



# NEWSLETTER

*Operational Research Society of New Zealand (Inc.)*

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## COUNCIL NOTES

From the meeting of 13 May 1974.

1. The new Wellington Branch Chairman, Dr B.A. Murtagh, was co-opted to Council.
2. The following appointments were made to sub-committees:  
Constitutional, Dr Murtagh; Education, Mr Gini;  
Membership, Mr George and Mr Lusk
3. Council has approved an annual 'Student-Paper Prize' (\$50) to replace the Lecture Prize. Members wanting further details should write to Dr H. Barr, 24 Marsden Ave. Wellington, 5.
4. Council proposes to hold an open Council meeting at the 1974 conference at which sub-committee conveners will report orally to the Society's members, and members can raise matters.
5. Discussions on Prof. Rivett's proposed visit to New Zealand in 1975 are continuing with ASOR.
6. Mr F.A. Coulter (Society Full Member) has been appointed by the Royal Society of N.Z. Council to its Conservation Advisory Committee. Mr Coulter was nominated by ORSNZ.

From the meeting of 29 July 1974

1. Council praised the quality of the program which had been arranged for the Conference by the Canterbury organisers.
  2. The Vice-President is to write to the Minister of Finance about the non-deductibility of the Society sub from personal income tax.
  3. Mr Walker was appointed to the Education Sub-committee.
  4. The Education Sub-committee will be producing the Survey of OR Courses later this year.
  5. Patrick Rivett will not now be visiting Australia or New Zealand after the 1975 IFORS Conference.
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## BRANCH NOTES

### 1. AUCKLAND

- 1.1 On Thursday 16 July a Branch meeting was held at the University of Auckland School of Engineering. The speaker was R. Simpson who spoke on "A Variation on an Inventory Control System."

Mr Simpson is Senior Industrial Engineer with General Foods Corporation where he is engaged in Operational Research applications for the Food Industry, primarily in the Distribution area.

A lot of goods are owned by the Corporation from the fields where they are grown to the time they are sold, and must therefore be stored in one form or another for this duration. Other items can be produced at will but might have to be stock-piled to accomodate seasonal demands. Specials at any centre throughout the country or group of centres can cause adverse short peaks in weekly sales histories.

The capital cost of building freezer space in depots is substantial and if this can be delayed by efficient planning and logistics and maintain a high level of service large savings may be made. The object of Inventory Control as used here is to advise Depot Managers as to what items in what quantities they should be holding but leaves the actual restocking decisions to them. This is logical as they have the week to week knowledge of possible sales, specials and competitor activity, on hand.

In the process of advising the information held on computer files is also used to determine freezer storage volumes, and by projection the probable volumes required in the future. Other applications are also used and more planned.

Mr Simpson's address was concise and interesting, the ease with which he handled the barrage of questions following is a good indication of the knowledge he holds in this subject.

- 1.2 A meeting of the Auckland Branch of the Society was held on Thursday 30 May. The guest speaker was an overseas visitor, Professor Thomas Vincent from the University of Arizona. Professor Vincent is a specialist in Aerospace and Mechanical Engineering. His research in the general area of Optimal Control theory has had numerous applications to such topics as: Pest control, Management of Ecosystems, Prey - predator systems, Collision avoidance, and Fish harvesting.

The topic Professor Vincent chose was Prey - predator systems which has its main applications in warfare, examples being air-craft and anti air-craft missiles, ships and target seeking torpedoes. Whereas these are obvious illustrations for the topic the Professor's main interest was in peace time applications, these being the avoidance of collisions particularly in the line of ships entering ports.

During the address such terms as controllability, games of kind and games of chance were used. Capture sets, the capture set of anti air-craft missile, is circular as the missile must only explode within a given radius of an air-craft to gain a kill. The capture set of a torpedo is the shape of the hull of a ship as it must strike the ship. Guidance laws as far back as ancient pirate days were discussed and formed the basis of what was termed the Proportional navigational barrier. Another possible avenue for further research could be in the field of Labour-Management relations and/or negotiations

The address was a total success and it was indeed a privilege to listen to such a distinguished guest. The Professor was relaxed, the topic was novel and the evening was rounded off over coffee.

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## JOINT JOURNAL WITH THE AUSTRALIAN SOCIETY?

Discussions with Australia have begun to see if an Australian O.R. Journal is a viable proposition with benefits to both Societies. Our Council has informally suggested to Australia that we prepare a (renamed) journal in N.Z. with an Editor appointed by both Societies. It seems an opportune time to consider the pros and cons of such a venture and to get some feedback from members on this rather important question. The salient points seem to me to be:-

- a Journal owned and operated by the NZOR Society is a catalyst toward establishing O.R. on a sound permanent basis in New Zealand.
- The combined membership would mean a greater pool from which articles could originate. This could result in more issues covering wider applications. While on this point, you may have wondered why issue Vol 2, No 2 of NZOR has not yet arrived in your letter boxes. The answer is quite simple:-

### WITHOUT ARTICLES WE CANNOT PUBLISH

- an increase in the number of Journals printed each issue may slightly reduce the unit cost. I cannot imagine this resulting in a decrease in membership subscription but it does mean revenue can be used for other purposes.

This, of course, raises much broader issues. Perhaps we should move toward becoming a branch of the Australian Society?

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BOOK REVIEW \*

'Operations Research Methods for Agricultural Decisions' by R.C. Agrawal and E.O. Heady, Iowa State University Press (1972) (About \$11.00)

This book is presumably aimed at Undergraduate agricultural economists. To an OR practitioner it is rather a disappointment. Its title is misleading, as the book is simply another undergraduate text on Operations Research. The Mathematical techniques of linear programming, non-linear programming, integer programming, dynamic programming, game theory, Markov chains, inventories, queues and CPM are described for the beginner, with little reference, except in generalities, to their relevance to agriculture. Examples are at the micro level, ie the level of individual farmers. They often concern Indian agricultural situations, and to me appeared unreal. The example of P.241 in which a peasant Indian farmer applies networking techniques to the six tasks of plowing and sowing of his crop seemed particularly so.

One would hope that a book of this title would include actual case studies of a moderate level of realism, or references to actual applications, with descriptions of the benefits achieved, as a guide to anyone contemplating applying OR to agriculture. In a brief reading I was unable to find one such study. The Authors state in Chapter 1 "... the opportunities for application (of OR) at the sectoral level are nearly unbounded, or are constrained only by the analyst's imagination." One would have thought such factors as political constraints, data collection problems, and uncertainty of market and weather conditions for instance, would apply quite noticeable constraints to the analyst's imagination. They appear to be skipped over lightly in the text, and there is nothing on statistical data collection and forecasting techniques, or on risk and risk reduction procedures.

Finally, as a guide to the problems and benefits of using O.R. in agriculture, this is a disappointing book. It seems doubtful whether O.R. can tell us much more than common sense when applied to the micro level of individual farmers. Co-ordination of sector activities within political constraints seems a more logical site for O.R. techniques, at least in the New Zealand context. These, however, are not covered in the book, and it seems simply to be an introductory textbook on some O.R. techniques.

Hugh Barr  
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D.S.I.R.

NOTE: the above book is held in the AMD Wellington Library

\* The idea of book reviews in the Newsletter was suggested by the Education Sub-committee. The committee contends reviewing suitable material as it comes to hand and passing it on for Publication.

## CONFERENCES/NOTICES

1. Don't forget our own National Conference in Christchurch on 23rd August.
  2. A meeting on Optimization Problems in Engineering and Economics will be held in Naples in December, 1974. Sponsored by the C.E.S.I. and Rice University, the meeting will cover the theory and applications of both Analytical and Numerical methods. Brochure available from - John Scott, NAC, P.O. Box 96, Wellington.
  3. International Working Seminar, York, England in April 1975. "The purpose of this seminar is to provide an opportunity for research scientists to evolve a strategy for the development of their own fields" It is claimed that some problem areas have been worked out and that continued effort in these areas can only suffer markedly from diminishing returns. Other important problem areas however have been hardly touched. The names of Churchman, Rivett, Simpson, Tocher, and others appear on the cover of the booklet which is available from - Prof Tony Vignaux, Dept of Information Science, Victoria University, P.O. Box 196, Wellington.
  4. 2nd World Symposium on "Traffic Control and Transportation Systems" is down for Monte Carlo in September, 1974. The aim of the symposium is to present recent advances in traffic control and transportation systems spanning all modes and air-land-waterway interfaces. Programme booklets available from - Professor Tony Vignaux, Victoria University, P.O. Box 196, Wellington.
  5. A new international journal has been listed entitled: "Computers and O.R. and their application to problems of world concern." The aims of this journal is pretty well summed up in its title. Also "papers will be presented in such a way that readers may not be expert in the particular disciplines discussed." Further details plus descriptions of some of the papers from the first issue, available from - John Scott, NAC, P.O. Box 96, Wellington.
  6. The report "Limits to Growth? A Study by the Ad Hoc Committee on World Dynamics" published by the Royal Society of N.Z. is now available at \$1.50 direct from the Royal Society of N.Z., P.O. Box 12249, Wellington. Two members of ORSNZ, Prof Vignaux and Prof. Philpott, were members of the Ad Hoc Committee; these were personal appointments by the Royal Society.
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