because of Pythagoras and Diophantus, John became interested in the history of mathematics - and through his efforts, we offered a course on the subject for several years.

(H) John retired from Waikato University early in 1994, an event marked by a `Retirement Symposium' with speakers and visitors from Auckland, Massey and Vic. He did NOT retire from mathematics, or from conferences - he has just returned from one in Italy (or was that the previous one)?

We miss his enthusiastic contribution to our teaching and research, we miss his flow of thought, talk and comment at meetings and the round the coffee table. I must pass over John's family life (that is a story for him to tell, not me), but beyond it, the more public side of his personal life has just as much variety as his career. Since his arrival in NZ, he retained his interest in sport and after recovering from his back injury, he played tennis regularly, with the same eagerness that he devoted to all his activities. Thanks to his interest in almost everything, he became

Vice-President and then President of the NZ Mathematical Association,

Foundation Chairman of the Waikato and Bay of Plenty Computer Society, for three years,

Council Member of the NZ Computer Society, for three years,

Chairman of the Hamilton Classical Guitar Society, for 10 years,

Foundation President of the NZ Federation of Classical Guitar Societies, for three years,

Foundation Chairman of the Waikato and Bay of Plenty Hang-Gliding Society, for three years, and the instigator and Foundation Chairman of the Waikato Art Group (with two colleagues, we enjoyed visiting exhibitions and galleries, and we made regular contributions to buy `objet d'art' - many of which still decorate walls and offices in the University).

I hope you permit me to draw a moral from his career. I think it took John a long to realise that he really could `join the club of true mathematicians': because of his start in life, working in institutions without a practice or tradition of research, he felt he did not `belong' in a university. However, he DID prove himself, in several areas, to his immense pride and satisfaction. Nowadays though, nobody `starting on the wrong side of the tracks' like him has any hope at all of gaining a job in a university - a real loss to the university system, I feel.

Kevin Broughan

NOTICES

GRANTEE REPORTS

Mark Johnston: Massey University

The Institute for Operations Research and the Management Sciences (INFORMS) is the major professional society for OR academics and practitioners. From April 23-26 this year, I was priviledged to attend the inaugural INFORMS Spring National Meeting at the Westin Bonaventure Hotel in Los Angeles. This was a huge meeting with some 2000 participants and an excellent opportunity to hear many famous names whose research articles have directly influenced my PhD research. The conference schedule was intensive, often with 30 parallel sessions, and I attended talks on a diverse range of familiar and unfamiliar topics. I found the sessions on Vehicle Routing, Tabu Search and Network Location the most interesting. Appropriately the theme for the conference was "MS/OR: Eye on the Pacific Rim" with invited sessions from many countries around the Pacific, such as Australia, Chile, Korea, Singapore and New Zealand. I presented a paper entitled "The Competitive Prize Collecting TSP" to an invited session on "OR/MS in New Zealand". Subsequent discussions generated some positive feedback and hopefully ongoing contacts. I wish to thank the New Zealand Mathematical Society for making this opportunity possible.

David McIntyre : University of Auckland

In August 1994 I attended the International Congress of Mathematicians in Zurich and the 10th Summer Conference on General Topology and Applications in Amsterdam, with the assistance of a $500 travel grant from NZMS.

Attending the ICM was a fascinating experience: I have never been in a city with such a high proportion of mathematicians! The sheer size of such a meeting is overwhelming, and gives a very clear idea of how broad and vigorous the field is. It was particularly interesting to hear the talks of the four Fields Medalists (Bourgain, Lions, Yoccoz and Zelmanov) and the Nevanlinna Prizewinner (Wigderson), as well as such famous mathematicians as Conway, Ratner and Wiles.

Because of the large number of participants at the ICM, contributed papers take the form of posters, with sessions for 19 subjects. One drawback with this approach is that you are expected to

stand by your poster answering questions to any queries during the session in which you are most interested in seeing the other posters. I presented a poster on Intervals in the lattices of topologies and partial orders.

Given the proximity of the ICM and the Summer Conference, it was surprising how few general topologists attended the ICM: perhaps as few as 10 or 20 of the 175 participants of the Amsterdam conference. This conference covered a broad range of topics in general topology, including a special session on set-theoretic topology which I found particularly useful. I was pleased to be able to renew old acquaintances and make new ones among the community of general topologists, and to catch up on recent developments in the subject.

Overall, I found this a very rewarding trip, and I am very grateful to the New Zealand Mathematical Society for making it possible.

Charles Semple: Victoria University

I would like to thank the New Zealand Mathematical Society for their partial support in assisting me to attend the American Mathematical Society, Institute for Mathematical Statistics, and Society for Industrial and Applied Mathematics 1995 Joint Summer Research Conference on Matroid Theory, held at the University of Washington, Seattle, July 2-6, 1995.

The conference was invaluable as it enabled me to make contact with other mathematicians with

similar research interests and exposed me to the thinking of leading researchers in the area. I know these contacts will prove useful in future research. At the conference I presented a poster presentation "Matroid Representation Over Partial Fields".

I would also like to take this opportunity to thank the American Mathematical Society for their generous support.

Fiona Taylor: Massey University

I arrived at Changi airport, Singapore, in sweltering humidity and clear skies, and left amidst an impressive tropical storm. Singapore is definitely a land of variety - from the culture, language and religions of her people, to the range of cuisine on offer.

It was against this backdrop that the first international meeting of INFORMS (The Institute for Operations Research and the Management Sciences) was held from the 25-28 June. The countries represented by the approximately 800 participants, were equally varied, as were the topics addressed in the presented papers. These covered such things as the backlash of Singapore's two child management policy, snow clearing problems in Canada, chemical transportation in Australia and USA airline management.

My attendance at the conference was made

possible, in part, through a travel grant from the

NZMS, which allowed me to present a paper on my PhD research into Search and Rescue problems. The conference provided me with an opportunity to gather knowledge in new areas of management science and to establish contacts with those from other countries working in related areas. I also took the opportunity to attend a tutorial on recent Tabu Search extensions given by Fred Glover himself (looking much different from what I had imagined) and colleague Manuel Laguna.

I flew back in through Christchurch to a welcoming 1^{o}C, with a collection of business cards from companies and universities around the world, representing opportunities for future correspondence. In all, it was an interesting and valuable experience and I am grateful to the NZMS for their support.

Positions Available

Hamilton

Lecturer

Department of Mathematics

University of Waikato

The University of Waikato invites applications for a Lectureship in Mathematics within the Department of Mathematics. This Department, together with the Departments of Computer Science and Statistics, forms the School of Computing and Mathematical Sciences. The Department of Mathematics has 10.5 full-time equivalent staff, and approximately 1200 course enrolments across all Schools of Studies in the University. Teaching and research supervision is done at undergraduate, Masters, and Doctoral levels.

The University wishes to appoint an applied mathematician whose interests will fit in with those of its existing strong group of researchers in applied and industrial mathematics.

Enquiries of an academic nature should be made to Associate Professor A D Sneyd (Tel +64 - 7 - 856-2889, ext 8324, email: sneyd@waikato.ac.nz). Information on the conditions of appointment and details of the method of application are available from the Academic Staff Registrar, The University of Waikato, Private Bag 3105, Hamilton, New Zealand (Telephone +64 7 856-2889, Fax +64 7 856-0135).

Places for appointees' children may be available in the creche run by the Campus Creche Society (Inc). The University welcomes applications from suitable people regardless of race, creed, marital status or disability.

Palmerston North

Professorship of Applied Mathematics

Department of Mathematics

Massey University

Consequent upon the resignation of the foundation Professor of Applied Mathematics, Graeme Wake, applications are invited for the Chair of Applied Mathematics within the Department of Mathematics. There are three chairs in the Department. The other professors are Professor Wolfgang Vogel (Pure Mathematics) and Professor Michael Hendy (Personal Chair in Mathematical Biology).

Applicants should possess a strong internationally recognised research record in any area of Applied Mathematics (including Mathematical Physics and Operations Research), good teaching skills and have good administrative potential. Links with industry are encouraged. A proven record in obtaining external funding is required. The appointee will be expected to provide strong leadership across the whole area of Applied Mathematics and be prepared to serve as Head of Department. Enquiries of an academic nature can be made to the Head of Department, tel (06)350-5081 or fax (06)350-5611, or the Dean of Information and Mathematical Sciences. It is hoped that the appointee will take up the position by July 1996.

Applications enclosing a full curriculum vitae are to be sent to the Academic Appointments Officer, Human Resources Section, Massey University, Private Bag 11-222, Palmerston North, New Zealand and should be received by 30 September 1995. Reference No 63/95 should be quoted.

Equality of opportunity in employment is University policy.

W J Tither, Registrar

Christchurch

Professorship of Applied Mathematics

Department of Mathematics and Statistics

University of Canterbury

The University invites applications for a Chair in Applied Mathematics. The successful candidate will possess a strong continuing record of internationally recognized research in any branch of Applied Mathematics. A proven record of academic leadership demonstrated by encouraging excellence in research, teaching and postgraduate supervision will be required.

Current research areas include computational mathematics, dynamical systems, fluid dynamics, biomathematics and relativity. The department has strong traditional links with the School of Engineering and the successful candidate would normally be expected to foster and encourage these ties.

Applications close on 30 November 1995. 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.

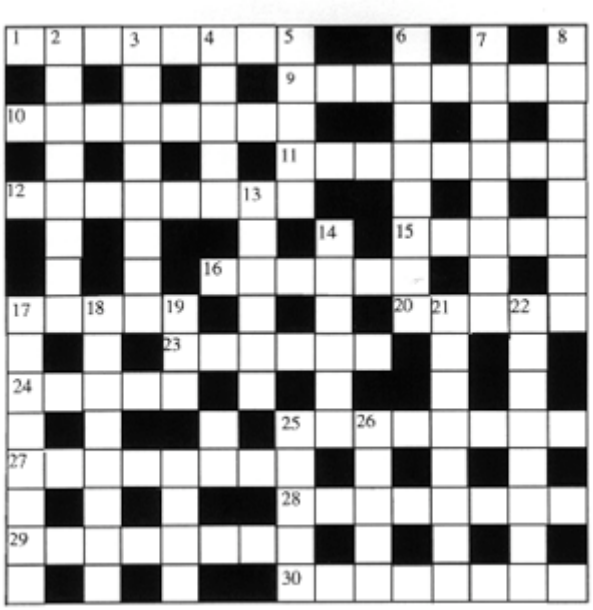
Further particulars and Conditions of Appointment may be obtained from the undersigned. Applications, quoting Position No. MT65, must be addressed to: Mr A W Hayward, Registrar, University of Canterbury, Private Bag 4800, Christchurch, New Zealand.

The University has a policy of equality of opportunity in employment.

Australian Mathematical Society

The Australian Mathematical Society has introduced an optional accreditation scheme for its members, (including reciprocal members), GAustMS, MAustMS and FAustMS for Graduate members, accredited Members and Fellows respectively. Several different membership criteria apply. Accreditation costs are A$65, A$97.50 and $130 for 1995, in addition to the annual membership fee. A booklet, containing further information on the Society and an application form for membership and/or accreditation, is available from: Mrs Val Pearson, Business Manager, Aust Math Society, Bruce Hall, ANU, Canberra, ACT 0200, Australia.

CROSSWORD N^{o}46 by Matt Varnish



ACROSS

1. Soul to soul for a great year? (8)

9 Commonplace 24 25. (8)

10 High flier one by way of triple cross. (8)

11 Extraterrestial cleric could be charged. (8)

12 Doubly rated gentleman's conveyance? (3-5)

15 Roman ghost from Madagascar hear a preliminary proposition. (5)

16 A little work before Tiny one for test results. (6)

17 Intervals of silence in purest sounds. (5)

20 Calls mathematical systems. (5)

23 Possibly a 12 for the former Miss Bell. (6)

24 and 25. Cheap distant object with pedalled front wheel. (5, 8)

27 With it with personal proof in state a number of fanlike inflorescences. (8)

28 Can rods be the axes of country dancing? (8)

29 Garlic and sapphires here according to Old Possum. (8)

30 Nothing left off the 11 motor is mass of restless energy. (8)

DOWN

2 Sharp one lethal if 11. (4, 4)

3 Send on over smart tin. (8)

4 Cheek a body's messenger. (5)

5 Had one over the eight? (5)

6 Round advertising material. (8)

7 Many raid split milk worker (perhaps a misspelt Pepys). (8)

8 Vernacular water events could lead to shy corns. (8)

13 Increase, due to adult movie's adverse criticism? (6)

14 In came damaged films. (6)

17 Tear Aristotle briefly an adjective for banks. (8)

18 Line Bess made thinking well. (8)

19 Pighouse rotas for hairdressers. (8)

21 Short measure still part looper caterpillar. (8)

22 Hardworking yachtsmen are few in Ecclesiastes. (8)

25 Noted a thousand in notes. (5)

26 God there is material. (5)
