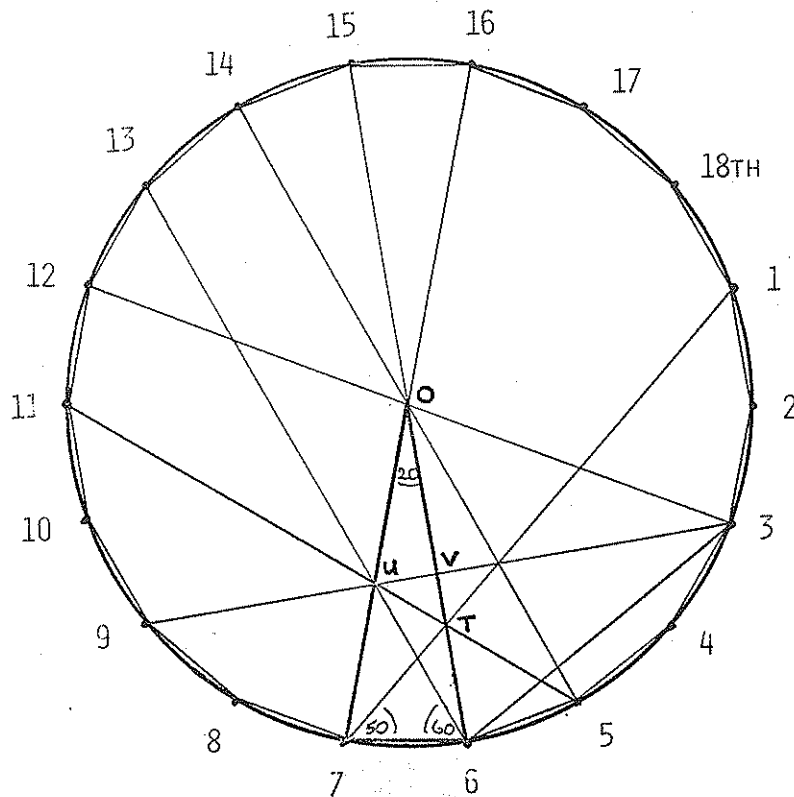# THE NEW ZEALAND MATHEMATICAL SOCIETY
NEWSLETTER

18TH NZ MATHEMATICS COLLOQUIUM
MAY 23-25 1983   MASSEY

CONTENTS

Editorial

Auckland University celebrates its centenary in May 1983 so it is appropriate that this issue of the Newsletter should include an article on Professors of Mathematics at Auckland University College. The feature article by Dr. D.A. Nield should be well received.

On a less grand scale, this issue also marks the tenth and final issue of the Newsletter to be produced at Canterbury University. It is a pleasure for me to acknowledge the considerable assistance I have received from John De la Bere, Derrick Breach, Michael Carter, Bob Long, Ken Russell, and all Honorary Correspondents, in the preparation of copy. I am especially grateful to the secretaries of the Department of Mathematics at Canterbury and of course to Brent Wilson, my predecessor for doing such an excellent job before me.

The new editor of the Newsletter will be announced at the annual general meeting of the Society at Massey University (see page 23 for details). In the meantime news items, notices and any articles for publication in the Newsletter should be sent to:
The Editor, NZMS Newsletter, C/- Department of Mathematics, University of Otago.

Ian Coope,
Editor.

News and Notices

DR CHANG RETIRES

This month marks the retirement, after more than 16 years as Senior Lecturer in Mathematics, of Chang Chao Ping.

Chao Ping began his academic studies during the second world war at St. John's University, Shanghai, where he took an M.Sc. degree. After the war he returned to Hong Kong where he embarked on a business career. It was not until 11 years had passed that he returned to academic life as a tutor at the University of Hong Kong. His training for this career was further enhanced by the years he spent at the University of Chicago where he graduated Ph.D. A few years after returning to a position in Hong Kong, he was appointed in 1966 to the Mathematics Staff at Auckland University.

As the senior member of the department specializing in Mathematical Analysis, Chao Ping played a central role in developments in this area. He has been especially associated with the courses in Calculus at both second and third year level and also in the more specialized courses in Complex Analysis at Master's level.

For many years Dr Chang has assisted in the production of the Mathematical Chronicle as its treasurer. Over the years this journal has grown from a small local production to a publication distributed worldwide and with an international authorship. Since coming to Auckland, Chao Ping has seen not only this change but also a doubling of the University as a whole and of the Mathematics Department in particular. Most important, he has seen Mathematical Analysis develop to its present role as a fundamental component of the Mathematical Sciences curriculum of this University.

John Butcher and David Gauld

LECTURESHIP IN MATHEMATICS AND STATISTICS

THE UNIVERSITY OF AUCKLAND

Applicants should have postgraduate qualification and proven research interests in any field of Pure and Applied Mathematics and Statistics. Careful consideration will be given to teaching records. Commencing salary will be within the scale for Lecturers $21,660-$25,684 per annum. Conditions of Appointment and Method of Application are available from New Zealand Universities and from the Assistant Registrar, (Academic Appointments), University of Auckland, Private Bag, Auckland. Applications should be forwarded as soon as possible but not later than 29 July 1983.

MATHEMATICAL VISITORS IN NEW ZEALAND

The information is arranged as follows: Name of visitor; home institution; whether accompanied; principal field of interest; dates of visit; principal host institution; principal contact; comments.

DEFINITE VISITS

Asst Professor R.K. Beatson; University of Connecticut; wife; numerical analysis, approximation theory, January 1983-December 1983; University of Canterbury; Dr. A.W. McInnes.

Professor F.H. Chipman; Acadia University, Canada; wife and two sons; numerical methods for ordinary differential equations; 28 July 1982-20 July 1983; University of Auckland; Professor J.C. Butcher.

Dr. Michael Fawcett; University of Cambridge; ?; mathematical physics; August 1982-December 1983; University of Otago; Professor W. Davidson; Beverley Fellow.

Professor Brian F. Gray; Macquarie University; unaccompanied; mathematical chemistry especially thermal ignition and reaction kinetics; 26 January 1983 – 26 March 1983; Victoria University of Wellington; Dr G.C. Wake; interested in visiting elsewhere in New Zealand.

Dr. David Gubbins; Cambridge University; wife and three children; mathematical geophysics; January 1983 – August 1983; Victoria University of Wellington; Dr. J.H. Ansell; Visiting Fellow and Royal Society Australasian Fellow.

Professor K. Hirsch; Queen Mary College, London; unaccompanied; algebra; April 1983 – May 1983; University of Canterbury; Professor G.M. Petersen.

Professor Max Jammer; Bar-Ilan University, Israel; ?; history of physics; 1 March 1983 – 30 September 1983; University of Otago; Professor J.N. Dodd.

Dr. Andrew Odlyzko; Bell Laboratories NJ; ? ; number theory, probability theory, combinatorics, computational complexity; 23 May 1983 – 27 May 1983; Massey University; Dr. M.D. Hendy; attending New Zealand Mathematics Colloquium.

Professor D.A. Spence; Imperial College, London; ?; continuum mechanics, applicable analysis, perturbation methods; 1 March 1983 – 14 May 1983; University of Canterbury; Professor B.A. Woods; Erskine Fellow.

Dr. G.A. Watson; University of Dundee; ?; numerical analysis; 1 March 1983 – 25 May 1983; University of Canterbury; Dr. I.D. Coope; Erskine Fellow.

Professor Carl E. Wulfman; University of the Pacific, USA; wife; Lie groups and application to physical problems; January 1983 – June 1983; University of Canterbury; Professor B.G. Wybourne.

The following overseas visitors are expected to attend the XI Australian Conference on Combinatorial Mathematics, 29 August – 2 September 1983 at the University of Canterbury.

Professor J. Abrham, Department of Industrial Engineering, University of Toronto, Canada M5S 1A4.

Professor B. Alspach, Mathematics Department, Simon Fraser University, Burnaby, British Columbia, Canada V5A 1S6.

Dr. E. Billington) Department of Mathematics, The University of Queensland, St. Lucia,
Dr. D. Billington) Brisbane Q4067, Australia.

Dr. L. Caccetta, School of Mathematics and Computing, Western Institute of Technology, Kent Street, Bentley 6102 W.A., Australia.

Dr. D.A. Holton, Department of Mathematics, University of Melbourne, Parkville, Victoria 3052, Australia.

Professor R. Lidl, Department of Mathematics, University of Tasmania, Box 252C GPO, Hobart, Tasmania 7001, Australia.

Dr. K.L. McAveney, Division of Computing and Mathematics, Deakin University, Victoria 3217, Australia.

Dr. J. Seberry, Department of Applied Mathematics, University of Sydney, NSW 2006, Australia.

Professor R.G. Stanton, Department of Computer Science, The University of Manitoba, Winnipeg, Manitoba R3T 2N2, Canada.

Professor Carsten Thomassen, Mathematical Institute, The Technical University of Denmark, DK-2800, Lyngby, Denmark.

D.H.

Local News

DEPARTMENT OF MATHEMATICS AND STATISTICS

Professor T. Berger returned to the University of Minnesota last December. During his stay at Auckland, Tom worked in areas which included regular graphs and automorphism groups. He also managed to finish some computations on M-groups which he had begun before departing from Minnesota.

In January, Dr. Marston Conder joined the staff as a lecturer.

Undergraduate enrolment figures in the department were on a par with 1982. Total students in stage I - 2,916; stage II - 878; stage III - 503.

Seminar:

Professor A. Buraczewski (University of Papua New Guinea), *Generalisation of the notion of determinant to rectangular matrices and some applications*.

E.D.

DEPARTMENT OF THEORETICAL AND APPLIED MECHANICS

Visiting speakers during 1982:

John R. Abrahams (Toronto), *Experience with Computer-Aided Learning Systems*.
Dr. E. A. Harris (Greenlane Hospital), *Modelling of Inspired Gas Distributions*.
Prof. Yoshihiro Tomita (Kobe University, Japan), *Numerical Investigations of Bifurcation and Post-Bifurcation Behaviour Under Large Elastic-Plastic Strain*.
Prof. Rolfe Tomlinson (University of Warwick), *What can we say about the future?*
Prof. R.W.H. Sargent (Imperial College), *Numerical Solution of Stiff Differential-Algebraic Systems* and *The Solution of Sparse Systems of Nonlinear Equations - Decomposition versus Simultaneous Solution*.

We also had as visitor a Post-doctoral fellow: Dr. G. S. Bodvarsson (Lawrence Berkeley Laboratories), visiting from October, 1982 to February, 1983.

D.M.R.

DEPARTMENT OF COMPUTER SCIENCE

Professor Germund Dahlquist, from the Royal Institute of Technology in Stockholm, visited the Department in December, and a Numerical Analysis Symposium was built around his visit. The Symposium was held on 7,8, & 9 December, with 16 participants, from the Universities of Auckland, Waikato, Massey, Victoria and Canterbury. Besides the three lectures of Germund Dahlquist there were 9 other lectures presented. Abstracts of the lectures are published in the Numerical Analysis Newsletter.

Approximately 208 students have enrolled for the standard Stage 1 courses (7.100 and 7.105); and approximately the same number have enrolled for the new Stage 1 service course in computing (7.101).

Peter Gibbons attended the First Wollongong Summer School on the Science of Programming, from 31 January to 9 February.

Garry Tee has returned from sabbatical leave, at University College London and the University of Newcastle-Upon-Tyne. The Babbage materials found in New Zealand and Australia have aroused much interest.

Philip Cox, who has been a member of this Department since its foundation in February 1980, has now accepted an appointment as Associate Professor of Computing Science at Acadia University, in Nova Scotia. He will leave in August 1983, with the best wishes of the other members of the Department.

G.J.T.

MASSEY UNIVERSITY

At the beginning of the year we had the pleasure of welcoming back an ex-Massey student, Bruce Aubertin, as a junior lecturer. Bruce graduated B.Sc. from Massey in 1970. After teaching for a year at Mt. Albert Grammar School, he completed an M.Sc. at Auckland. He spent a few months on the Auckland staff as a junior lecturer, then moved to the University of British Columbia. Bruce has spent the past ten years studying and teaching in Vancouver, but is now glad to be back in New Zealand and hopes to stay.

Seminars:

Prof. A. Buraczewski (University of Papua New Guinea), *Generalization of the Notion of Determinant to Rectangular Matrices and some Applications*, and *Determinant Theory of Operators in Vector spaces*.

Deng Yong-Lu (Sun Yat Sen University, Canton, China), *Comparison Theorems in Random Variables and Point Processes*.

M.R.C.

WAIKATO UNIVERSITY

Enrolment overall remains constant, although (i) the removal of (nearly) compulsory statistics for Social Science caused some drop there, (ii) open entry to Management Studies increased numbers taking "basic mathematics", and (iii) the popularity of computing in Science has caused waves which have not died down yet.

Bronwyn Beder graduated B.Sc.(Hons I) from Vic in 1982, with a major in probability-and-statistics (are these always inseparable, like T-dum and T-dee, or field extensions?). She began her two-year stint here by enrolling in an M.Phil., helping John Turner and Fay Sharples set up computer-assisted REmedial MATHematics programmes, teaching the occasional statistics course, and advocating jazz as an antidote to chamber music.

The large-scale use of terminals by first-year students (mainly rostered for REMATH) causes some access problems for "genuine" users ... discussions continue. Discussion continues also on our course structure, spurred by trends towards computing and management, as well as by low enrolment in mathematical physics and senior pure courses.

Roger Hosking was away nearly two months over Christmas, in India and Australia. He was invited to speak at the Jubilee Celebration in Delhi, gave a seminar at the university in Bangalore and visited the Indian Institute of Science there, gave another seminar at the University of Adelaide, and read a paper at AINSE Plasma Physics Conference.

Ian Craig leaves in May to work with Dr. J. C. Brown (Dept. of Astronomy, University of Glasgow) on solar and stellar astrophysics. Then from New Year, he aims to visit Dr. R. C. Canfield and Dr. A. D. McClymont (Centre for Astrophysics, U.C.S.D., La Jolla, San Diego), studying "hydrodynamics and radiative transfer in stellar ammospheres".

Finally, Alfred Sneyd returned from six months leave in Cambridge, working with Prof. K. Moffatt and Dr. M. Proctor on MHD. While there, he attended the I.U.T.A.M. Symposium on the metallurgical applications of MHD, in September last.

M.S.

VICTORIA UNIVERSITY

Dr. Jim McGregor, from the Solar Energy Unit of the Department of Mechanical Engineering and Energy Studies, University College, Cardiff, is the new Fellow in Meteorology.

Overseas visitors include Prof. Brian Gray (Mathematical Chemistry, Macquarie) who has now returned home, Dr. Deng Yonglu (Mathematics-Mechanics Dept., Zhongshan University, Guangzhou, China) and Dr. David Gubbins (Seismology, Cambridge) who are here now (the latter in the Institute of Geophysics), and Prof. David Spence (Applied Mathematics, Imperial College London) who will come for a month after his stay at Canterbury.

Our own members going overseas include Philip Rhodes-Robinson who has now returned from sabbatical at Stanford, David Vere-Jones who went to China in the long vacation for more earthquake statistics, and John Harper who went to Wollongong University to lecture on fluid mechanics and also spoke at the Australian Mathematical Society Division of Applied Mathematics conference at Perth. He will also be going on sabbatical to Cambridge in June, as will Chris Atkin to Mannheim. Rob Goldblatt is leaving soon for Canada where he will be an invited speaker at the conference of the Society for Exact Philosophy, and for France where he has been invited to lecture on topoi at the Faculte des Sciences de Luminy (Marseilles).

J.F.H.

D.S.I.R.

Rick Beatson, (University of Connecticut, Applied Mathematics Division) has been appointed to the Statistics Section of A.M.D. at Lincoln. Russell Miller has a short term appointment until August when he will begin study overseas. Graeme Edwards is back at Mt. Albert and is available for O.R. consulting after being seconded to Caxtons. Vicky Mabin is back in the O.R. section at A.M.D. after being seconded to Trade and Industry.

The book by Malcolm Grant (A.M.D.), Ian Donaldson (P.E.L.) and Paul Bixley (M.O.W.D.) entitled *Geothermal Reservoir Engineering* has been published and provides an in-depth coverage of the hydrology of geothermal reservoirs.

Approximately 40 people attended a very successful two day workshop on *Optimization and Applications* which was held with Professor Mordecai Avriel at the beginning of February.

The old Statistics Section has been split into two: Statistics under Selwyn Gallot and Industrial Statistics under Tim Ball.

G.J.W.

CANTERBURY UNIVERSITY

Brent Wilson has returned from study leave. He spent most of his time at the Institute of Astronomy, Cambridge, with a short period at the Observatoire de Meudon.

Philip Sharp has just completed his Ph.D. with Peter Bryant as supervisor, the title of his thesis being *Unsteady waves on an open two-layer fluid*. He will be leaving in September to take up a post-doctoral fellowship at the University of Toronto.

Peter Heffernan, a graduate of Canterbury, who has been a part-time assistant in statistics, has been appointed to a visiting position for one year in the mathematics department of the University of Texas at Austin.

As foreshadowed in the previous Newsletter, we currently have three visitors to the department, namely, Professor Spence and Dr. Watson (both as Erskine Fellows), and Professor Hirsch. In addition, Dr. Buraczewski visited us during January-February.

Seminars:

Professor Adam Buraczewski (University of Papua New Guinea), *Generalization of the notion of of determinant to rectangular matrices and some applications*.

Dr. G. Alistair Watson (University of Dundee), *A finite algorithm for computing centres in the Jaccard metric*, and a series of three seminars on *Univariate B-splines*.

Professor David Spence (Imperial College), *Multiple solutions for convective flows with internal heating*, and *A review of recent work on biharmonic problems in elasticity and Stokes flow*.

Professor K. Hirsch (Queen Mary College, London), is giving a series of six seminars on *Stability groups, groups having finite automorphism groups, and polycyclic groups*. He is also giving six lectures to the Stage 3 algebra classs on the Sylow theorem and applications.

Dr. Andrew K. Laing (N.Z. Meteorological Service), *Numerical wave modelling*.

OTAGO UNIVERSITY

Dr. Frederic Lam, who has recently completed his Ph.D. at the Institute of Statistics at Texas A & M University in the USA, has been appointed to a Lectureship in Statistics. The title of his thesis is *Non Parametric Tests for Homogeneity of the Marginal Distributions of Paired Data*. He is interested in statistical inference, data modelling, time series and probability theory. He arrived in Dunedin at the end of February.

Dr. John Curran has returned from his Sabbatical Leave at Oxford. His activities included visits to the Open University (to see their TV productions), Queen Mary College (to play with the Cayley group program), and to Limerick, Ireland (to participate in an algebra conference). He also attended meetings of the London Mathematical Society.

Dr. Henry Levy will be on Sabbatical Leave for the last two terms of 1983. He plans to spend most of the time at Queen Elizabeth College, London and Royal College of Technology, Stockholm, Sweden, and will attend the International Conference on the Teaching of Mathematical Modelling in Exeter in July.

The Senior Demonstrators for 1983 are M. A. Nasir, Lewis Weatherall, Robin Whitaker, Natalie Wood, and Richard McIntyre. Mr. Nasir is working on his Ph.D. and the others are M.Sc. students.

This year two short Summer School courses were offered by the Mathematics Dept. (18 - 20 January 1983):

(a) *Mathematical Problem Solving on the Computer* (John Shanks). The course focussed on numerical techniques for non-linear optimisation with applications to curve-fitting, the solution of systems of non-linear equations and differential equations. Also discussed as a necessary introduction were systems of linear equations and single non-linear equations.

There were 11 participants including teachers (5) as well as employees from the Tiwai Smelter, MAF, and the University of Otago.

(b) *Applications of Advanced Statistical Methods* (Bryan Manly & John Harraway). The purpose was to give a brief survey of multiple regression and multivariate analysis, with the emphasis being on understanding the output from BMDP computer programs.

There were 11 participants, including 2 accountants, 2 market researchers, 1 from the Ministry of Works, 1 from MAF, 3 from Forestry Research in Invercargill, and 2 from the University of Otago (1 Biologist and 1 Computer Programming Consultant).

This year's Staff Seminar is being devoted to *Permutation Groups and Combinatorial Structures* (organised by John Clark, John Curran, and Dennis McCaughan).

The Mathematics Dept. is scheduled to shift to the 2nd floor of Science III some time this year. We will share this building with the Physics Dept. and the Science Library.

G.O.

MINISTRY OF AGRICULTURE AND FISHERIES, BIOMETRICS

My fellow correspondent M.S. will find that I had scooped him about Ray Littler's move to Ruakura with a note in the issue before last. Ruakura, incidentally, doesn't come under A.M.D.

Ministry biometricians gathered in Flock House near Bulls on 22-24 February for our annual Biometrics Conference. Topics of papers presented included:

- Generalised Linear Models;
- Time Series via Minitab;
- Models in fisheries and animal diseases;
- experimental design; and
- using residuals on adjacent plots to improve precision in field trials.

Greg Arnold from Massey and Peter Thomson from Victoria were invited to present papers, and Jack Hills from UC Davis gave an illustrated talk about the University of California's Division of Agricultural Sciences and their biometrical work.

This conference has been kept as an in-house affair as a matter of deliberate policy, although we always invite a few non-MAF people to attend each time. It is felt that something would be lost if we "went public".

Readers who wish to know more about MAF-Biometrics and the conference will find more detail in the Biometrics Newsletter, copies of which are obtainable from Isabelle Gravett, Ruakura Agricultural Research Centre, Private Bag, Hamilton.

M.A.J.

Problems

Problem 9. *Aircraft circling time*

Take the wind to be speed U along the x-axis, then for air-speed V the aircraft's ground-speed (tangential to the circle of radius a) is

$$v(\theta) = - U \sin\theta + \sqrt{V^2 - U^2 \cos^2\theta} \, .$$

Hence the total time is

$$T = \int_0^{2\pi} \frac{a\, d\theta}{v(\theta)} = \frac{2a}{V^2 - U^2} \int_0^{\pi} \sqrt{V^2 - U^2 \cos^2\theta} \; d\theta \, .$$

Writing $m = U^2/V^2 \in [0,1]$ and $T(m) = \frac{4a}{V(1-m)} E(m) = \frac{2\pi a}{V} f(m) = T(0) f(m)$

where $E(m) = \int_0^{\frac{\pi}{2}} (1 - m \sin^2\theta)^{\frac{1}{2}} d\theta = \frac{\pi}{2} \left\{ 1 - \sum_{n=1}^{\infty} \left[\frac{1.3\ldots.(2n-1)}{2.4\ldots.(2n)} \right]^2 \frac{m^n}{2n-1} \right\}$

is the complete Elliptic Integral of the Second Kind.

Now $f'(m) = \frac{2}{\pi} ((1-m) E'(m) + E(m))/(1-m)^2, \quad 0 \leqslant m < 1$

and using the uniform convergence of $E(m)$ for $0 \leqslant m < m_0 < 1$,

$$(1-m) E'(m) + E(m) = \frac{3\pi}{8} \left\{ 1 - \sum_{n=1}^{\infty} \left[\frac{1.3\ldots.(2n-1)}{2.4\ldots.(2n)} \right]^2 \frac{m^n}{(n+1)(2n-1)} \right\} .$$

This is positive since the summed term is

$$< \Sigma [\quad]^2 \; \frac{1}{2n^2} < \frac{1}{2} \frac{1}{4} \Sigma \frac{1}{n^2} = \frac{\pi^2}{48} < 1 \, .$$

Hence $f'(m) > 0$ and so $T(m)$ is monotonically increasing. Representative values are

m	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	.95	.99
f(m)	1	1.0828	1.1849	1.3145	1.4848	1.7197	2.0665	2.6349	3.7513	7.0332	13.5023	64.68

Hence the wind's effect is to increase the time of the journey.

G.C. Wake, Victoria University

# Conferences

June 6–16 (Timisoara, Romania)	*Eighth International Conference on Operator Theory* Details from Eighth Operator Theory Conference, Department of Mathematics, INCREST, 220 boulevard Pacii, R-79622 Bucharest, Romania.
June 7–16 (Catania, Italy)	*International Conference on Multifunctions and Integrands: Stochastic* *Analysis, Approximation and Optimization* Details from Multifunctions and Integrands Conference, Seminario Matematico dell´ Universitá, Viale A. Doria 6, I-95125 Catania, Italy.
June 9–11 (Logan, Utah)	*Utah State University Conference on Matrix Theory and Applications* Details from E.E. Underwood, Department of Mathematics, Utah State University, Logan, Utah 84322, U.S.A.
June 9–12 (Allerton Park, Illinois)	*Conference on the Geometry of Normed Spaces* Details from Day Conference Committee, Department of Mathematics, University of Illinois, 1409 West Green Street, Urbana, Illinois 61801, U.S.A.
June 20–22 (Eugene, Oregon)	*Second West Coast Conference on Computing in Graph Theory* Details from Adrzej Proskurowski, Department of Computer and Information Science, University of Oregon, Eugene, Oregon 97403, U.S.A.
June 20–24 (Israel)	*International Symposium on the Mathematical Theory of Networks and Systems* Details from P.A. Fuhrmann, Department of Mathematics, Ben Gurion University of the Negev, Beer Sheva 84120, Israel.
June 20–25 (Trento, Italy)	*Variational Methods for Equlibrium Problems of Fluids* Details from Secretary, C.I.R.M. University of Trento, 38050 Povo (TN), Italy.
June 21–23 (West La Fayette, Indiana)	*Ninth International Symposium on Machine Processing of Remotely Sensed Data* Details from D.B. Morrison, Purdue University/LARS, 1220 Potter Drive, West Lafayette, Indiana 47906, U.S.A.
June 21–24 (New Haven, Connecticut)	*Conference in Banach Algebras and Several Complex Variables* Details from R. Coifman, Department of Mathematics, Box 2155, Yale Station, New Haven, Connecticut 06520, U.S.A.
June 27–29 (San Francisco)	*Symposium on Programming Language Issues in Software Systems* University of California, Berkeley, California 94720, U.S.A.
June 27–29 (Cambridge, Massachussetts)	*SIAM Symposium on the Applications of Discrete Mathematics* Details from Society for Industrial and Applied Mathematics, 1405 Architects Building, 117 South 17th Street, Philadelphia, Pennsylvania 19103.
June 27–July 13 (Clamart, France)	*École d'Été d'Analyse Numérique* Details from Secretariat des Ecoles d'Ete, 1 avenue du General-de-Gaulle, 92140 Clamart, France
*June 27–July 15 (Montréal) *New dates	*Seminaire de Mathematiques Superieures – NATO Advanced Study Institute on* *Topological Methods in Nonlinear Analysis* Details from SMS-NATO ASI, Département de mathématiques et de statisque, Université de Montréal, C.P. 6128, Montréal H3C 3J7, Canada.
June 28–July 1 (Dundee, Scotland)	*Dundee Biennial Conference on Numerical Analysis* Details from Conference Secretary, Department of Mathematics, University of Dundee, DD14HH, Scotland.
June 30–July 10 (Durham, England)	*Durham Symposium on Modular Forms* Details from R.A. Rankin, Department of Mathematics, University of Glasgow, Glasgow G12 8QW, Scotland.
July 3–20 (Cantal, France)	*13th École d'Été de Calcul des Probabilités* Details from P.L. Hennequin, Département de Mathématiques Appliquées, Université de Clermont, B.P. 45, 63170 Aubière, France.
July 4–9 (Venice)	*Tenth International Conference on General Relativity and Gravitation* Details from GR10 Secretariat, Istituto di Fisica "G. Galilei", Via Marzolo 8, 35100 Padova, Italy.
July 6–9 (Morgantown West Virginia)	*Conference on Physical Mathematics and Nonlinear Partial Differential Equations* Details from S. Rankin, Mathematics Department, West Virginia University, Morgantown, West Virginia 26506, U.S.A.
July 10–16 (Milano, Italy)	*International Conference on Quasigroups and their Applications* Details from H. Pflugfelder, Department of Mathematics, Temple University, Philadelphia, Pennsylvania 19122, U.S.A.
July 11–15 (Noordwijkerhout, The Netherlands)	*Journées Arithmetiques 1983* Details from Mrs. S.J. Kuipers-Hoekstra, Mathematisch Centrum, Postbus 4079, 1009 AB Amsterdam, The Netherlands.

July 11-15 (Ithaca, New York)	*12th Conference on Stochastic Processes and their Applications* Details from N.U. Prabhu, Center for Applied Mathematics, Cornell University, 275 Olin Hall, Ithaca, New York 14853, U.S.A.
July 11-15 (Warsaw)	*Symposium on Large Scale Systems Theory and Applications* Details from Z. Nahorski, ul. Newelska 6, PL01-447 Warsaw, Poland.
July 11-15 (Southampton)	*Ninth British Combinatorial Conference* Details from E.K. Lloyd, Faculty of Mathematical Studies, The University, Southampton S09 5NH, England.
July 11-16 (Salzburg, Austria)	*Seventh International Congress of Logic, Methodology and Philosophy of Science* Details from Paul Weingartner, Institut Fuer Philosophie, Universitaet Salzburg, Franciskanergasse 1/1, A-5020 Salzburg, Austria.
July 11-12 (Durham, England)	*L.M.S./S.E.R.C. Durham Symposium on Potential Theory* Details from D.A. Brannan (Ref. PT/83), Faculty of Mathematics, The Open University, Walton Hall, Milton Keynes MK7 6AA, United Kingdom.
July 11-22 (Hamilton, Canada)	*Quadratic Forms and Hermitian K-Theory* Details from C. Riehn, Department of Mathematical Sciences, McMaster University, Hamilton, Ontario, Canada L85 4K1.
July 12-15 (Exeter, England)	*International Conference on the Teaching of Mathematical Modelling* Details from Mrs. S. Williams, Conference Secretary, University of Exeter, St. Lukes, Exeter EX1 22U, England.
July 18-22 (Bari, Italy)	*International Conference on Mathematics in Biology and Medicine* Details from V. Capasso, Instituto di Analisi Matematica, Universita di Bari, Palazzo Ateneo, 70121 Bari, Italy.
July 18-22 (Barcelona)	*10th International Colloquium on Automata Languages and Programming* Details from ICALP 83, Fac. Inform., U.P.B., 31 Jordi Girona Salgado, Barcelona, Spain.
July 18-23 (Aachen, Germany)	*Logic Colloquium '83* Details from Michael M. Richter, Lehrstuhl für Angew. Mathematik, insbes. Informatik der RWTH, Templergraben 64, D-5100 Aachen, Federal Republic of Germany.
July 18-29 (Clamart, France)	*École d'Été d'Informatique* Details from Secretariat des Icoles d'Ete, 1 Avenue du General-de-Gualle, 92140 Clamart, France.
July 18-August 12 (Burnaby, British Columbia)	*Workshop in Latin Squares: Their Construction and Application* Details from Dr. Katherine Heinrich, Department of Mathematics, Simon Fraser University, Burnaby, British Columbia, Canada V5A 1S6.
July 19-22 (Vienna)	*Sixth European Congress on Operational Research* Details from Secretariat of the Congress, EURO VI, C/o Interconvention, P.O. Box 80, A-1107 Vienna, Austria.
July 25-29 (Pittsburgh, Pennsylvania)	*Sixth International Symposium on Multivariate Analysis* Details from P.R. Krishnaiah, Centre for Multivariate Analysis, Ninth Floor, Schenley Hall, University of Pittsburgh, Pennsylvania 15260.
July 25-August 2 (Toronto)	*Seminar on the History of Mathematics* Details from History of Mathematics Summer Seminar, Institute for the History and Philosophy of Science and Technology, University of Toronto, Toronto, Canada M5S 1K7.
July 31-August 6 (Harrisonburg, Virginia)	*Seventh International Conference on Near-Rings and Near-Fields* Details from Carter Lyons, James Madison University, Harrisonburg, Virginia 22807.
August 1-10 (Boulder, Colorado)	*Seventh International Congress on Mathematical Physics* Details from Walter Wyss, Executive Secretary, IAMP 1983 Congress, Department of Physics, Campus Box 390, University of Colorado, Boulder, Colorado 80309, U.S.A.
August 1-12 (Antwerp)	*NATO Advanced Study Institute on Methods in Ring Theory* Details from F. van Oystaeyen, Department of Mathematics, University of Antwerp, U.I.A., 1 Universiteitsplein, B-2610 Wilrijk, Belgium.

August 1-14 (Saint John's Newfoundland	*Workshop and Conference in Algebraic Topology* Details from Renzo Piccini, Department of Mathematics and Statistics, Memorial University of Newfoundland, St. John's, Newfoundland, Canada A1B 3X7.
August 8-11 (Seattle, Washington)	*International Conference on Numerical Methods in Laminar and Turbulent Flow* Details from C.Taylor, Civil Engineering University, College of Swansea, Swansea, SA2 8PP, U.K.
August 8-12 (Karlsruhe, Germany)	*International Joint Conference on Artificial Intelligence* Details from Saul Amarel, Computer Science Department, Hill Center, Busch Campus, Rutgers University, New Brunswick, New Jersey 08903, U.S.A.
August 9-13 (Eger, Hungary)	*Colloquium on Topology* Details from J. Gerlits, Janos Bolyai Methematical Society, 1-3 Anker köz H-1061 Budapest, Hungary.
August 11-14 (Toronto)	*Eighth International Time Series Meeting* Details from O.D. Anderson, ITSM Toronto, 9 Ingheam Grove, Lenton Gardens, Nottingham NG7 2LQ, England
August 15-17 (Zürich)	*Symposium on Numerical Analysis and Computational Complex Analysis* Details from Conference Office, Seminar für Angewandte Mathematik, ETH-Zentrum, CH-8092 Zürich, Switzerland
August 15-17 (Zürich)	*Fourth International Conference on Mathematical Modelling* Details from X.J.R. Avula, Co-Chairman, Fourth International Conference on Mathematical Modelling, School of Engineering, University of Missouri-Rolla, Rolla, Missouri 65401.
August 16-24 (Warsaw)	*International Congress of Mathematicians* Details from Organising Committee ICM-82, Institute of Mathematics of the Polish Academy of Sciences, Sniadeckich 8, P.O. Box 137, 00-950 Warsaw, Poland.
August 21-27 (Linköping,	*International Conference on Foundations of Computation Theory* Details from Foundations of Computation Theory 1983, Department of Mathematics, Linköping University, S-581 83 Linköping, Sweden.
August 22-26 (Szeged, Hungary)	*Universal Algebra* Details from L. Szabó, Bolyoi Institute, Aradi vértanuk tere 1, 6720 Szeged, Hungary.
August 22-27 (Namur, Belgium)	*Tenth International Congress on Cybernetics* Details from Association Internationale de Cybernetique Palais de Expositions, Place André Rickmans, B-5000 Naur, Belgium.
August 26-31 (Busan, Korea)	*Conference on Combinatorial Groups* Details from A.C. Kim, Department of Mathematics, The Busan National University, Busan, Korea.
August 29-31 (Evanston, Illinois)	*Conference to Honor the Sixtieth Birthday of J.B. Keller* Details from Judy Piehl, Department of Engineering Sciences and Applied Mathematics, Northwestern University, Evanston, Illinois 60201, U.S.A.
September 11-15 (Paris, France)	*Fourth Meeting of the International Society for Clinical Biostatics)* (Incorporating a Mini-Symposium on Diabetes). Further information on this meeting and on the Society and how to join may be obtained from: ICSB-4 secretariat, Départment de Statisque Médicale (+10), Institut Gustave-Roussy, rue Camille Desmoulins, 94805 Villejuif Cedex, France.
September 25 - October 2 (Leipzig)	*International Conference on Operator Algebras, Ideals and their Applications in Theoretical Physics* Details from Karl-Marx-Universität, Naturwissenshaftlich-Theoretisches Centrum, International Conference 1983, DDR-7010 Leipzig, Karl-Marx-Platz, PF920, German Democratic Republic.
November 24-27 (Lewen, Belgium)	*International Congress on Computational and Applied Mathematics* Details from F. Broeckx, University of Antwerp (RUCA), Faculteit Toegepaste Economische Wetenschappen, Middelheimlaan 1, B-2020 Antwerpen, Belgium.
November 28 - December 2 (Newcastle, Australia)	*Eighth Australasian Fluid Mechanics Conference* Details from Professor R.A. Antonia, Department of Mechanical Engineering, University of Newcastle, New South Wales 2308, Australia.
1984 August (Adelaide)	*Fifth International Congress on Mathematics Education* Details from John Mack, Department of Pure Mathematics, Sydney University, New South Wales 2006, Australia.
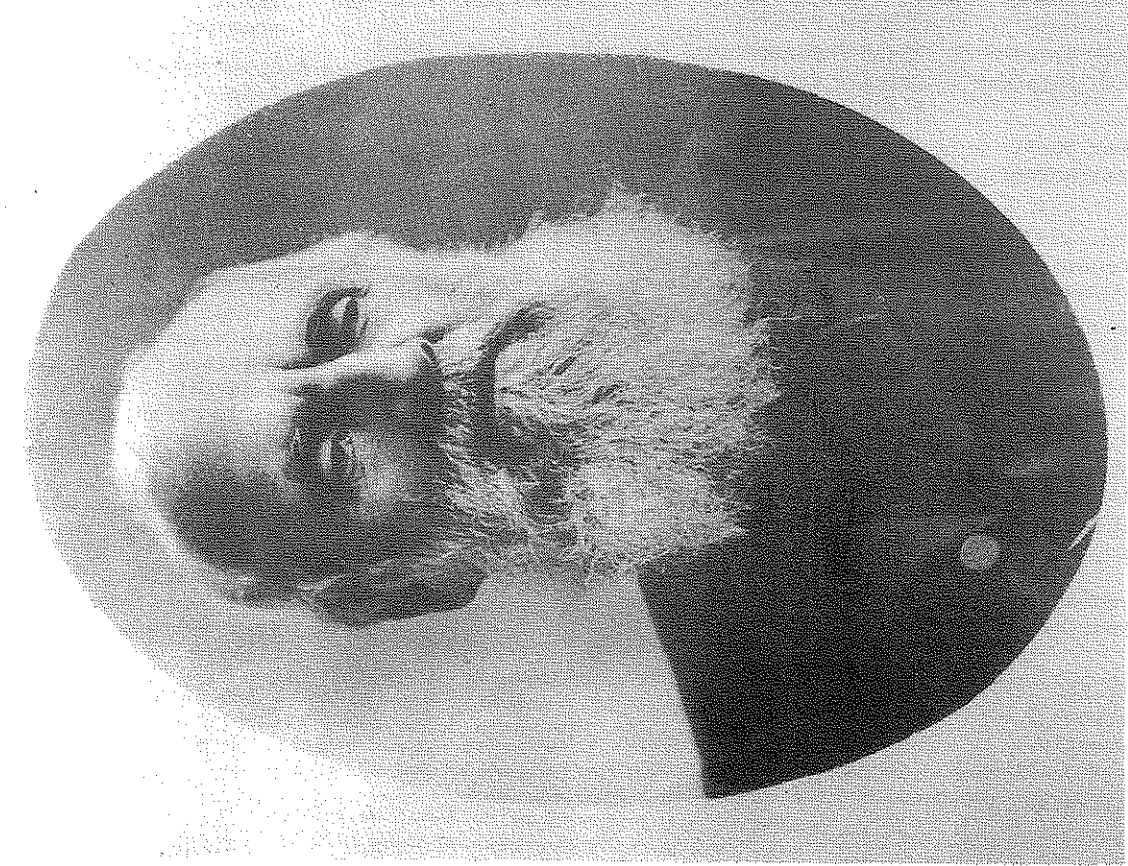
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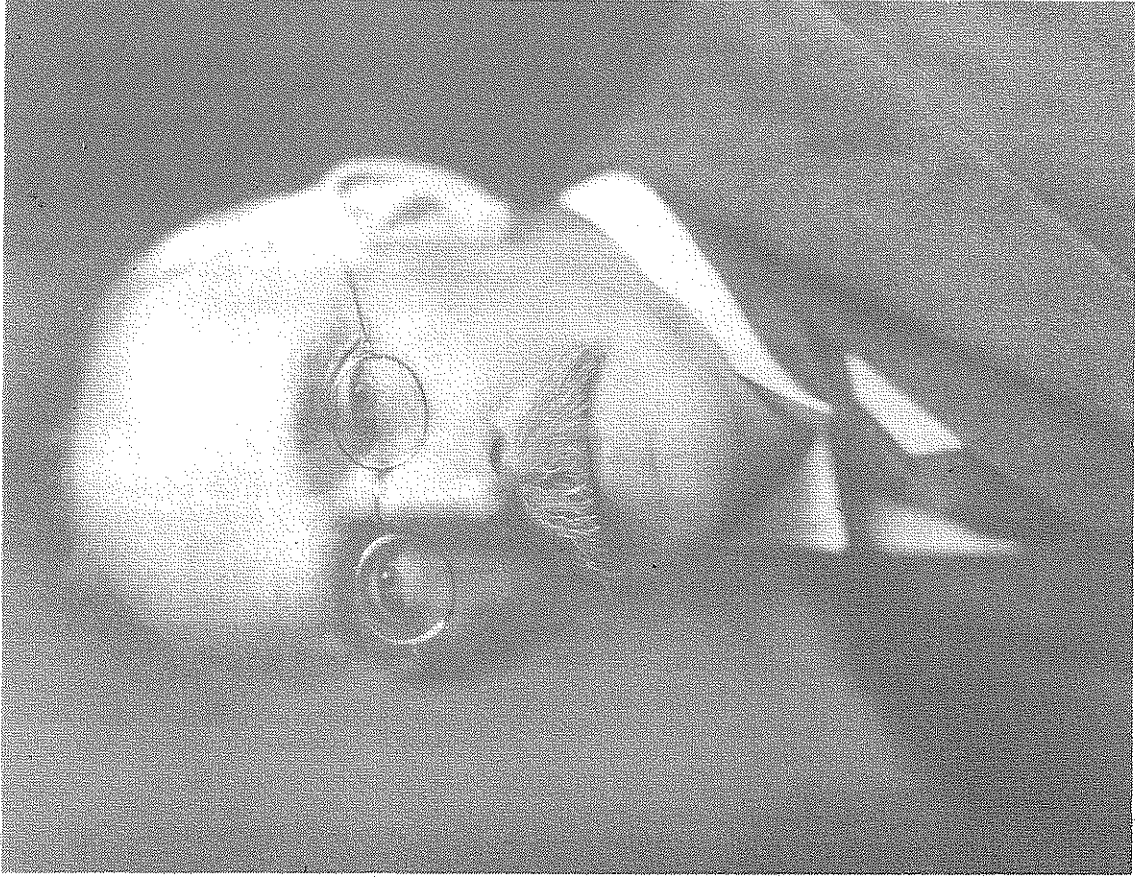
Feature Article

PROFESSORS OF MATHEMATICS AT AUCKLAND UNIVERSITY COLLEGE:

THE MISSIONARY, THE BUSINESSMAN, THE STORY-TELLER AND THE SALESMAN.

D. A. NIELD

In 1983 the University of Auckland celebrates its centenary, and I have written, for the Mathematical Chronicle, a fairly comprehensive account of the development of University Mathematics at Auckland. Rather than just presenting a precis here, I have now written an impressionistic account of the holders of the Chair of Mathematics at Auckland University College, and their activities. I have taken the opportunity to include some material which did not fit into my longer essay.

George Francis Walker, B.A., Fellow of Queens' College, Cambridge, the Second Wrangler of 1879, may be considered to be the zeroth holder of the Chair. A few days after he arrived in Auckland, and before he could take up his duties, Professors Walker and Tucker (Classics and English) went out on the Waitemata Harbour in a small yacht, which capsized. Tucker managed to keep afloat until rescued but Walker was drowned. Thus in 1883 the lectures in Mathematics were given by A.P.W. Thomas, the Professor of Natural Science.

THE MISSIONARY

The vacant Chair of Mathematics was filled by the appointment of William Steadman Aldis, who had in fact been the first choice for the Foundation Chair. Walker, whom Aldis had coached for the Mathematical Tripos, had been recommended by him when he found that, because of a mix-up in arrangements (presumably due to slow mail), his current duties prevented him from taking the Chair at the outset.

When it had been announced that the Auckland University College would be appointing professors, the *New Zealand Herald* said that 'in a new country something more than mere ability' was wanted, and that the College 'must secure, if possible, men who are humble minded and have lofty views'. What was definitely not wanted was 'some conceited young professor who only intensifies the prevailing tendency to self-glorification' and, if necessary, the choice should not be restricted to England but only by the quality and 'missionary spirit' of the applicants.

The overall process of selecting the first four professors was entrusted to Dr. Benjamin Jowett, Vice-Chancellor of the University of Oxford. As tutor, then Master, of Balliol College, Jowett made its name a by-word for academic excellence and high moral purpose. He placed the selection for the Mathematics Chair in the hands of Peter Tait, Professor of Natural Philosophy at Edinburgh and Dr. John Jellet, Provost of Trinity College, Dublin, and they chose Aldis to be the mathematical missionary.

Aldis certainly had the right qualifications. He was born in Southwark, London, on 10 February 1839, the second son of Rev. John Aldis, a noted Baptist minister, and the grandson of Dr. William Steadman, the first head of what is now Rawdon Baptist Theological College, affiliated to the University of Leeds. He was educated by his parents at Shirley, near Croydon, until the age of twelve, and then at the newly-founded City of London School. At sixteen his father destined him for business, until his headmaster protested. Instead, in 1858 he went up to Trinity College, Cambridge, where he made his way by means of scholarships, reaching the pinnacle of being Senior Wrangler (leading the other competitors in the Mathematics Tripos by two thousand marks) and First Smith's Prizeman of 1861. Two of his brothers were later in their turn Sixth and Second Wranglers. Another member of the family invented the Aldis signalling lamp.

Normally Aldis would have got a College Fellowship (the usual opening to a University career) as a matter of course but, being a Nonconformist, he was barred by Statute. Instead, he spent the next ten years as a private tutor to Tripos candidates at Cambridge, and as an external examiner for Queen's University, Belfast, both mundane but well paid jobs. In 1863 he married Mary Robinson, the daughter of a Baptist minister. In 1871 he became Professor of Mathematics at the newly-founded College of Physical Science at Newcastle (part of the University at Durham) and in a few years he was also made Principal. Having learnt Hebrew while recovering from a typhoid illness a year or two after going to

Newcastle, he was sometimes employed by the University of Durham to examine divinity students in Hebrew. One of his students at Newcastle later described him as a man of medium height, spare rather than stout, with a pale face and a bushy reddish-brown beard, and added that he had 'an obliquity of vision, a soft voice, and a biting tongue'. A historian of the University of Durham wrote that 'he was undoubtedly a brilliant teacher, and it was a great loss to the College when he resigned in 1884'.

On his arrival in Auckland, in good time for the 1884 session, Aldis began work in the former Admiralty House, in which Mathematics shared with Classics and English a lecture room formed by removing the folding doors between the two sitting rooms, whose French windows led to a verandah overlooking the harbour. The two bedrooms over the lecture room had been converted into professorial studies, and the rest of the house served as residence for the caretaker and his wife. In 1890 Aldis moved to a building in Beach Road vacated by the Survey and Crown Lands Department, and there he had his own lecture room. Most of the lectures were given in the evening or on Saturday morning since most of the students were part-time.

Research was low on the list of priorities for the early professors at Auckland. Aldis, who had earlier written standard works on Solid Geometry (1865) and Geometrical Optics (1872) and two others on Double Refraction (1870) and Rigid Dynamics (1882), went on to produce a textbook on Algebra in 1887. In 1888 he published a paper "On the mechanical description of a straight line by means of link-work" in the *Transactions and Proceedings of the New Zealand Institute*. He seems to have done quite a bit of consulting. He told a Diploma Day audience that he had 'been appealed to .... to determine the proper depth of a vat to hold a given quantity of sheep dip; to explain the method of calculating the percentage which diluted spirits are over proof; to reconcile a supposed discrepancy between the usually received dimensions of the earth and the distance at which twilight can be seen', showing that, besides training certain faculties of the mind, his discipline could, if necessary, be intensely practical. Aldis was very interested in astronomy; he prevailed upon the University to import astronomical slides from California, and he probably influenced the donation to the University of a telescope which was then placed under his charge.

The historian J. A. Froude published a book in 1886 describing a visit to New Zealand the previous year, during which he met Aldis and his wife whom he described as 'of the elect of cultivated man and woman-kind'. Froude was invited to visit the Aldis's at their home under Mt. Eden. He wrote that 'though it was a strange place in which to find the most brilliant mathematician that Cambridge has produced for half a century, he and his wife contrived to find life pass pleasantly there. Nay, they looked back on Newcastle ... as in comparison a sort of Tartarus, an abode of lost souls. The professor went daily into town for his duties at the college, and he had pupils, he told me, of real promise, quite as likely to distinguish themselves as any that he had taught at home'. Froude was of the opinion that 'had Aldis been a clergyman of the Established Church, he might have risen to an archbishopric. There was no distinction which he might not have claimed, or for which the completeness of his Christian belief would not have qualified him. But in his own judgment, which was probably as excellent on this point as on others, he was better as he was. In his house there was no gossip, political or personal. Of politics he kept prudently clear, as no business of his. But he talked, and talked admirably, on all subjects of enduring interest, with the clearness of scientific knowledge, and the good sense which it is so pleasant to listen to'.

In fact, being apolitical was not typical of Aldis. His daughter has related that Aldis, when he was weighing the question of emigration to New Zealand, enquired carefully in an interview with the Agent-General whether as professor in a Government College, he would be free to take part in public matters. "Free as air," replied   Dillon Bell. But the emigrant himself made a vow of abstinence for two years, feeling that a newcomer might easily make mistakes. She also wrote that 'his Puritan upbringing made gambling in its most trivial forms in his sight as morally wrong as it is mathematically unsound. His sensitive soul shrank from even the mention of the coarser forms of evil. But duty came before feeling .... When they came to Auckland they found licenced prostitution in full swing. So, as the two years of vowed abstinence, or holiday, from public work were drawing to a close, husband and wife, out for a long ride together, discussed the situation. "There is no help for it. We must face it " concluded she. "Yes, even if it costs the professorship," he replied. Owing to his professorial duties, most of the hard work of the agitation fell to her share. A lead once given, others rallied to their support. The day came when a good Presbyterian minister said, "Mrs. Aldis, all the bad men in Auckland *hate* you."'

Mr. R. B. Shalders, one of the founders of the Auckland Y.M.C.A., and a Baptist deacon, whose great interest was in the spiritual welfare of the back-blocks, 'found a willing curate in the new professor of mathematics ... Many a happy weekend was spent during vacations under [Shalders's] auspices in the home of some country settler, with a view to ministering on the Sunday in some more or less neighbouring Church or Hall. One prospective hostess

was alarmed at the idea of entertaining a University Professor, but was reassured by a friend who had tried, and told her, "Oh! It's just like having a child in the house."'

According to his daughter, 'as a teacher, Mr. Aldis had been above all concerned that his pupils should understand, and that they should think. He believed in hard work, and close attention; but not in long hours. Six hours a day, six days a week, plus lectures had been his own allowance when studying for his degree: and he doubted whether at such a subject as Mathematics any man could with real advantage do more. The brain, he felt, was a delicate instrument, of which the edge could easily be blunted.' Aldis seems to have got on well with his students, at least with the ladies. His daughter wrote that 'His sense of humour was a great help to him in the new situation. One of the lady students once remarked that it was so nice to have a professor who could say nasty little things to you; such for instance as that a set of papers would be much improved by being ironed; or the promise, "When Miss _____ has finished her lecture, I will go on with mine."'

To the surprise of his students, in 1893 Aldis was summarily dismissed, on the grounds that he neglected to give some of his advertised lectures. The story of this affair, which has many of the elements of tragi-comedy, occupies most of a chapter of Sinclair's *A History of the University of Auckland*. It involved a personality clash between Aldis and Sir Maurice O'Rourke, Chairman of the Council of the A.U.C., and a power struggle between the Council and the Professorial Board. Prior to 1912, the Professors had no representation on Council. In 1885 Aldis was elected Chairman of the Auckland Education Board with an *ex officio* seat on Council, but he resigned, ostensibly on the grounds of ill health, before taking his seat. In 1892 Aldis reported to Council that he had ridden to College to find that all four College stables were (as he supposed) occupied by the polo ponies of O'Rourke's son. Aldis and his wife had made themselves unpopular in some quarters with their outspoken and uncompromising statements on moral and social issues. We have already seen one example; another was their pacifist attitude. On the occasion of the death of the Duke of Clarence they protested against the military salute 'on the score of noise and expense'. A *Herald* correspondent wrote that he would sooner be a champion shot than a Senior Wrangler, for he would be more likely to be of use to society.

Sinclair concludes that the substance of the original accusation made against Aldis was very thin: he was doing about the number of hours advertised; there had been no complaints at all, and there was no criticism of his teaching; he had received no warning nor, according to him, any admonitions to improve his performance; indeed, he was apparently sacked because Council was not informed that he had not given two weekly lectures for the reason that no students had enrolled.

The way in which Aldis was dismissed was also discreditable, and there were numerous protests, notably by Sir George Grey, Sir William Fox, and Sir Robert Stout. Grey claimed that Aldis was 'one of the most learned mathematicians in Europe ... one who could lead [his students] to the highest pitch of mathematical knowledge'and he 'had aided him in forming one of the most perfect libraries for mathematical teaching that could exist. They obtained almost everything necessary for the education of men in that branch of knowledge: and now Council intended dismissing the man who could direct this educational effort.'

However, Aldis's intemperate statements, and a press campaign in Britain (launched by his friend E. A. Abbott) which included an appeal for University men to boycott Aldis's Chair, aroused antagonism. Council voted 5:5 on a motion to rescind the dismissal, and O'Rourke gave his casting (that is, second) vote against. Further appeals to Members of Parliament and petitions to Parliament were unavailing.

Aldis and his wife remained in Auckland for three more years and then returned to England, where he preached occasionally and assisted with examining, but he never held another teaching position. He published some tables of Bessel functions in the *Proceedings of the Royal Society* (Volumes 64 (1899) and 66 (1900)). He died in 1928, aged 89. In Sinclair's view, Aldis was not a great man, but he was a far better mathematician than a small colonial College had any right to expect.

THE BUSINESSMAN

Early in 1894 the Chair of Mathematics was offered to Alfred Robert Johnson, the Sixth Wrangler of 1882 and a former Fellow of St. John's College, Cambridge, but Johnson declined because of what he had heard from Abbott about the Aldis affair. However, he recommended that the Chair be offered to Hugh William Segar, the Second Wrangler of 1890 and one of the two Smith's Prizemen of 1892. The offer was made, at a salary of £500, which was £200 less than that which Aldis received (many people in Auckland considered that Aldis was overpaid as well as underworked), and Segar accepted.

Segar was born in Liverpool in 1868 and received his secondary education at Liverpool College. At sixteen years of age he was first in the British Isles in each of the three subjects, pure mathematics, applied mathematics and science, in the Cambridge Senior Local Examinations (open to all students under nineteen years of age). He declined a sizarship to St. John's College, Cambridge, in favour of staying longer at school, but later proceeded to Trinity College, Cambridge. From Cambridge he went to the University College of Wales, Aberystwyth, as Lecturer in Mathematics, but a few months later he was appointed to the Auckland Chair, which he was to occupy until his retirement in 1934, a period of forty years.

For almost the whole of his appointment, Segar taught single handed, and without benefit of sabbatical leave, the subjects of Pure and Applied Mathematics up to Honours standard. The list of university prizewinners shows that at first Segar was a successful teacher, even though some students found his monotone boring, but it is evident that in his later years he became tired. K. E. Bullen, who was a student (1923-27) and later an assistant (from 1927) to Segar, reported that prior to 1928 Segar gave four lectures a week in first-year Pure Mathematics, two in first-year Applied Mathematics and for the rest he lumped everybody together into a single tutorial class during which he would go around and ask his students if they had any difficulties, and as a rule refer them to a cupboard where he had solutions of the more difficult problems written out by him over earlier years.

In the period 1890-3 Segar published sixteen papers, most of them short, on properties of determinants and related items of algebra. His research ceased abruptly when he came to Auckland, presumably because of his heavy teaching load and the fact that mathematical journals were not available in the Dominion. In the period 1900-8 he published twelve papers in the *Transaction of the New Zealand Institute* on statistical and economic topics, but no subsequent research papers. He left a long unfinished manuscript on "a class of transcendental functions".

He spent an increasing amount of time on committees, both university and public. He became Chairman of the Boards of Directors of three companies: Tonson, Garlick, Ltd. (furniture); J. Wiseman & Sons (manufacturers and wholesalers of leather and sports equipment); and New Zealand Home Builders. He served continuously on the Senate of the University of New Zealand from 1913 until his retirement in 1934. He was Chairman of the Academic Board from its inception in 1915 until 1934. He was a member of the Auckland University College Council from 1913 to 1929. Segar had the reputation of being a man of integrity who did not shirk difficult or unpleasant tasks, and he provided a cohesive force in university committees which were often subjected to serious tensions. He was recognized as one who loved university students and had great affection for his students, an affection which was indeed mutual. On numerous occasions he championed the students when they were undeservedly taken to task by the local press for public misbehaviour.

Segar was active over a long period with both the Workers' Educational Association and the Auckland Institute and Museum (on whose Council he served from 1900 until his retirement, on account of ill health, in 1953, a record unequalled on any public body in Auckland). He gave numerous public lectures on a variety of subjects, his most popular ones being on astronomy. For many years he contributed articles in the *New Zealand Herald* on economics and astronomy. He was elected an Original Fellow of the Royal Society of New Zealand and in 1933-35 was President. He was also active on the Committee of Advice of the Training College, the Auckland Grammar Schools Board, the Dilworth Trust Board and the Auckland City Council Library Committee. He was Vice-President of the Economic Society in 1930-31 and President of the Auckland Rotary Club in 1923-24.

As a boy Segar played Rugby football in a team representing the secondary schools of Liverpool. Although he was not an active player in New Zealand, he closely followed the games of the University Club for many years; he was President of the club for several years, and he served on the Management Committee of the Auckland Rugby Union. He was also a keen tennis player, and played regularly until over seventy years of age, both at home and as a member of the Parnell Lawn Tennis Club, which he served as President for many years. In later life he took up bowls with the Remuera Bowling Club and was President of the Club in 1938-9. He also found much recreation in music.

Segar married Elise Scherff in 1894. They had two sons and two daughters. One daughter, E. C. Margaret Segar, was for many years a staff member of the Botany Department at the University of Auckland. His biographer, L. H. Briggs, wrote that Segar would be remembered for his genial personality, his kindliness in his own house, and his unruffled temperament and calm judgement on committees. Science and education in Auckland owed a great debt to his life of service over sixty years in university and public affairs.

THE STORY-TELLER

In 1934 Segar was succeeded by Henry George Forder, whose main competitor for the chair was the young Bullen. Forder was aged 45 when he arrived in Auckland. A Wrangler of 1910,

Forder's previous employment had been entirely in secondary school teaching, and G. H. Hardy who was asked to comment on the applicants, wrote that "Forder is plainly, in his way, a rather remarkable man, since he combines so much experience of comparatively elementary teaching with a real understanding of and enthusiasm for the logic of his subject .... I bought his book ... and read quite a lot of it, and was genuinely interested by it." One of Forder's referees was E. A. Milne, who wrote that Forder was extremely widely read in mathematical logic and philosophy, pure mathematics, relativity, quantum mechanics and astrophysics, and that on these subjects he had heard him speak with knowledge, and authority, and with marked originality.

Thus Forder arrived in New Zealand with a high reputation as an authority on what had been done in Mathematics, and in the years to come he was to continue expounding on mathematical discoveries. His own contributions to original mathematics were comparatively modest; his strength lay in the reworking and popularising of the work of others. The book that Hardy referred to was *The Foundations of Euclidean Geometry*, published in 1927. As Forder wrote, it "claims to give for the first time a complete account of that subject from the standpoint of modern logic, following the work of Pasch, Hilbert, Veblen, Pieri and their successors." Forder had also published two school textbooks, *A School Geometry* (1930) and *Higher Course Geometry* (1931). Later he was to publish his treatise *The Calculus of Extension* (1941), which gained him the Hector Medal of the Royal Society of New Zealand in 1946, and *Geometry* (1950) an "expository book for the non-specialist who is interested in geometrical shapes."

Since several excellent biographies of Forder have been written in recent years, I shall briefly outline his career. He was born on 27 September 1889 at Shotesham All Saints, near Norwich, the son of a blacksmith who cherished books. Henry Forder won scholarships, first to Paston Grammar School (where, with another boy, he founded the school debating society) and then to Sidney Sussex College, Cambridge where he studied the standard mathematical books of his time and read a dazzling variety of books on other subjects. On completion of his degree in 1910, he could not afford to stay on at Cambridge, and so he became a school master, the occupation he desired. He taught at schools in Oldham, Cardiff and London, and finally at Hull, where, in 1922, he married his wife Dorothy, and so began what was to be a happy marriage lasting forty-eight years. He eventually became dissatisfied with his life as a schoolmaster, and, when invited to apply for the Auckland chair, he did so. Apart from a sabbatical leave in England in 1947, he was to remain in Auckland for the rest of his life.

The mathematical syllabus which Forder found when he arrived at Auckland shocked him. After one term he was invited to report to Council. He wrote that he would attempt to raise the standard at Auckland to the standard of the scholarship examinations taken in schools in England. He reported that it was at present possible for a student to get First Class Honours and be completely unaware of the existence of the whole of modern mathematics, and by modern mathematics he meant not the mathematics of this century but the last! Such was the inertia of the University of New Zealand system, coupled with the political need to cater for large numbers of part-time and exempt students, that it took him until 1936 to get the theory of complex variables into the course, and until 1938 to get calculus into the syllabus for Pure Mathematics I.

Forder quickly got disillusioned with committees, and did his best to steer clear of them, with one exception - the Library Committee of the A.U.C., of which he became Chairman. He dedicated himself to building up the library. When he arrived it contained no mathematics journals at all except for three old volumes. He had told the selection committee for the Chair that if the situation with respect to journals was to continue then he would prefer to remain as an Assistant Master in an English School. As a result, Council provided a small grant for journals, and Forder himself subscribed to others. He was later to relate that the annual grant of £18 to the Mathematics Department was less than what he spent himself.

Of course Forder continued to read lots of books, particularly on history. He made a point of telling Rutherford, the Professor of History, that he read history when he was too tired to read mathematics, and he took a delight in correcting colleagues who, in the course of conversation in the Senior Common Room, made slips of historical fact. Indeed, Forder was renowned as a wit and conversationist. In his entry in *Who's Who in New Zealand* he listed his interests as "walking and talking", and the latter predominated.

My undergraduate days coincided with Forder's last three years in the Auckland Chair. He taught a first year geometry course and third and fourth year courses on geometry and real variable analysis. I went directly into second year classes, but I was advised to attend Forder's Stage I geometry lectures. I found that to fully enjoy this performance it was advisable to sit in the front row to the right of the blackboard, in order to get a clear view of the small squiggles and to hear the conversation. Forder was notorious for his habit of expounding solid geometry by drawing pictures in the air. Weaker students found his

lectures difficult to follow, but they were a delight to those who could readily appreciate what he was doing. I remember him as one of medium height and build, slightly stooped, with a roundish face of florid complexion surmounted by short white hair, wearing glasses with round lenses and thin metal frames which, from time to time, he used to raise in order to peer at his lecture notes. These were usually written in an extremely concise format in small notebooks from which the staples had been removed. An exception was his Honours geometry course, for which he handed out cyclostyled notes which were complete except for the absence of diagrams, which each student had to put in for himself. For parts of the lecture he used to walk up and down in front of his class. Usually he found something to chuckle about. An example was the moral illustrated by the function $\exp(-1/t^2)$, which started life (at $t = 0$) with very poor prospects (zero value, zero rate of growth, zero acceleration, ...) and which achieved a significant value at later age. Again, during a discussion of uniform convergence, his students were told to imagine a drunk, each of whose arms were held by a policeman; if the two policemen did not wriggle very much then the drunk could not wriggle very much. Forder generated stories. For example, there was the First of April when he arrived at his Stage I geometry lecture to find his blackboard covered with derisive comments. These he pretended to ignore, and immediately started running through a demonstration, the details of which the students dutifully copied down, showing that every triangle was equilateral!

Forder reluctantly retired at the end of 1955, having been allowed to continue for one year beyond the normal retirement age of 65, but for another decade he continued to give a course of lectures to Master s students. After his wife died, he moved into a retirement home in Selwyn Village. Although he grew increasingly frail, his mind remained alert and he continued to read mathematics until his death, on 21 September 1981, a few days before his ninety-second birthday. I was privileged to have been one of his students. Since John Butcher, John Kalman, Cecil Segedin and others have recently published tributes to Forder, I need write no more.

THE SALESMAN

Frederick Chong arrived in 1956 as the new Professor of Mathematics. Then aged 40, Chong had been born in Australia to Chinese parents, and had gained an M.Sc. (Sydney), and proceeded to St. John's College, Cambridge, where he was a Wrangler in 1939. From 1940 to 1946 he was at the New England University College, Armidale, at first as an Assistant Lecturer and then as a Lecturer in Mathematics and Physics. He then moved to the University of Sydney where he was promoted to Senior Lecturer in 1949. The following year he travelled to the U.S.A. on a Fulbright Travel Grant. He spent a term as a Research Associate at the University of Chicago before going to Iowa State University, where in 1952 he was awarded a Ph.D. He then returned to the University of Sydney. At the time of his appointment he had worked on orthogonal matrices and the application of dual integral equations to problems in elasticity, and had published a paper on common eigenvectors of commuting matrices. He had also edited the Australian version of E. A. Maxwell's *Elementary Coordinate Geometry*. Keith Bullen, who had been asked to comment on the candidates for the Chair, favoured Chong as a person who had interests in both pure and applied mathematics and who had been involved in the training of teachers of mathematics.

I was a member of Chong's first Master s classes, in algebra and analysis, at Auckland. He was an excellent salesman of mathematics. He gave good lectures, carefully organized and clearly articulated, and this made things easy for his students. Whereas Forder had, like most of his Arts Faculty colleagues, worn a gown while lecturing, Chong sported a short white coat.

Although confined by the University of New Zealand regulations until 1962, Chong made a number of innovations. In order to make the Unit system more flexible he introduced the units Advanced Mathematics (to provide a suitable third year course for students who had gained direct entry to Stage II in their first year) and Ancillary Mathematics (to provide a mixture of pure and applied mathematics papers at third year level for Physics and Chemistry students), and he initiated the teaching of abstract algebra at the second year level.

Chong was active in the Auckland Mathematical Association, and provided a steadying hand at the time when "modern mathematics" was being introduced into the secondary schools, and he supported the publishing by the Association of the *New Zealand Mathematics Magazine*, from 1963, under the editorship of Marin Segedin. For several years this publication was produced in the Mathematics Department at the University.

At the time that Chong arrived at Auckland, New Zealand university salaries were well below Australian ones, and for the first few years his annual reports to Council contained complaints about the difficulty of recruiting staff. (Indeed, except for the usual routine information on examination pass rates, they contained little else.) Student numbers were rising rapidly, and class sizes were limited only by the capacity of the largest lecture rooms available. The University had of necessity to initiate an extensive building program, and Chong was appointed as Special Assistant (Buildings) to the Vice-Chancellor from 1 August 1964 for two years. About this time he had to go to Wellington to tell the University Grants Committee that the Mathematics Department would need not one but two floors of the planned Section C of the Science Building. The following year he announced his resignation, in order to accept the Foundation Chair of Mathematics at Macquarie University.

During his stay in Auckland, Chong was in demand as a public speaker, in institutions varying from schools to prisons. He was an active member of the Chinese Presbyterian Church in Auckland, and he took a particular interest in the establishment, by the Presbyterian Methodist Congregational Foundation Inc., of the Grafton Hall of Residence.

Frederick Chong was to remain at Macquarie University for the remainder of his teaching career, but he made a point of calling in on his friends at the University of Auckland each time he passed through Auckland during a Sabbatical leave.

References

K. Sinclair, *A History of the University of Auckland*, Auckland University Press 1983.

S. J. Wallace, The Idea of University Education and the Public Response in Auckland, 1883-1919, Thesis for M.A. in History, University of Auckland, 1972.

A. L. Aldis, 'A Brief Biography of William Steadman Aldis', typescript, 1940, Auckland Public Library. Another copy is in the Aldis Papers, University of Auckland Library.

C. E. Whiting, *The University of Durham*, 1832-1932, London 1932.

J. A. Froude, *Oceana, or England and her Colonies*, London 1886.

L. H. Briggs, Biography of H. W. Segar, *Trans. Roy. Soc. N.Z.* 82 (1954-55), 1195-1197.

Sir Douglas Robb, Biography of H. G. Forder, *A Spectrum of Mathematics* (J. C. Butcher, Ed.) Auckland University Press, 1971, pages 5-7.

C. M. Segedin, Henry George Forder - An appreciation, *N.Z. Math. Mag.* 18 (1981), 43-46.

J. A. Kalman, Henry George Forder, *N.Z. Math. Mag.* 18 (1981) 46-49.

J. C. Butcher, Biography of H. G. Forder, *Proc. Roy. Soc. N.Z.* 110 (1982) 23-26.

D. A. Nield, University Mathematics at Auckland: A historical essay, *Math. Chron.* 12 (1983), to appear.

I have also made use of unpublished reminiscences of K. E. Bullen and H. G. Forder supplied by K. Sinclair, and I have had access to Auckland University Council Minutes.

NEW ZEALAND FUTURES TRUST

The New Zealand Futures Trust has been formed to replace the Commission for the Future, which was disestablished by the Government. The aim of the Trust is to provide for the general public and for institutions and societies, information about the future so that they have better understanding of the way this country is likely to change and develop.

The Trust seeks people who are prepared to support the New Zealand Futures Trust with an annual donation of $15 (tax deductible). This entitles one to receive a quarterly magazine. Donations, and requests for further information, should be sent to the New Zealand Futures Trust, P.O. Box 270, Wellington.

The cover illustrates the "unexpected" concurrence of diagonals (at U) in a regular octokaidecagon leading to Kerr's solution of an old chestnut: given the 20^0 isosceles triangle O67 in which U67 = 60^0, T76 = 50^0, find the angle TU6.

CHINESE UNIVERSITIES

During six weeks in South-East Asia I delivered eleven lectures on mathematics. Four of these were given at Sun Yat Sen University, three at two universities and the National Academy in Taiwan, two at different universities in Hong Kong and two at the University of Singapore.

The different Chinese universities all have elements in common. All of them provide housing for staff and for students. Sun Yat Sen houses all of its 4,000 students and 2,000 staff on the campus. Tsing Hua in Hsinshu, Taiwan does the same. In Sun Yat Sen, houses are tenanted by staff and their descendants - the descendants having some possibly non-academic job on the site. The Chinese University of Hong Kong provides housing for staff until their retirement: then they must move. With the high cost of housing in Hong Kong this can be a rude shock for the retiring lecturer. Even though the high rise apartments have most attractive views in Hong Kong many choose not to live there. At Sun Yat Sen and Tsing Hua residence is one hundred percent.

Tam Kang - a private university at Tan-shui in Taiwan-owns high rise apartment houses and the income provides support for the university. The top storey of one building is a restaurant run by students. There did not seem to be many staff living on the grounds.

The University of Singapore has a school of education financed by a high rise hotel (23 floors). The land at the centre of the city was donated and the hotel built. The first nine floors are given over to Convention rooms, offices and other activities. The remaining 14 floors are rented out as hotel accommodation. On the main site there are some high rise apartments for staff. However these do not nearly supply facilities for more than a minority of staff members. I understand that more buildings are being put up. Hong Kong Baptist College has a most remarkable history. However, it occupies a most limited site and houses none of its staff.

The Sun Yat Sen University has a campus covering a square of 1 1/2 to 2 miles on each side. On one side it borders the Pearl river and there is a ferry to the town centre taking twenty minutes. There is housing for bachelors, maybe ten playing fields for children, schools and of course university buildings. The buildings include a new library - very spacious. There is also a language centre sponsored by the United Nations. I stayed at the Guest House for foreign visitors. The visitors included about ten instructors in English from U.C.L.A. To them the progress in building is slow. Every so often they must attend a "pep" talk by a representative of the Foreign Office. I am told this exercise is repetitious and boring. The Head of the Mathematics Department is also an officer by virtue of his post in the Communist Party. In this way he has considerable control over his colleagues. The University Book Shop did not appear to have a selection which compared to that in many western campuses. The book shops in town, however, were extensive. On my last day of visiting it was announced that the Government monopoly on publication was being removed. On the other hand overseas study by private students is being drastically reduced. I was invited to lecture to post-graduate students intending for the most part to do a Ph.D. in the United States. They had many questions and I had a most pleasant time. The cultural revolution left its mark on the University. The Mathematics library has a superb collection of texts and research journals. All volumes of these research journals from 1968 to 1973 are missing. I have supplied some from my own collection, but this is a blight I fear that runs across the country and over all subjects. Originally many of the slogans of Chairman Mao appeared at strategic places. Now one signboard remains and this one is likely to go. The slogan now is for the five courtesies and four virtues - a teaching that has not penetrated the army.

Taiwan has 18 million people and twenty universities I am told. Hsinchu, a town of 300,000 has two universities. Tsing Hua where I stayed has an extensive campus including a mountain. The buildings are modern, the guest house spacious and generally the air is that of an American university. The name of the institution is that of the "parent" one in Peking and the connection is represented by an arch - a copy of the one standing on the grounds in Peking. Most of the staff are proficient in speaking English but now with deteriorating relations with the United States I understand the language is less popular. Construction goes on all the time. A half mile of pipe was laid, ditch dug first day, laid on second, ditch filled third, road etc. sealed on fourth.

Food at guest house very much a drill - always the coconut pie for dessert.

Chow Tung University borders on the campus and all of the buildings have a new look. All cement but relieved by patches of tile. The Tsing Hua campus has two ponds with a white heron and water lilies - all the traditional decoration. They have an annual baseball game with Tam Kang - the private University I have spoken about. There were not many new buildings there and clearly it was not easy to keep it afloat financially. There had been no one big founder but several wealthy men making up the board. The older red brick buildings with tile roofs surrounded by fir trees gave a very pleasing impression.

Academica Sinica is similar to the Royal Society. However it has extensive grounds in Taipei and buildings old enough to look lived in but new enough to look clean and in good order. The extent and cost of the establishment compares with that in Australia, say.

In Taiwan university departments seemed to have common rooms where staff could relax. I was entertained on my first day in Canton in a very formal room. I was told incidentally there were 100 in the department but I met only about 20. Perhaps the others were tutors, etc.

Over many years I have visited the Chinese University at Hong Kong. Originally I would find it in some run down buildings in the centre of Hong Kong but now it has been moved to a hillside in the country at Shatin. These buildings are attractive and very much enhanced by the views down the bay from the site. As I reported many but not all, of the staff live on the site. Students mostly arrive by bus. The library is excellent and is backed up with a very complete selection on micro fiche. The book shop is perhaps more extensive than the one at Canterbury. There are several good eating houses on the grounds. The Staff Club has a cuisine that is most satisfactory. There is a small supermarket on the grounds which has a complete supply of foodstuffs for the staff living on campus. The campus is spread over a very steep hill and there are many flights of stairs connecting different complexes of buildings. The athletes do not need to go jogging - attending classes is enough to keep them fit!

Hong Kong Baptist has 3,000 students and boasts of a remarkable success story. When the Chinese University of Hong Kong was formed from a number of smaller colleges in the city, Hong Kong Baptist was invited to be part of the establishment. However it refused and the government then ordered that Hong Kong Baptist should not offer degrees in the future but only a diploma. However this College has turned out so many first rate people that its diploma is specifically recognised by many of the larger universities in the United States. Students have no difficulty in finding universities and funds in the United States for post graduate work. Dr. To of Canterbury University taught as a member of this College. One class of six students produced a set of first rate mathematicians. Four of them are now Professors at different American and other foreign universities. The buildings are very crowded and every inch of ground space is utilized. The buildings are kept clean and painted. When you leave the buildings you step immediately into the howling traffic of Hong Kong. The College is a convenient half way meeting place for mathematicians from the two universities.

Not so many years ago there were two universities in Singapore; the National University and Nanyang - the Chinese University. Being a private university, Nanyang had its financial problems. Now it has been degraded to being a Technical Institute. The National University is expanding - one of the few places in the world where staffing is being increased by large numbers. The site is beautiful and I hope to spend a month there at the end of my next study leave. I shall then spend a part of each day in the swimming pool to keep the body temperature down. The campus has many airy staircases and verandahs, so students easily find breezy and cool corners to use in pursuing their studies. Air-conditioning is widespread and up and down the hill all buildings are connected by a covered walkway. The university has a full programme of post graduate work.

The ferry from Sun Yat Sen university to the centre of Canton was a source of great pleasure to me. I was frequently engaged in conversation by students who practiced their English. I was treated to a dinner by the Vice-Chancellor of Sun Yat Sen - ten courses including frogs' legs, Peking Duck, succulent black mushrooms. The breakfast was done by an inventive cook. Some breakfasts were the traditional Chinese rice soup; others pancakes, canapés, scrambled eggs or some other western dish. Beds, whether Canton, Taiwan or Singapore, were hard - the cover if needed was a feather bed (duvet). The lectures I gave in Canton were through an interpreter save for my last one on general matters to overseas students. It is not easy for either the speaker or the interpreter to establish a rapport. At Sun Yat Sen university mathematics had a very strong applied bias. At Hsinchu and elsewhere in Taiwan I found that many had read my papers in the past. Some have criticised me for going to Taiwan but I am always interested to talk to other mathematicians with a similar interest - politicians are another matter. Some in Taiwan told me I was the first mathematician from New Zealand to have visited.

I hope to visit Canton at the end of 1985. There are five universities in Canton, I am told, and at least some of them have mathematics departments. Meanwhile the Chinese government plans to send 15,000 post-graduates overseas in the next five years.

I look forward to the universities in Canton developing their own post-graduate programme. This is no easy trick, but the experience of Singapore university shows that it can be done. The 15,000 sent overseas should give a strong boost to the Chinese post-graduate programme. I hope New Zealand can play a strong and useful part in such a programme of exchange and development.

Last word! I have recently been informed that in South China the Jinan University for overseas students accepts and has had entries from Taiwan. A very hopeful sign. One of the Science staff may visit New Zealand at some later date.

G. M. Petersen.

A MATHEMATICIAN'S OUTING

The following report was composed by Marta Sved of the Department of Mathematics, the University of Adelaide. The gaps are to be filled in by using names from the list of thirty-two mathematicians at the end of the report. (A little stretching may be necessary in some cases).

THE STORY

It was a beautiful day. Our party, led by Archie and Dan headed for a picnic on the (1).......... . The (2)..........r acted like a (3)..........ic, although the (4).......... was driving had a rough engine, badly in need of an (5).......... . We parked our cars and got out, with Archie and Bert in the lead, the others following. However the (6).......... and Archie began to climb was steep, and we de(7)..........ed to move. Susie, Archie's sister lisped, "Why not resht here, Archie? It'sh show (8)..........". But (9).......... move on. Susie was so annoyed that she embarked on one of her tall (10).......... about her brother, but we knew it was a (11).......... .

We enjoyed the wild life: a beautiful pink (12).......... flying past and a s(13).......... lizard scurrying for cover. Once we heard a (14).......... and a little furry animal ran past; it appeared to have a coat of (15)..........n similar to the (16).......... is wearing. A (17).......... would have been happy to catch it.

The landscape opened up, and we saw in the distance a herd of cows. Or were they goats? "They are (18).........." said Leon, who thinks himself witty. "(19)..........on," said Kate, "you (20)..........ment us with your puns. You should stay away from human society, like a (21).......... ."

After lunch and a rest, the inevitable game followed. We divided into two teams, Pommies and Aussies, with Des who was un(22).......... to play, acting as referee. Never again will we let this happen. The way (23).......... shows how biased he is, always taking the side of his count(24).......... . In the slightest skirmish (25). .... off the player from the opposing side, and since he comes from the U.K., the game naturally finished with (26)..........ing.

Finally it was time to go home. On the whole, we all (27)..........vellous time. Back at the cars we had our final drinks, sipping them from the bottles through straws. Leon sneered, "(28).......... needed?" At your age I could drink n(29)..........s of beer without any mechanical aids. You are just not as (30).......... as we were." This re(31).......... his ended our picnic, so my (32).......... will end here.

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Abel	Descartes	Galois	Kronecker
Archimedes	Einstein	Gauss	Markov
Boole	Euclid	Green	Minkowski
Cantor	Euler	Hadamard	Newton
Cardan	Fermat	Hardy	Riemann
Cayley	Fibonacci	Hermite	Russell
Cauchy	Fourier	Hilbert	Thales
Desargues	Frechet	Klein	Weierstrass.

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Secretarial

NINTH ANNUAL GENERAL MEETING

The Ninth Annual General Meeting of the New Zealand Mathematical Society will be held at 7.00 pm on Monday, 23rd May, 1983 at Massey University, Palmerston North. The meeting will be held during the Eighteenth New Zealand Mathematics Colloquium, and precise details of its location etc. will be announced at the Colloquium.

The following nominations have been received for positions on the Thirteenth Council. Each is accompanied by brief biographical details submitted by the nominee:

1. Dr. M.R. Carter, Massey University.
   Age 42. Senior Lecturer in Department of Mathematics & Statistics, Massey University. Born in South Africa, studied at University of the Witwatersrand, Johannesburg, then taught there for 10 years.
   Emigrated to New Zealand in 1971 and have been at Massey University since then.
   Research interest in differential equations, general interest in analysis, history and philosophy of mathematics and mathematics education.
   Founder member of NZMS. Councillor 1980-83. Acting editor of NZMS Newsletter on various occasions.

2. Professor Ian Collins, University of Auckland.
   B.A., Cambridge (Mathematics) 1962.   Scientific Officer, Admiralty, 1962-65.
   M.A., Cambridge, 1964.   Ph.D., Cambridge, 1968.
   Lecturer/Senior Lecturer, Mathematics Department, UMIST, 1968-1981.
   Visiting Scientist, U.S. Steel Research Laboratories, 1979.
   Professor, Department of Theoretical and Applied Mechanics, University of Auckland, 1981- .

3. Dr. A.W. McInnes, University of Canterbury.
   Allan McInnes gained an M.Sc. in mathematics from Victoria University of Wellington and a Ph.D. in mathematics from the University of Illinois. He also gained a B.A. in economics from the University of Canterbury. He was appointed at Canterbury in 1973, and is presently a Senior Lecturer. He is a foundation member of the NZMS and has been a member of the Executive Committee of the Canterbury Mathematical Association since 1980. His principal research interests are in approximation theory and theoretical numerical analysis.

4. Dr. John Shanks, University of Otago.
   Born: 25/9/48 Lancashire, England.
   Universities: Liverpool (1967-70) - B.Sc. Hons in Computational Statistical Science.
                 Oxford (1970-73) - M.Sc. and D.Phil. in Numerical Analysis.
   Came to Otago at completion of D. Phil and took up the post of lecturer (January 1974). Took study leave in Oxford first two terms of 1979.
   Married Yvonne 1981; baby Louise born 16/12/82.

RECIPROCAL MEMBERSHIP

The New Zealand Mathematical Society currently has reciprocal membership arrangements with the Australian Mathematical Society, the American Mathematical Society, the Canadian Mathematical Society, the London Mathematical Society, the Edinburgh Mathematical Society and the South-East Asian Mathematical Society. Members of the NZMS wishing to join any of those Societies should obtain a letter from Dr. J. L. Schiff, Treasurer NZMS, Department of Mathematics and Statistics, University of Auckland, Private Bag, Auckland, certifying that s/he is a members of the NZMS. This should then be sent to the appropriate Society. Members of the six Societies mentioned above who wish to join the NZMS should send an appropriate note from their Societies to Dr. Schiff.

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If you receive your copy of the Newsletter at your home address, but work at an institution with other members of the NZMS, you can help us to save postage costs by receiving your Newsletter at work, as this would allow us to send you copy en masse with the other copies.

Just write a short note to Dr. J. L. Schiff, Treasurer NZMS, Department of Mathematics and Statistics, University of Auckland, Private Bag, Auckland, giving your current and new addresses.

Crossword
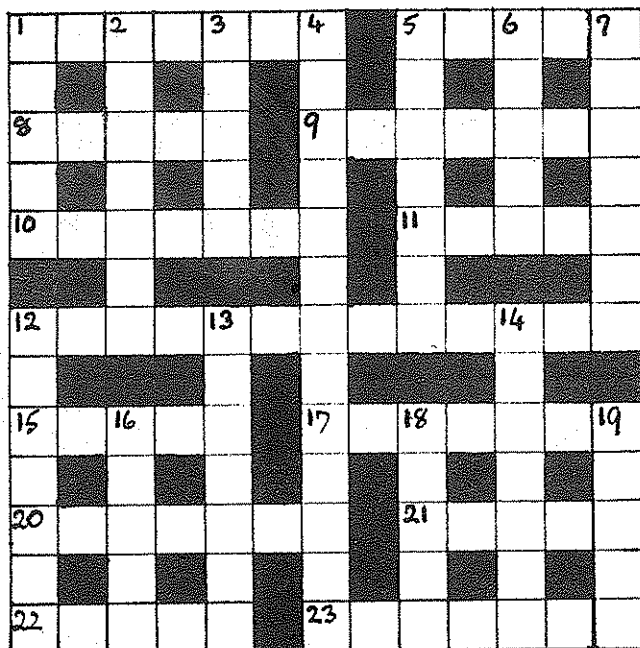
CROSSWORD N° 9 SOLUTION

Across:

3. A thousand, 7. Atoll, 8. Metonic,
9. Lunar, 10. Ten, 12. Seven, 14. Puts,
16. Solid, 18. Sham, 20. Axis,
22. Enemy, 24. Sere, 25. Staid, 27. Ass,
29. Arete, 30. Hundred, 32. Often,
33. Trombones.

Down:

1. Callippus, 2. Cornets, 3. Alert,
4. One, 5. Showed is, 6. Noise, 8. Mono,
11. Esme, 12. Six, 13. Nineteens,
15. Sheikdom, 17. Lays, 19. And,
21. Seventy, 23. Maid, 26. Truer,
28. Samos.

Across:

1. To some a garble. (7)
5. Soft sounder who could have been a peon. (5)
8. Bridge supporters. (5)
9. Line sets for writing? (7)
10. Furious poet so a riot. (7)
11. Shellfish of the gold sea. (5)
12. East European twister. (9+4)
15. Mentally absorb with an inner ear. (5)
17. Cockney description of Venus di Milo? (7)
20. Arthur associated with Bateman, H.T.F. and asymptotics. (7)
21. The last will arouse all to answer. (5)
22. Roustabout ring. (5)
23. Common to compasses and conifers. (7)

Down:

1. The first Greek. (5)
2. A cringe describes the oded urn. (7)
3. Foundations of number systems. (5)
4. As 5 + 7 is to 13. (13)
5. P → on = 21. (7)
6. There is one of choice. (5)
7. See the ex-pupil wait. (7)
12. Problem space man. (7)
13. Disc without disc. (7)
14. As 13 - 5 is to 7. (7)
16. He who increased (by steps of 10^3?). (5)
18. The bishop's angle. (5)
19. Sub-clans have 30 days. (5)