Felicity Ferret's Gossip Column

More people are on the move: Christine Kernohan and Sue Nicoll have both recently left the Min. Ag. & Fish. Christine and her family have gone on a trip back to Scotland for two months and Susan heads North to Hamilton to begin work for NZ Co-op Dairy Co.

John McCutcheon of NZE is back in Wellington from Twizel, Don Johnston has moved to the Govt Stores Board from the State Services Commission, and André Milkop (of MoE) has departed overseas for three years.

And lastly (or should that be lastingly?!) ex Wellington Branch secretary, John Hayes, recently became engaged to Cathy Randall of Foreign Affairs.

WELCOME TO NEW MEMBERS

New members since the last newsletter are:

Paul Sutton	NZIG Wellington
David Robb	Student, Auckland
Champauati Uka	Student, Auckland
Julie Falkner	Student, Auckland

Total membership of the society now stands as follows:

Full membership	186
Student membership	14
Corporate members (and sponsors)	10

That makes Julie the lucky 200th individual member!

DIVISIONAL NEWS

Wellington

The Wellington Branch maintains its fine record having had two meetings since the last newsletter. Professor Tony Vignaux spoke about 'The Policy Control Room - A Case Study' and David Whittaker (also from Victoria University) gave a talk on 'Time-constrained travelling salesman problem - for recreation and management'.

A further talk is to be given on Thursday, 26 July at 12.30pm. Brian Morris from the State Services Commission (seconded from UK Civil Service) is to talk about 'The lessons learnt from efficiency scrutinies in the UK Civil Service'. For more information contact Frances Sutton, Phone 726-600.

FORTHCOMING CONFERENCES

1984		
August	6-10	IFORS X (Washington DC)
	13-15	Simulation Society of Australia, 6th Biennial Conference (Adelaide)
	20-24	2nd Latin American OR Conference (Buenos Aires)
September	4-7	UK Annual OR Conference (Lancaster)
	10-14	6th International Congress of Cybernetics & Systems (Paris)
	23-28	AGIFORS Symposium (Strasbourg, France)
October	10-13	'Targetting Strategy Formulation' & Implementation - 4th Annual Strategic Mgmt Society Conference (Philadephia, USA)
November	21-22	UK ORS: 'OR Software & the Micro'
1985		
March	12-14	IFAC Workshop on AI & Pattern Recognition in Economics & Mgmt (Zurich)
Apr 19 - May 1		TIMS/ORSA semi-annual national meeting: 'OR/MS and High Tech.' (Boston)
June	17-20	EURO VII: Annual European Congress (Bologna, Italy)
July	3-7	7th IFAC/IFORS Symposium: 'Identification & System Parameter Estimation' (York Uni, UK)
July	9-11	Control '85: 'Theory & Practice of Automatic Control' (Cambridge, UK)
Jul 31 - Aug 2		3rd IFACE Symposium on Computer Aided Design in Control & Engineering Systems (Denmark)
August	5-9	IMACS 11th World Congress: 'Systems Simulation and Scientific Computation' (Oslo, Norway)
	20-22	IFAC Regional Conference on Control & Technology for Development (Beijing, China)
	27-30	Advances & Computer Applications in Production Management (Budapest), Hungary)
September	10-12	2nd IFAC conference: 'Analysis, Design & Evaluation of Man-Machine Systems' (Varese, Italy)

Further details are available from Vicky van den Broek - Mabin, P O Box 904, Wellington

NEWSLETTER

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JULY 1984

1984 SCIENCE & TECHNOLOGY PLAN

"Science and Technology Plan; 1984, The First Steps"
National Research Advisory Council, Box 12-240, Wellington, Price free.

The Science Plan is an important document for the scientific community, not so much for what it says, as because it has appeared at all. It is the first of what is expected to be an annual "Science Plan" for New Zealand, setting directions for scientific resource allocation.

The Plan indicates a major change for science in New Zealand. It is a casting off of the previous emphasis on pastoral agriculture based, production oriented, research and a search for a new modus operandi for science, as a motivator for New Zealand as a "free market, world trader". Its value is as a first attempt by science to address both this question, and the question of the place of S and T in our broader society.

The Plan itself documents the growth and changes in R and D resource allocation over the last 20 years. It states New Zealand spends comparatively little on R and D, and that, relative to other countries, designated expenditure by the private sector is minimal. We rank alongside Italy, and Denmark with 0.88% of GDP, a long way behind the industrialised nations - USA (2.30%), UK (2.2%) and Japan (2.11%). We are the seventh lowest of the 21 listed OECD nations.

The Plan then discusses its rationale - as a "flexible national medium term strategy for science and technology", and to provide an overview of national strengths and needs, and point to a number of significant key areas.

To this end, the needs and opportunities for science and technology, in all sectors of our society are discussed in details in Chapter 4. These have been identified, as a result of a lengthy consultative process, carried out during 1983. These are sometimes used as opportunities by industry to push their claims for growth. Unfortunately there is no comparative assessment of different market prospects for this "mission oriented" research. Much more critical analysis is needed of some of the statements in this chapter. There is, too a disconcerting tendency to promote only research directly related to production, and the market place, and to ignore the broader needs of our society. The whole of social science and health research for instance ranks only five pages, one page more than the single sector of forestry. Surprisingly, market intelligence ranks only one page. The final section highlights new directions for science, and includes biotechnology market signals, manufacturing, transport, tourism, information technology, marine science, land use, and social issues. As might be expected of a first plan, this chapter does not fully sketch an overall strategy.

The book is a useful listing of present thinking on science and technology directions. It has still a considerable evolution to go through before it becomes a coherent plan. To operational researchers, and decision analysts, the question must be what can be achieved by such a lengthy consultative planning process, and what cannot.

Our consultative planning has a very poor track record, and one that science and technology planners must try to improve on. The National Department Conference (1969), forecasted 5% economic

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growth, but became a band wagon for politically strong industries to demand preferential treatment. It achieved very little. The Education Development Conference of the mid seventies, also achieved very little. The Planning Council has not been a great success, nor was the Commission for the future. It has even been said that participative planning is the opiate of democracy.

The one planning process that has continued for an extended time in New Zealand is the very specific task of electricity planning. This is not a consultative process, but is tightly controlled by the electricity supply industry. It has led to a considerable oversupply of electricity generation in recent years - a success from its point of view, but not necessarily from that of the public. At least it is a plan that is implemented.

In commercial R and D, an element of surprise, is vital to catch competitors unawares. Consequently, no-one is going to publicise their true intentions in a competitive market place, through a science and technology plan. However, it is in the integration of private and public research and development effort that major achievements could result - a co-ordinated New Zealand Incorporated perhaps? It is here that a broad strategy, and a will to move forward, rather than just seek privilege, would be valuable.

Managing science and technology is the skilled task of charting the uncertain and the unknown. It is the quality of judgement of our managers, and the political support they receive that will determine our success. It is not the successes of today that will be the successes or needs of tomorrow. Diversity of portfolio is a more important criterion than consensus. A healthy and confident community too, is also a major asset. Research to this end should not be lost sight of. Our quality of life is more important than inventing a juicier kiwi fruit.

Planning, as we have practised it in New Zealand has been to accent the trendy, and short-term, to centralise control, to be over-influenced by dominant pressure groups, and to give minimal political commitment. These are sizeable hurdles for any planning process to overcome, let along one as uncertain, and as long-term as science planning. If future science plans do, it will be a considerable achievement. The question too of greater integration of private and public science is one that will take time and effort to sort out. We have the talent. Do we have the resolve?

Hugh Barr

OR/STATS: Real-World Developments and Applications

The European Journal of Operational Research is now preparing a special issue devoted to real-world developments and applications of the OR/STATISTICS interface.

Original papers are sought that address new developments, or intelligent applications of existing methodologies, using both statistical and O.R. techniques. A real-world application in an industrial, service or governmental environment is required; priority will be given to papers documenting implementation results. All submitted papers will be subject to a refereeing process as that of the EJOR; their suitability for the special issue will be assessed.

Authors wishing to contribute papers for this special issue, should submit four (4) copies of the completed manuscript (max. 15 double-spaced pages, including appendices, typed according to EJOR guidelines) by December 31, 1984 to:

Prof. S.H. Zanakis
Chairman, Dept of Decision Sciences
College of Business Administration
Florida International University
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EDITORIAL

This will be the last newsletter before our Annual Conference and hence my last chance to remind/encourage you to register. The Auckland Branch has organised the conference this year and has managed to secure an overseas keynote speaker, namely Professor Harvey Wagner. He is well known for his widely acclaimed book 'Principles of Operations Research' (published 1969). His presence should much enhance the interest in and success of the conference.

I am soon to be leaving Wellington and the Ministry of Ag. & Fish. so please note the change of address for any articles/gossip/letters/whatever that you may be going to send for the newsletter. I am particularly keen to start a series on 'OR in Government and Industry'. However I'm not the expert on the subject but YOU are - or at least you are with respect to your workplace. So please don't wait for me to harass you individually - a page or two is fairly easy to write and it keeps us all informed as to who's doing what where.

See you at conference,

Sue Nicoll

O.R. FOR THE HEALTH SERVICES

by Andrew Smith

Having spent a number of years in the Department of Health I was asked if I would write something for the Newsletter about OR and the health services. Since 1974, when I joined the Department, I led what is now called the Economic and Operational Resarch team within the Management Services and Research Unit. Despite my recent departure for the Ministry of Energy I decided that I would take up the challenge of putting together some words on 'health'. During the ten years the team has been small but active. Its size has varied from two to five people depending on the availability of able people. Mathematicians have been, and still are, prominent among its members although there have been people with formal training in physics, chemistry and economics as well as OR. Terrence Crombie recently made the same transition as myself to Energy. However, the team is currently as active as ever with George Pitt and Harvey Steffens under the able leadership of Frances Sutton.

The first thing to realise about the health services is how large a part they play in New Zealand, and for that matter all developed countries. They encompass hospitals, both public and private, general practitioners, physiotherapists, dentists, pharmaceutical companies and so on. In total they account for some 7 percent of this country's GDP. The proportion of the workforce is a little less but similar. If OR cannot make some significant contribution to solving the problems of this large enterprise then there is in my view, either something wrong with OR or with the people trying to do it.

In the team we consciously tried to balance our time between small tactical studies and larger ones attempting to grapple with some of the strategic issues facing the health services. The smaller studies, generally taking no more than a week or two, provided advice, for example on how to schedule clinic appointments. Another example was preparing and using some simple personnel models to examine the future availability of nurses. But while these small studies could bring quick rewards we did not want to become entirely bogged down in things like bedpan scheduling.

One of the strategic issues facing the public health services is how to allocate funds or resources between competing sectors of the services. Fundamental problems here are that it is difficult to measure the value of health service outputs and the relationships between inputs and outputs are poorly understood. OR textbooks say little about how to deal with such intractable problems. One way in which the resource allocation issues manifests itself is in how to distribute, among the 29 hospital boards, the over $1 billion annually in operating grants. The major item of work of the team over the last few years has been to develop a model for dealing with this problem. Basically the model allocates funds to boards according to the size and population served by each board. Other factors such as age structures and the activities of private hospitals are, however, taken into account. Overall the model is quite large, handling in condensed form, some 12 million items of data. The model is now used each year in assigning grants to the boards and has undoubtedly had a significantly impact on thinking in the health services on resource allocation and efficiency.

A study recently taken on by the team is looking at the question of immunisation for hepatitis B. At considerable cost people can be immunised. This reduces chances of contracting the disease, of being ill and of passing the disease on to others. A cost-benefit analysis framework has been established. However, some careful analysis is needed to predict the cumulative effects of the disease being passed from person to person. Frances has been developing some interesting differential equations to handle this problem. This study is particularly exciting because although it is essentially a tactical study it may provide useful general insights into how to evaluate strategies for preventing ill health.

From its inception until last year Dr Salmond was the Director of MSRU. Throughout that time he was keen to see the contribution that OR could make in the health services. From his new position as Deputy Director General of the Department of Health he will, I am sure, continue to support OR. There is no doubt that its potential is well recognised in the top echelons of the Department and there is great scope for innovative OR people to make a contribution in the health services. I will be disappointed if the next ten years does not see the Economic and Operational Research team make some significant new advances.