NEWSLETTER

Operational Research Society of New Zealand (Inc.)

Registered at C.P.O., Wellington, as a magazine

JUNE 1981

NEWS FLASH

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* * * * * *COUNCIL NEWS* * * * * *

THE LAST TWO ORSNZ COUNCIL MEETINGS HAVE FAILED TO REACH A DISCUSSION ON THE SPRINGBOK'S TOUR. IT HAS BEEN RUMOURED THAT OR PRACTITIONERS WITH THE DEPARTMENT OF JUSTICE HAVE REFUSED TO USE THEIR MODEL TO FIND OPTIMAL POLICE MOVEMENTS WHILE OTHERS WITH THE TRANSPORT MINISTRY HAVE DECLINED TO FORMULATE OPTIMAL TRANSPORTATION OF THE VISITING TEAM.

ON THE OTHER HAND, 25 MEMBERS OF THE SOCIETY HAVE VOLUNTEERED THEIR SERVICES TO THE N.Z. RUGBY UNION TO HELP SORT OUT THEIR BACK-LINE PROBLEMS, AND ANOTHER 15 HAVE MADE THEMSELVES AVAILABLE TO REPLACE GRAHAM MOURIE.

FACED WITH SUCH A DIVERGENCE OF OPINION, IT IS NOT SURPRISING THAT OUR COUNCIL HAS NOT FORMULATED A DETAILED POLICY STATEMENT.

ON A BRIGHTER NOTE, THIS YEARS A.G.M. WILL BE HELD -

IN ROWS 45-52, UPPER DECK - MILLARD STAND ON

AUGUST 29TH, 1981.

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TIMS OR/MS PRACTICAL APPLICATIONS PRIZE

Each year "Interfaces" the joint journal of The Institute of Management Science (TIMS) and the Operators Research Society of America (ORSA) publishes the prize winning papers in its International Management Science Practice Competition.

This years special issue (Dec, 1980 Interfaces) is again well worth reading.

The $6000 first prize went to King & Love of Kelly-Springfield, a Major U.S. hire company. Their paper discusses savings worth a total of $12.9 million from better co-ordination of sales forecasts, inventory control, production planning and distribution decisions.

Other papers cover modelling the cost of construction delays, and the responsibility for them (in a $447 million litigation settlement), manpower planning for the Army, (claimed savings $100 million), use of Linear Programming to improve rail wagon utilisation, use of risk analysis for investment decisions at Getly Oil, and evaluating a market for a new product.

The papers indicate that OR/MS is making exciting progress in North America, and effectively reducing costs and improving performance.

HUGH BARR

NOTE: "Interfaces" is held by the Applied Mathematics Division Library in Wellington, and at University Libraries in other centres, and can be borrowed on interloan.

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APPLIED MATHEMATICS DIVISION

VACANCY

IN'OPERATIONAL'RESEARCH;EXPERIENCED PRACTITIONER'OR'RECENT'GRADUATE'

WE ARE SEEKING A GRADUATE TO JOIN OUR OPERATIONAL RESEARCH GROUP IN WELLINGTON IMMEDIATELY.
APPLIED MATHEMATICS DIVISION HAS AN ACTIVE OR GROUP OF FIVE PEOPLE OUT OF A FULL PROFESSIONAL MATHEMATICAL AND STATISTICAL STAFF OF 30. THE GROUP CARRIES OUT A VARIED RANGE OF ASSIGNMENTS, FROM PROJECTS WITH OTHER GOVERNMENT DEPARTMENTS TO ADVISORY AND CONSULTANT WORK WITH INDUSTRY GROUPS. MUCH OF THE WORK HAS BEEN IN THE AREAS OF TRANSPORT, DISTRIBUTION, MANUFACTURING, AGRICULTURAL PROCESSING AND ENERGY. FUTURE PROJECTS ARE ALSO LIKELY TO BE IN THOSE AREAS. A FEATURE OF THE WORK, HOWEVER, IS ITS VARIETY.

Applicants should have a good honors degree and can be either a practitioner with several years experience or a recent graduate. They should have taken courses in one or more of: operational research, engineering, statistics, economics, mathematics or psychology. They should also be effective at oral and written communication, and be interested in problem solving, and working with other people.

The position is a challenging one with good prospects for further experience and advancement. Starting salary is dependent on qualifications and experience and is according to the government scientific scale (initial maximum up to $ 16 000 for new graduates, and up to $ 22 500 for experienced practitioners).

PLEASE ADDRESS ENQUIRIES TO:

Dr Hamish Thompson
Director
Applied Mathematics Division,DSIR
P.O. BOX 1335
WELLINGTON.

XV PACIFIC SCIENCE CONGRESS

The 15th Congress of the Pacific Science Association will be held in Dunedin at the University of Otago from 1st - 11th February, 1983. The theme will be :

CONSERVATION; DEVELOPMENT
AND UTILIZATION OF RESOURCES
OF THE PACIFIC.

General Symposia -

(i) Energy in Agriculture

(ii) High Latitude Resources: Their Assessment and Development.

(iii) Resources, Science and the Law of the Sea.

(iv) Pacific Island Potentials

FURTHER INFORMATION FROM:

the secretary general
15th pacific science congress
p.o.box 6063
dunedin north
new zealand.

AUSTRALIAN SOCIETY OF OPERATIONS RESEARCH

THE AUSTRALIAN BIENNIAL CONFERENCE WILL BE HELD IN SYDNEY ON 24TH - 26TH AUGUST, 1981

NEWS OF MEMBERS

PETER LA ROCHE - *current Wellington Branch Secretary, is to leave AMD, DSIR to return to the U.S. with his American born wife.*

He hopes to do Industrial OR there.

BRUCE BENSEMAN - *current Vice-President, is about to depart on a quick European/U.K. jaunt, taking in IFORS 81 at Hamburg amoungst other activities. (I can remember when Private Enterprise used to get all the perks - Ed).*

LINDA WANNAN-EDGAR - *Auckland Branch Chairperson, has recently changed vocations and is now practicing OR amoungst the nappies, and is busy optimising feed times for her new baby boy.*

OUR PRESIDENTS

the old and the new

THE PAST PRESIDENT

Dr Hugh Barr retired in 1980 after serving five years as ORSNZ President. Over that period, he has worked hard advertising the profession, and the Society has attracted eight or so corporate members and sponsors. He has also written numerous book reviews and political columns for the OR Newsletter. Although never generating the excitement caused by the "long-haired licks" editorial, Dr Barr does have the gift of raising important questions and sometimes hackles. Writing on issues like Iranian oil, the Mobil process and the second aluminium smelter, Dr Barr frequently berated N.Z.'s think big planners for their short-sighted risk-taking.

In his popular Listener article "Here is the (electricity) forecast and you are paying for it", he castigated the professional power planners for an alleged massive over-capacity. Later he made many recommendations such as under-forecasting ("to encourage conservation") and more flexibility in planning ("small hydros"). Such comments must have won him many friends in the Ministry of Energy. Not surprisingly perhaps, Dr Barr is currently Chairman of the Environment and Conservation Organisations of N.Z., and is a keen skier and tramper.

As well as strategy development in the energy and transport fields, Dr Barr is interested in decision analysis. In his "Risk Analysis" paper at the 1980 conference, he talked almost exclusively on encouraging creative thinking in OR. Indeed, he frequently stresses the commonsense approach of Ackoff and Woolsey, two authors we academics should take more seriously. Dr Barr is OR section-leader at the Applied Mathematics Division of DSIR, and many OR analysts have graduated from AMD over the last few years, influenced by his healthy scepticism (of computer models).

Dr Barr's real contribution to ORSNZ has been his emphasis on tactics, simplicity and creativity rather than techniques, complexity and optimality. In his final Annual Report, he warned us against "econometricians and world modelers". Unlike two previous past Presidents, our new one Professor Rosser seems innocent of these charges. The Society can perhaps expect a fresh philosophy over the next year or so.

A Solicited Resume of ORSNZ President Associate Professor M.S. Rosser

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Mervyn Rosser, an old-boy of Mt. Albert Grammar School, completed his tertiary education with a double degree as Master of Science with Honors in Mathematics and a Batchelor of Music at the then Auckland University College of the University of New Zealand.

His career in "communications" began in the 1950's with periods of service as a secondary school teacher of mathematics first at Pukekohe High School and then back at Mt. Albert Grammar. In 1962 he joined the staff of the Mathematics Department at the University of Auckland and the following year became a foundation staff member of the new Department of Theoretical and Applied Mechanics in the School of Engineering. As Associate Professor in the Department, he has served, on a number of occasions, as acting Head and is highly regarded both as a teacher and as an administrator.

For many years Merv has been the mainstay of the Auckland Branch of ORSNZ helping to form the branch in 1971 and serving as Chairman from 1973 till 1977. He has also served for 4 years as the Auckland delegate on ORSNZ Council.

Merv continues his lifelong interests in the Church and in music, making valuable contributions in both areas. One member of ORSNZ remembers listening from his bed as a very young boy to a rather younger MSR sharing the music making at late-night teacher's parties. Such events do not feature quite as regularly nowadays, but perhaps the 1981 Conference Dinner could be followed (or preceded) by a Presidential performance of popular piano preludes.

SCHEDULING STAFF IN AN ACCOUNTING FIRM

DURING THE BUSY SEASON

(Review of a seminar presented by Rick Rosenthal to the Wellington Branch, April 8th, 1981).

The problem of scheduling staff in a small American public accounting firm arose out of the experience of C.W. Alderman who was working for the firm. At the end of each financial year, there was a disproportional work load for 10 weeks as clients demanded their annual statements. Much overtime was worked, there was a high employee dissatisfaction and management was on a reaction-to-crisis basis.
To help improve the situation, the following objectives were established for a computer assisted staff scheduling system;

* free management from a large part of scheduling responsibility.
* Ensure all work is performed by appropriately qualified personnel.
* Avoid work below a person's level of qualification.
* Ensure jobs are completed before their due dates.
* Minimise overtime costs.
* Avoid fluctuating work loads.
* Permit easy revision of schedules when unexpected changes occur.
* Data inputs must be easy to provide.
* Output reports easy to use by management.
* An economical system.

A general design philosophy was that the computer can HELP but not DO everything. The human element should remain intact, with management being relied on for subjective aspects of scheduling.

PROBLEM FORMATION: Each job for a client was described in the following way -

* Earliest date that work can begin on the job.
* Due date for completion of the job.
* Amount of work required for the job, in the various qualification levels. (There were 3 levels of qualification).
* Total available, regular and overtime, hours for each qualification level for each week.
* Overtime wage for each qualification level.

The decision variables determined by the system are -

* Total regular time at every qualification level assigned to staff of every qualification level, for each job in each week.
* The same for overtime.

The problem is solved using LINEAR PROGRAMMING for a number of weeks, typically 10 weeks.

The objective function for the LP was designed primarily to minimise overtime costs. However, by using a weighting factor, the objective function was modified to minimise weekly overtime hours, the fluctuation of overtime hours from week to week, and also to maximise slack time (i.e. finished the job before it is required).
These secondary objectives were used as "tie-breakers" because many solutions were optimal when only the primary objective was specified.

The output reports do not actually allocate specific employees to a particular job - this was a task left to the managers. This task is easily done by using the reports produced by the system, which show for a particular week what jobs require which qualification of worker.

The system was successfully implemented for the accounting firm and cost them $18.00 to schedule 8000 hours for 25 people, which certainly is a cost-effective result.

A full report of the system is given in the "JOURNAL OF ACCOUNTANCY", Vol. 150 No. 6, December, 1980.

REVIEWED by

PETER MELLALIEU .

Whats To Come

NEXT ISSUE -

- How to overcome the Springbok's at number 6 in the lineout while minimising the use of the dive.

- Dr Hugh Barr reviews "Long Range Forecasting : From Crystal Ball to Computer" by J. Scott Armstrong.