Number 97 August 2006

NEWSLETTER

OF THE

NEW ZEALAND MATHEMATICAL SOCIETY

Contents

PUBLISHER'S NOTICE

This newsletter is the official organ of the New Zealand Mathematical Society Inc. This issue was assembled by Rowan M^{c}Caffery and printed at Victoria University of Wellington. The official address of the Society is:

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The newsletter is available at: http://IFS.massey.ac.nz/mathnews/NZMSnews.shtml
Editorial enquiries and items for submission to this journal should be submitted as text or LaTeX files to mark.mcguinness@vuw.ac.nz.

ISSN 0110-0025

EDITORIAL

It does seem to be a very BUSY time for mathematics at the moment.

Colleagues have just come back from the International Congress of Mathematicians that was held in Madrid at the end of August, carrying multitudinous volumes of proceedings weighing around 10kg - a challenge in light of recent events in the UK which have led to extra restrictions on luggage.

Grigory Perelman confirmed many a lay view of the eccentricity of mathematicians when he turned down a Fields Medal, but what a story that was! Nice to see in the NewYorker some serious discussion of what actually constitutes a proof, and the difficulties that other researchers can have in following a proof. Also fascinating to hear a little of the infighting that can occur in academic circles.

Marsden Grants have just been allocated, with lots of Fast Start programmes funded. Less than 10% of the original applications got funding, which is very tough.

NZIMA programmes are going strong, NZIMA Fellowships are being taken up and are freeing mathematicians to engage more closely with their research.

The annual NZ Mathematics Colloquium is drawing near, and I have just applied for funding to go to the ANZIAM meeting in Perth early next year.

I just hope you are not all too busy to have a read through this edition of the NZMS Newsletter!

All the best,
Mark McGuinness
Editor

PRESIDENT'S COLUMN

A short report this time. I'm hurredly bashing it our before I travel tomorrow to the International Mathematical Union meetings in Santiago de Compostela before the International Mathematical Congress in Madrid both of which I'll report on next time. A few weeks ago I thought it would be quite smart to arrange to spend a day or two in London before these meetings to meet up with a co-author. Now I dread the extra hours I'll be forced to spend in Heathrow and worry if my flight to Madrid will actually leave.

On other fronts, the Tertiary Education Committee has issued a press release announcing a CoRE selection/reselection round to begin later this year (see www.tec.govt.nz). Although the panel process and decisions won't be announced till next year, the NZIMA (the Mathematics CoRE!) will most likely need to have its re-bid ready by late November. I am sure that Marston Conder and Vaughan Jones would really appreciate "good news stories" from all of you who have been involved in one way or another with the programmes run by the NZIMA - perhaps some new research coming out of meeting visitors to the programme or good contacts made by your students and so forth. The NZIMA's CORE funding is the only really substantial funding that Mathematics research gets other than through Marsden, and it will need the strong support of the mathematical community in its bid for continuation. Information about NZIMA and its programmes can be found on the web at www.nzima.auckland.ac.nz

I have also been in discussion with the Mathematics Department at the University of Auckland regarding its support for the NZ Journal of Mathematics. In the straightened times it currently finds itself in (like most Mathematics Departments these days) it is (rightly) questioning the benefits and costs of its strong support of the journal. Whatever happens it is clear that some things are going to have to change and that increased support is going to have to be found elsewhere. That support is going to have to come from the mathematical community (the direct beneficiaries?) in one way or another. Not many of you subscribe or publish in the journal. In order to substantially reduce costs it might have to go completely electronic. There are of course all sorts of other issues. David Gauld and I would appreciate your opinions (and ideas!) on the matter.

More thought next time,
Gaven Martin
Massey University, Auckland

LOCAL NEWS

AGRESEARCH

The BifoMathStats annual retreat (Bioinformatics, Mathematics and Statistics Retreat 2006) was held at the Ruakura campus of AgResearch, on April 19, 20 and 21, 2006, where ever increasing applications of Maths, Statistics and Bioinformatics were pondered to problems in Biology. Discussions ranged from applications across scales of biological phenomena- from continuum mechanics to modelling muscles, mining of genome data, to application of structural modelling to determine biological functions.

Professor Geoff McLachlan of the University of Queensland conducted a one day workshop on Statistical Methods for the Screening and Classification of Microarray Gene Expression Data at the University of Waikato, Hamilton, New Zealand. The meeting concluded with an optimistic look at the future of Mathematical Biology and Bioinformatics.

Paul Shorten presented a poster entitled "A mathematical model of skeletal muscle force contraction due to electrical stimulation" at the Gordon Research Conference on Muscle Excitation Contraction Coupling in New Hampshire, USA (June 4-9, 2006).

Ken Louie

THE UNIVERSITY OF AUCKLAND

Department of Computer Science

Ian Warren gained a New Staff Research Fund grant for the full amount requested, which is very good going! John Corey and CSI have been awarded over $800,000 over 3 years, in a GIPI project.

Our Departmental Manager Linda Thompson was granted a staff development award - after which she transferred to the Science Faculty Office.

John Rugis (a PhD student of Reinhard Klette) has a poster accepted at SIGGRAPH.

Hans Guesgen has announced his departure to a Chair in Computer Science at Massey University, at the start of 2007.

Several staff have recently completed a sabbatical or long leave of various sorts, including Bakh Khoussainov, Muharram Khoussainova, Andre Nies, Mike Barley, Patricia Riddle and Peter Dance. And Cris Calude, Beryl Plimmer, Ulrich Speidel, and Kevin Novins have recently headed off on sabbatical or long leave of various sorts.

Professor Jack Copeland, Head of the Department of Philosophy at the University of Canterbury, founded the Turing Institute there, and he has published two books about Alan Turing. Now he has edited a major book on "Colossus - the Secrets of Bletchley Park's Codebreaking Computers", which has been published by Oxford University Press. On July 12, our Department sponsored a public lecture by Jack Copeland on "Colossus - the Secret Code-breaking Computer" to launch the NZ publication of that book.

In 1945 the mathematicians Geoffrey Timms, Jack Good and Donald Michie at Bletchley Park wrote a detailed technical report on Colossus. That report was kept as a State Secret until 2003, but some pages are now published in this new book. After World War 2, Geoffrey Timms, Catherine Caughey and David Bolam each settled in Auckland. Geoffrey Timms died about 20 years ago, but his daughter Dr Bera MacClement (who recently retired from our Department of Physics) attended the booklaunch. David Bolam has contributed his account of building Colossus computers for Bletchley Park. He is now in poor health, but his wife attended the booklaunch. Catherine Caughey has contributed her account of operating Colossus at Bletchley Park, and she attended the booklaunch.

The lecture theatre PLT1 was full for that Public Lecture, and the OUP bookstall was kept busy selling copies of the book.

Seminars

Dr Neal Glew , "Programming for multicore architectures".

Tracy Camp , "Recent activities in the U.S. to reverse the incredible shrinking pipeline".

Robert Strandh , "The line- and page breaking algorithm of the Gsharp score editor".

Santokh Singh , "Inversion of control and the spring framework".

Carl Schultz , "Utilisation of qualitative spatial reasoning in geographic information systems".

Luciano da F. Costa , "Complex Networks: an integrated approach to science and technology".

Dr Mark Titchener , "Changing perspectives in time-series analysis: information visualisation".

Sebastian Link , "Unlocking keys for XML trees".

Prof. John Hosking , "The Software Engineering Academic's Role in industrial innovation".

Garry J. Tee

Department of Mathematics

Eamonn O'Brien has been promoted to Professor.

Hannah Bartholomew was on sabbatical leave during the first semester of 2006. For 3 months she was based in London, renewing connections with former colleagues and forming some new links. Her main activity while in London was writing, but she gave a seminar at King's College London, based on research undertaken here as part of the MEP project. That stimulated considerable interest, and it has resulted in a new collaboration with Jeremy Hodgen at King's College London, looking at teachers and emotion. She also undertook some small-scale research with Mike Robinson at Sheffield Hallam University, looking at a modelling unit taken by their second year mathematics students. They presented that research at the Third International Conference on Teaching Mathematics at the Undergraduate Level, in Istanbul in July.

Bill Barton has declined an invitation to address a Ministry of Education workshop in the Maldives, since that conflicted with teaching and Departmental Review commitments.

David Bryant travelled to Australia in April to work with John Thomson at the Royal Botanical Gardens, Sydney. They are working together on strategies for decoding the evolutionary history of Pteridium (bracken fern), a task made difficult by the complex structure of the Pteridium genome. In June, David spoke at the 2006 Evolution Meeting, in Stony Brook, New York. He then visited the department of mathematics and statistics at McGill University (working with Prof. Paul Tupper on geometry of probability distributions) and the department of Human Genetics at University of Michigan, Ann Arbor (working with Noah Rosenberg on the reconstruction of species trees from gene trees). In addition, David has given talks at Massey University, Palmerston North, and Massey University, Albany.

Marston Conder gave an invited lecture at a workshop on "Symmetries of Combinatorial Structures" at the University of Ljubljana, in May. He has been serving on the Advisory Group to the "National Strategic Review of Mathematical Sciences" in Australia.

Rod Gover has been invited to run a Banff Research in Teams Workshop during 2007.

Sina Greenwood and Hannah Bartholomew were awarded $17000 from AURC, for their Northland Maori students project.

Eamonn O'Brien gave invited lectures on "Asymptotic Group Theory" at the Oberwolfach Forschungsinstitut Computational Group Theory, held at Jerusalem in May, and he had a "Research-in-Pairs" Fellowship at Oberwolfach Forschungsinstitut for June and July. Also in July he gave an invited lecture on "Groups and Computation" at Queen Mary University of London.

Boris Pavlov gave an invited talk in April on "Resonance optical conductance on star-shaped quantum network" (with S. Fedorov) at the international conference in honour of Professor Y.I. Ljubich on Algebra and Analysis, at Haifa. In May, he spoke on "Boundary conditions at the junction" (with M. Harmer and A. Yafyasov) at the IWCE-11 International Workshop on Computational Electronics , at Vienna. In June he gave an invited talk on "Kirchhoff coefficients for Helmholtz Resonator" (with J. Bruening) at the OTAMP-06 conference on Operator Theory and Applications to Mathematical Physics, at Lund; and an invited talk on a "Solvable model for Helmholtz resonator" at the Summer Conference of the American Institute of Mathematical Sciences, at Poitiers. In July he gave a lecture on "Modelling of quantum networks" at the NANOSEA-2006 International Conference on Nano-structures and Self-assembling, at Aix-en Provence; and an invited talk on "Jump-start in an analytic perturbation procedure on the continuous spectrum and the solvable models" at the 15th Summer St. Petersburgh meeting on Mathematical Analysis, in the Euler Institute.

Ivan Reilly gave a presentation at the academic celebration of Maximilian Ganster at Graz University, Austria, June 19th.

Jozef Siran was kept busy in July. He gave a colloquium presentation at the Technical University of Vienna, an invited address at the Australasian Conference in Combinatorial Mathematics and Combinatorial Computing, and an invited address at the 6th International Symposium on Graph Theory, Combinatorics, Algorithms and Applications. He was invited to join the Editorial board of the Journal of Combinatorial Theory Series B, the most prestigious periodical in his field of research.

In July, Arkadii Slinko attended the 8th International Conference on Social Choice and Welfare, at Istanbul. He directed the work of his students John McCabe-Dansted and Shaun White, which

they presented at that Conference. Arkadii reports that "Istanbul conference was fantastic. The chair of the conference Remzi Sanver used the wealth of his family and family connections a great deal. Can you imagine that the Central Bank of Turkey was the main sponsor and the welcoming cocktail took place in the Sultan's hunting lodge on the bank of Bosphorus where we were taken by boats? Turkey has made a lot of progress since I last was there". In 2007, Princeton University will have a cohort of 3 people who have come through Arkadii's tender tutelage in the Olympiad programme: Simon Marshall, Eric Kang, Eva Waddington. All three have been accepted with generous scholarships. As well as congratulating these three, we congratulate Arkadii on the success of his work with this programme.

Shayne Waldron has been invited to be on the Editorial board of a new journal on multivariate approximation, The International Journal of Theoretical and Numerical Approximation. He declined an invitation to address an American Institute of Mathematics meeting, since that conflicted with teaching and Departmental Review commitments.

The Incredible Science Day for children was a major success, with greater numbers of visitors than ever before. Our Department was represented in a larger way than on previous occasions, with three different presentations, each given multiple times. Phillip Sharp made two presentations to full MLT1 lecture theatres on Meteors and Collisions; James Sneyd exposed himself four times in all, I believe, in the Entrance Foyer of our Building (this must be some kind of record, for better or worse); and Hugh Gribben and Jonathon Baxter gave virtually continuous Origami and Mathematics shows all day.

The Great Origami Maths & Science Show, featuring Jonathon Baxter and Hugh Gribben, was hosted by the Department on a RSNZ grant. It had a successful opening at Incredible Science Day and in several Auckland schools. A national tour of 16 performances started on August 7 & 8 in Manukau, to finish in Dunedin on September 1. Most venues are already sold out, with several requests for extra performances. Hugh Gribben has featured in a National Radio interview.

Dr Jeff Gong has been a Tutor in our Department since 2003, and he has been involved particularly with teaching Maths 208 in our Summer Schools. He has now been appointed as Assistant Professor of Mathematics at the United Arab Emirates University in Al Ain, UAR, and he will start there sometime in August.

Dr Andy Begg is an honorary researcher in our department, and he has supervised several Mathematics Education graduate students. He has now completed his orals at the Open University, for his second doctoral degree. Congratulations to Dr Dr Andy Begg, who has just been appointed as Programme Director for Postgraduate Education at AUT North Shore campus!

Renu Choudhary has completed her PhD on Functional Analysis, supervised by Bruce Calvert; and Josef Silhan has completed his PhD on Lie Representation Theory and Differential Geometry, supervised by Rod Gover.

Recent visitors include Dr Mathieu Baillif (University of Geneva), Prof. Rick Beatson (University of Canterbury), Prof. Walter Bossert (University of Montreal), Jochen Bruening (Humboldt-Universitaet Berlin), Dr Simon Chiossi (Humboldt University, Berlin), Sean Cleary (CUNY), Colin Guillarmou (University of Nice and the ANU), Prof. Adrian Hill (University of Bath), Prof. Robert Jajcay (Indiana State University), Prof. Shouli Jiang (Shandong University), Dr. Ben Martin (University of Canterbury), Prof. Abdul Mohamad (Sultan Qaboos University, Oman), Prof. William Newman (UCLA), Prof. Peter Nyikos (University of South Carolina), Prof. Bjorne Sandstede (University of Surrey) and Dr Emily Stone (University of Montana - Missoula).

During the first semester, David Gauld told Bill Barton that "Often people ask what mathematicians do, given that all mathematical discoveries were made a century or whatever ago. Well, in a few minutes time I shall be giving a seminar, and included in that will be a presentation of a nice result I just proved in the past hour".

Seminars

Dr Ben Martin (University of Canterbury), "Lattices, local fields and automorphism groups of trees".

Colin Guillarmou (University of Nice and the ANU), "Determinants, zeta functions, and Weyl asymptotics in hyperbolic geometry".

Dr Jochen Bruening (Humboldt-Universitaet zu Berlin), "Nonparabolic Dirac Systems".

Ronald Begg (University of Canterbury), "Some problems related to cell-growth modelling".

Dr. Gareth Vaughan (Otago University), "The scattering of ice-coupled waves by an arbitrary ice sheet".

Dr Warren Moors , "When is a compact convex metrizable?".

Prof. Walter Bossert (University of Montreal), "Arrow's theorem".

Simon Marshall , "Bound states of Schroedinger operators".

Dr Tsukasa Yashiro , "Surface diagrams with two triple points".

Dr Simon Chiossi (Humboldt University, Berlin), "Solvable extensions of nilpotent Lie groups with G_2 structures".

Dr Richard Evans , "Characterising strong convergence".

Prof. Rick Beatson (University of Canterbury), "Radial basis function theory and applications".

Prof. Peter Nyikos (University of South Carolina), "In and around the M_1-M_3 problem", "Sequential compactness (and lack thereof) in countably compact spaces", "Stone-Cech remainders of discrete spaces: some old problems", "Kurepa families and locally compact, countably compact spaces", "Subsequentiality and sequential compactness", and "Hereditarily normal manifolds".

Dr Arkadii Slinko , "Abstract convex geometries and decision rules".

Prof. Robert Jajcay (Indiana State University), "Classifying regular Cayley maps".

Prof. Peter A. Streufert (University of Western Ontario), "Products of relative probabilities".

Tara Bonda , "Alternating and symmetric quotients of certain triangle groups".

Prof. Abdul Mohamad (Sultan Qaboos University, Oman), "Probabilistic quasi-metric spaces".

Prof. Jon Carlson (University of Georgia), "The poset of elementary Abelian p-subgroups of rank at least two".

Dr Mathieu Baillif (Universit de Genve), "Homotopy in non-metrizable manifolds", "Detecting Spillover: A dynamical systems modeling approach to glutamatergic synaptic signaling".

Dr Dmitry Malinin (USP Fiji), "Finite Galois stable subgroups of GL_n".

Prof. Bjorne Sandstede (University of Surrey), "Dynamics of spiral waves".

Prof. Shouli Jiang (Shandong University), "The cardinality of a first countable compact space".

Garry J. Tee

Department of Statistics

Catherine Loader has come from Case Western Reserve University, and she is now Associate-Professor in our Department.

Mik Black has left us, to join the Bioinformatics Group at the University of Otago.

Chris Triggs has returned from his sabbatical visit to the Centre of Excellence in Nutritional Genomics at UC Davis. Whilst there, he attended a conference at which one of the talks (on completion of the HapMap project) was reported on the front page of The New York Times. Chris does not recall that happening for any Statistics conference which he has attended.

In 1996, Ross Ihaka and Robert Gentleman published their paper which introduced the R language for statistical computation. That has now been listed as the most cited paper of the past decade, in the mathematical sciences. More than 20 books based on R have been published, and at least 10 more books are in the pipeline.

Arden and Mel Miller have a son Jacob, born on May 8.

The Australian Statistical Conference / New Zealand Statistical Association Conference 2006 was held at SkyCity in Auckland on July 3 to 6, organized by David Scott with William Dunsmuir, Neville Bartlett and Harold Henderson. The conference was sponsored by SAS, Roche, Australian Bureau of Statistics, RSNZ, NZIMA, Eli Lilley, Australian Bureau of Statistics, Australian Mathematical Sciences Institute, Statistics New Zealand, VUW, AGMARDT, UNSW and University of Melbourne.

The event was a success, attended by over 300 delegates from 31 countries. An exceptional program was delivered, with the highlights being the keynote addresses by Prof. Ray Chambers (University of Southampton), Prof. David Donoho (Stanford University), Prof. Peter Hall (ANU) and Prof. Xiao-Li Meng (Harvard University).

Seminars

Dr Geoffrey Pritchard , "Optimal offering in electricity markets".

Dr Bhramar Mukherjee (University of Florida), "Bayesian analysis of case-control data: an application to studies of gene-environment Interaction".

Dr Karen Vines (Open University), "Simple principal components and beyond".

Dr Sam Ferreira , "To cull or not to cull African elephants: Is that the question?".

Dr Gerald H. L. Cheang (Nanyang Technical University, Singapore), "American and European style exchange options under jump-diffusion".

Adam Smith , "Relating the marine environment classification to patterns in coastal reef fish communities".

Dr Lyn Hunt (University of Waikato), "Multiple Choice versus free response questions for assessment in introductory statistics papers".

Garry J. Tee

UNIVERSITY OF CANTERBURY

Department of Mathematics and Statistics

Neil Watson: Neil was taken ill suddenly on his way to university at the beginning of the year. He spent a considerable time in intensive care, and is now recovering slowly. We wish him and his family well.

Douglas Bridges visited Germany to participate in a conference on "Trends in Constructive Mathematics" in honour of his sixtieth 60th birthday. The conference was held in a nunnery on an island in the middle of Chiemsee (Bavaria's largest lake). Douglas also worked with various colleagues at the University of Munich.

In June Mike Steel headed off for an eight-week research tour around Germany, with side trips to the USA (Rutgers, Stony Brook), the United Kingdom (Norwich, Cambridge, Oxford), the Netherlands (CWI Amsterdam) and Austria (Vienna). He gave twelve talks, and met colleagues in biomathematics and bioinformatics working in Hamburg, Bielefeld, Dusseldorf, Greifswald, Munich and Tübingen. In the USA he attended the annual international Evolution meeting, along with 1500 other participants (including approximately 25 other kiwis). This meeting, which has so far always been held in North America, will be held next June in Christchurch, and is being organised by the Allan Wilson Centre for Molecular Ecology and Evolution. Mike also met with administrators at the Isaac Newton Institute for Mathematical Sciences in Cambridge UK, to discuss preparations for a 4-month workshop he is co-organising on phylogenetics (September to December 2007).

Alex James was on Study Leave for the first half of the year. She reports: "I recently returned from a six-week trip to the North of England. With the illustrious Dr Jon Pitchford (Biology, York) I visited numerous gritstone crags in North Yorkshire and the Lake District to carry out extensive research on the effects of minor injuries on rock-climbing abilities. The research conclusively showed that personal sacrificial offerings to the Rock Gods can improve ascent techniques in atrocious weather conditions and rapidly fading light. Other trip outcomes included results on Levy flights in population dynamics." Fortunately Alex has returned to us in one piece.

Ben Martin spent two weeks at Oberwolfach, working with three collaborators from the UK. The weather started out unseasonably cold, with rumours of snow, then warmed up for the beginning of the World Cup. The Mathematics Institute is in a peaceful forest setting, but the roar from down the valley when Germany scored its first goal was clearly audible. Ben also spent a week in April visiting the University of Auckland.

PhD student Hannes Diener gave a talk at a Constructive Mathematics workshop in Germany in June. Rick Beatson attended the Curves and Surfaces 6 conference in Avignon, France, in June/July. Carl Scarrott and Marco Reale attended a conference in Galway in July, and Jennifer Brown attended the International Conference on Teaching Statistics in Brazil, also in July. The same month, Chris Price went to the Computational Techniques and Applications Conference in Townsville.

We welcome Justine Willett to the department. Justine is stepping in to replace our departmental administrator Julie Daly, who is away on secondment for three months.

Recent visitors include: Dr David Borchers (St Andrews), Prof Daniel Huson (Tübingen), Tobias Thierer (Auckland), Prof Stephen Gardiner (University College Dublin), Dr Inna Korchagina (Birmingham), Prof Christian Robert (Université Paris Dauphine), Prof Jeremy Levesley (Leicester)

We also welcomed a delegation from the Indonesian National Cryptographic Institute for an afternoon. Their visit was sponsored by Christchurch company CES Communications, which makes hand-held cryptographic devices.

Seminars

Prof Domenico Piccolo (University of Naples "Federico II"), "Statistical models for evaluation and preference data"

Prof Domenico Piccolo (University of Naples "Federico II"), "Temporal and spectral metrics for time series modeling"

Dr Mark McGuinness (Victoria University, Wellington), "Confronting a mathematical model of cardiac control with data"

Dr Alex James , "Is a mean fish a dead fish?"

Dr David Borchers (University of St. Andrews), "Estimating animal density using spatially explicit inclusion probabilities"

Dr John Newell (National University of Ireland, Galway), "EDA, FDA, Soccer and Drugs"

Dr Inna Korchagina (University of Birmingham), "Classification of finite simple groups"

Prof Christian Robert (Universit Paris-Dauphine), "Minimum variance importance sampling via population Monte Carlo"

Prof Ronald Christensen (University of New Mexico), "Some ideas and examples of statistical testing"

Prof William Newman (University of California at Los Angeles), "Earthquakes, forest fires, gang warfare, and related issues"

Ben Martin

MASSEY UNIVERSITY

Institute of Fundamental Sciences (Palmerston North)

Sophie Pack has joined us as a Graduate Assistance and has commenced a PhD under the supervision of Igor Boglaev. She has been awarded one of the (24) Top Achiever Doctoral Scholarships by the Tertiary Education Commission. A great start to her PhD.

Tammy Smith has been awarded the Massey University Womans award for 2006. The money gained will be used to free Tammy up from some teaching duties in 2007.

On 11th June, Associate Professor Dean Halford (our long time "gaffer") officially retired (maybe) for the second time. Dean first retired in June 1998 but returned as the Deputy HoI. It is almost certain that Dean has been the longest (44.5 years) serving member of staff at Massey University. He has played a major role in developing the discipline of mathematics and has made substantial contributions to both research and teaching, mainly in the area of mathematical physics. His expertise in Relativity will be greatly missed. Dean has played a prominent role in administration at all levels of the University and, indeed, well beyond. He was a founding member of New Zealand Mathematical Society where he served several terms as a Councillor and was the President in 1980-81. Dean also made tremendous contributions to New Zealand education at secondary level. Among other things he was the Chairman of the Awatapu College Board of Trustees (1984-94) and President of the New Zealand Secondary School Boards Association (1987-89). He also made a significant contribution to the introduction of "Tomorrows Schools". Dean was awarded a NZ Commemoration Medal by the Queen in 1990 in recognising of his service to education. Dean is also a Fellow of the New Zealand Mathematical Society. Dean has been an inspirational mentor for his colleagues and has provided wise guidance and support for all our endeavours.

Alas, we had to say farewell to Patrick who has been a part of IFS for many years, as an undergraduate, honours and PhD student. His thesis, on "Mathematical Modelling of Granulation Processes", incorporated a wide variety of mathematical, numerical, and modelling techniques. His seminars were memorable, especially the one in which he wore a lab coat and brought along a kitchen blender for a demonstration. In fact his talks were so good they were recognized twice, when he won the NZMS Aitken Prize in 2000 and again when he was Highly Commended in 2001. In 2005 he commenced a postdoc with Igor Boglaev and worked on the project "Monotone Algorithms for Nonlinear Singular Perturbation Problems", which he has just finished. During his time in IFS he has provided invaluable computer support, setting up and maintaining the Linux boxes, a skill which he's putting to use for the Institute of Information Sciences and Technology (IIST), where he has taken up a position as Linux Administrator. He has been a warm and supportive part of the mathematics community here and we wish him all the best at IIST.

Igor Boglaev and Sophie Pack attended "The 13th Biennial Computational Techniques and Applications Conference (CTAC'06)" held at James Cook University, Townsville, Australia. Igor presented a paper titled: "Monotone iterates for nonlinear difference schemes of parabolic type in the canonical form" and Sophie (joint with Igor) "Iterative monotonic domain decomposition algorithms for convection-diffusion singularly perturbed equa-

tions".

Robert McLachlan has just returned from teach a winter school on Geometric Numerical Integration in Brisbane. The graduate school, which also offered courses in geometric analysis (the Poincar conjecture) and in mathematical physics (integrable models in statistical mechanics) with a total of 7 lecturers, attracted about 60 students from honours to postdoc level, many of them exceptionally keen. Massey students Brett Ryland and Sophie Pack also attended, thanks to the NZIMA's new partnership with AMSI. The school is run by ICE-EM, the International Centre of Excellence for Education in Mathematics, who runs several similar events each year. It is generously funded and you should definitely keep your students informed of any future programmes.

Our graduate students have been away travelling, Brett Ryland to Amsterdam to work with Jason Frank, and afterwards to a geometric integration conference in Bari, Italy, and Philip Zhang and Dion O'Neale to Beijing with work with Jia-Lin Hong and Zai-Jiu Shang, respectively, and the Chinese Academy of Sciences. Dion has been keeping us informed of his progress by blog at http://frontlawn.livejournal.com/ of which the highlight for NZMS members is perhaps the following:

Dion reports:

"Chinese Summer
When Philip and I flew out of Palmerston North in early June the temperature was some small single figure. One day and three flights later when we arrived at Beijing airport it was a balmy twenty-something degrees even though we arrived at midnight.

Philip Zhang and I had both received travel scholarships from NZ Education to travel to the mathematics institute of the Chinese Academy of Sciences. Philip, to visit Jiao-lin Hong and me to visit Zai-jiu Shang. A continuing theme during our time there was the battle with the temperatures of the Chinese summer. These were usually in the 30s during the day and at points reached into the 40s. Nights rarely dropped below the high 20s. Fortunately our rooms at the CAS guest house were air-conditioned and it was still possible to concentrate on some maths.

The CAS maths institute is located in the north-west of Beijing, the same area where much of the construction for the 2008 Olympic Games is taking place. Several other universities and research institutes are located in the same part of the city and so numerous academic bookshops have been established in the same area. Philip and I took full advantage of this buying close to thirty kilos worth of the Chinese re-printings of famous maths texts. These amazingly cheap books are re-printings (in English) from some of the top European publishers. What's more, they are even legal due to some complicated copyright agreement.

The main purpose of my trip was to discuss the preservation of periodic orbits by geometric integrators with Z.-j. Shang, but during my time in China I was also able to attend the Nanjing Conference on Hamiltonian dynamics.

Nanjing is located about 700km south of Beijing and was once the capital of China. It is also more humid than Beijing which made the temperatures there even less bearable. Although this was the first time the conference had been held the speakers who attended were excellent. Also impressive was the large student contingent at the conference, some 70% of the total audience. Even though jobs prospects for graduates in China are reportedly not so good, there are still large numbers of students wanting to study maths.

In both Nanjing and Beijing, the popular topic of discussion was the possible proof of the Poincaré conjecture by two Chinese mathematicians, Cao Huai-dong and Zhu Xi-ping who presented a talk in Ricci flow at the same time as the Nanjing conference. Dinner table conversations were dominated by the topic with people from widely spread areas offering opinions on the matter and on who they thought should received the prize attached offered for solving the conjecture. Maths is certainly alive and flourishing in China!"

Brett reports:

"On the 1st of May I travelled to Amsterdam to carry out six weeks of research relating to my PhD with Jason Frank (a well known researcher in the field of geometric integration specialising in multisymplectic methods) at the Centrum voor Wiskunde en Informatica (Centre for Mathematics and Computer Science). The main result from this visit was the generalisation one of my earlier results

on the nonlinear wave equation. I have found the requirements for a PDE to allow one to construct an explicit high-order multisymplectic integrator based on Lobatto IIIA-IIIB discretisation and have given a general construction for doing so. This class of systems includes the nonlinear Schrdinger equation with cubic potential .

I managed to take in some of the cultural side of Amsterdam by visiting several of the more prominent museums, by cycling through (and getting lost in) the older parts of the city. One weekend two others and I went on a 50km bike ride through the surrounding countryside, which, fortunately, is very flat. It is also quite scenic as our route took us along several strips of land only a few metres wide with man-made lakes on either side

At the end of my six weeks in Amsterdam, I travelled to the seaside village of Capitolo in Italy (near Bari) where I presented a poster at the SDS2006 conference (structural dynamical systems: computational aspects). Following the conference, I spent 5 nights as a tourist in Rome before returning to NZ."

Charles Little attended an international conference on optimisation in Rio de Janeiro during the period July 31 - Aug. 4. It was a large conference, with speakers from all around the world. On most days the sessions began at 8:30a.m. and finished at 6:30p.m., though the programme ended up having a few gaps in it, mostly because of Varig cancelling almost all of their flights due to the financial difficulties they are facing. In addition to the plenary and semi-plenary sessions, there were 21 parallel sessions of contributed talks, and so there was always something of interest to attend.

News from the Allan Wilson Centre

This semester there are 8 students from Greifswald visiting the AWC on an exchange programme. They are all in the 4th year of their undergraduate mathematical biology program. Three of them have joined the Mathematical Modelling paper. Several are doing projects for their Computational Biology paper that have a mathematical slant. These include:
-the modelling of mutations in mitochondrial DNA, which is more complicated than the standard situation as each individual carries many copies of their mtDNA so there are populations within populations;
-the application of mathematical models to try and explain why there is an apparent speed up in the rate of mutation when it is measured over shorter time-scales.

The AWC has been involved in running the mathematics part of the Year 10 visits (Year 10 is 4th form in the old lingo) to the Institute of Fundamental Sciences. We have eighteen 45 minute visits by groups of about 20 students. Each group is given a whirlwind tour of phylogenetics and searching the major sequence databases. Pairs of students each pick an animal and search for sequence similarities to every other pairs choice of animal. Eventually the table of similarities is used to build up a picture of which species are most closely related. This seems to be quite an enjoyable exercise for the students, although the downside of the time constraint is that the mathematics behind how the search engines work so efficiently is not covered.

Mike Hendy recently organised a one-day workshop on mathematical phylogenetics as part of the 2006 Winter School in Mathematical and Computational Biology hosted by the University of Queensland. He put together an all Kiwi line-up of himself, Barbara Holland, Mike Charleston, Alexei Drummond, and Charles Semple. The AWC also put on a 2.5 day workshop on molecular phylogenetics, presented by Matt Phillips and Barbara Holland, as part of a Summer School in South Korea in mid August.

Pete Lockhart will be hosting the 2006 Julius von Haast recipient, Dr Bill Martin. The award will see Prof Martin travelling to New Zealand each year for the next three years, to further research collaboration with Pete and his Plant Species Radiation Group. Bill is well-known in his role as the editor of Molecular Biology and Evolution.

Barbara Holland has been awarded a half-time lectureship in the Institute of Fundamental Sciences (Mathematics), Massey University, Palmerston North and will commence on the 1st of January 2007. She will continue on as a Research Fellow at the AWC for the other half of her time.

We have a new PhD student, Liat Shavit, who joined us in April from Israel, and more recently the University of Wageningen in the Netherlands. Liats background is in Bioinformatics. She will be working with David Penny, Mike Hendy and Barbara Holland on a Marsden funded project studying the phylogenetic implications of lineage-specific evolutionary processes.

Graduate Seminars Series

Dr Patrick Rynhart , "Solving 2D non-linear reaction-diffusion problems on a parallel computer".

Dr Barbara Holland , "Proving phylogenetic trees minimal for population data".

Sophie Pack , "Iterative monotonic domain decomposition algorithms for solving a convection-diffusion problem".

Marijcke Vlieg-Hulstman

Institute of Information and Mathematical Sciences (Albany)

Jeff Hunter has spent a period of leave in Europe. He attended the International Workshop on Matrices and Statistics at Uppsala (June 13 - 17) delivering an invited paper on "Generalized Inverses in Stochastic Modelling". Following a period of annual leave (spent in Russia) he spent some time with Prof Dr Joachim Werner at the University of Bonn, Germany. He also delivered an invited talk on "Variances of First Passage Times in a Markov Chain with Applications to Mixing Times" in the Mini-symposium on Linear Algebra and Statistics held during the 13th meeting of the ILAS, the International Linear Algebra Society in Amsterdam (July 17 - 21).

Graeme Wake was an invited speaker at the International Conference on Mathematical Modelling and Computing 06 at the University of Brunei Darussalam, Brunei, 5-8th June. In addition to his plenary lecture "Industrial Mathematics Case Studies" he ran a workshop for 20 post-graduate students on "Mathematics in the Environment", which addressed a problem on pollution. In July Graeme (and Lil) travelled to Europe and Asia. He visited Oxford for collaborative research, and was an invited contributor to the European Conference on Mathematics in Industry, giving a talk entitled "Animal fouling of pastures-a discrete stochastic dynamical system" and contributed to a Mini-symposium with a talk called "Industrial Mathematics on the other side of the World". He then moved onto the University of Bath, UK to speak on the "Micro-Mechanics Modelling of Fibres" calling in to visit the Wake farms in nearby Somerset villages, where his father originated a century ago. From there he proceeded to the Korean Advanced Institute of Science and Technology for the fourth "Industrial Mathematics Initiative" meeting in Daejeon. Graemes talk was on the "Diffusive Wave Model of the RHD virus in Rabbits". Graeme will return to New Zealand in early August after giving the same workshop for post-graduate students in Korea as in Brunei described above.

Mick Roberts had been at Oxford University, working on models for virus transmission and evolution with Angela McLean. He then travelled to the Netherlands, to work on models for emerging infectious diseases with Hans Heesterbeek from Utrecht University. Micks next stop was at Korea where he joined Graeme at the 'Industrial Mathematics Initiative 2006'. Mick gave an invited paper entitled 'Modelling the Evolution and Transmission of a Virus'.

Gaven Martin gave a Plenary Lecture "Analysis and Partial Differential Equations", at the new Mathematics Research Institute Bedlewo, Poland (http://www.impan.gov.pl).

Carlo Laing and Alona Ben-Tal participated and presented talks at the NZIMA one day meeting on dynamical systems and numerical analysis at Victoria University of Wellington.

The joint Australian and New Zealand Statistical conference was held in Sky City, Auckland from July 3rd-6th, 2006. There were over 300 delegates at the conference with the following from Massey, Albany giving oral presentations:

Nicoleen Cloete, "MCMC for the Distribution of Ancestral Selection Graphs and the Inference of a Directional Selection Parameter".

Barry McDonald, "Coefficients of Determination for Binary Response Regression".

Beatrix Jones, "Parentage Analysis for Nest Structured Data".

Marie Fitch, "A Comparison of Methods to Represent Interactions in Microarray Data".

Claire Jordan, "Mixture Models and Product Partition Models".

Congratulations to Graeme Wake who has been awarded the 2007 Maclaurin Fellowship.

This is a most prestigious award, from the New Zealand Institute of Mathematics & its Applications (NZIMA). The award will allow Graeme unfettered research time for next year.

Congratulations to Carlo Laing who received the IIMS Teaching Award for 2006. The Teaching Award includes a certificate from the Institute as well as a sum of $1000 and acknowledges exceptional standards of lecturing and teaching achieved on an on-going basis.

Congratulations to Nicoleen Cloete who has satisfied all of the requirements for her PhD in Mathematics at the University of Auckland.

Seminars

Dr Ian Bond , "Finding distant planets using natures lenses".

Prof. Tony Norris , "Key challenges in health informatics".

Dr Beatrix Jones , "Follow up on the final results of the Fish Parentage project".

Dr Barry McDonald , "How to best measure and compare physical activity when the data are grouped and how to find an appropriate sample size when the data are highly skewed and truncated".

Dr Claire Jordan , "Comparing Institutional Performance using Product Partition Models".

Prof Jeff Hunter , "Some problems related to Markov chains".

Dr Nicoleen Cloete , "Markov Chain Monte Carlo for the distribution of ancestral selection graphs and the inference of a directional selection parameter".

Alona Ben-Tal

UNIVERSITY OF OTAGO

Department of Mathematics and Statistics

Several awards have been bestowed on staff and students since the last Newsletter.

Prof Derek Holton was awarded a CMSA medal for lifetime contribution to combinatorics in 2005 but the medal was presented in 2006 at a conference in Alice Springs. (More details later when available.)

Congratulations also go to Robert Aldred who was awarded the Nihon University Medal in recognition of the contribution made by his joint work on graph factors with Professor Akira Saito.

Janine Wright and Matthew Schofield, both PhD students in the Department, were equal runners-up for the award of best presentation by a New Zealand student at the ASC/NZSA Conference recently.

Dr Mihly Kovcs took up his appointment as Lecturer in Mathematics on 1 July. Previously Mishi was a Postdoctoral Fellow working with Mark Meerschaert here at Otago. He has links to the Mathematics Institute of the University of Miskolc in Hungary, his native country. (More in New Colleagues section, next Newsletter.)

We are sorry to lose Professor Mark Meerschaert from the beginning of August. Even though Mark has been at Otago for a reasonably short period his influence and contribution to the Department has been very significant. He leaves to take up a prestigious position as Chair in Statistics at Michigan State University.

Dr Fred Lam has left the Department after 23 years of loyal service. Fred was one of our quieter staff members but his advice was always carefully considered and reliable. Our best wishes go to Fred for his future endeavours.

Dr Phil Battley's FRST Postdoctoral Fellowship finishes at the end of August. He has been working in the field on survival rates of Bar-tailed Godwits and Red Knots.

Derek Holton has provided this conference report.
From 27 June to 3 July I attended an interesting conference in Trondheim, Norway. It was organised by the International Commission of Mathematical Instruction. Every year they seem to initiate a Study on a specific topic in maths education. These involve a conference from which a Study volume is produced which purports to be the State of the Art for that topic area.

The conference in Trondheim was on Challenge in Mathematics. But it wasn't a conference as we usually know it. Sure there were a couple of plenary sessions but there were no other talks. The rest of the time was spent getting chapters of the Study Volume prepared.

The Volume is to be broken into three areas. The first is on challenges outside school and will cover exhibitions and competitions; the second is on challenges in school and takes the students' perspective; and the third is challenges in school from a teacher's perspective and includes professional development.

I was involved in the last chapter of nine on professional development for teachers. By the end of the conference we had a 7 page quite full outline that has assigned different parts to different people. My job now is to collect the parts and produce a readable chapter. With any luck each of the chapters should be finished by Christmas. Not a bad way to produce a book, eh?

In June Richard Barker gave an invited presentation at the Bayesian Methods in Wildlife Population Monitoring Conference in Colorado.

John Harraway attended ICOTS 7 in Salvador Bahia, Brazil in July. The conference was very worthwhile with 520 attending despite the collapse of the Brazilian Airline, Varig, which caused 12 people not to attend. John presented a paper on Item Response Theory, took part in an invited debate about the teaching of statistics in context and organised the session on multivariate statistics within the tertiary education topic. He was Scientific Secretary for ICOTS 7 and has been asked to Chair the International Programme Committee for ICOTS 8 which will take place in Slovenia in 2010.

John also visited the Federal University of Santa Catarina in Florianopolis where he is working with Dalton Andrade on a project in Brazil.

Robert Aldred was on study leave during the first semester. A very full schedule saw him visiting Thailand, England, U.S.A., Japan and Denmark to work with long-term colleagues. The mixture of polishing off some older projects, continuing present ones and getting some new ones under way was very productive. As always the chance to work directly with international colleagues and share some of the differences (and gripe about the dreadful similarities) between universities at home and abroad is extremely valuable. It was also a very gratifying surprise to be awarded the Nihon University Medal in recognition of the contribution made by his joint work with Professor Akira Saito.

Seminars

Ami Radunskaya (Pomona College, Claremont, California), "Mathematics in the Treatment of Cancer"

Warren Palmer " Building houses on straw polls' '

Dalton F. Andrade (Department of informatics and Statistics, Federak Department of Informatics and Statistics, Federal University of Santa Catarina, Brazil), "Item Response Theory(IRT): Main models and applications in Education and other areas"

Phil Morrison (Otago Polytechnic), "The Impact of Paid Employment on Academic Achievement"

Dr Tomasz Kozubowski (Department of Mathematics and Statistics, University of Nevada at Reno), "The Laplace distribution and generalizations: Fundamental properties, applications, and recent developments"

Dr David Ohlssen (MRC Biostatistics Unit, Cambridge, UK), "Random effects modelling in the analysis of hospital performance"

Dr Anna Panorska (Department of Mathematics and Statistics, University of Nevada at Reno), "Stochastic Models in Climate and Hydrology"

Peter Dillingham "Steller sea lions: Population dynamics with a stellar budget"

Bram Evans "An Introduction to Exterior Calculus"

Preliminary presentations of honours statistics projects:

Hee Mong (Levin) Wong " Heavy Tails in Financial Data"

Zijia (Carrie) Jiang " Reliability of Reporting of the Number of Sexual Partners"

Samuel Brilleman "Ultimate Running Performance of Man"

Stelios Charalambides "An Introduction to Torsion Theory"

Mark Meerschaert "Heavy Tails: Data, Models, and Applications"

Preliminary Presentations of MATH and COMO Projects:

Andrew Darlington (COMO) , "Optimizing Soup Production"

Josh Howie (MATH) , "Topology and Modern Analysis"

Caroline McLean (COMO) , "Squat of Vessels"

Vicki Livingstone (Department of Preventive and Social Medicine), "Clustering using Product Partition Models"

Greg Reid (University of Western Ontario, Canada), "Introduction to Numerical Geometry for PDE A strange tale of analysis and algebra"

Phillip L Wilson (The University of Tokyo), "Pipe flows and blood cells Mathematics in Industry and Biology"

Sabir Umarov (National University of Uzbekistan), "Fractional order differential equations and some of their applications"

Christian P. Robert (Universite Paris Dauphine and Erskine Visiting Professor), "Minimum Variance Importance Sampling Via Population Monte Carlo"

Lenette Grant

UNIVERSITY OF WAIKATO

DEPARTMENT OF MATHEMATICS

This column covers a longer period of time than normal as the column intended for the last issue of the Newsletter was inadvertently omitted.

We congratulate Tim Stokes who was promoted to Senior Lecturer in the last promotion round. Also to be congratulated are Rua and Michelle. Their son, Jasper, was born on 12 January and weighed 4.27kg (9lb 6oz).

We welcome Keith Allen to the department. He will be working as a part-time Senior Tutor until the end of the teaching year.

Preparations for the 2006 New Zealand Mathematics Colloquium are well underway. A notice about it appears elsewhere in this Newsletter.

Our postdoctoral fellow, Gabriel Fruit, left in early July. He returned to his native France to take up a position at the University of Toulouse. Earlier in the year, Gabriel and Tim spent time across the Tasman attending the ANZIAM conference held in Mansfield, Victoria. Gabriel presented a talk titled 'Resonant Alfvén waves in a current sheet driven by footprint motions — applications to solar coronal heating" while Tim gave a talk titled "Dripping viscous fluids: an Eulerian approach". Tim spent another three weeks in June/July visiting the University of Tasmania.

Kevin Broughan attended the Taipa *Workshop on Geometric Methods in the Topology of 3-Dimensional Manifolds* which was held in early January. He hosted Gary Walsh from the University of Ottawa for a week in early March. Kevin is on study leave in the first half of Semester B. He will spend about three weeks in Spain and will be attending the International Congress of Mathematicians that will be held in Madrid. There he will present a talk titled "Zeta zeros and holomorphic flows".

Ernie Kalnins was away from the end of June for about a month. He spent some time in Yerevan, Armenia at the *XII International Conference on Symmetry Methods in Physics*. There he presented a talk titled "Quasi exact solvability and superintegrability". After that conference, he went to the University of Minnesota to participate in the 2006 IMA Summer Program on *Symmetries and overdetermined systems of partial differential equations*. There he presented a talk titled "Topics in superintegrability and quasi-exact solvability".

Ian Craig has been on study leave during the first half of the year. He spent about four weeks visiting the University of Sydney and after a month back in Hamilton, he visited the US for about six weeks. Rua started his study leave in mid-April and is due back in mid-August. He spent these four months visiting the University of Victoria in British Columbia, Canada.

Seminars

V. Sinescu, "Construction of good lattice rules based on the L_∞ weighted star discrepancy".

M. Visser (Victoria University of Wellington), "Analogue spacetimes".

B. Pavlov (University of Auckland), "Typical problems of analytic perturbation theory on the continuous spectrum".

G. Vaughan (University of Otago), "Smoothed particle hydrodynamics for fluids".

G. Walsh (University of Ottawa) "Linear recurrence sequences and their connections to cryptography and Diophantine analysis".

VICTORIA UNIVERSITY OF WELLINGTON

School of Mathematics, Statistics and Computer Science, *Te Kura Tatau*

Noam Greenberg has accepted a Mathematics position here in MSCS. Noam was a postdoc with Rod Downey, completed his PhD under Richard Shore from Cornell University and works in the theory of computation and logic.

Rod Downey gave an invited Tutorial of three lectures at the European Logic Colloquium in Nijmegen in early August, and then gave a 45 minute talk at the ICM at Madrid in late August. Noam Greenberg gave an invited talk at Nijmegen in the special session on Computability Theory. Rod has just been made an editor of the computer science journal "Theory of Computing Systems", formerly "Math Systems Theory."

Peter Donelan attended the Advances in Robot Kinematics meeting in Ljubljana, Slovenia in June and subsequently spent some time working with Jon Selig at London South Bank University on screw systems and their invariants.

Matt Visser has been awarded a Marsden Grant of $457,011 over three years to investigate analogue models of curved space time.

Two new PhD students have arrived - Galym Akishev from Kazakhstan to work with Rob Goldblatt, and Giorgi Kvizhinadze from Georgia working with Estate Khmaladze.

Aleksandar Stojmirovic, our B.Hons graduate and then PhD student (supervisors: Vladimir Pestov and Bill Jordan, Head of the Centre for Biodiscovery), successfully defended his Ph.D. thesis "Quasi-metrics, similarities and searches: aspects of geometry of protein datasets" on May 16,

2005. Following a short appointment at the VUW Centre for Biodiscovery, Dr Stojmirovic took up a postdoctoral position at the University of Ottawa, from where he moved on to a two-year postdoc at the National Center for Biotechnology Information (NCBI) in Bethesda, Maryland, which started in August 2006.

Mark McGuinness was in Oxford in the UK again for a couple of weeks in July, visiting Andrew Fowler and talking about modelling equiaxed crystal occurrence in sea ice and alloys, in between visits to the emergency dentist for root canal work. On the way back home, Mark stopped in at the Korea Advanced Institute of Science and Technology in Taejon, South Korea, for the Industrial Mathematics Initiative (where Graeme Wake and Mick Roberts also featured, as noted elsewhere in this Newsletter) and gave a talk on the modelling of cardiac control.

An excellent one-day meeting under the NZIMA sponsored Dynamical Systems and Numerical Analysis programme was held at Vic on Tues 27 June, organised by Mark McGuinness and attended by about 30 academics and students. Eight talks, delicious food, and many useful conversations made for a great day, check out the website: http://www.mcs.vuw.ac.nz/~markm/DSNA/

A new Statistics staff member, Yuichi Hirose, joined us at the start of September. He comes to us from Auckland, where he completed his PhD under supervision from Alan Lee. His PhD research considered the efficiency of semiparametric maximum likelihood estimation in a variation of case-control sampling that was originally proposed by Alastair Scott and Chris Wild. Currently Yuichi is adapting this theory for GEE and Bayesian estimating function situations. Yuichi has filled the new position with a focus on 'Applied Statistics', mentioned in the previous newsletter, that we created following our external review in 2005.

Dong Wang is overseas on sabbatical, from July 2006 to April 2007. Richard Arnold gave a talk at the 8th Valencia Bayesian statistics meeting in Spain in July, and Richard jointly ran a course in longitudinal data analysis for Statistics New Zealand in May, along with Ivy Liu. Ivy and Richard also presented work at the ASC/NZSA 2006 conference in Auckland in July, as did John Haywood and Estate Khmaladze. Victoria University sponsored Hira Koul's invited talk in the "Modern Goodness of Fit Methods" session that Estate organised, and in which Estate also spoke. Hira (Michigan State University) then spent some time working at VUW with Estate following the conference. At the end of June, John Haywood presented a talk at the Time Series Econometrics, Finance and Risk conference in Perth (UWA). John also gave an invited presentation to Statistics New Zealand at the end of August, and was an invited speaker at a workshop organised by the Reserve Bank of New Zealand in March.

Stefanka Chukova visited Japan and South Korea in August. In Japan Stefanka worked with Yu Hayakawa (in Tokyo), and gave an invited seminar on some joint work of hers with Srinivas Chakravarthy and Harry Perros. In Busan (Korea), Stefanka organized a special session on Advanced Warranty Modeling at the 2006 Asian International Workshop on Advanced Reliability Modeling (AIWARM 2006). Stefanka also visited Bulgaria in June, where she attended the 12th International Summer Conference on Probability and Statistics in Sozopol and gave a talk on Warranty Repair Strategies, which is joint work with Mark Johnston. Mark has been busy since joining us last year, and he's having an exciting time: in the same week in April he got engaged (to Emily) and bought a house. In addition to his work with Stefanka, Mark gave a talk on adding rewards in combinatorial optimization at the ANZAM Operations Management Symposium held at Victoria University in June.

Bhramar Mukherjee (from University of Florida) visited Ivy Liu for a month (in May) and worked with Ivy and Dong Wang. Estate Khmaladze hosted Jon Wellner (University of Washington) for three weeks in August/September, in addition to Hira Koul for a fortnight in July. Daryl Daley did some work with David Vere-Jones here in Wellington after the ASC/NZSA conference, where Daryl received his (surprisingly heavy!) Pitman Medal. Christian Robert (Universite Paris Dauphine and Visiting Erskine Fellow at Canterbury) visited the Statistics and OR group briefly in early August. Christian's talk drew a large and diverse audience, with several computer science representatives, along with those from stats/OR and maths. Harry Perros (North Carolina State University) visited Stefanka Chukova from February to April. Stefanka and Harry co-taught a graduate class on Computer Networks and Reliability, and they did some research on issues related to computer networks. Stefanka is also hosting Dimitar Christozov (American University in Bulgaria) from August to October. Stefanka and Dimitar are jointly researching warranty issues linked to malfunctioning and misinforming.

Seminars

Elisa Varini (CNR, Milan), "Filtering of a state-space model by particle filtering"

Noam Greenberg , "Natural definability in the nether regions of the c.e. degrees"

Bhramar Mukherjee (University of Florida), "Bayesian Analysis of Case-Control Data: An Application to Studies of Gene-Environment Interaction"

Silke Weinfurtner , "Analogue model for general geometries, massive particles, and quantum gravity phenomenology"

Dillon Mayhew , "Matroid complexity and large descriptions"

Petarpa Boonserm , "Generating perfect fluid spheres in general relativity"

Celine Cattoen "Necessary and sufficient conditions for big bangs, bounces, crunches, rips, sudden singularities and extremality events"

Aaron Armour , "Geometric classification of 4-dimensional super algebras"

Dmitry Malinin (University of the South Pacific), "On some integral representations of finite groups"

Flavio Ferrarotti (Massey University), "Arity and Alternation of Quantifiers in Higher Order Logics (or 'When can we really express more queries in Higher Order Relational Calculus')"

Hira Koul (Michigan State University), "Goodness of fit testing via martingale transform"

Rod Downey , "Ideals in Computable Commutative Rings"

Christian P. Robert (Universite Paris Dauphine and Visiting Erskine Fellow, University of Canterbury), "Minimum Variance Importance Sampling Via Population Monte Carlo"

Thomas Suesse , "Analysis and Diagnostics for Multiple Categorical Responses"

Hyman Bass (University of Michigan), "Rationality of the Zeta Function of a Finite Graph"

Estate V. Khmaladze , "Differentiation of set-valued functions: comparison to generalised functions and construction of the local Poisson processes"

Graeme Wake (Massey University), "Modelling of cancer treatment"

WSG news

The Wellington Statistics Group (WSG), a local group of the New Zealand Statistical Association, continues to meet regularly (although a little less frequently so far this year than we would have liked). The Group receives regular sponsorship from the Ministry of Social Development, Statistics New Zealand, Statistics Research Associates Ltd, and Victoria University of Wellington. There have been recent WSG talks given by:

July 2006: Edith Hodgen, Rachel Dingle and Hilary Ferral, New Zealand Council for Educational Research, "Statistics: a growth area for NZCER"

June 2006: Ian Westbrooke, Department of Conservation, Research Development and Improvement Division, Christchurch, "Meeting statistical needs in a conservation management organisation"

March 2006: Geoff Chambers, Cell and Molecular Biosciences, VUW, "Out of Taiwan? Genetics sheds new light on Maori origins"

There are a couple of 'promised' talks in the pipeline, but with no confirmed dates yet I won't drop any names! Anyone who does not presently receive WSG announcements and who wishes to be informed of future events is welcome to contact the WSG Convenor, John Haywood: John.Haywood@mcs.vuw.ac.nz

John Haywood

FEATURES

Obituaries

Emeritus Professor C. J. Seelye, MSc(NZ) PhD(Edin) CPhys FInstP FNZIP

24 Nov 1912 - 16 May 2006

Cassilis James (Cass) Seelye was born in Waihi, where his father, Frederick Thomas Seelye, taught chemistry and mathematics at the Waihi School of Mines. In 1920 the family moved to Wellington when Cass's father joined the Dominion Laboratory.

After attending Lyall Bay School and Wellington College, Cass studied from 1930 to 1933 at Victoria University College, being awarded his MSc with First Class Honours in Mathematics and Second Class in Physics. He then went to Edinburgh, where his PhD thesis "Researches on the Relativity Wave Equation of the Electron" was accepted in 1936.

On returning to Wellington in 1937 he had part-time positions in both physics and mathematics at Victoria, and in 6th form mathematics at Sacred Heart College, before getting a permanent position in November in the Meteorological Office. During World War II that became a branch of the Air Force, in which he reached the rank of Squadron Leader. He met his future wife Elsie, nee Swinney, when she joined the Meteorological Office in 1941 on completing her Otago BSc. She graduated MSc in Mathematics from Victoria in 1943, and they married in 1944 when Cass was 31.

He returned to Victoria as a Senior Lecturer in Mathematics 1947, became an Associate Professor in 1960, the Professor of Applied Mathematics in 1967, and Head of the Mathematics Department when Prof. J. T. Campbell retired in 1969. Cass retired himself in 1974 aged 62.

I was taught by Cass from 1956 to 1959 (though we would not have dreamt of calling him "Cass"!) and was a colleague in 1960 and from 1968 to 1974. His lectures, on various parts of mathematics, were clear and methodical. Generations of students are grateful, including myself. Almost all New Zealand university mathematicians then concentrated on teaching to the exclusion of research. When I went overseas to do my own PhD and encountered a Department in which all the academic staff were active in research, and saw for myself how it improved their teaching, I wondered how the Victoria mathematicians had managed to teach so well. Cass's devotion to teaching is shown by his taking on, in the year he was to retire, a new second-year topic which he had never taught before and would never teach again. His teaching of linear algebra led to a research publication: not an easy subject to say something new about in 1958! Most of his research was on climatology. I recall him picking up a Master's thesis on that subject which he was to examine; its excessive weight prompted him to say "Feels like a good Second."

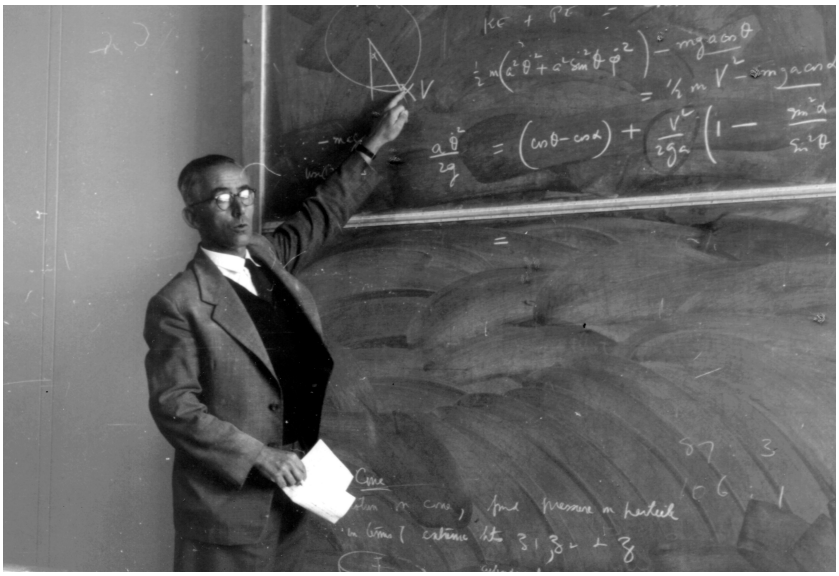
He also put his knowledge of climatology to good practical use: shortly before he retired he started a discussion on where to live. Some of us suggested Tauranga, the Coromandel Peninsula or Napier, but he produced damning statistics for everywhere except Waikanae, which is where he spent his last 31 years.

Although Cass did not enjoy politics or administration, his most important achievement is probably an administrative one. He wrote the letter to the Royal Society of New Zealand in 1972 that prompted the formation of the NZ Mathematical Society, after a departmental meeting recommending it. Although there was opposition from some members of the National Committee for Mathematics, Cass's letter ensured that the matter would not be quietly buried, and New Zealand mathematicians are now very grateful that their Society exists.

Outside mathematics his major interests were cross-country running and the Presbyterian Church, in which he was an elder.

Our sympathy goes to Elsie, his wife for 62 years, their four children, and all the Seelye family.

J. F. Harper



ROBERT McKIBBIN

Robert McKibbin has been a Professor of Applied Mathematics in Massey University since early 1996 and is seriously overdue as a subject of this centrefold series. Apart from a stint of four years in the mid-1970s at the Papua New Guinea University of Technology, Robert has been based in three different New Zealand universities. He has provided sterling service at each of these universities, encompassing his overall devotion and guidance to engineering and applied mathematics.

He originated from Hamilton and was dux of Tauranga Boys College in 1965 in the beautiful Bay of Plenty region. He headed south to the University of Canterbury, completing his BSc (Hons) and MSc degrees by 1970. Before setting off to Papua New Guinea in 1974, he spent a few years as a Teaching Fellow in Mathematics at the University of Canterbury.

On his return to New Zealand in 1978, he took up a lectureship at the University of Auckland in the Department of Theoretical and Applied Mechanics (now the Department of Engineering Science). This was in parallel with the completion of his PhD in Applied Fluid Dynamics (Geothermal Modelling) in 1982. In 1984 he became Senior Lecturer a position shared between the Department of Theoretical and Applied Mechanics and the Geothermal Institute, University of Auckland. By the late 1980s Robert was established as a key figure in the flourishing Geothermal Institute at University of Auckland which is an interdisciplinary group embracing many of the subjects that contribute overall to this key activity for New Zealand.

Thus by the early 1990s, it seemed Robert was really settled and well-established in the University of Auckland. However in 1991, his wife Helen Renwick was offered the Head Librarian position at Massey University, which was then based solely in Palmerston North. Simultaneously, Robert was offered a position of Senior Lecturer also at Massey in the Department of Mathematics. So in September 1991, all of Robert, Helen and children Emily and James joined the merry band in Massey University in Palmerston North. In January 1996 he was appointed Professor of Applied Mathematics at Massey Palmerston North. Then in January 2001 he transferred from the Palmerston North to Albany campuses and so was able to re-locate back to Auckland. At different times in this period he created the Centre of Mathematical Modelling and, much later, the Centre for Mathematics-in-Industry at Massey University. The latter was a very convenient vehicle to enable the Institute to host the ANZIAM Mathematics-in-Industry Study Group over the period 2004-6, a move Robert strongly supported. His support helped to make these activities a real success.

Robert is a peer of the current generation of professors brought up through the New Zealand system and he is a leading figure in the research and teaching of applied mathematics. He is an enthusiastic teacher universally liked by students. His "no-nonsense" approach is well-known and appreciated.

His research today, although heavily based in the theory and application of heat and mass-transfer, also stretches across the ever-expanding stage of which applied mathematics operates. He has contributed substantially to the areas of: fluid mechanics; geothermal fluid mechanics; hydrogen diffusion in metals; reservoir modelling; water-rock interaction and oxygen isotope transport in hydrothermal systems; non-condensable gas effects in geothermal reservoirs; modelling of hydrothermal eruptions; volcanic ore-forming brines; and modelling of dispersion of particles by the atmosphere. These highly related areas have enabled Robert to apply the high level tools of modelling and computation from these areas to a wider diverse range of heat/mass transport and energy distribution and production. His contributions show clearly the distinction, not always fully appreciated, that Applicable Mathematics is a very different activity from Industrial and Applied Mathematics. Robert operates very firmly within the latter category. He has had a steady stream of collaborators and graduate students which gives testimony to his standing in these areas. He makes frequent visits to international events in far-away exotic places (Japan, South Korea, Norway, Thailand, etc.), often because he is sought as an invited speaker.

With a well-established research record in place he has also led by example in many administration roles. In 2002 he became Head of the Institute of Information and Mathematical Sciences (IIMS) at the Albany, Auckland campus of Massey University, a position he still occupies currently. This is a multi-disciplinary grouping across the subjects of computer science, computer engineering, information systems, mathematics and statistics, with over 60 staff. In 2004-6 he was the Chair of ANZIAM, being only the second New Zealander to be so in that organizations very successful 13 years of existence. A distinctive feature of his leadership style is the way he consistently provides support and encouragement to colleagues at all levels and at all times. He is extremely competent in administration and at the same time maintains excellence and enthusiasm in his research and teaching roles.

Not only does Robert have a consistent and high level of involvement in university life, he also has considerable involvement in other cultural and scientific areas. Included currently in these roles is the chairmanship of the North Shore Branch of the Royal Society of New Zealand. He also has much musical talent, and is currently a member of the choir of the Hibiscus Coast Singers.

Robert has been a respected colleague of mine since 1991 and I consider it a great privilege to be invited to pen this portrait of him for this Newsletter.

Graeme Wake Massey University

Gloria Olive

(1923-2006)

Gloria Olive died at *Redroofs*, a nursing home in Dunedin, on 17 April 2006. She had been ill for several months. Towards the end of her life, Gloria relied on a thick magnifying glass to read, but eventually even that proved ineffective, and when she was no longer able to walk she consciously allowed herself to die. There was a death notice in the *Otago Daily Times* but, at Glorias request, no funeral. She left her body to medical science.

At the Colloquium in Dunedin in 2004, Gloria gave a talk entitled *Looking Backward and Forward (Some personal and mathematical disclosures)*. It was in two parts, the first an autobiographical summary, which reiterated, with anecdotal colour, much of the detail she gave Saunders Mac Lane and John Rayner for their Centrefold article (NZMS Newsletter 45) on the occasion of her retirement in February 1989. The second part summarised her work on generalized powers, which goes back to her PhD thesis. With typical polish, the non-technical side of her talk was word perfect and carefully enunciated, though she was frail and found it tiring to speak. It was also provocative — there were clearly some matters she wanted to get off her chest — and entertaining. Regrettably there was little time left for what she wanted to say about generalized powers. This was her last formal connection with the mathematical community in which she occupied such a distinctive and conspicuous position.

Gloria Rita Olive was born in New York City on 8 June 1923. Her father, Lazaur (1876-1956), was a lawyer, businessman and amateur mathematician, remembered by Gloria in the dedication to her thesis for his example of independence. The thesis was also dedicated to the memory of my Mother [Florence] (1889-1960), who gave so much and expected nothing in return. In 1930 the family moved to Brighton Beach, Brooklyn. Gloria described herself as being at this time more of a ball-player than a mathematician [1]. In 1938 she was the Manhattan Beach Womens Table Tennis Champion, and pitched for the Manhattan Beach Womens Softball Team at Madison Square Garden.

Gloria entered Brooklyn College in 1940, intending to major in Physical Education, but on discovering that for this she would need to take courses in biological sciences, she switched to mathematics. She graduated BA in 1944 and became a Graduate Assistant at the University of Wisconsin. Gloria recalled her arrival at Madison:

> It was a Monday and I asked the secretary if I could make an appointment to see Professor Langer [the Department Chairman] that afternoon. She replied, Professor Langer is never here in the afternoon. So, I asked, How about tomorrow morning? and she said Professor Langer is never here on Tuesday. I was glad to be able to see Professor Langer on Wednesday morning. When I arrived, he was most gracious and asked about my trip to Madison [. . .] He then asked if I had found a place to live. When I told him I had, he said he would like to have my address

> and so, he called out to his secretary (in his Harvard accent): "Ms Meyer, Ms Meyer." When there was no response, he called out to his other secretary: "Ms Smith, Ms Smith." When she also failed to respond, I said, "I guess you'll have to write it down yourself." [2]

Gloria received her MA from Wisconsin in 1946. Following appointments at Arizona and Idaho State, she accepted a Graduate Assistantship at Oregon State in 1950. Her PhD the thesis was entitled *Generalized Powers* was awarded in 1963.

Gloria was Chair of the Mathematics Department at Anderson College (now Anderson University), Indiana, 1952-68, remembered by the present Chair as a gifted mathematician, inspiring teacher and a treasured friend, and Professor at Wisconsin State University, Superior, 1968-71. Her book, *Mathematics for Liberal Arts Students* (1973), was written during this period. She was appointed Senior Lecturer at Otago in 1972, a position she held until her retirement. Gloria was a foundation member of the New Zealand Mathematical Society and served on the Council. She was an organizer of the 1975 Colloquium that gave birth to the Colloquium bell — "I can recall that Colloquium Dinner in which Professor Gordon Petersen bellowed DINNER IS SERVED (to start it off) and GO HOME (to encourage us to leave)" [3] and attended most others. She will be remembered by many of us as one of the Colloquium's identities. She greatly enjoyed mixing with mathematicians, and when Saunders Mac Lane visited Otago as a William Evans Fellow in the late 1980s, Gloria was with him constantly; she described herself as his Appointments Secretary.

Gloria's published mathematics had its origins in her PhD thesis, the results of which appeared in the American Mathematical Monthly [72 (1965), 619-27]. A sequence of papers in the Journal of Mathematical Analysis and Applications saw the further development of generalized powers [74 (1980), 270-85, (with Raymond Scurr and Robert Aldred) 192 (1995), 439-59], the introduction of the b-transform [60 (1977), 755-78] and work on binomial functions [70 (1979), 460-73, (with Donal Krouse) 83 (1981), 110-26] and Catalan numbers [111 (1985), 201-35]. Other papers in the sequence can be found on MathSciNet. Her last paper (with Raymond Scurr) was on Stirling numbers [Discrete Math. 189 (1998), 209-19].

Gloria once reflected that being a woman in a male-dominated profession has its advantages and disadvantages [4]. Whatever the advantages, the disadvantages were etched in her memory. "Since coming to Otago University, my life has changed in many ways. If anyone told me what I could tell them, I would be sure they were paranoid." [5] Gloria gave an example of what she meant at her Colloquium talk, probably best not committed to print. From this distance, however, it is not difficult to reconstruct episodes that Gloria might have accepted as adequate substitutes.

Gloria was a senior colleague, and of course a woman, in a department largely made up of youngish males with new PhDs, kindly enough but sure of ourselves and quick to judge. Her view that teaching

should be student-centred fell on deaf ears. Her exam results were consistently higher than others, and examiners meetings took a familiar form, Gloria putting her arguments against scaling, with a freshness as though she were making them for the first time, and with so much energy that for much of the meeting she was standing, and frequently gesturing, at her seat, the rest of us putting, with stony patience (if only in our minds), the counter-arguments. Invariably the rest of us prevailed. But she never gave up. On the wall of her living room hung a picture of Abraham Lincoln, with a quotation one presumes she identified with: *Let us have faith that right makes might; and in that faith let us to the end, dare to do our duty as we understand it.*

My own relationship with Gloria was instantly turbulent. We shared the first-year calculus course, Gloria taking the afternoon stream and I the morning stream. This required regular meetings in her office to ensure that we were synchronized. She found me inflexible and wrong-headed. I found her prescriptive and condescending. Over time we forgave each other, though nothing was said, and a warmth, even affection, developed between us.

"Some [experiences] have caused frustrations," Gloria wrote,

> which in turn, have motivated me to become involved in various activities — away from the Mathematics Department. For example, I was motivated to go on long bike rides — and swim in the sea every month of the year. I also became involved in the Sivananda Yoga Centre. In 1975 I attended a Yoga Retreat led by Swami Vishnudevananda. He spoke about vegetarianism — and I have been a vegetarian ever since. I also became interested in: alternative health practices, the Dr Bernard Jensen Health Club, Spiritualism, the Theosophical Society, Rudolph Steiner Education, and Hare Krishna. [6]

Gloria's bookshelves in her house on Forth St revealed her interest in alternative theories to almost everything. An instinctive sympathy for alternative explanations may have been a fundamental part of her personality. Gloria was unmistakable on her bike, perched high and always in a big gear, so that she seemed to be forever toiling at the pedals. She was once given a ticket for dangerous cycling and thereafter adopted a theatrical deliberation in her hand-signalling. She kept a bike at a bikeshop in Christchurch to use whenever she was in town.

Garth Craib, an old friend of Glorias, said that her house had been crammed with papers: on shelves, desks, even parts of the floor. She liked the clutter and knew where everything was. Her front room, which she referred to as The Cave because of the wallpapers stonework pattern, was packed from floor to ceiling. She lived for her mathematics, he said.

Peter Fenton

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[1] Letter to Diane Farquhar, 20 July 1987
[2] Looking Backward and Forward, 2004
[3] Ibid
[4] Letter to Diane Farquhar, 20 July 1987
[5] Looking Backward and Forward, 2004
[6] Ibid

BOOK REVIEWS

Susan Oakes, Alan Pears & Adrian Rice, **The Book of Presidents 1865-1965**, London Mathematical Society, London, 2005, 157 pages. ISBN 10: 0950273414.

The "Book of Presidents" studies the evolution of the London Mathematical Society from 1865-1965 through its presidents and De Morgan Medallists. The presidents of the LMS and the medallists were leading mathematicians in England and hence their biographies give an accurate glimpse of the mathematical culture and education in England during this period. The problems they worked on give us a mathematical pulse of the times.

In this slim volume, the authors provide short biographical sketches of past LMS presidents and De Morgan Medallists. The book is supplemented with an introduction, a chronological map of the LMS, a list of presidents, titles and references to presidential addresses, a list of medallists and a glossary. There is a lot of information and references here not conveniently found elsewhere. This book is clearly a valuable reference for the historians interested in British mathematics from Victorian times onwards.

I believe the book has appeal not only for historians, but also for the general mathematical public. It is not diffcult to imagine that a work of this nature could turn into a dry account of the LMS and its presidents: the authors avoid this. The book is well written and engaging. The authors evidently took great trouble to ensure that it is self contained. The 17 page introduction contains a short but informative sketch of events leading to the formation of the LMS followed by a judiciously brief history of the Society. This chapter is valuable in its own right and it sets the stage for the biographies that follow. Most of the LMS presidents held chairs at universities in England and received various prizes, medals and honours from the LMS and the Royal Society. A glossary containing descriptions of named chairs, and medals and prizes is given at the end of the book to help the reader.

The heart of the book consists of short biographical sketches of LMS presidents starting with De Morgan (1865) to Walker (1963-1964). Each president is considered separately. The sketches are under a page in length and are based largely on material appearing in obituaries from LMS and Royal Society publications. Each sketch is accompanied by a photograph of the president and a signature. There were 51 presidencies in the first 100 years, but 50 presidents. G.H. Hardy served two separate terms. The reader thus gets two photographs of Hardy and a continuation of a sketch in its chronological order. Although the book concentrates on the first hundred years of LMS presidents, the authors provide a brief biographical sketch of the presidents since 1965 including photographs.

I found the biographies of the early presidents particularly interesting. These men came from diverse backgrounds. Many studied law (e.g. Sylvester, Cayley, Merrifield, Roberts, Cockle, Kempe). Cockle (1886-1888), for instance, was an eminent lawyer and judge. He was appointed Chief Justice of Queensland, Australia in 1863 during a stormy period when the resident Supreme Court Judge declared the Queensland Parliament and all of its acts invalid. Somehow during his distinguished legal career he managed to write 80 mathematical papers. Kempe (1892-1894) was an authority on Ecclesiastical law and held several Chancellorships of dioceses. Spottiswoode (1870-1872) took his father's place as the Queen's Printer. The authors note that "... the first recorded development of his scientic interests was an explosion." He was expelled from Eton College because "this was deemed inconsistent with sound discipline."

The book provides a list of De Morgan Medallists. This is the premier medal of the LMS awarded every three years. Many of the presidents were awarded this medal during their careers, but there were medallists such as Klein who were not LMS presidents. The book gives a brief biography of these medallists in a similar format to the presidents. Extracts of the citations are given for post 1965 medallists in lieu of a biography.

Anyone with interests in the history of mathematics and the evolution of mathematics in England from Victorian times will find this book of interest. It gives a rich account of the attitudes and fashions of mathematics from Victorian times as well as a history of the Society. For the general mathematical reader, it is always nice to attach a face to a famous theorem or influential book and learn a little about these mathematicians.

Bruce van Brunt, Massey University

Lucio Russo, **The Forgotten Revolution. How Science Was Born in 300 BC and Why It Had To Be Reborn**,
Springer-Verlag, Berlin, 2004, 487 pages. ISBN 3-540-20396-6.

La Rivoluzione Dimenticata was published in 1996, and an essay review by Sandro Graffi was published in *Notices of the AMS*, May 1998, 601-605. This English version was translated from the second Italian edition by Silvio Levy, in collaboration with the author.

After Alexander of Macedon conquered much of the world between Greece, India and central Asia, he died in a drunken orgy at Babylon in -323. His generals then fought each other and grabbed various parts of Alexander's empire, and they established kingdoms in which Greek culture developed with strong influence from the local cultures. The ensuing culture throughout Alexander's empire (plus various autonomous Greek cities throughout the Mediterranean region), from the late -4th century to the -1st century, is known as Hellenistic culture.

In Egypt in -331, Alexander had founded the city of Alexandria at the western mouth of the Nile river. After Alexander died, his general Ptolemy siezed Egypt (plus Cyprus and Cyrenaica) and he became Ptolemy 1st Soter, founder of the Ptolemaic dynasty at Alexandria, which ruled Egypt until the Roman conquest in -30. Under the rule of the Ptolemies, Alexandria quickly became one of the major cities in the world, a cosmopolitan centre of culture, trade and manufacture. In particular, Ptolemy 1st Soter founded the Mouseion (temple of the Muses), which is often translated misleadingly as the Museum of Alexandria. It could be more accurately described as a University, or as an Institute for Advanced Studies.

Classical scholars have paid little attention to Hellenistic culture, regarding it as an unimpressive aftermath to the glories of Classical Greece. But science and technology developed greatly in Hellenistic culture, until the Mediterranean region was conquered by the Roman barbarians, who had no understanding of science. Alexandria was the major centre for science and technology until -145, when Ptolemy 8th, under pressure from the advancing Romans, destroyed the flourishing Greek community in Alexandria.

Very few scientific books survive from the Hellenistic period, but those do include mathematical texts of the highest quality, by Euclid, Archimedes and Apollonius. And in 1902, divers salvaged a Roman wreck (early -1st century) off the islet of Antikythera (midway between Greece and Crete), and recovered a severely corroded mechanism. That was found to be an astronomical calculator designed by Posidonius of Rhodes, an intricate machine whose technological level surpasses anything else known until more than a millenium later.

Archimedes explained in *The Method* how he used his understanding of mechanics to suggest various geometrical results (particularly for areas and volumes), for which he then published rigorous proofs. "It is of great interest for this and other reasons, such as the importance the author attaches to what we might call physical intuition and because it shows how essential it is, even for a genius, to use familiar methods in finding new scientific results, however tenuous the objective connection between these methods and the initial problem might seem after the event" (pp.72–73).

Max Jammer declared that "Even Archimedes, the founder of statics, has little to contribute to the development of the concept of force. His treatment of mechanics is a purely geometric one". Russo comments that modern statics "was born from the translation of Archimedes' theory into a Newtonian language, where the concept of force plays a fundamental role. But the concept of force is not a necessity of nature, as demonstrated by the several formulations of mechanics that do not involve it all" (p.20).

Thales (-6th century) was regarded by Greeks as the founder of geometry. For instance, Aristotle's disciple Eudemus of Rhodes reported that Thales proved that a diameter divides a circle into two equal parts, and that opposite angles at a vertex are equal. But Russo points out that "Only when a well-developed deductive system is attained can the demand arise for demonstrations of such apparently obvious statements as the ones attributed to Thales" (p.33).

No Hellenistic writings on anatomy and physiology have survived — but scattered accounts of the writings of Herophilus of Chalcedon and Erasistratus of Ceos indicate that they developed anatomy and physiology to a level which was not attained again until the 16th century. Aristotle had described the function of the brain to be cooling the blood — but Herophilus discovered the nerves and he distinguished between sensory and motor nerves (p.144).

The author discusses technology of the Renaissance period: "The oft–heard comment that Leonardo's genius managed to transcend the culture of his time is amply justified. But his was not a science–fiction

voyage into the future so much as a plunge into a distant past. Leonardo's drawings often show objects that could not have been built in his time because the relevant technology did not exist. This is not due to a special genius for divining the future, but to the mundane fact that behind those drawings (and Francesco di Giorgio's) there were older drawings from a time when technology was far more advanced" (p.336).

In Europe in the 16th century, theodolites were designed on the basis of Heron's account of the dioptra (p.100). That was a highly sophisticated surveying instrument with two worm screws, for rotating the pointer about vertical and horizontal axes.

The author emphasizes that "several Hellenistic scientific theories, such as hydrostatics, geometric optics, and the theory of simple machines, have been absorbed essentially without change into modern science" (p.27). Moreover, "In Chaplin's film *Modern Times*, the tokens of modernity are screws, gears, transmission belts, valves, steam engines, automata: a smorgasbord of inventions from ancient Alexandria. How can one say that these innovations were useless back then? Yet, though so much of the technology that made up the movie's factory goes back to the third century B.C., it is clear that in that century there were no factories like Chaplin's" (p.263).

Many writers have described experimental science as a distinctively European invention of the 16th century; but several well-documented accounts of scientific experiments have survived from the Hellenistic period. Some writers have dismissed those early experiments from consideration, claiming that they were sporadic events that did not add up to a method. Russo comments that "making true experiments in the absence of an experimental method would be a bit like casually writing a few sentences before writing was invented" (p.195)

Russo presents a strong argument that those achievements were not isolated freaks, but that Hellenistic culture developed science and technology to a level far higher than has been generally thought. Much of his evidence comes from careful analysis of Greek and Latin texts of the Roman Empire.

A few later writers, including Pliny, Vitruvius and Seneca (1st century) and Plutarch (2nd century), were fascinated by Hellenistic scientific works. They could not follow the logic of the arguments but they admired the conclusions, precisely because those conclusions seemed unexpected and marvellous. Consequently, their reports of Hellenistic science are frequently so garbled that it is difficult to understand what they were writing about. But, even the credulous Pliny did transmit some data on planetary periods more accurate than that used by Ptolemy (2nd century), he reported accurate details of spring tides and he declared that the Moon and the Sun are the causes of tides (p.308). (In the 17th century, even Galileo rejected any influence of the Moon upon tides.) And Plutarch reported (twice) that "Chrysippus said that the number of intertwinings obtainable from ten simple statements is over one million. Hipparchus contradicted him, showing that affirmatively there are 103,049 intertwinings" (p.281). For over 1600 years nobody could understand that statement; but in 1994 David Hough (then a graduate student of mathematics) recognized 103,049 as the tenth Schröder number, giving the number of ways in which 10 symbols can be bracketed. Thanks to Plutarch (and David Hough), we now realize that the great astronomer Hipparchus (-2nd century) had performed a very advanced combinatorial computation.

Russo disputes many conventional interpretations of ancient science. "A first cause of misunderstandings is the idea that there was such a thing as the 'Ancients'. Talk of ancient science, supposedly spanning the millenium and more from Thales to Simplicius and represented by such diverse people as Parmenides, Archimedes, the elder Cato, Plutarch and Seneca, makes as much sense as talk of a 'second millenium science' cultivated by Thomas Aquinas, Nostradamus, Galileo, Lavoisier, Freud and Dr Mengele" (p.198).

Under the Roman Empire, any scientific or technological activity was done mostly by Greeks, many of them slaves. For example, the magnificent aqueducts were designed, built and maintained by slaves, who were in no position to write books. The fullest account of the aqueducts was written by Sextus Julius Frontinus, the Roman bureaucrat in charge of Rome's water supply, whose writings reveal that he understood almost nothing about the flow of water (p.239). Also, he explained that "I will ignore all ideas for new works and engines of war, the invention of which has reached its limits and for whose improvement I see no further hope" (quoted by David Milsted in **They Got It Wrong! The Guinness Dictionary of Regrettable Quotations**, Guinness Publishing, Enfield, 1988, p.49).

Russo gives a sombre account (p.240) of the end of ancient science: "As time went by, the climate in what had once been the great Hellenistic intellectual centres got overrun by irrationalist winds. Chemical knowledge, contaminated by magic and religious elements, gave rise to alchemy; astronomical lore dwindled and turned into no more than a lingo for the casting of horoscopes. Thus was science smothered,

while the ever-present human tendency toward superstition gained new and fertile channels of expression. And never since then did pseudoscience — the combination of irrational beliefs with a language borrowed from science but devoid of scientific methodology — yield its position of supremacy, at least as far as popular attention is concerned."

Comments

The author follows the quaint convention of identifying Greek texts by Latin titles. Almost all readers would prefer titles of texts to be given in English, with the original title (in Greek or Latin or Arabic etc.) printed in a footnote. A quotation from Galen is given in a Latin translation (p.177). And Robert Boyle's classic English treatise **The Skeptical Chymist** (London, 1661) is consistently cited by a Latin title! (pp.168, 405, 442 & 444).

Throughout this book, many dates confusingly omit a negative sign, e.g. "in fifth century Greece" (p.22). The dates of Archimedes are given (p.11) as 287-212; but he was an old man when he was killed by a Roman soldier in -212, and the date of his birth can only be estimated as about -287.

"The definitive end of ancient science is sometimes dated to 415, the year in which Hypatia ... was lynched for religious reasons by a fanatical Christian mob in Alexandria" (p.15). But the architect and engineer Anthemius (d.534) significantly extended the mathematics of conic sections and their applications.

All works of Eudoxus are said (p.28) to have perished; but a papyrus calendar attributed to Eudoxus has been published by John E. Murdoch in the **Album of Science, Volume 1, Antiquity and the Middle Ages**, Scribner, New York, 1984.

The form of the Greek abacus is said to be obscure (p.41) — but the Salamis marble abacus is well-preserved, and a famous painted vase depicts an abacus being used by the treasurer of Darius.

"Physicists and engineers know very well that $\cdots$ the arguments of functions such as sines and exponentials must be ratios of homogeneous magnitudes. This awareness seems sometimes to elude mathematics students" (p.47). In fact, that awareness had eluded the statisticians Quetelet in 1835 and 1842 and Ebbinghaus in 1885 (cf. Stephen S. Stigler, **The History of Statistics — The Measurement of Uncertainty before 1900**, The Belknap Press, Cambridge Mass; 1986, pp. 173 & 260).

Many works by Archimedes were transmitted in two 9th-century Greek manuscripts, and the Greek palimpsest recovered in 1906 is described (p.52) as "our only other source for the works of Archimedes" — but many Arabic versions of works by Archimedes have been translated into modern languages.

Hipparchus defined the chord of an angle for a circle of arbitrary radius R. The definition (p.53) of chord omits R.

It was Kepler who applied the Latin word focus (meaning hearth) to the point at which rays were concentrated by a paraboloidal mirror (p.61).

Eratosthenes measured the Earth by analysis of minimum shadow lengths at Alexandria and Syene at the summer solstice. "The difficulty in knowing in Alexandria when it was noon in Syene is overcome by assuming that Syene is directly south of Alexandria, so that noon occurs simultaneously in both places" (p.68). But Eratosthenes did not require precise timings for Syene and Alexandria — only the arc length south from Alexandria to the latitude of Syene. And he could plausibly have measured that by surveying.

Some ancient moving planetaria were reported to have been made by
Archimedes, Posidonius and others. The author asserts that only after the Copernican revolution did the construction of moving planetaria become possible again (p.82). But moving planetaria were constructed by Geoffrey Chaucer (14th century), al-Kashi (15th century) and Petrus Apianus (early 16th century).

The author criticises some editors, for apparently regarding as inevitable the link between heliocentrism and impiety (p.82). But Brahmagupta (in 628) denounced the impiety of Aryabhata (in 499) for treating the Earth as rotating, which contradicted various sacred texts.

Many astronomers, from Hipparchus to Tycho Brahe, calculated planetary directions by the concept of epicycles, which is said (p.91) to be "equivalent to a modern expansion in Fourier series". Actually, the method of epicycles is only *approximately* equivalent to a modern expansion in Fourier series. But such circular motions did lead to "an algorithm that could reduce the necessary calculations to simple operations realizable with elementary instruments".

Several reports have survived of Greek oceanic voyagers, and "yet until not long ago it was believed that the 'Ancients' sailed only within sight of the coast, because this is what people did in the Middle Ages, when all scientific theories needed for ocean sailing had been lost" (p.113). Rather, European people sailed only within sight of the coast during the European Middle Ages, whilst Polynesian, Chinese, Indian and Arab people were sailing the oceans.

The Pharos, the great lighthouse of Alexandria, is described (p.116) as having a square base with an octagonal tower — but that tower was hexagonal (Fig. 7.5, p.211). Remarkably, no Greek account of the Pharos has survived, and some medieval Arabic reports give the only descriptions of one the most impressive of The Seven Wonders of the World.

Chinese science is mentioned briefly on pp.44, 334 & 389; but some Chinese achievements are attributed to later Greek scholars: alchemy (p.165), scientific terminology (p.179) and mathematical astronomical texts (p.296). Russo quotes approvingly Bruno Snell's dogmatic declaration (p.179) that "only in Greece ... was there a native formation of scientific terms — all other tongues fed on Greek, borrowed from it, translated from it or depend on it in some less direct way". But Chinese scientific terms were constructed within Chinese culture, with no direct influence from the Greek language until recent centuries.

Euclid's complicated definition of proportion is said to be tantamount to a definition of ratio (p.181). Rather, Euclid's definition (from Eudoxus) defines a relation $a : b :: c : d$ (in Thomas Harriot's convenient notation) between two pairs of quantities "of the same type". That corresponds to $a/b = c/d$, without requiring ratio to be defined.

"As fas as I know, the United States is the first country in modern times where mountains were carved and giant statues put up" (p.207). But that has been done for many centuries in Afghanistan, China and Japan. And the modern immigrants to North America are said to have encountered native populations of nomadic hunters (p.207) — but the European settlers of New England encountered Amerindians who were mostly settled farmers, who also engaged in hunting and fishing.

"To accept the idea that magnifying glasses were used in antiquity we must account for the scarcity of literary references" (p.271). But Seneca described glass globes filled with water, which were used as an aid in reading small and battered writing.

Philo of Byzantium explained that machines built from the same design can vary markedly in their effects, as a consequence of many small variations. The notion that chance "can boil down to small causes generating large effects seems to have been forgotten for many centuries after Philo of Byzantium. It was taken up again, in quite another technical context, in modern theories of deterministic chaos" (p.280). But Pascal, in his **Pensées**, speculated that "Had Cleopatra's nose been shorter,the whole face of the world would have changed".

"Although we have no true astronomical works from the period between Hipparchus and Ptolemy" (p.296). But the earliest surviving Chinese work on mathematical astronomy **Chou Pei** appears to have been compiled (from older materials) about the time of Ptolemy.

"On open shores, high tide comes soon after the moon reaches the middle of its trajectory from horizon to horizon" (p.305). But at Auckland the open east and west coasts are only 35km apart, and yet the west coast tides occur about 2 hours 20 minutes after the east coast tides. And the assertion (p.306) that "in the open ocean ... high tide follows the moon's transit over the meridian very closely" is incorrect: in the 1830s, William Whewell proved topologically that some points exist in the open ocean where the mean tidal range is zero, and hence at all times high tide occurs on some curve radiating from such a point.

Parmenides (-5th century) is misdated to the first century B.C. (p.306).

"The ellipsoidal shape of the Earth was 'suspected' in the seventeenth century ... . Remarkably, this suspicion predates any measurement of *or* theoretical explanation for the polar flattening". But in 1672, the astronomer Richer took a pendulum clock from Paris to Cayenne, where he found that it lost 2 minutes 28 seconds per day. Isaac Newton explained that by calculating the polar flattening of the Earth resulting from its rotation and the resulting variation of gravity with latitude (Isaac Newton, **Philosophiæ Naturalis Principia Mathematica**, London, 1687, Book 3, Proposition 20, Problem 4).

Alhazen (Basra 965 – Cairo 1039) is said not to have applied conic sections to optics (p.331) — but he did write on paraboloidal mirrors. An English translation was given by H. J. J. Winter & W. 'Arafat, "Ibn al-Haitham on the Paraboloidal Focussing Mirror", *Journal of the Royal Asiatic Society of Bengal.*

Science, v.**15** no.1 (1947), 25–40. Winter & Arafat remarked (p.40) that "Indeed it is also clear that some of the originality, in optics especially, but also to a certain degree in scientific method, formerly attributed to Roger Bacon (1214–1291) can now be traced to al-Haitham".

"The earliest period in Western Europe to which the name 'Renaissance' has been applied is the twelfth century" (p.332). But the revival of learning in the empire of Charlemagne (early 9th century) has, with considerable justification, been called the "Carolingian Renaissance".

The **Alfonsine Tables**, which were compiled in 1252 by Christian, Jewish and Muslim scholars for King Alfonso the Wise of Castile, are described (p.334) as the first astronomical tables made in Europe. But they superseded the Toledo Tables, which had been compiled at Toledo.

In Renaissance Europe, "The Ptolemaic system was not understood in its true function as an algorithm to predict the motion of the planets, because nobody before Copernicus had been able to use it that way" (p.341). But in the 1470s, Puerbach and Regiomontanus were the first Europeans to master Greek and Arabic mathematical astronomy, and their published texts of mathematical astronomy became very influential.

"Kuhn has called attention to the fact that only after the Copernican revolution was it possible to observe the appearance of new stars and the motion of comets across the putative planetary spheres" (p.341). But in what sense can "the motion of comets across the putative planetary spheres" be observed? Tycho Brahe rejected Copernican astronomy (on religous grounds), but he made careful observations of the great comet of 1577, and he demonstrated that any plausible interpretation of his measurements required that comet to pass through various celestial spheres.

Russo supports (p.342) the case for Andrea Cesalpino (1519-1603) to be credited with discovery of the circulation of the blood. But the brief and obscure statements by Cesalpino do not seem very significant when compared with William Harvey's book (**De Motu Cordis et Sanguinis**, Frankfort-on-Main 1628) which is justly admired as an example of scientific method. Harvey gave detailed accounts of dissections and experiments, with clear logical analysis, and he made simple but very effective use of arithmetic to demonstrate the absurdity of traditional views about motion of blood (including some attributed to the Hellenistic anatomist Erasistratus).

Differential gears were first applied to production machinery centuries after their application in astronomical clocks. "Any belief that it was an independent invention rather than the resumption of Hellenistic knowledge disappears when we observe that . . . " (p.344). Here, "Any belief" should presumably have been "Any doubt".

The scientific theory of the rainbow, based on experiments and on mathematics, was developed near the end of the 13th century, simultaneously and independently by Dietrich Theodoric of Freiberg and by Kamal al-Din of Farisi (p.346). Russo calls al-Din an Arabic writer, but he was a Persian scholar who wrote in Arabic.

Russo asserts (p.348) that "the sine function was introduced by the Arabs" – but the Indian astronomer Aryabhata started his treatise (in 499) with a short table of sines.

Galileo is described as "the first person who attempted to build new scientific theories" (p.349). But Kepler had already achieved considerable success in building revolutionary new scientific theories. He *invented* the concept of planetary orbit, he swept away the cumbersome mechanism of epicycles and he found empirically his three laws which accurately describe the planetary orbits.

Galileo is said never to have grasped the so–called "method of exhaustion" and the theory of proportion "(and indeed nobody would for another two centuries and more)" (p.350). Rather, Galileo, like many professors of mathematics around the end of the 16th century, demonstrated his competence by finding volumes of some figures by that method, which he later published as appendices to his **Discorsi** (1638). And in 1647 Gregory de St Vincent published his detailed analysis of the method used by Euclid, Archimedes and others for finding various areas and volumes, and Gregory de St Vincent then invented the name "method of exhaustion".

Russo compares Hipparchus's theory of motion with Galileo's early ideas on that subject: "Since the theory developed therefrom by Galileo does not differ from the one that Simplicius attributes to Hipparchus, there is no reason to believe that the latter's theory was founded on a less solid experimental basis" (p.351). The phrase "the latter" seems to refer not to Galileo but to Hipparchus, which is likely to confuse some readers.

Kepler is said to have estimated "the thickness of the sphere of fixed stars as one twelve-thousandth of the diameter of the sun: in his reckoning, a bit over 2000 German miles" (p.356). Should "diameter of the sun" be "diameter of the Earth's orbit"?

Russo considers that some mystical notions expressed by Kepler do "not seem too likely to have led to the ellipticity of orbits on its own, particularly since the observed data could be described equally well through a system of epicycles" (p.358). Rather, Kepler made many attempts to adjust the epicycles for Mars to match Tycho Brahe's observations, but each gave a discrepancy of at least 8 minutes of arc. Kepler rhapsodized that "After the divine goodness had given us in Tycho Brahe so careful an observer, that from his observations the error of calculation amounting to 8 minutes betrayed itself, it is seemly that we recognize and utilize in thankful manner this good deed of God's, that is we should take the pains to search out at last the true form of the heavenly motions". Consequently Kepler rejected epicycles, and he declared that "These eight minutes showed the way to a renovation of the whole of astronomy" (Max Caspar, **Kepler**, translated from German by C. Doris Hellman, Dover Publications, New York, 1993, p.128)

Kepler's incomplete science-fiction tale **Somnium**, in Latin, is cited (p.360) from Kepler's **Opera Omnia**. At least 3 English translations have been published: by Everett F. Bleiler in **Beyond Time and Space**, (Pellegrini & Cudahy, New York, 1950), by Patricia Frueh Kirkwood in **Kepler's Dream** (University of California Press, Berkeley, 1965), and by Edward Rosen in **Kepler's *Somnium*** (The University of Wisconsin Press, Madison, 1967).

Should "the considerations at the end of the **Opticks**" (p.381) be "the Questions at the end of the **Opticks**"?

"Linnaeus' zoological nomenclature" (p.381) should be "Linnaeus' biological nomenclature", since he applied it to plants and to animals.

"Apollonius had already used what came to be called Cartesian coordinates" (p.385). And before that, Archimedes had *defined* the conic sections by their equations in oblique Cartesian coordinates.

"But in the seventeenth century we start seeing the completion of numerical tables to a hitherto unmatched degree of precision and extension" (p.356). Even in the 16th century, Copernicus's young friend Rheticus published immense tables of the trigonometric functions; and those remained the basis of most later trigonometrical tables, even until 1959.

A progression whose ratio is the thousandth root of 10 is described as a table of decimal logarithms (p.386) – rather it is a table of decimal antilogarithms.

Gilles de Roberval is said to have apocryphally published his book in defense of heliocentrism as being written by Aristarchus of Samos (p.389) — rather he published that book pseudepigraphically.

The anecdote of Newton and the apple is described as "a legend spread by Voltaire, one of the most active and vehement erasers of the past. ... Thus, the erasure of gravitation's long history left a void that had to be filled by some other story: for the gullible, it could even be the notion that all it took was a genius seeing an apple fall" (p.390). But four friends of Newton in his old age recorded him telling them that anecdote (Richard S. Westfall, **Never At Rest. A Biography of Isaac Newton**, Cambridge University Press, Cambridge, 1980, pp.154 & 155).

"To a Hellenistic mathematician, there would be no point even in posing the question whether one can construct a consistent geometry containing a theory of parallels different from the one in the **Elements**. This is because spherical geometry makes it obvious that the answer is yes" (p.393). Obvious indeed to mathematicians of the 20th and 21st centuries — but very far from obvious to most previous mathematicians.

Some accented letters have got garbled in the process of publication, as frequently happens with modern word processors: "at 8% Motte/Cajori translation" (?) (p.381), "[Bohr], at 72% and 81%" (?) (p.397), "**Claude Dure9**, *Discours de la ve9rite9 des causes ...*" for "**Claude Duré**, *Discours de la vérité des causes ...*" (pp.407 & 450), "Je1nos Bolyai" for "Jànos Bolyai" (p.442), "*Origine des de9couvertes attribue9es aux modernes*" for "*Origine des découvertes attribuées aux modernes*" (p.469), "Claire Pre9aux" for "Claire Préaux" (p.474) and "Voicu, Adre9s Juan" (?) (p.486).

There are numerous other misprints, some of which are confusing: "Calcidius" for "Chalcidius" (pp.77 & 443), "rigid siderial star" for "rigid siderial sphere" (p.89), "meters" for "metres" (pp.100, 115 & 116), "coal" for "charcoal" (p.169), "Thomas Aquinas ... establishes" for "Thomas Aquinas ... established" (p.194), "Oxyrynchus" for "Oxyrhynchus" (p.224), "the value 3 for β" for "the value 3 for π" (p.236), "*Decline and fall of the Roman Empire*" for "*History of the Decline and Fall of the Roman Empire*" (p.237), "move" for "moving" (p.245), "acclimation" for "acclimatization" (p.250), "Anthemius of Thralles" for "Anthemius of Tralles" (pp.304 & 437), "See the articles into Philoponus' knowledge of mechanics on [Sorabji]" for "See the articles on Philoponus' knowledge of mechanics in [Sorabji]" (p.331), "Appolonius" for "Apollonius" (p.373), "Newton ... overstates" for "Newton ... overstated" (p.377), "**Edmund Halley**" for "**Edmond Halley**" (p.409), "**Martianus Cappella**" for "**Martianus Capella**" (p.411), "Ernest Mach" for "Ernst Mach" (p.464), and "Prician" for "Priscian" (p.474); plus minor misprints on pp.97, 120, 189, 199, 230, 240, 280, 284, 364, 379 and 425.

These should be corrected for the next printing.

Garry J. Tee, University of Auckland

Please indicate your willingness to review new books, to the Review Sub-Editor Bruce van Brunt, at B.vanBrunt@massey.ac.nz. Bruce will then organise for you to receive a complimentary copy for reviewing.

CONFERENCES

Mathematics-in-Industry Study Group 2006: Summary

The third (and last, for now at least) of the ANZIAM Mathematics-in-Industry Study Groups to be held in New Zealand (MISG2006), took place at Massey University at Auckland, 30thJanuary to 3rd February 2006. Hosted by the Centre for Mathematics in Industry at Massey University, the problem-solving week was directed by Professor Graeme Wake, Professor of Industrial Mathematics. Administrative support was provided by the Institute of Information and Mathematical Sciences (headed by Professor Robert McKibbin) and MISG2006 Administrator was Nikki Luke. Deputy Directors were Associate-Professor Mark McGuinness from Wellington (VUW), and Dr Winston Sweatman from Massey.

Seven problems were presented, six from New Zealand and one from Australia, as in the previous year. About 110 persons attended from eight countries. Nineteen student financial grants were given. In the following reference, non-technical outlines of the problems, and the progress made, are given. Feedback is very welcome.

The Centre for Mathematics in Industry was formed to provide a national base for MISG and has also built links with emerging similar activities, in South Korea and Thailand (the latter in 2004). This years MISG was fortunate in attracting yet another member of the well-known Oxford Group: Dr Peter Howell, of the Oxford Centre for Industrial and Applied Mathematics in the United Kingdom, as an overview facilitator. The Minister of Science and Technology, Hon Dr Steve Maharey provided a keynote opening address providing welcome support for MISG2006. He was followed by the Vice-Chancellor of Massey University, Professor Judith Kinnear, who endorsed our initiative and gave the Minister a warm vote of thanks. Significantly a strong statistical content was evident this year, a trend noted also in 2005. This attracted several well-known statisticians to attend and contribute, notably several fron Statistics New Zealand, a government agency. Student workshops were held and addressed by Dr Howell, Richard Penny, from Statistics NZ, and MISG2006 Director Professor Graeme Wake. During the plenary session on Wednesday 1st February, Dr Brian Pink, the Government Statistician attended. One of his colleagues Dr Walter Davis, along with Dr Howell, gave addresses. Once again we were fortunate in obtaining a significant grant from the Foundation for Research, Science and Technology in New Zealand under their "Smart Start" programme, which is gratefully acknowledged. Last but not least we acknowledge the immense work provided by the problem moderating team, which again this year included a postgraduate student in each case. The contribution of the moderators often beyond the call of duty is warmly acknowledged. Without this input, MISGs just would not happen.

The seven problems presented are nicely summarised on the website, which we invite you to visit. See http://misg2006.massey.ac.nz/MISG2006Eqn%20free%20Booklet.pdf

These are non-technical versions of the problems and outcomes, which can be used for presentations and information for the public or students on "newer uses of mathematics". All Departments in Australian and New Zealand Universities are being posted copies so that they can be used for promotional purposes.

Graeme Wake
Director, Centre for Mathematics in Industry Massey University, Auckland.

Conferences Coming Up

THE 9th MANAWATU-WELLINGTON APPLIED MATHEMATICS MEETING

This meeting will be held on Thursday 26 October 2006 at Massey University, Palmerston North. It will be very informal and there are no registration fees. Morning and afternoon tea will be provided. You can bring your own lunch or buy it at the Student Centre, Options (a caf situated at the Commercial Centre) or at Wharerata (MU Staff Club).

This is a great opportunity for informal networking amongst NZ applied mathematicians.

Please let us know as soon as possible if you will be able to attend. If you like to present a paper then please send us the title and a brief abstract of your talk (We have already received one abstract!). The length of talks will depend on the number of talks, but will likely be between 20 and 30 minutes.

Further notices will be sent out when more information comes to hand.

See you then.

Regards,
Igor Boglaev (for abstracts), email: i.boglaev@massey.ac.nz
Marijcke Vlieg (for attendance), e-mail: m.vlieg@massey.ac.nz

FINANCIAL MATHEMATICS WORKSHOP

ICE-EM is sponsoring a Workshop on Mathematical Methods in Finance on 25-26 September 2006. The special guest is Prof. Dr. Freddy Delbaen from ETH (Swiss Federal Institute of Technology), Zurich. The workshop will be followed on 27-29 September by the 5th National Symposium on Financial Mathematics. Both events will be run at the University of Melbourne. The homepage for the website is www.cmss.monash.edu.au/Events/Meeting06

ICE-EM is offering travel and accommodation subsidies to postgraduate students and early career academics in Asian and Latin American universities to attend. Information about these subsidies is posted at www.cmss.monash.edu.au/Events/Meeting06/funding.htm

Applications for subsidies will be assessed within a few days of receipt so that all New Zealand participants can make their travel and accommodation bookings and complete their registration.

MISG 2007

Academics, scientists, industrial partners, postgraduate students and others are invited to attend the Mathematics and Statistics in Industry Study Group, MISG2007, to be held at the University of Wollongong, Wollongong, NSW, Australia, 5-9th February 2007.

Registration is free and currently available via our website: www.misg.math.uow.edu.au

Australian-based postgraduate students, early career researchers and postgraduate students from New Zealand and other Pacific Rim Universities are eligible for financial support to attend MISG2007. Details are available on the website.

The MISG2007 website also contains information about transport and accommodation options.

Website: www.misg.math.uow.edu.au

Contacts:
A/Prof. Tim Marchant, Director MISG2007, tim@uow.edu.au
Dr. Maureen Edwards, Associate Director MISG2007, maureen@uow.edu.au

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NEW ZEALAND MATHEMATICS COLLOQUIUM

4–6 December, 2006

The University of Waikato, Hamilton, New Zealand

The annual New Zealand Mathematics Colloquium for 2006 will be hosted by the Department of Mathematics at the University of Waikato.

The invited speakers are:

- Brian Davey (La Trobe University) — Model theory versus topology
- Larry Forbes (University of Tasmania) — Stable and unstable interfacial fluid flows
- Georg Gottwald (University of Sydney) — A normal form for excitable media
- Robert McLachlan (Massey University, Palmerston North) — Geometric numerical integration
- Mick Roberts (Massey University, Albany) — Evolution and invasion of a novel virus

Social events will include a Welcoming Reception on the Sunday evening (3 December) and the Colloquium dinner on Tuesday evening. The award of the Aitken prize for the best student talk will be announced at the Colloquium dinner. An optional excursion to Te Aroha on Tuesday afternoon is planned.

The programme on Monday will include a theme day on **Mathematics Education** and a theme day on **Dynamical Systems and Numerical Analysis**. The latter is part of the thematic programme of the same name sponsored by NZIMA (New Zealand Institute of Mathematics and its Applications).

The Annual General Meetings of the New Zealand Mathematical Society and the New Zealand Branch of ANZIAM will be held during the Colloquium.

Bed and breakfast accommodation at a rate of $55 per night will be available at the Halls of Residence on campus.

Online submission of abstracts and online registration are now available from the Colloquium website:

http://www.math.waikato.ac.nz/NZMC2006/

The deadline for registration is 20 October, 2006. The standard registration fee is $NZ150 while the student/retiree fee is $NZ75. Early bird discounts of $20 for standard registration and $10 for student/retiree registration will apply if payment is received by 20 October, 2006.

The above website above will be updated as information comes to hand. Enquiries may be made to the Colloquium Secretary, Stephen Joe, by email to stephenj@math.waikato.ac.nz.

We look forward to you participating in the Colloquium at our attractive campus in Hamilton.

Stephen Joe
Convener, NZMC2006 Organising Committee

NOTICES

NEW COLLEAGUES

Dr Austina S S Clark

Austina has been working in the Department of Mathematics and Statistics in Otago as a Senior Teaching Fellow since 1997 and joined the Department in January as a Lecturer in Statistics. She has a long association with the Department. In 1975 she completed a MSc in Measure Theory at Otago, supervised by David Hill and then worked as Assistant Lecturer for a short time before heading to Scotland. On returning to Dunedin she taught at a local high school for nearly 6 years as well as raising two sons. After her younger son finished primary school, she went back to study for her PhD in Statistics at Otago on Experimental Designs, supervised by David Fletcher. Her research interests are in experimental design and probability theory.

NZMS Accreditation

Applications are invited for NZMS Accreditation. The deadline for applications is Sunday 30 April 2006. If you would like to be considered or would like to nominate someone could you send for application forms to:

The Accreditation Secretary
C/- Department of Mathematics and Statistics
University of Otago University P O Box 56
DUNEDIN

or email lgrant@maths.otago.ac.nz

To help you understand better what each of the categories of membership are, I have added a copy of Article IV of the Constitution.

ARTICLE IV: OPTIONAL ACCREDITATION

An Ordinary Member (or Reciprocity Member) may apply to the Council to become a Graduate Member, Accredited Member, or Fellow. The Council shall make and issue, and may revise from time to time, Rules which shall give effect to the following requirements.

(1) A Graduate Member shall have completed a degree or diploma at a recognised university or other tertiary institution, the studies for which shall include mathematics as a major component, and shall be currently employed or occupied in the development, application or teaching of mathematics.

(2) An Accredited Member shall have completed a postgraduate degree in mathematics at a recognised university or other tertiary institution, or shall have equivalent qualifications, and shall have been employed for the preceding three years in a position requiring the development, application or teaching of mathematics.

(3) A Fellow shall be a person who currently has or previously has had the qualifications of an Accredited Member and who, in addition, is deemed by the Accreditation Committee (see paragraph below) to have demonstrated a high level of attainment or responsibility in mathematics and to have made a substantial contribution to mathematics or to the profession of mathematician or to the teaching or application of mathematics.

An Honorary Member shall have the right to become a Fellow immediately upon application to the Council and without payment of a fee.

The Council shall establish an Accreditation Committee to consider applications for designation as a Graduate Member, Accredited Member or Fellow, and to administer the Rules described in the first paragraph of this Article. In its determinations, the Accreditation Committee shall discount interruptions to employment such as temporary unemployment and parental leave.

A Graduate Member may use the abbreviation GNZMS, an Accredited Member may use the abbreviation MNZMS, and a Fellow may use the abbreviation FNZMS. These designations and the corresponding abbreviations are the rights of that class of Member only while the member remains a financial member of the Society and while the occupational requirements outlined in the first paragraph of this Article continue to be satisfied. The occupational requirements shall be deemed to be satisfied by Honorary Members and in the case of interruptions to employment such as temporary unemployment and parental leave, and they shall not be applied in the case of retirement or promotion to an administrative or other position.

A fee shall accompany each application to the Accreditation Committee. The fee shall be additional to the annual subscription charged by the Society and shall be the only charge for accreditation.

****

If you have any queries could you please direct them to me at the above address or by email (dholton@maths.otago.ac.nz).

Derek Holton
Chair, Accreditation Committee

Application for membership of the NZMS

The New Zealand Mathematical Society (Inc.) is the representative body of professional mathematicians in New Zealand, and was founded in 1974. Its aims include promotion of research in the mathematical sciences, the development, application and dissemination of mathematical knowledge within New Zealand, and effective cooperation and collaboration between mathematicians and their colleagues in New Zealand and in other countries.

Membership categories:

(Full details at www.math.waikato.ac.nz/NZMS/NZMS.html)

Ordinary*	$36 p.a.	
Reciprocal	$18 p.a.	

For overseas residents who are fully paid-up members of societies with which the NZMS maintains a reciprocity agreement (including the American Mathematical Society, the Australian Mathematical Society, the Canadian Mathematical Society, the London Mathematical Society, and the Mathematical Society of Japan).

Student*	$7.60 p.a.	For currently enrolled students in NZ
Overseas student	$18 p.a.	For currently enrolled students in overseas

(GST is added to rates for NZ residents.)

Members can subscribe to the New Zealand Journal of Mathematics (http://www.math.auckland.ac.nz/NZJM/index.html) at a reduced rate.

Members can also elect to make a donation, when paying their subs, to the NZMS Endowment for Student Support.

* The Society offers NZ students and new staff a special free one-year membership.

Please complete below and mail to:

John Shanks, NZMS Membership Secretary,
Department of Mathematics and Statistics,
University of Otago, P.O. Box 56, Dunedin, NZ

or Fax: +64 (3) 479 8427

E-mail: jshanks@maths.otago.ac.nz

NZMS Application Form

Name: _____ Title: _____

Address: _____

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An institutional address is preferred

E-mail: _____

Membership category: ☐ Ordinary ☐ Reciprocal ☐ Student ☐ Overseas student

If Reciprocal then complete this:

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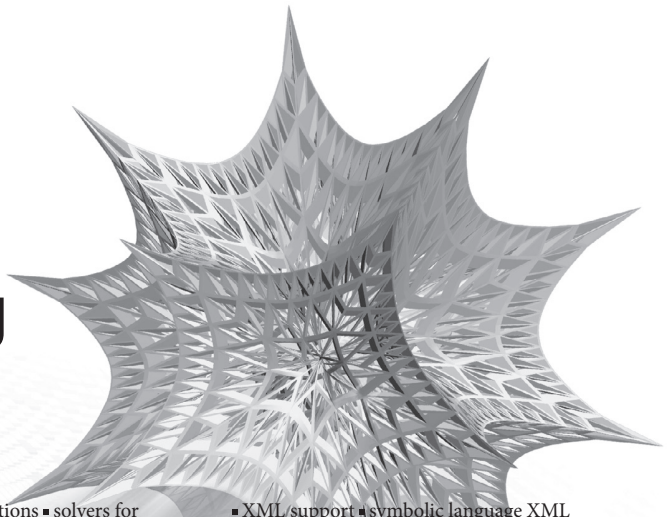

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