New Zealand Statistical Association (Inc.)

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newsletter

Statistics in the New Zealand Curriculum

Some recent (and future) history

A summary of the report of the Education Committee (which you will find on page 4).

The Present

The Maths Advisory Group is translating the Maths Curriculum (levels 1, 2, 3, 4) into Unit Standards to be written, approved and registered on the Framework for a carefully-monitored limited trial in 1995.

This follows a year of debate:

- is this impossible, or just very difficult?

An irreverent view of the curriculum development process

It is very important that the "Mathematical Processes" strand in the new curriculum become a major part of the implemented, as well as the intended, curriculum. This is very likely to depend on how well the strand is incorporated into the assessment structure . . .

Knight et al

We are currently committed to working with NZQA to produce Unit Standards which

- enhance our non-mechanistic view of statistical practice
- are technically sound.

The Future

If New Zealand gets

- workable Unit Standards
- a well-resourced professional development partnership for teachers
- a review of the Curriculum

then we will have Statistical Education which is as useful, dynamic and fun-filled as possible. We will then be at the cutting edge of an exhilarating international movement. The experiment on these levels has major implications for Statistical Education at all other levels.

A.C. Aitken Centenary Conference 1995 NZSA Conference, Dunedin 28 August - 1 September 1995

A brochure and registration form are enclosed.

There is also a three day registration fee of $150 for Wednesday to Friday of the conference week. See the item on the conference on page 18.

In this issue:

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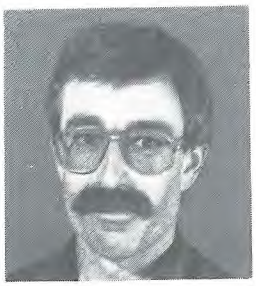
President's Page



Association membership at March 1994 was 398 compared with 375 last year. It was good to see so many of you at the Annual Conference at Massey in August. I'm sure you join me in thanking the Massey team (pictured on page 20) for running such a successful conference.

Code of Conduct

An important issue discussed at the AGM was the draft Code of Conduct, developed as a result of a resolution at the 1993 AGM. The draft Code which was printed in the May *Newsletter* provides the rationale "... To give guidance to its members the Association has formulated this Code of Conduct to show the standards expected of all practising statisticians. The Code follows closely on one adopted in 1993 by the Royal Statistical Society in the UK." The 1994 AGM adopted it as a *guide* and agreed that some important matters needed further reflection and debate, with a revised Code to be considered for approval at the 1995 AGM. Individuals promised to respond over the next three months. You are invited to participate in this process by commenting on the content and/or the appropriate status of the Code.

Regarding the content, note that these "rules of professional conduct" are mostly generic, i.e., they might apply to a professional in any field. You may wish to suggest additions, deletions or rewording. For example, the issue of recognising ecological principles was raised at the AGM.

On the issue of the status of the code, are you happy with "Membership of the Association is an assurance of ability and integrity."? Does the Association wish to take responsibility for monitoring and enforcing the Code of Conduct for its 400 members? The stance of the standards committee is that the code is the Association's way of helping members achieve an acceptable level of **integrity**. (Recall that the Association is also working on Guidelines for Good Practice and has agreed to postpone a decision on accreditation.)

Please send your comments (by the end of November) to the convenor of the committee on standards,
Garry Dickinson, Statistics New Zealand,
PO Box 2922, Wellington.
Phone (04) 495 4620, Fax (04) 472 9135,
Email: gdickinson@stats.govt.nz

Acknowledgments

I thank all members of the executive committee and other committees and the editors of our two publications for their work and help during the year. Particular thanks go to Ray Littler for his planning expertise as secretary and to Gary Dunnet our new treasurer. All three executive officers have greatly appreciated the support and advice of their predecessors; Jean Thompson, Alistair Gray and Antony Gomez. I welcome John Waller as the new secretary, who takes over the day-to-day office activities from Ray, who remains minute secretary. I also welcome Charles Lawoko (pictured on page 3) to the committee. Much of the work of the Association is done by individual members with no official title. Thanks to you all.

I am interested in your views on Association activities. Please contact me by

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or call your closest AgResearch (avoid toll)
(09) 307 0784 Auckland
(06) 356 8019 Palmerston North
(04) 528 6089 Wellington
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and ask for Harold at Ruakura extension 5151
fax: (07) 838 5012
email: hendersonh@ruakura.cri.nz
Harold Henderson
Statistics, AgResearch Ruakura, Private Bag 3123, Hamilton

Editor New Zealand Statistician

The New Zealand Statistical Association is searching for a person to replace Hugh Morton, who has announced his intension to step down as the editor of the *New Zealand Statistician*. This person would work in tandem with Hugh for a period while becoming familiar with the editorial processes involved.

At present the NZSA is in conversation with the Statistical Society of Australia regarding the possible establishment of a journal with a name similar to *The Australia and New Zealand Journal of Statistics*. If this arrangement proceeds the NZSA will contribute editorial services to the combined journal at approximately the same level as presently involved with the production of the *New Zealand Statistician*, possibly taking responsibility for a particular section of the combined journal.

Please contact Harold Henderson if you are interested in taking on this professional challenge. Contact Hugh Morton [h.morton@massey.ac.nz] if you wish to know more about what is involved.

Editorial

It happens that this issue of the *Newsletter* has no less than four obituaries. This might have made this a depressing issue to read were it not for the human warmth and devotion to statistics that shines through the accounts of the lives of Professors Campbell and Rayner and Drs Taylor and Ige. I am sure that you will find reading of the lives of these people adds to your understanding of the growth of statistics in this country, as well as giving personal insights into each of them. If this reading triggers memories in any reader about these statisticians or some of the events that they were involved in I would be grateful for written copy on this that might be published in a later issue of the *Newsletter.*

Also of importance in this issue is the Annual Report of the NZSA Education Committee which focuses especially on the work of the Committee with the NZ Qualifications Authority and its Mathematics Advisory Group.

The NZQA is involved in a radical restructuring of New Zealand Secondary and Tertiary education with one goal being to standardise the presentation of subjects to facilitate easy movement between institutions. But statistics is constantly changing under massive pressure generated by technological change in the subjects that it serves and the development of new computationally-intensive methods. It is far from clear how its teaching can be assisted by the kind of rigid structure that the NZQA envisages.

But as long as any Authority is regulating the teaching of statistics in New Zealand the NZSA must be there, as an association and as individual members, both to point out the limitations of proposed structures and processes and to work within the framework to ensure that whatever emerges is as good as possible given the constraints of the framework.

In its report on page 4 the Education Committee welcomes new participants to join in its activities. I urge members to take up this offer now, rather than leave it until later to bewail what emerges at the end of the process.

Murray Jorgensen
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Hamilton Email: maj@waikato.ac.nz

Electronic information on NZSA activities

If you weren't among the 40 people at the AGM and are interested in more details on the Association's activities a number of the reports, minutes, the draft code of conduct and other documents are available by email. Email `mailserv@invermay.cri.nz` the one-line message `directory [nzsa]` for a list of files; `send [nzsa]pres94.txt` will return the president's report to the 1994 AGM. `Help` returns the help file.

New Zealand Statistical Association

President: Harold Henderson
Secretary: John Waller
Treasurer: Gary Dunnet
Editors *NZ Statistician*: Hugh Morton
Newsletter: Murray Jorgensen
Committee: Peter Danaher, Vince Galvin, Stephen Haslett, Jeff Hunter, Donal Krouse, Charles Lawoko, Ray Littler, Katrina Sharples, Debra Taylor, Jean Thompson, Marianne Vignaux.

Subcommittee convenors: Stephen Haslett (SAPQC), Mike Camden (Education), John Waller (Publications), Vince Galvin (Science Fairs), Garry Dickinson (Standards), Greg Arnold (History), Helen Stott (Women's Suffrage Project), Katrina Sharples (Public Relations).

Further information from:

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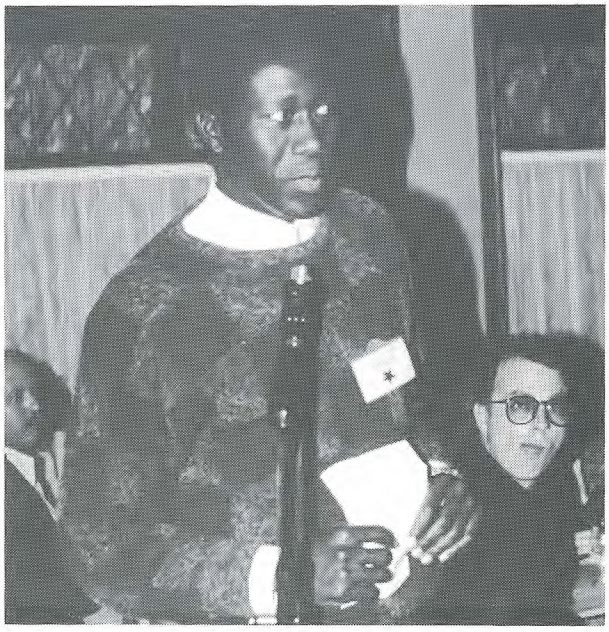


Charles Lawoko has joined the Committee.

NZSA Education Committee Annual Report to AGM

The Committee

The Education Committee has existed since 1987 and we currently meet bi-monthly (or more) in Wellington. The backgrounds of the 10 members include school teaching (contact and correspondence), polytechnic teaching (contact and correspondence), university teaching, research, teacher education, consulting (public and private sector), qualifications and policy development.

Our purpose is

to improve the quality of statistical education for New Zealand students.

The current members of NZSA's Education Committee are Paul Ackerley, Megan Clark, Brian Corbitt, Peter Fleming, Sharleen Forbes, Jo Higgins, Caroline Smith, Jean Thompson and Mike Camden. Also, Maxine Pfannkuch is our contact in Auckland and Sandra McDonald is our contact in Statistics NZ. The Education Committee would always welcome new participants; either Wellington-based people, or people we can communicate with by means other than meetings.

Mike Camden, Caroline Smith and Sharleen Forbes of the NZSA Education Committee and speakers in the Education session at the 1994 NZSA/ORSNZ Conference.

The paper for this conference, titled "Statistics in the NZ Curriculum" could be taken as the long version of the Committee's report. It embodies the views which the committee has developed over the years on statistical education and it outlines our recent interactions with NZQA. It exists as the conference version and also as a longer version, with quotes. This report will address some more strategic issues for NZSA.

The Last Year: The Maths Advisory Group

In the last 12 months our priority has been the work of the NZ Qualifications Authority and its Mathematics Advisory Group. This includes the construction of the "matrix" of titles for Unit Standards in Maths (including Statistics) at Framework Levels 1,2,3 and 4, the writing of the Unit Standards and now the trialling in perhaps 30 schools, consultation with teachers, testing of the moderation system and writing of "exemplar" material.

NZSA is represented on the MAG by Peter Fleming (HOD Maths, Taita College; and NZSA member) and myself. The MAG consists of about 10 people, currently all maths educators of various sorts. We have been quite united in our views over a rather turbulent 18 months. (MAG was formed April 1993). NZQA has about 180 National Standards Bodies, but the MAG is one of the earlier of 26 General Education Advisory Groups.

The MAG has wrestled, or is wrestling, with some difficult issues. The first of these is whether it is possible/difficult/impossible to set up a matrix of unit standards which would promote the essential (and most useful) aspect of Maths (processes, like problem-solving, reasoning, communicating, making connections). We seem to have concluded that whether this is possible or not, an attempt at it is unavoidable.

The second issue was the relationship between MAG and NZQA. We felt that we were not being heard, and that our concerns were not being addressed. These feelings culminated in some five letters or papers being written to NZQA by people or groups attached to MAG in May this year. They included a letter from NZSA President Harold Henderson, and a joint one from the Mathematical Sciences Council of NZ.

The MAG in July was visited by the Minister of Education, who, among other things, said that he had taught a Statistics Course (Experimental Design and Analysis).

A third issue is about what the MAG's and its members' responsibilities are, and how it is resourced. NZQA normally assumes that the organisations which send reps, pay the reps. This is untrue of people who represent professional bodies. The MAG has met for about 8 full days in the last 12 months.

A fourth issue concerns us (NZSA) only, and that is the technical quality of the Unit Standards in Statistics. This means not only getting the right words in the right order, but also getting words that really lead towards the processes of doing statistics. We petitioned for a statistical writer around November. We (6 of us, off and on) spent much of a day with the writer in February and eventually we got agreement

for 3 of us to be paid as writers for 1 day (8 July). Given the nature of the response, we can take no responsibility for the quality of the documents. We have contributed much more than we have been resourced to do. The documents are as good as we can get them on a shoestring. We've come to the end of the shoestring!

We could refine our processes for input into NZQA documents, and it seems that NZQA's processes have not been ideal for the production of quality documents in Statistics. NZQA have several more stages of development planned.

In the last few weeks, the Education Committee has discussed the draft Unit Standards, and we have received very valuable feedback from National Executive members (Peter Danaher, Marianne Vignaux and also Garry Dickinson). I've used their comments and NZQA comments to re-re-draft the Statistics Units. My doubts about the format for Unit Standards, and the philosophy behind it, have intensified. While lawyers and insurance companies move to "plain English" (and even Maths teachers talk about "Own Language"), the Unit Standards and their writers could be seen to be going into contortions. The purpose of Unit Standards is to create clearly defined standards by which providers (oops! teachers) can assess whether students should be credited with competency. I'm tempted to regard the Unit Standards as a probabilistic experiment, whose possible outcomes include success, confusion, consternation, laughter and tears.

So there's a fifth issue: the format of Unit Standards, and the philosophy behind this.

A sixth issue is the quality of the Statistics Strand in the Curriculum document. A recent letter to MAG from the Minister of Education said that "Maths in the NZ Curriculum" would be reviewed in 1998. While the rest of MAG were pleased by the assurance that it would in fact be reviewed, I was dismayed that the deficiencies in its Statistics strand would not be reviewed till then. We need to ensure that curriculum development continues in the meantime, via other routes (e.g. Unit Standards).

There are some future issues too; like who writes the "exemplars" in statistics, who has responsibility for ensuring their quality, and who gets resourced to do so. The MAG has taken a big slice of my resources. There has been some compensation in working with the maths educators of the MAG and of NZSA.

The Last Year: Other Concerns

We are concerned about promoting statistics whenever possible; for example at NZ Association of Maths Teachers conferences. The 1995 conference is in Auckland, and Maxine Pfannkuch is working to arrange a strong statistical input. Such input is vitally important as statistics in schools is at a growth point, but will need to be driven. Conferences (NZAMT and others) could contain statistical plenaries, workshops on applications, workshops on teaching methods, sessions on software and reports on research into statistical education. The last item is an area that we need to foster and promote.

We have considered other issues too, like the Suffrage project, NZQA's units in Statistics for Journalism, whether national statistics exams should include questions from military contexts and the continued existence of two Bursary maths subjects.

I still believe that NZSA has a role in ensuring that statistics in NZ meets the needs of both partners to the Treaty of Waitangi. Some of this role involves education.

The Future

We have enjoyed the support and involvement of NZSA's President and Executive. The difficult nature and high profile of current issues suggests that we should formalize our (Education Committee's) relation with the National Executive. We need an arrangement whereby the membership of NZSA, via its elected National Executive, takes some responsibility for the directions and activities of the Education Committee. This would involve the appointment process, feedback, consultation and eventual endorsement. It will be difficult to fit these into our already full schedules.

The workings of the Education Committee could be lubricated by some arrangements for secretarial support, and possibly by arrangements for phone conferencing or other networking methods.

Statistical education is of such importance that we would like it to take a very high profile at future conferences of NZSA.

I'd like to thank the members of the Education Committee. In spite of their great variety of backgrounds, they have a common view of how statistical education can progress, and they share a strong commitment to it.

Mike Camden (Convenor) 25 August 1994

[camden@eng.wnp.ac.nz]

Mike's email address is now for real - Ed.

Mike Camden is at Wellington Polytechnic.

Sharleen Forbes joined Statistics New Zealand in Wellington, in August, as Manager Public Policy. Her email is sdforbes@stats.govt.nz.

Caroline Smith is at the Correspondence School, Wellington

Emeritus Professor James Towers Campbell, OBE, PhD 1906-1994

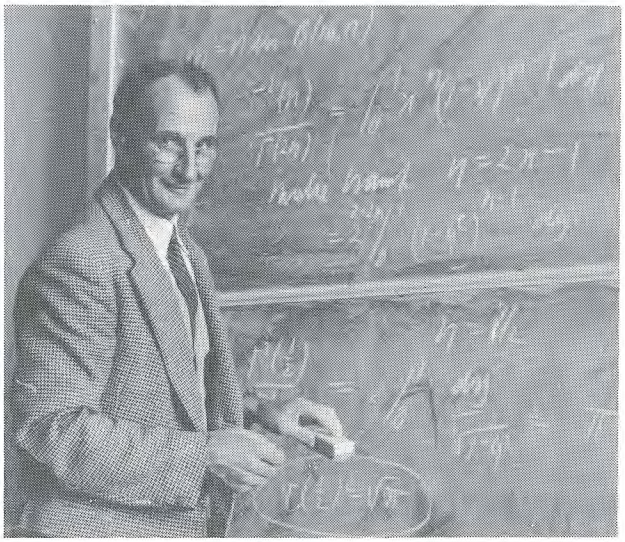
A recollection of his professional career by R M Williams. Delivered at his funeral, 6 July 1994.

Jim Campbell arrived in Gisborne from Scotland, aged 6, in 1913. His father found work in his trade as a plumber, Jim enrolled at primary school. For most children in that area, schooling finished at primary school, but we can assume that his father, influenced by that Scottish belief in education which has played such an important part in New Zealand's history, ensured that Jim was one of the three, out of a standard six class of 30, who went to Gisborne High School.

At high school Jim, who had found arithmetic dull and predictable, discovered the exciting and mysterious world of algebra - the beginning of a life long love affair. But other aspects of the mathematics class were less pleasing. The master divided the class into boys on the right, girls on the left. The girls were told to get on with their knitting, the boys were taught mathematics. This injustice was a lasting memory for him - and throughout his life he vehemently challenged the idea that women could not do mathematics. It is no coincidence that an unusually high proportion of young women from his classes pursued successful careers in mathematics - helped, no doubt by the quality of his teaching, but far more by his positive confidence in their ability.

His concern for his students, men and women, manifested itself in a multitude of ways. David Vere-Jones relates how, in his final year, Campbell unexpectedly materialised by his side and suggested that he might slip into a room where they happened to be doing the preliminary selection for Rhodes Scholarships. He brushed aside David's protest that he was not an applicant - the paperwork could be dealt with later! As a result, David studied in Oxford, Moscow and Tashkent before returning to New Zealand and finally to a chair at Victoria. It was this practical regard for the welfare of his students and staff, that enabled Jim to run a department which was remarkable for its warmth and stability, at a time when staffing mathematics departments was a continuing difficulty.

But to return to his career. He won a scholarship to go to the University of Otago where he studied under Professor R J T Bell - in Campbell's view, by far his best teacher. He obtained a first class honours degree and was awarded one of the few post-graduate scholarships for overseas study. On Bell's sound



Professor Campbell at the blackboard.

advice he rejected the well worn path to Cambridge and went to Edinburgh to do a PhD under the New Zealander, A C Aitken, also one of Bell's students. Two years later, in 1932, he completed and published his thesis on orthogonal polynomials in relation to correlated Poisson variables. David Vere-Jones tells us that many years later, when working on bivariate distribution which had then become fashionable, he chanced on this paper written long before its time. Jim, of course, had not mentioned it.

After a year teaching at Edinburgh University, he returned to New Zealand, taught for a year or so at Nelson College, and in 1935 started lecturing at Victoria. The only other staff member was Professor Miles. It was common in the University of New Zealand at that time, for two people to do all the pure and applied mathematics teaching. Fortunately as well as being an enthusiastic teacher, he had a deep love of mathematics. So, in spite of a horrendous workload, he found time to do that extensive reading which made him a quite exceptionally broad and well informed mathematician. This was not achieved without sacrifice - he did not attempt much research. But he did something else which, in the circumstances, was much more important.

He gave a remarkable amount of time to consulting in statistics. For example, he would sometimes spend the May or August vacations in Palmerston North working with people in agriculture at Massey or the DSIR. His clients included some formidable names. Professor Riddett, Director of the Dairy Research Institute; Dr Dry, the geneticist, who in the face of considerable criticism, developed the Drysdale breed of sheep which has been a vital element in our carpet wool industry; Otto (later Sir Otto) Frankel of the Wheat Research Institute; A W Hudson, who conducted a vigorous correspondence about the merits of random and systematic experiments with W S Gossett, better known by his pseudonym "Student"

and for the famous t-test he invented. Most significant was Campbell's collaboration with Arthur (later Sir Arthur) Ward who started in a very humble role in a dairy factory and became the chief executive of the Dairy Board. Ward saw the possibility of massive improvements in the quality of the New Zealand dairy herd by an extensive programme of testing and statistical analysis. It was Campbell who, recognising in Ward a natural, albeit untrained, statistician, provided the statistical expertise which helped to make Ward's work a major source of strength to the dairy industry - see for example, Ward A H and Campbell J T, The practical application of age conversion factors to dairy cattle production (butterfat) records. *J. Ag. Sci.* 1938.

The value of Campbell's work was recognised very rapidly, and in 1937 he was asked to accept at least a part-time appointment in DSIR to provide statistical consulting services. He very sensibly declined. He loved the whole of mathematics, he was devoted to teaching and his students, and he was shrewd enough to know that regular consulting would make intolerable demands on his time. But the ball he had set in motion continued to roll, and in 1939 the DSIR recruited for the same purpose Ian Dick, who was about to graduate in mathematics from Canterbury. I have no doubt that Campbell's advice was to recruit a good mathematician and let him learn about agriculture and statistics rather than to try to teach an agriculturalist about statistics.

Dick, knowing nothing about agriculture, statistics or government departments, found in the Campbell's home the only decent collection of statistical literature in New Zealand, a warm welcome from Margaret and Jim on his visits to Wellington and some very thoughtful discussions on how statistics might develop in New Zealand. In fact, statistics had to go on the back-burner for the duration of the war. Ian became involved in radar and other military activities.

When in 1941 I went from Christchurch to Wellington also to go into radar I was advised by my professor, if I wanted to keep in touch with mathematics, to go and see Campbell. To my disappointment, Campbell was warm and friendly, but about to leave for the Navy. His next four years were spent mainly in Australia on decoding work, which he found mathematically unrewarding.

He returned with relief to Victoria in 1945. Heavily involved in teaching, with inadequate resources, the surge of students which followed the war, he still found time to be warmly supportive of Ian Dick when he was establishing the Biometrics Section (later to be the Applied Mathematics Laboratory) and in 1948 the NZ Statistical Association was formed, with Campbell as president and Dick as secretary.

Throughout his life he continued to be involved with that still flourishing association, and gave it generous financial assistance.

One form of support for the AML was to encourage some of his most able students to spend their long vacations working in the Laboratory and to find for themselves that there was interesting work to be done there. This became the regular means by which the Laboratory identified staff it might recruit and enabled it to attract the interest of a remarkably high standard of graduates. Many of them had won post graduate scholarships, and Ian was content to appoint them and then wait for their return after completing their PhDs overseas. The most distinguished of these was Peter Whittle who after graduating at Victoria and studying in Sweden spent some years with the Laboratory and then went overseas finally to become a fellow of the Royal Society and the Churchill Professor of the Mathematics of Operational Research at Cambridge.

Campbell who became professor and head of department in 1952 continued at Victoria until 1968. He thought deeply and independently about what the University should offer its students. When it became increasingly fashionable to emphasise research and play down the importance of teaching he had no hesitation in swimming against the tide. His own lectures always conveyed the enthusiasm and love he had for mathematics, even to those whose own abilities were modest. He saw his task as enabling students, to the limit of their ability, to have access to the excitement and elegance of mathematics and to expose them to the intellectual rigour and honesty it demanded.

Although he was in those early days easily the best equipped person in New Zealand to mount serious statistical courses, he chose not to do this himself, and was content to leave that to be done later, and very ably, by Jock Hoe. He was, on the other hand, sympathetic to departments that wanted to provide some statistical courses for their non-mathematical students. Sympathetic, but not uncritically so. One department was informed that, given the mathematical equipment of their students, the best thing that could be done for them was to provide elementary courses in very basic algebra, on which statistics might some time later be based. He was shocked to find in another department that what purported to be statistical courses were being given by a staff member who appeared to lack even that elementary knowledge of algebra.

An extraordinarily helpful and sympathetic man, he occasionally gave voice to anger and frustration provoked by woolliness or dishonesty of thought. In

spite of these occasional explosions his judgment and decency made him widely liked and respected in the larger university community. He shaped the role that he saw as most appropriate for the times, and filled it with great energy. Peter Whittle described him affectionately as a square peg in a square hole.

He took a great interest in the teaching of mathematics in schools, and not only to the most able students. Perhaps if he had been even more heavily involved, the introduction of the new mathematics would have faced fewer problems.

One contribution he made to education came from his association with Dr E G (Peter) Jacoby. Peter and his wife Ilse had come to New Zealand as refugees from Germany, just before the war. Peter, a lawyer by training, a sociologist by inclination, and, in his first years here, almost anything else by necessity, finally found his niche as a research officer in the Department of Education. Campbell recognised in him, as he had in Ward (who by background and temperament was almost the exact opposite of Jacoby) a natural though untrained statistician. He valued the friendship and respected the abilities of both men. Jacoby's work in predicting student numbers and staff requirements, as well as more general demographic questions, gave a very good planning base for the Department. He developed the controversial (but essential) scaling system for examination marks, now under ill-informed attack. In all these matters, Campbell's wise and quiet support was a vital element.

One can only be amazed at how Jim, without apparent stress was able to be involved in such a vast range of activities. Some answer can be found in the close personal network to which he and Margaret belonged. The Campbells, the Wards, the Jacobys, the Beagleholes, and a number of others, formed a mutually supportive group with common interests, notably in music and walking.

On a more personal note, I had returned from Cambridge in 1949 and in 1953 followed Ian Dick as the director of the Applied Mathematics Laboratory. At that time the latest of our makeshift homes was above some shops in Courtenay Place (later occupied by the Depot Theatre). Jim and I had long believed a critical mass of mathematicians was essential to do good research and when Victoria started to plan a new library building which was also to house the mathematics department we got government money and university support to add an extra floor to provide a permanent home for the Laboratory. Although I left the Laboratory before the building was completed, and never occupied that office with a wonderful view that I had planned for myself, I believe that many of the hopes that both sides had for this centre of excellence were fulfilled. It is ironic that although, nearly thirty years later, the creation of such centres was trumpeted as one of the advantages of science restructuring; the restructuring in fact lead to its dissolution.

After his retirement to Nelson, he spent a number of years as a part time mathematics teacher at Nelson Girls' College; fifty years after that episode in Gisborne High School he was still setting things right!

So what did it all add up to? Some of the specific achievements have suffered at least temporary setbacks. But institutions change, and may reform. The enduring legacy is a tradition of excellence in teaching and a concern for students and staff; the sense of excitement and intellectual honesty which, through his teaching of mathematics, this kind and wise man was able to give to so many people.

Ian Dick records Campbell's help in setting up the Biometrics section, DSIR

As a result of Bob Williams' comments in his eulogy at Jim Campbell's funeral, I have been asked to put on record certain aspects of the help Jim Campbell so liberally gave me when, 50 odd years ago, I was in the process of thinking how best to get statistical methods off the ground in DSIR. I would like at this stage to pay a very real tribute to the way the DSIR administration gave me an almost complete carte blanche. Their enlightened attitude, particular that of F.R. Callaghan, was of tremendous help.

It is, perhaps, not appreciated that in the 30s and 40s there was very little expertise in mathematical statistics in the country. In the 30s, Jim Campbell was the only person in NZ with any academic training in the field, having taken a PhD under A.C. Aitken at Edinburgh. During the war years, Harold Silverstone, another PhD, returned to NZ from Edinburgh. During the war years he was, if I remember correctly, engaged in manpower statistics in the Labour Department. From there, he took a lectureship at Otago University and after a period as Secretary of the NZ Communist Party, left NZ to take a post in the University of Brisbane. I met Harold once or twice when he was at Otago. However, he had no influence in the development of mathematical statistics in NZ.

Because there were no courses in any of the NZ Universities when I was appointed to DSIR in 1939, the plan was first to send me to Lincoln College or Massey to learn something about agriculture, and then send me to Rothamsted to work under Yates and the other statisticians there. However, the outbreak of

war put an end to that idea.

I was sent in December to work at Lincoln in the Agronomy Division, later the Crop Research Division, DSIR. There I also had to take lectures at the College in field husbandry, animal husbandry, soils and fertilisers and genetics. I was fortunate enough to sit under such people as Bob (later Sir Malcolm) Burns and C.P. McMeekan.

Unfortunately, there were virtually no worthwhile textbooks or periodicals available in the country. Jim Campbell had his own private collection of the *Annals of Mathematical Statistics* and, I think, but am not absolutely sure, the *Supplement to the Journal of the Royal Statistical Society*. In the 30s and the 40s NZ had very stringent foreign exchange procedures and it was necessary for Jim almost every year to go to some outfit, probably the Department of Trade and Industry, to get an import licence to buy these Journals.

One of the very few textbooks was Yule and Kendall's *Introduction to the Theory of Statistics*. While fairly elementary, it was very helpful. Jim lent me his copy of A.C. Aitken's book, but while of real theoretical interest was virtually no help at all when trying to apply statistical methods to practical problems. No library seemed to hold R.A. Fisher's two books on statistical methods and the design of experiments. But, a DSIR colleague at Lincoln and a Massey graduate, Malcolm Driver, let me have the use of his personal copies. I always remember my pleasure at seeing in Australia in 1944 the copy of Kendall's *The Advanced Theory of Statistics* published the year before.

Another book of some interest and of passing importance was Thurstone's *Vectors of the Mind* dealing with factor analysis. I took this book on my honeymoon in 1943 at Governor's Bay in Lyttleton Harbour. Some parts of the book I found difficult to understand, so I went over the hill to see my old professor, Willie Saddler, who expressed some surprise at my choice of honeymoon reading.

I sought help from everybody I could think of and was always treated with the utmost kindness and helpfulness. One such was Abe Hudson (not to be confused with his brother, E.R. Hudson, the Head of Lincoln College) of Massey. When he was previously Field Crop Experimentalist in the Department of Agriculture, he had become interested in the statistical design of experiments. To get a better understanding, he had been in correspondence with Student. He let me read their letters and very interesting they were. I don't know what finally happened to them.[1]

And so I spent the whole of 1940 trying to learn something of the theory of statistics and their applications, trying to get back as far as possible to the original papers in journals such as the *Proc. Roy. Soc.*, *Proc. Camb. Phil. Soc.* and so on. The trouble I had in this process made me determined that we have as good a library as possible, as soon as possible.

All this was to end in 1941. Jim joined the Navy and, because I had taken advanced physics, DSIR transferred me to research and development in radar.

The early years of radar research were absolutely fascinating but by 1944 a lot of the initial enthusiasm was evaporating. But we were under very strict manpower control and it was virtually impossible to leave the radar laboratory. But one day I had a real stroke of luck. I was walking down the street and ran into an old DSIR friend, Jimmy Melville, who was a Captain in the army. He said I was just the man the army was looking for but had been unable to find. They badly wanted someone of the right qualifications to go to Australia to be trained in Operational Research, with particular reference to artillery fire. If I did not mention this to DSIR, he would have me commissioned before DSIR would be able to find out and have my transfer blocked. Within 4 days I was commissioned and in Australia. While in Australia, I met some of their statisticians, particularly Alf Cornish and Helen Newton-Turner.

I returned to NZ late 1944 but before being sent to Egypt, I saw my DSIR boss, F.R. Callaghan and asked him to order certain books and periodicals, so that they would be available for me after the War. I was discharged in February 1946 and very shortly afterwards started setting up the Biometrics Section, DSIR. Jim Campbell was back at Victoria and, as formerly, was very free with his advice and wisdom, factors which greatly helped me to get the show on the road.

[1]*Editor's note: On 2 September 1982, during my time at the Ministry of Agriculture and Fisheries I arranged for microfilms to be made of this correspondence and the originals stored in the National Archives (Archive reference AG series 51, Hudson and Gossett Correspondence 1931-39). I still have some sets of microfiche cards available to interested persons containing the complete correspondence and some associated material. Greg Arnold discussed these letters in an article in the New Zealand Statistician 20(1) of April 1985*

Further information about Professor Campbell can be found in an article by David Vere-Jones in the *New Zealand Statistician* volume 18(1983), pages 34-38.

Jean Thompson remembers Prof Campbell's lectures

As he swept into room 323 at the top of the Biology block at Victoria University of Wellington early in March 1958 to deliver the first lecture in Maths 1 for the year I was struck with a sense of awe. He looked so alert and so keen to get started. He walked briskly, surveyed the class over the tops of his half-lenses and was off. I started taking notes furiously. I wasn't going to miss a trick. But soon I realized, instead of concentrating on what he was saying, I was observing that his academic gown had a greenish hue from the years of chalk dust burrowing its way into the black cloth. I started to wonder how long he had been lecturing. Certainly there was not a hint that the subject matter was "old-hat" or that he was bored with the routine. Needless to say, while I was musing he got ahead a bit. I was suddenly faced with copying down what he had said from his notes on the board rather than taking dictation. Thus I learned my first important lesson. I realized that never again could I afford to muse on the superficial for it was certain I would not get the hang of that hand-writing!

Being one of four or five young women in a class of about 120 it was not long before Prof knew me by name. Perhaps I accelerated this by asking him in the second lecture to read out something he had written on the board which I had not caught as he said it! He peered over the tops of his glasses to see who this could be, but then read it out. As I left the class that day several students, none of whom I knew, gathered around me and informed me sternly that "You don't ask professors to read out what they have written"! I couldn't see why not, and although it was clear he had been surprised at my gall, I think he admired my courage if not my naivety.

As the year progressed and he got to know the class he would often come in and spend a little time chatting and philosophising on a wide variety of topics. He clearly enjoyed these moments and his eyes would twinkle as he told his stories. But then, as a consequence of taking this time out, the lecture that followed would be delivered at a steadily accelerating pace to fit it into the time. I need not elaborate on the effect this had on the hand-writing!

Whether or not there was a story at the beginning, there was always a mass of information to get down in Prof's lectures and during that year my careful, tidy writing deteriorated to such a degree that I began to wonder if mine too would become effectively illegible. But hanging on in there and getting it all down certainly paid off. Prof's notes were always consistent and followed a logical path that could be retraced after the event and still make sense. I was to realize as I progressed that this would not always be the case at university. The impression I got was that he had thought carefully about what a person coming to the ideas for the first time would need to know to get started. His assignments would then provide the opportunities to take the ideas further. Coming from an excellent maths teacher at school who had the same approach I was not aware at the time how lucky I was to be in Prof's class and enjoy this "customer sensitive" approach to university teaching.

By the middle of that first year I remember feeling I was flagging quite a bit. I was not used to Wellington's "bracing" climate and got quite sick and so had fallen behind. One day, in a state of deep misery I decided to go and have a talk with the great man and see if he thought I should carry on. I really was considering giving it all up and frankly thought he would agree with me. I felt I just wasn't good enough and that I had been wrong to be so ambitious. I was so surprised to be met by strong assurances that I had a good career ahead of me and to be told I wasn't really behind at all, only by my standards! I was surprised that he knew who I was and had noted my progress.

The kind and gentle concern he showed for me that day was to continue though all my time at Vic and the warm memory of that concern has stayed with me right up to the present. Had he not been such a caring person, who knows what I may have decided to do at that critical time and how my life would have changed as a result. I was to continue to view him with awe as my professor for he knew so much and I so little, but I always knew I had a friend.

Jean Thompson, 9 September 1994

Finally a short tale from another student of Professor J T Campbell

JTC habitually wore an old brown houndstooth jacket for lecturing. (Over it he pulled on an aged academic gown which probably dated from his own student days). The jacket was through at the elbows, frayed at the cuffs and impregnated with chalk dust. It used to hang, when he was not lecturing, behind his study door (which was the last one on the western side of floor six of Easterfield). I suspect his wife had been making hints about replacing the jacket, but as it never left the building, and as she probably didn't feel that she should walk into his study and take it, there it remained.

Anyway one day in the middle of 1962 it vanished. JT must have missed it but made no overt moves to trace it. A few days later it reappeared, with leather elbow patches, and I guess new cuffs and certainly less chalk dust.

The honours class by then knew that it had been spirited away by a few of their number and taken to a tailor downtown. We waited with apprehension for JT's reaction — after all his study had in effect been burgled. Anyway all was made right when he appeared for his next regular lecture, wearing the jacket, and proudly showing off the improvements. The photograph on page 6 was taken at this lecture. He let us know that both he and it were good for many more years.

Garry Dickinson

Further information about Professor Campbell can be found in an article by David Vere-Jones in the *New Zealand Statistician* volume 18(1983), pages 34-38.

Emeritus Professor James Towers Campbell, OBE, PhD
1906-1994

Professor Arthur Asquith Rayner

Reprinted with permission from the *Otago Daily Times.*

Dunedin-born Emeritus Prof Arthur Asquith Rayner, who helped pioneer the study of statistics in South Africa after World War II, died there recently after a brief illness. He was 77.

He was educated at St. Clair Primary School in Dunedin and then at Otago Boys High where he demonstrated high academic prowess by winning a series of junior and senior national scholarships. In 1933 he gained the second highest aggregate score in the country in university junior scholarship examinations, coming first equal, nationally, in French, and second in mathematics and chemistry. He also became school dux that year. In 1936 and 1937 he gained BA and MA honours degrees from Otago University.

A stint with the New Zealand Census and Statistics Department followed before war service with the 2nd New Zealand Expeditionary Force in the Middle East and Italy from 1941 to 1944.

After a period as a biometrician with the New Zealand Department of Agriculture in 1945, he studied mathematical statistics under Prof A.C. Aitken at Edinburgh University, gaining his doctorate in 1947.

From 1948 to 1949 he resumed duties with the Department of Agriculture in Wellington before leaving for South Africa with his wife, Nancy. He subsequently began a distinguished 44-year career with the University of Natal, serving as Professor of Biometry and Head of the Department of Biometry.

Prof Rayner went on to play a pioneering role in the teaching of statistics at university level in South Africa, and also built an international reputation in biometrics, a discipline which applies mathematics and statistics to the biological sciences.

His career-long devotion to biometrics resulted in the publication of three text books, a host of scientific articles and the teaching of generations of agriculture students. Academic editing duties included a period as Associate Editor of the international journal, *Biometrics.*

He served in several senior administrative posts at the university including Dean of the Faculty of Agriculture from 1958 to 1959. He became a South African citizen in 1955, and in 1962-63 undertook further study at the University of North Carolina's Institute of Statistics.

He became a Fellow, President, and later Honorary Vice-President of the South African Statistical Association and became an elected member of the International Statistics Institute. He was recently honoured at a conference of the South African [Statistical] Association, organised at Pietermartizburg by the University Department. During the conference the "A.A. Rayner Computing Laboratory" was declared open in his honour.

In 1990 he ended a 50-year association with rugby refereeing, for health reasons. He had started officiating at games in New Zealand in 1939, and had later handled games in Egypt, Scotland, England and South Africa. A highlight of his refereeing career was presiding over an army international between South Africa and Wales in Cairo during the war.

Prof Rayner is survived by his wife and five children and a brother in Dunedin.

Dr Abel Folorunso Ige

Abel came to New Zealand as a Visiting Fellow on Sabbatical Leave from the University of Ilorin in Nigeria during May last year. His arrival followed a year-long effort on his part to gain a passport and visa for New Zealand in the face of obstacles that would have deterred anybody without such a clear sense of direction. This characteristic of gentle, quiet, yet very dignified determination even in the face of difficulty was the hallmark of Abel's time at the Institute of Statistics and Operations Research, and of his final days in Wellington Hospital. He died peacefully of cancer on 11 April, after a very sudden deterioration in his condition over the previous three or four weeks, and just before his planned return home to wife and family.

Abel was the first person to obtain a PhD in Statistics from a Nigerian University in 1984 under Professor Des Raj who was in Nigeria with the United Nations. Abel had a fine grasp of sampling theory, and a willingness, even an impetus, to work thoroughly through the technical aspects of his subject. He also possessed considerable experience in designing and implementing sample surveys in Nigeria, and these skills made him an invaluable addition to the Contract Research programme at ISOR during his stay here. His involvement in developing statistical sampling estimation formulae for work with New Zealand Post has been crucial to completion of that aspect of a major project in a reasonable time frame. At the time of his death Abel was working jointly on double sampling techniques for stratification, and time series estimators for repeated sample surveys.

Abel's friends and colleagues arranged a memorial service on the Thursday following his death, at St Peters in Willis Street where Abel went to church. The service was very well attended with a very strong representation from the African Community in Wellington, as well as other people whose lives he had touched, and who had supported him during his illness. The day following, he returned to Nigeria to his wife Marion, and four children Hunu, Bumi, Tope and Kike.

Stephen Haslett

Dr William Brooking Taylor

Bill Taylor, a member of the Association from 1951 until 1960, died suddenly in Adelaide on 19 March 1994. He was a Committee Member in 1956 and again in 1960. He graduated from Auckland University in 1949 with a First-Class M.Sc, joined the Applied Mathematics Laboratory in that year, was awarded a D.S.I.R. Fellowship to University College, London, where he studied under E.S. Pearson, H.O. Hartley, N.L. Johnstone, and Florence David. His overseas graduate studies were curtailed to an M.Sc in Statistics, by his father's death and by lack of funds.

Bill worked with the Applied Maths Lab until 1960, when he joined the Wool Board, then the Meat Board, and then was appointed to a Senior Lectureship in Mathematical Statistics at Adelaide University. While at AML, he showed a tremendous breadth of aptitude, working on a wide range or problems. In those days there were no computers, all calculations being done on a Powers-Samas Card Machine, or on Monro-Matic Electric Calculators, and in an economic problem concerned with exporting meat to England by the cheapest method, it was necessary to invert a 12 x 12 matrix. His computer assistant gave up in despair, but Bill worked solidly for three days, hammering away at his calculator before achieving his solution. In 1956 he won the NZ Economic Research prize. Bill was one of the first statisticians in NZ to introduce sampling techniques in at least two major fields:- he helped the Department of Statistics develop Sampling Theory, being largely responsible for the first Agricultural Sampling Survey in 1956, and at the same time was introducing statistical analysis to industry, working in particular to improve production methods in the field of ceramics.

On the personal side, Bill had a unique personality. While most of his colleagues worked normal hours, Bill would sometimes arrive late in the afternoon, and then work through the night. At one time he bought a house section on hilly ground in Houghton Bay. Unfortunately, the path to this was almost completely blocked by an encroaching neighbour's hut. After several unsuccessful requests to his neighbour to remove it, Bill finally pulled it down himself. His colleagues have a sincere sense of loss — he was one of the most friendly, lovable characters, that one could ever meet with.

Stan Roberts

I arrived at Applied Mathematics Laboratory at 21A Courtenay Place one morning in the summer of 1953 as an undergraduate vacation student and a prospective research scientist specialising in mathematical physics if things worked out all right. After various formalities associated with joining the public service such as signing the books (so that you got paid), being familiarised with the time sheet and how and when it worked and being shown the rules for morning tea shouts (cream cakes on birthdays, on returning from trips overseas, wife's birthday if you liked ...) I was put in the hands of Bill Taylor. Bill then introduced me to my research project concerned with the diffusion of chemicals in green timber as well as the subtleties of the tram ticket petty cash system, Wellington's sandwich bars, the lunch time snooker hall, useful library material, the scrap paper system and last but not least, how to actually start doing research.

It was a great summer. I discovered Laplace transforms, diffusion equations and wrote my first paper jointly with and under Bill's guidance. In order to interact with the experimental side of the problem, Bill took me up to Auckland to see timber actually being treated with Boron. In the process, I was introduced to the overnight "express", and was invited to stay with his family and made to feel part of it. I returned to Canterbury University the next year with a clear vision of what I wanted to do for the next forty years. Mathematical physics was great fun, fellow scientists and friends like Bill Taylor were fantastic work mates and the government actually paid you to do it. Thank you Bill, for your friendly guidance and good humoured encouragement; mathematical research has been a great experience.

Alex McNabb

My first impression of Bill Taylor, when he returned from London to work at AML was of cheerfulness and exuberant confidence. Later, I came to recognise an intense loyalty and engaging unpredictability, combined with a perceptive mind and a sensitive personality. One could never be quite sure of what Bill would do, but one could be sure that he would do something and that it would be effective. At a time when the Laboratory had gone through its first phase of recruiting and training, there was a need to show that it was capable of tackling the wide diversity of untidy problems that make up the life of most working statisticians. Bill was by temperament and ability ideally suited to respond to this need. His untimely death deprived the statistical world of an unusual and engaging character who carried his very real professional strength with casual modesty.

R M Williams, Director, AML 1953-1962

Editor's note: As Stan Roberts notes, Bill Taylor did not complete a PhD at University College, London. To check whether the heading was correct I contacted Bill Venables at the University of Adelaide who replied as follows -

Yes he did do a PhD after he came to Adelaide. His supervisor was Alan James and I remember one of his examiners was A. P. Dempster, but I can't remember the other one. Here is the Barr Smith Library entry, if anyone wants more detail.

AUTHOR Taylor, William Brooking
TITLE Some aspects of statistical analysis of shape similarity with applications to bone morphology / [by] W. B. Taylor.
PUBLISHED Adelaide, 1972
PHYS DESCR ix, 143 leaves : ill. ; 28 cm.
CALL NO BSL Special collections strong room 09PH T247 Joint Store P sequence
SUBJECTS 1. Similarity (Geometry) 2. Mandible
Thesis (Ph.D. 1972) from the Dept. of Statistics, University of Adelaide

ALUMINIUM SMELTERS SCHOLARSHIP

in

APPLIED MATHEMATICS, OPERATIONS RESEARCH or STATISTICS

This scholarship, tenable at Massey University, sponsored by NZ Aluminium Smelters Ltd, is to encourage postgraduate research in Mathematics and Statistics related to the aluminium industry in New Zealand. It is tenable for up to three years and is valued currently at $9,500 pa. Candidates should have completed the requirements for a Bachelors degree with honours on taking up the scholarship. Masters scholars or doctoral candidates are welcome.

So far two students have completed Masters theses whilst holding this scholarship. They are:

Megan Smith (Statistics Department) 1992
Experimental Design

Chris Palliser (Mathematics Department) 1994
Heat-transfer.

Both gained first class honours. Candidates interested in this award should send their applications to the Registrar, Massey University, Private Bag 11-222, Palmerston North, by 1 November. Informal enquiries concerning supervision etc should be addressed to the Heads of Departments - Mathematics or Statistics.

email: G.Wake@massey.ac.nz (Mathematics)
J.Hunter@massey.ac.nz (Statistics)
Fax: (06) 350-5611

Statistical Package News

SPSS plans to buy SYSTAT

On August 9, SPSS Inc. announced that it has signed a non-binding letter of intent to acquire the assets of SYSTAT Inc. According to the SPSS press release they plan to continue the development of both packages as separate products, but to share resources such as source code for new statistical and presentation graphics procedures. They also anticipate improved distribution channels for both products.

Ray Hoare, whose Hamilton based firm 'Hoare Research Software' holds the local agency for SYSTAT comments 'For the foreseeable future, Hoare Research Software will continue to sell and support SYSTAT software. We hope that the merger will make it easier for us to sell SPSS as well.' Ray's email address is hoare@midland.co.nz.

Hannan Medal for Distinguished Research in the Mathematical Sciences

The council of the Australian Academy of Science is commemorating the research achievements of the late Professor E. J. Hannan, who died on January 7, 1994, by the establishment of a Hannan Medal and Lecture.

The medal is to be awarded in the following three areas of the Mathematical Sciences at two-yearly intervals
1994 - Statistical Science,
1996 - Pure Mathematics,
1998 - Applied and Computational Mathematics.
The cycle will then be repeated from the year 2000 on.

The award will be made to a scientist for distinguished research carried out mainly in Australia, with special weight attached to recent work. Approval has been requested for the recipient of the award to deliver a public lecture on his/her research at a meeting of the Statistical Society of Australia or the Australian Mathematical Society, depending on the area of the award.

Colleagues and friends of Ted Hannan are invited to contribute to the Hannan Memorial Fund of the Australian Academy of Science. Cheques in £stg, US dollars or Australian dollars should be made out to the "Australian Academy of Science" and clearly marked "Hannan Memorial Fund". They should be mailed to
Professor J. Gani
Stochastic Analysis Group, CMA
Australian National University
Canberra ACT 0200, AUSTRALIA

Mathematical and Information Sciences

The Royal Society of New Zealand Standing Committee on Mathematical and Information Sciences is being launched on September 29. There is a good chance that this will become a strong, effective and broadly-based lobby group for the mathematical and information sciences.

SUNZ'94 Conference

The 12th annual SAS Users of New Zealand Conference is being held at the Centra Hotel in Auckland on September 26 and 27, 1994. SAS users and staff from the SAS Institute will swap ideas and techniques and learn about new software from SAS Institute. About 100 delegates are expected.

Keynote speakers are Keith Collins, head of Research and Development Resources at SAS Institute, Cary, North Carolina, and Tony Crewdson from NZ Police Computer Services. Further information is available from Amanda Howcroft, SAS Institute, Wellington, phone (04) 472 7595.

Local News

Otago University

David Fletcher has been granted leave for 1995 and will be spending the year with Tony Underwood at the Institute for Marine Ecology, Sydney University.

Laimonis Kavalieris spent 10 days in Brisbane in July, working with Vo Anh at the Queensland University of Technology. Their collaboration began last year while Laimonis was on study leave in Australia. The work centres on the use of long memory processes in space and time to model urban air pollution data.

Bryan Manly went to London in May to receive a DSc from his old university. He will be going to the Environmetrics Conference in Burlington, Canada, and the International Ecology Congress in Manchester, U.K. in August. At the ecology conference he will be receiving an award as a 'distinguished statistical ecologist'.

In May, Russell Millar attended the Statistical Society of Canada meeting in Banff. He took a tent and spent a couple of extra nights in back country campsites. Apparently, there were some grizzly bears around, but Russell's awful whistling held them out of earshot! Russell then continued on to Newfoundland to work on joint research with fisheries scientists there. His whistling has been blamed for the absence of cod.

The Proceedings of the conference on Statistics in Ecology and Environmental Monitoring held last December will have been published by the Otago University Press by the time you read this. Orders have been coming in rapidly, so if you want to buy a copy you should contact Irene Goodwin (telephone (03) 479-7774, fax (03) 479-8427) soon!

Irene Goodwin

Massey

The Department of Statistics at Massey University is pleased to announce the appointment of Steve Haslett as Director of the newly established Applied Statistics Consulting Centre within the Department. Associate Professor Haslett will take up his appointment later this year. Steve is currently a Senior Lecturer and Director of Internal Consulting at the Institute of Statistics and Operations Research at Victoria University of Wellington. He is also the Convenor of the Association's Survey Appraisals and Public Questions Committee.

Jeff Hunter

Applied Maths, IRL

It's been pretty hectic here in recent months, what with overseas visits and embarking on a quest for quality via ISO 9000.

Kit Withers is returning from a three month study tour evangelising his extreme theories with application to floods and other such apocalyptic phenomena. According to his itinerary, Kit is coming home via Miami and then Mexico City.

Russell Boyles and Donal Krouse have been recharged by the ASC12 conference at Monash. It was great to see a sizeable contingent of New Zealanders, and especially such well ensconced expats as John Reynolds and John Rayner. Although we were there for the "Industrial Statistics", we couldn't help being indoctrinated with a statisticians' version of Einstein's $E=MC^2$, which equates E(stimation) with M(arkov) C(hain) M(onte) C(arlo)!

Our leader, David Rhoades, has had his share of globe trotting too. David's been exploring habitats in the US and Finland in search of a rare species of Operations Researcher to add to IRL's already impressive collection.

International hijinks aside, on the domestic front we've popped the cork on the ISO 9000 genie. Our on-site consultant tells us this will involve pushing a wheel up an inclined plane, and using a wedge to stop the thing rolling backwards, presumably while we're away at morning and afternoon teas. By May 1995, we'll be the only group of ISO 9000 accredited statisticians in NZ, or bust!

Donal Krouse

Lincoln University

George Love retired at the end of 1993 after 23 years at Lincoln but stayed on teaching under contract until the end of the first semester 1994. He has now retired to play golf in Nelson.

Two new appointments have been made in the Centre for Computing and Biometrics.

Jim Young comes (back) to Lincoln from Statistics New Zealand where he has been employed in the Survey Methods section since obtaining a PhD from Lincoln in extreme value distributions and flood predictions. Jim is responsible for (amongst other things) the teaching of the commerce statistics subject for the Tenaga Nasional Berhad in Malaysia.

Chris Frampton obtained a PhD from University of Canterbury and then went on to be biometrician at the Clinical School. He since joined Landcare and is now here at Lincoln, but has retained a 20% appointment with the Clinical School.

Richard Sedcole

Canterbury

The Mathematics and Statistics Department has recently undergone a departmental review and we are awaiting the report with interest.

Frank Lad has recently presented three invited lectures to the International School of Mathematics "G. Stampacchia" in Erice, Sicily, at a workshop on "Mathematical Models for handling Partial Knowledge in Artificial Intelligence". His work has been based on applying de Finetti's fundamental theorem of prevision to computational problems of this sort. Frank's main work during his study leave has been oriented toward the completion of his book "Operational Subjective Statistical Methods: a mathematical, philosophical, and historical introduction", which has been engaging him for several years now. Frank has been working at the School of Statistics at the University of Minnesota.

Murray Smith attended the 5th Valencia Bayesian meeting in Alicante in June and John Deely attended the joint meetings in Toronto in August.

The department has been blessed with a number of visitors. In July Arnold Zellner visited on an Erskine fellowship jointly with the Economics department and gave a series of very stimulating seminars involving the Bayesian paradigm. Ron Christensen from the University of New Mexico is visiting the department until the end of the year and Wes Johnson from UC Davis will be here for September. We are also looking forward to a visit next year by Jim Berger on an Erskine fellowship.

Murray Smith

Statistics New Zealand

Vince Galvin has just set off for ICOTS 4 in Morocco, then Paris and then Ottawa so I've drawn the short straw to put some notes together.

There have been several changes in staffing in recent months. In Wellington Matthew Cronin and James Reilly have joined us but James is about to move on to AGB McNair. Michael Ryan and Phillipa Grahame have added to the Christchurch strength, Michael returning to the fold after a decade away while Jim Young has gone to Lincoln. The Christchurch mathematicians are now working as two closely coupled sections. Gary Dunnet heads the analysis side and Carolina Kol the survey methods.

We are looking forward to the inaugural quiz night against ISOR. We are sending a strong team up the hill and hope that intellect will prevail where sheer muscle has not in the past.

Garry Dickinson

ISOR, VUW

Currently operating with a skeleton crew, ISOR would struggle to do a paired 't' test at the moment. So where is everyone? Well Ross Renner is on leave, and keeps telling everyone; Tony Vignaux is on a Fellowship to Wolfson College, Oxford; Peter Thomson is with the Bureau of the Census in Washington, USA; Shirley Pledger is in Canada for a Biometrics Conference and Megan Clark was away for the ICOTS4 conference held in Marrakesh, Morocco. Megan reports a strong showing from New Zealand and a surprisingly small turnout from many European countries. Yu Hayakawa has been away at the Bayesian Seaside Resort in Spain. In addition Thomas Mikosch has left for his position in Groningen, Holland where I am pleased to say he is still receiving all our junk e-mail.

In terms of personnel there are a few new developments. Dr Jiayan Pang has taken up a FORST research assistantship in Statistical Seismology. Jill Andrews from the Open Polytechnic is visiting as part of her programme to develop an internal consulting service at the Polytechnic and lastly we welcome to the Institute Elsie Gatfield who is Anne Marie's replacement in the Office.

On the social side we've managed a meal out to farewell Thomas and a joint ISOR/Statistics NZ Quiz Night. The quiz night went down well with Brian Dawkins excelling on the Pop Music Section, Bevan Blair displaying a tremendous knowledge of Taggart and the Canberra Raiders winning by a short head. Quote of the night; "That's Whistler's Mother, but who painted it?"

On the eve of the exodus to Massey for the NZSA/ORSNZ Conference I should mention that Stephen Haslett has been poached! His new position of Associate Professor in the Department of Statistics at Massey involves heading up the Applied Statistics Consulting Centre. His involvement in all aspects of ISOR's activities will be sorely missed! Who will I turn to now with my tricky practical problems? Still, we will aim to lure him back periodically for social events, after all we're keeping his coffee machine hostage! GOOD LUCK STEVE FROM ALL AT ISOR!

Peter Smith

IBC'94 in Hamilton, Ontario

Some of the NZ contingent at IBC'94, from left to right, Nye John, Shirley Pledger, Murray Jorgensen, Brian McArdle, Harold Henderson, ***Bill Warren, Peter Johnstone****, George Seber. Others not pictured included Katrina Sharples, Nihal de Silva, Dave Johnson, Gita Mishra and Roger Marshall.*

Effective statistical consulting in agricultural research organisations

We print the text of a talk given by ***Peter Johnstone****, AgResearch Invermay, to a session at IBC'94 devoted to issues in statistical consulting with comment by* ***Bill Warren.****, whose recent experience is with fisheries and forestry. Peter and Bill are in the IBC'94 photo above.*

Introduction

Statisticians in many Agricultural Research organisations suffer from confused identity within the organisations. Although statisticians are undoubtedly scientists they are often positioned as a discretionary expense within the service sector of the organisation. This leads to statisticians being seen to have a service role which results in organisations not getting full benefit from them, a problem which I now address.

Function of Statisticians

The function of statisticians within many Agricultural Research organisations is as follows.

1. Design experiments and surveys.

Properly done this leads to clearly specified experimental objectives and efficient use of financial and physical resources. It should include the use of power studies. Properly designed experiments and surveys have many other benefits which are not immediately obvious. An example is the reassurances research directors might receive from knowing that the number of animals being used in an experiment minimises the ethical cost while still achieving the experimental objectives.

2. Analysis and interpretation of results.

Complementing of researchers analysis and interpretation skills speeds up the reporting of results, thus increasing the ability of the organisation to compete successfully for funds.

3. Apply theory to new situations.

The introduction of suitable methodology for facilitating the interpretation of results enables the early and successful interpretation and reporting of results. This often can only be successfully carried out by those who have knowledge of the research projects which can only be obtained by close contact with the project.

4. Referee papers.

The quality of publications is improved. This means that results are reported more rapidly and the organisations reputation as a provider of good quality science is enhanced.

5. Teaching, frequently one to one, but sometimes in groups.

Improves statistical awareness and leads to the understanding of statistical arguments and the use of suitable methodology. This results in an enhanced reputation for the quality of the organisations science.

How can this function be effectively carried out?

Firstly, statisticians have to have the necessary statistical, computing, social and communication skills to be able and willing to deliver what the organisation requires. This can be achieved simply by organisations choosing people who have all these skills rather than just some of them. The need to select and train such people in statistics graduate programmes has already been identified by Boroto and Zahn (1989).

However it requires more than suitable staff. It requires active management support. The importance of statistics has to be reflected in the apparent status of statistics within the organisation. As the application of statistics is a scientific task it is essential for statisticians to report to someone high in the science structure of the organisation. It is wrong and reflects a misunderstanding of the function of statistics if it reports to someone in the support structure.

Organisations can get the best value from statisticians if collaboration with statisticians is not a direct charge on those collaborating. That is, the funding of statisticians should be seen as an essential operating cost in much the same way as operating costs for libraries and gene banks should not be discretionary. There are still too many scientists who would exercise discretion against statistics either because they do not understand statistics or because they have had contact with an unhelpful statistician.

Once again statisticians, reporting to someone high within the science structure of an organisation would help ensure the funding of statisticians is not discretionary.

Despite the need to be funded in a nondiscretionary way, statisticians should be aligned to specific programmes in which they have a willingness to work as a real collaborator. They have to gain an understanding of the science they are involved in, both at an intellectual and practical level (Preece 1987), and be prepared to contribute enthusiastically to it in order to be effective.

Issues

There are many research organisations which do not have a structure which is suitable for the effective application of statistics. How is this to be turned around? How do statisticians gain acceptance of the idea that they need to report to someone high within the scientific hierachy of an organisation and that their services should not be discretionary? Most importantly, they have to be seen to be very useful to the organisation. They need to have the necessary skills to ensure that other scientists understand that the application of statistical ideas leads to efficient and effective use of resources, and that statisticians in a collaborative role are the best people to implement those ideas. So as to be able to achieve this ideal statisticians must focus on the needs of fellow scientists and they have to be prepared to tackle real problems which do not necessarily involve the development of new statistical techniques. It is interesting to note that Hoerl et al (1993) identified these as survival skills for industrial statisticians.

How should statisticians' knowledge deficiencies be dealt with? These will arise because of changing needs of research organisations and new statistical knowledge and techniques and new computer technologies. In some situations new staff will be required but in many situations self or supervised study depending on the nature of deficiency and the nature of the individual, should be allowed for. Consequently statisticians should have access to adequate time for study, reflection, sabbaticals and conferences.

If statisticians are given the role which is suggested they can perform an important addition task to those listed above. They will have sufficient knowledge of the whole research process to act as facilitators for broader experimental design issues than blocking and treatment allocation. The need to obtain a clear statement of experimental objectives is just one of these. An incomplete list of others includes the use of project management tools, TQM methodology and methods of reducing experimental variation.

For statisticians working at agricultural research organisations, the need to do statistical research is a vexing question. Research at research stations has been very worthwhile, as is evidenced by the results which have come from organisations such as Rothamsted. As well research publications, particularly those which include "respectable" mathematics are good for academic careers. However to balance this, there are many cases where research in research stations has lead to managers failing to see the relevance of the research and withdrawing funds. A careful balance seems to be the answer with statisticians at each location having to judge what strategy is prudent for that location.

Conclusion

Within research organisations:-

Statisticians should be identified with the scientific rather than the service sector.

Funding for statisticians should not be discretionary

In order to attain this ideal:-

Statisticians need to focus on the requirements of fellow scientists and on tackling real problems.

References

Boroto, D.R. & Zahn, D.A. (1989) Promoting statistics: On being valued and utilized. *American Statistician* 43:71-72

Hoerl, R.W.; Hooper. J.H.; Jacobs, P.J. & Lucas, J.M. (1993) Skills for industrial statisticians to survive and prosper in the emerging quality environment. *American Statistician* 47:280-292

Preece, D.A. (1987) Good statistical practice. *The Statistician* 36:397-408

Comment by Bill Warren

While sympathetic to Peter Johnstone's position, I am not convinced that his conclusion, that statisticians should be placed in the scientific rather than the service sector, necessarily follows. Research establishments usually have the following structure, a Director of Research, three or four Research Divisions each with a Division Head, and a Service Sector that commonly reports to the Deputy or Associate Director or the Senior Administration Officer. Generally there is no more than a handful of statisticians, perhaps one statistician per twenty scientists. It may not be practical to have the statisticians reporting directly to the Director of Research. It can (and I have seen it) give rise to questions about why such a small group is seemingly being given equal status with a Research Division. (Is the senior statistician equivalent to a Division Head?). Placing the statisticians within a division can (and

has) limited the ability of statisticians to work with scientists in other divisions. (Turf wars - why are you working with xxx in another division when your salary and resources are coming out of my budget?). Similarly, splitting statisticians among divisions can limit their ability to collaborate and rarely makes full use of the expertise available.

These problems are avoided by placing the statisticians within the service sector - and Peter Johnstone's list of what statisticians do can be regarded as a service for other scientists - but, and here I agree with him, the statistician must still be recognized as a scientist. In other words, management must recognize the proper role of the statistician. For much of my career I functioned within a service sector but under informed and/or sympathetic management. There was never any impediment to my role as a research scientist (and it is consulting with other scientists that one finds interesting problems for statistical research). Indeed, I have resisted, and would still resist, being placed with a research division. Nevertheless, I think that it can be structured either way. What is important is not so much where statisticians are placed in the formal structure of the organisation, but that the scientific management, as a whole, understands the role of statisticians and gives them the resources and flexibility to play their part fully and effectively.

Bill Warren

Bill was the first editor of the NZ Statistician. I invited Bill to fill us in on his movements since leaving NZ.

I moved to Canada towards the end of 1967 to join the Western Forest Products Laboratory, Canadian Forestry Service, on UBC Campus. Following the privatization of the Laboratory in 1979, I stuck it out for a couple of years and in 1982 went to Louisiana State University as Professor of Experimental Statistics. It seemed like a good idea at the time. In 1986 I accepted an offer to join the Forest Response Program of the National Acid Precipitation Program run by the US EPA and Forest Service. The group was located at Corvallis and so that I could be employed the Program paid Oregon State University to pay me as Research Professor in Forest Management. The project was of limited term and in 1989 started to change direction and I wanted to get back to Canada anyway. The one job that came up was with the then being formed Centre of Disciplinary Expertise (CODE) in Resource Assessment and Survey Methodology with the Dept. of Fisheries and Oceans in St. John's. It is best described as a pioneer research group facing several interesting and challenging problems.

Upcoming Statistical Conferences

A statistical conference for Genstat users
Wagga Wagga, NSW, Australia. 28-30 November, 1994
email g5conf@agric.nsw.gov.au

Workshop on clinical trials research methods
Auckland, 16-17 February, 1995
(features Thomas Fleming, Biostats, Univ Wash.)
email katrina@otago.ac.nz

Third International Applied Statistics in Industry Conference
Dallas-Ft Worth, Texas, USA. 5-7 June 1995.
(features George Box and Douglas Montgomery as 'Special Speakers')
email tracy@acginc.com

Sixth International Meeting on Statistical Climatology
Galway, Ireland. 19-23 June 1995.
Contact I.G. O'Muircheartagh, University College Galway, Ireland

50th session of the ISI
Beijing, Peoples Republic of China. 21-29 August 1995.
email wangj@bepc2.ihep.ac.cn

Sixth International Conference on Statistical Methods and Statistical Computing for Quality and Productivity Improvement
Seoul, Korea. 17-19 August, 1995.
email parksh@krsnucci.bitnet [Prof. Sung H. Park]

A.C. Aitken Centenary Conference
1995 NZSA Conferencee
Dunedin. 28 August - 1 September 1995
Brochure and registration form is enclosed with this *Newsletter.*
There is also a three day registration fee of $150 for Wednesday to Friday of the conference week, during which time there will be some emphasis of statistics in the programme and the annual meeting of the NZ Statistical Association will take place. However, there will be plenty on every day of the conference week to interest statisticians. A registration form allowing for three day attendance will be included in the next *Newsletter.* Details of an email bulletin board for the conference will be announced in the next *Newsletter.*
email casm@maths.otago.ac.nz

Statistics in Public Resources, Utilities, and in Care of the Environment
SPRUCE III: Statistical Aspects of Pollution - Assessment and Control
Merida, Yucatan, Mexico. 11-15 December 1995
email spruce@mailer.main.conacyt.mx

Sydney International Statistical Congress
Sheraton-Wentworth Hotel, Sydney. 8-12 July 1996
email sydney96@syd.dms.csiro.au

Biometrics in Horticulture

Peter Alspach writes:

The 1995 NZ Society of Horticultural Science is planning a session on "Biometrics in horticultural research" at its 1995 annual conference. The conference will be over three days: 4 & 5 September for science sessions, and 6 September for field trip and grower sessions. It will be held at the Tahunanui Beach Holiday Park Conference Centre in Nelson.

This seems to be a great opportunity to promote biometrics in an applied field, and I hope many of our members will present some of the interesting applied work they have undertaken, perhaps collaboratively with a horticultural colleague.

Further information is available from the conference organisers, Jill Stanley (jstanley@hort.cri.nz) or Nick Pyke (npyke@hort.cri.nz), or me (palspach@hort.cri.nz). We are all at HortResearch, Riwaka Research Centre, RD 3 MOTUEKA.

Workshop on Clinical Trials

A workshop on methodological issues in clinical trials research will be held in Auckland on 16-17 February, 1995. The aim of the workshop is to provide a forum for the discussion of important issues in the design, conduct and analysis of clinical trials. The content of the workshop will be suitable for clinicians, epidemiologists and statisticians involved in clinical trials research. The main guest contributor will be Professor Thomas Fleming from the Department of Biostatistics at the University of Washington, Seattle. The proposed topics include: monitoring of outcome in clinical trials; use of surrogate endpoints; misclassification of disease outcome measures; design and analysis of active control equivalence trials; and subset/subgroup hypothesis testing.

Katrina Sharples, email katrina@otago.ac.nz

Stephen MacMahon, fax (09) 302 1710
Clinical Trials Research Unit, University of Auckland

1994 Conference Opened by Vice Chancellor

The Vice Chancellor of Massey University, Dr Neil Waters, opened the Conference with challenging remarks including,

These are interesting times for educationalists. One feels that they should be exciting times as we hear leaders from all walks of life not only extolling the virtues of education, the need to be smart and so on, but also propounding the virtues, indeed the necessity, of such old-fashioned notions as grammar, science and numeracy. Standards and excellence come readily to the tongues of politicians and others. All good stuff - who among us would disagree? Why then do we feel so beleaguered, so unappreciated? Because, of course, as a country we want all these good things without having to pay for them. There is the belief that the right outcomes and outputs will automatically happen if they are somehow legislated through priority purchasing, performance indicators, unit standards, the Qualifications Authority and so on. The driving forces are two - reduced Government spending and increased central control. The old market maxim that you get what you pay for is yet to dawn on the idealogues. We have, for two decades or more, paid for mediocrity and that, overall, is what we have got. And this is not just in education itself but in the respect we show for excellence and achievement generally.

I am told, for example, that only 5% of our physics teachers in secondary schools are qualified in the subject. Why? Because we don't pay teachers of physics what they are worth and we are prepared to accept mediocrity which is the consequence.

This year Massey University will graduate nearly 3000 persons - one third will be in commerce. I applaud the commerce graduates but given that this institution is one of the largest technological establishments in the country, if one includes our agricultural, horticultural, veterinary science and technology enterprises, what does it say about our emphasis on the very things which underpin our economy. The quantitative skills, the technological know-how, the scientific expertise, the excellence, the smartness we need.

About two years ago a visiting Japanese Professor said to me over lunch that he had read a report of a speech I had given in which I had commented that every year New Zealand graduates more lawyers that it does those qualified in agriculture, horticulture, forestry and veterinary science combined. As this group of skills services industries accounting for the major part of our exports the Professor was sure the press had got it wrong - and what had I actually said? A man who spoke very good English then had great difficulty in comprehending the press had got it right. Clearly the whole idea was so bizarre he felt that he was missing an important point. We respect lawyers and pay them - and I have no quarrel with that. We don't really care much for statisticians or OR experts. Who needs them?

Until we take matters much more seriously we shall not become the technologically driven economy we dream about. It can, however, be done. In Singapore the Vice-Chancellor of one of their universities was worrying about the fact that 80% of his graduates were in technology - what about the arts and sciences he asked. Contrast that with our figures. Of every 100 pupils who entered the fifth form in 1986 only four have now emerged with a university qualification in science or mathematics. Five will have received other tertiary or trade qualifications for a total of nine out of 100 with any formal competence in the one area which underpins the late twentieth century. There are even gloomier statistics to be told but I have made my point already.

More positively let me tell you that at Massey University we are endeavouring to give your subject areas their rightful place. We established, the first, Department of Statistics in a University - not without drama but we got there. We have established, this year, a new Faculty of Information and Mathematical Sciences. We have placed Operations Research under a Board of Studies to recognise its cross-discipline character.

1994 Annual Conference

The Joint Annual Conference of the NZSA and ORSNZ at Massey University, August 25-26, was very successful. There were 160 participants with 73 papers being presented in 23 sessions. There were a further 22 registrations for the Statistics Education Session. Many thanks go to the organising team for a superbly organised and catered conference.

The organising committee: (front row) Julie Falkner, Jeffrey Hunter, John Giffin, (back row) Charles Lawoko, S Ganesalingam, Mark Bebbington, Douglas Timmer, Helen Sneddon, Paula McMillan and Chin Diew Lai (not shown)

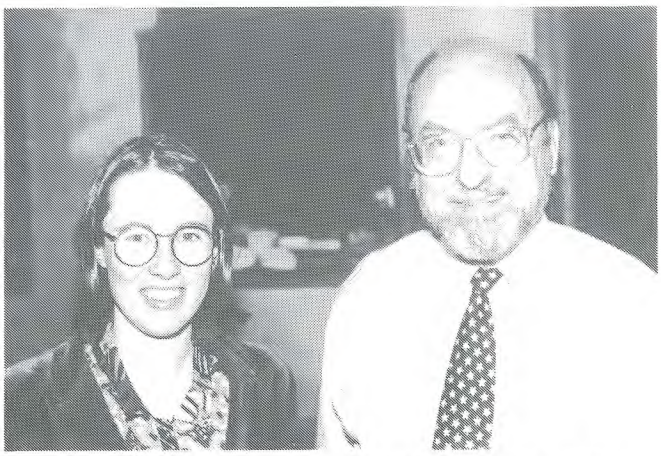
Remarks of Jeffrey Hunter, Conference Organiser

This response is an indication of the growing strength of the two societies. The meeting of scientific and professional societies is a vital part of the maintenance of a scientific discipline and the growth of knowledge. It is a time for the sharing of values and standards as well as a communication of results. At a more personal level a meeting such as this provides an opportunity for individuals to interact, learn of how others have attacked difficult problems or applied some well known theory in some unexpected way.

Speakers in the NZSA post graduate session: Robert Lynn, Lovina McMurchy, Lyn Hunt, Suzette Lizamore

It is also significant to note that we have 7 entries in the ORSNZ Young Practitioners Prize and 4 entries in the newly established NZSA Student Prize. These competitions are important as they provide us with an indication of the young talent that will ultimately form the future growth of the society and association.

When I agreed to be the organiser of this Conference, I had little idea of the historical significance of this occasion. It is the first time that the Societies have met together jointly since 1971, the first time that the ORSNZ has met at Massey University and seven years since the NZSA first met at Massey University. On a personal level, I have been a member of both societies for 25 years and I thought it appropriate to look back to the conference 25 years ago when both Societies met at the Shell Theatre at The Terrace in Wellington. The conference was spread over three days with 13 papers. The opening paper was given by the Honourable R D Muldoon, the then Minister of Finance, talking on the use and interpretation of Statistics at Cabinet Level.



Lovina McMurchy, University of Auckland, winner of the NZSA student prize, being congratulated by Alastair Scott

Invited speaker Thomas Ryan (right) with Douglas Timmer session organiser

Included in the program was a paper on queuing, one of the areas featured in this year's invited paper program. I did not however find a paper on Statistical Process Control, the other area covered in this year's invited sessions. The officers of the NZSA in 1969 included my predecessor to the Chair of Statistics at Massey University, Prof Brian Hayman as President, Mr Greg Arnold acted as Secretary-Treasurer and past presidents Steve Kuzmicich and Tony Vignaux both served as the Executive. Tony later took an active role in the OR Society.

The links between OR and Statistics were thus firmly established right at the formation of the ORSNZ and both societies met together for their Annual conference from 1965 up to and including 1971.