



# NEWSLETTER

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



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## GENERAL NOTES

### New Members

The membership of the society is increasing rapidly and the following new members give us a membership of over 200 at present.

Yasuo Yagyu	-	D.S.I.R.
Mervyn Rosser	-	School of Eng. - Auckland
Peter Bearsley	-	A.N.Z. Bank
Hans Daellenbach	-	Canterbury University
John Turner	-	Waikato University
Chris Patterson	-	Alex Harvey Ind.
Chris Lusk	-	N.Z.E.D. Wellington
Alan Lock	-	I.B.M.
Pak Yoong	-	Social Security Department
Nick Lubeck	-	Statistics Department

### Institutional Rate for Publications

We have received several requests from libraries, company libraries, and other institutions for copies of the O.R. Society Newsletter. These have previously been supplied free on request in most cases. However because of the impending issue of the N.Z.O.R. Journal and the increasing numbers of institutional requests, it has been decided to establish an Institutional Subscription for the Newsletter and Journal. This has been set by Council as \$2 per year. In future single issues will not be provided to institutions. Members of the Society will of course receive both N.Z.O.R. and the Newsletter free of charge.

Should your company be interested in an Institutional Subscription please reply to the Secretary, N.Z.O.R. Society, P.O. Box 904, Wellington.

### Auckland Branch Inaugural Meeting

A meeting of Auckland members and interested parties was held on the 3rd of June to discuss the feasibility of the formation of an Auckland Branch of the Society. The meeting was attended by approximately 60 people with some 25 apologies. Tony Vignaux the Society President addressed the meeting and a steering committee was elected to investigate possible branch status further.

This committee comprised :-

B. Slocombe  
G. Holms  
M. Rosser  
K. Nutsford  
R. Elder  
M. Dodgson

It is hoped that some worthwhile advances in the service offered to members in the Auckland area results from the recommendations of this steering committee.

#### Corrections

We must apologise to Bernard Kaiser for stating in the last Newsletter that he had resigned from the Society. This was incorrect. Due to an increase in his professional responsibilities Bernard considers that he would be unable to give council the service it requires and has resigned as Public Relations Chairman. His place has been filled by Lester O'Brien from Unilever.

PRESIDENTS NOTES ON A TRIP TO THE UNITED KINGDOM

Introduction

The main purpose of my visit to the United Kingdom from December 1970 to the end of March 1971 was to see how our courses in Operations Research can be improved and what new courses might be offered. At the same time, I had some particular interests in the way that corporate planning techniques were being applied. This was based upon a personal disquite about O.R. applications in New Zealand. I feel that O.R. is often being applied at too low a level in the corporate or organizational structure and that the proper application of O.R. thinking and indeed of O.R. techniques should be at a much higher level - at a strategic rather than a tactical level.

Contact with the U.K. O.R. Society

As soon as I arrived in the U.K. I made contact with the Secretariat of the Operational Research Society whose office is situated in Cannon Street, just along the road from St. Paul's Cathedral. I was given a very pleasant welcome and a great deal of assistance. I met both the Secretary, Mrs. Kinnaird and, later on, the President, Stafford Beer. In a long discussion with Mrs Kinnaird I was struck by the attitude that the Society has to many of its activities. In the main the Society tries to make a profit on whatever it does and in fact a great deal of its income is derived from this source. I discussed the reorganisation of the U.K.O.R. Society (the "Marlow Plan 1970") and possible applications to the New Zealand scene. Naturally the U.K. Society has very many more members and a correspondently greater number of activities than our Society.

I also had the good fortune to meet Professor A. Jensen, the President of IFORS (the International Federation of Operational Research Societies) and discussed with him our position within IFORS and what sort of contacts would be most advantageous. We have a most useful and exciting discussion of various possible developments.

I attended one or two Society meetings while I was in the U.K. One of them, a Conference on the Teaching of O.R. was, of course, exactly what I was interested in. I can't say that I learnt a great deal from the Conference itself but I discovered how people were thinking and perhaps more important, how employers felt about the methods of teaching Operations research that were current in the U.K.

I also attended some ordinary Society meetings; in particular one made up of a series of papers on O.R. in Finance. This particular area of application is growing rapidly in the U.K. and was of personal interest as it was applying O.R. to strategic problems in the organisations concerned.

### O.R. Teaching Developments

I was interested in the teaching of professional O.R. analysts in the U.K. This teaching takes various forms: In some places the intake is almost wholly mathematical and scientifically trained graduates who carry out a years Masters program; in other cases it is considered to be an extension of the normal form of business school. I visited both the Manchester and London Business Schools and several Universities teaching in the area. I spent most of my time at the Management Engineering Section at Imperial College, London, but visited Warwick and Lancaster Universities as well.

The typical form of the courses was a Masters degree course, taking 12 months rather than an academic year, and including project work during the summer. The academic work was often tested by examination but there were also systems of crediting particular courses without requiring examinations at the end. I was most struck by the great degree of course flexibility in most of the institutions I visited. I feel that this is something which might be desirable in this country.

The summer project work in some cases was a completely practical job taking the student, usually with a member of the Department as adviser, into a real project in organisations outside the University. Often these projects were paid for with a substantial fee by the organisation where the job was done. The University was then acting as a consultant group. This system had the advantage that the students were introduced to real problems in real organizations before they were allowed to leave the University. At other Institutions the projects were more theoretical and, although usually based upon real problems, could well be theoretical developments of the mathematics associated with O.R. models.

In many departments some considerable effort was undertaken to give mathematicians and scientists entering the courses some broad introduction to business ideas and practice. Often this was done in courses, seminars and visits which formed a large part of the time on the course - an indication of how important people felt this aspect was. In a few universities the course was part of a general business course structure and the problem of making 'pure' scientists a little 'less pure' did not arise - to some extent the problem was the reverse one of giving business studies students more mathematics.

One development that I was very interested in was the Systems Engineering course at the University of Lancaster. This course appeared from outside to be a typical Operational Research Masters program. However it had the characteristic of focusing very much more attention on the first stage in O.R. : that is discovering what is the problem, rather than the possibly less difficult but more technical stages of developing and solving the models of the situation. The head of the Department, Professor G.M. Jenkins, has some caustic comments to make about the present stage of O.R. and this goes some way to explaining why he set up a new Department and a new discipline with a new name (reference 1). Even though one might consider that Systems Engineering is a sort of "rival" to Operations Research, I approved of this development since there is a very great danger of getting the right answer to the wrong problem in present day O.R.

I visited other Departments in Universities in Canada and U.S.A. on my way back home and received similar impressions to those that I had gained in the U.K.

### Strategic Operations Research

I was particularly interested in the use of Operations Research techniques in Corporate planning. I visited various firms and University departments where work was being carried out in this area and I have returned convinced that we ought to be able to do more of this in New Zealand.

At I.C.I. (Heavy Organic Chemicals Division, Billingham) O.R. seemed to be particularly well integrated into the management and decision making system. Although the O.R. group is established as a separate entity, members of the group are brought into many of the technical and marketing decisions made by management. Linear programming is used extensively, of course, since the very nature of the activities of the Division make this model a particularly suitable one. The staff of the division have been associated with the setting up of the Systems Engineering Department in the University of Lancaster and they are particularly orientated towards the Systems Engineering viewpoint. This may explain why they have been so successful. (reference 2).

I was also lucky enough to see how Corporate planning models were used in other firms in the U.K. The ones I saw were mainly based upon either a Linear Programming model or a standard accounting-type deterministic model of the organization.

### Conclusions

In the field of Education in O.R. it would appear that more practical project work and more course flexibility should be introduced into our courses, together with some business intake if the courses are being offered to pure scientists and mathematicians. From the point of general Operations Research development some new thinking may be needed so that we can apply O.R. more effectively to more appropriate and important problems.

G.A. Vignaux

### References

- (1) Jenkins, G.M., The Systems Approach, J. Systems Engineering vol 1, No. 1 pp. 3-49 Autumn 1969.
- (2) Stephenson, G.G., A Hierarchy of models for planning in a division of I.C.I., Operational Research Quarterly, Vol. 21, No. 2, pp 221-245, June 1970.

COURSES IN O.R. AND RELATED AREAS

The Newsletter is happy to publish details of any course or seminar to be conducted in O.R. or related areas. The following course to be run by I.C.L Limited should be of interest to those members involved in 'Cash Flow' problems.

ONE DAY PROSPER WORKSHOP

ON

FINANCIAL PLANNING & EVALUATION OF RISK

I.C.L has scheduled a number of one day workshops on PROSPER, its financial planning package, which may be of interest to members of the O.R. Society, particularly those interested in applying simulation and Monte Carlo techniques to solving financial problems for management.

No previous programming or EDP experience is necessary and the workshop will be aimed particularly at managers, O.R. specialists and project planners, who are familiar with their organisation's cash flow.

PROGRAMME:

Particulars will be introduced to the basic concepts of PROSPER including a discussion of alternative methods of project evaluation. This will be followed by a description of a typical PROSPER model showing how it is built up. Syndicate groups will then be asked to investigate the effect of making various changes to the model which they will code themselves in original data format.

Current New Zealand applications of PROSPER will be described and ample opportunity will be allowed for discussion of possible applications, syndicates' computer runs and answering of questions.

A nominal charge of \$10 per person will be made to cover costs. This will include lunch as well as notes and samples of computer output.

Reservations of places at workshops should be made with: -

Mr B. Sinclair, ICL, P.O.Box 2121, Auckland.

Miss M. Webb, ICL, P.O.Box 394, Wellington.

Mr A. Rosling, ICL, P.O. Box 1990, Christchurch.

Applicants will receive further details giving the program venue and preliminary reading material.

SCHEDULE OF WORKSHOPS

AUCKLAND

Wednesday July 7th

WELLINGTON

Tuesday June 29th  
Tuesday July 20th  
Tuesday July 27th \*

CHRISTCHURCH

Tuesday July 13th

TIME: 9.00 am - 4.30 pm.

\* to be followed by a two day detailed instruction course  
(\$10 per day)

WORKSHOP ORGANISER:

Mike Jameson, a member of the O.R. Society, is running the workshops and will be pleased to supply any further information required (phone: - 51-249 ext. 49).

AUCKLAND MEETING - REPORT

Report of a meeting held on June 3, 1971, under the auspices of the Education Committee of the Society (Chairman of Education Committee, John Jordan; Auckland members, Barney Slocombe, Mervyn Rosser) to investigate the possibility of forming an Auckland Branch.

Publicity was sent to interested people in the following groups:

O.R. Society members in the area

N.Z. Institute of management

N.Z. Institution of Engineers, Industries Division

Computer users groups

University Department and Graduates.

A buffet tea was enjoyed at 6.30 p.m. and the meeting convened at 7.30 p.m. with an attendance of about sixty under the Chairmanship of Mr Barney Slocombe. The President of the Society, Professor G.A. Vignaux of Victoria University of Wellington, addressed the meeting on the role of Operations Research in New Zealand and elsewhere, including the following:

1. Definition of Operations Research is very wide, including, but not restricted to, the application of mathematical methods to optimization problems in industry, local government, corporate planning. Much present work is interdisciplinary, linking physics, engineering, biological sciences and other areas.
2. Operations Research in New Zealand has developed informally for many years; was formally recognized by formation of the Society in 1964; which joined the International Federation of Operational Research Societies (I.F.O.R.S.) in 1970.
3. Applications of Operations Research in New Zealand include:
  - i. Linear Programming (e.g. oil companies)
  - ii. Simulation (e.g. Amalgamated Brick, P.O., N.Z.E.D.)
  - iii. Inventory Control (e.g. N.Z.F.F.)
4. Development of Operations Research overseas (in particular, comments related to U.K.)
  - i. Corporate planning level (most successful in technologically based industries, as I.C.I., B.P.)
  - ii. Finance applications (portfolio analysis, movement of money L.P. models using financial data)

- iii. Search for the right problem (as in Systems Engineering at University of Lancaster) appropriate to a firm. .
5. Meanwhile, back in New Zealand, Operations Research should be considering broader issues (such as investment analysis, East Coast erosion studies already done) and move into ecological and environment studies, and perhaps most important, into the boardroom.

After questions, and chairman's thanks, brief indications of the aims of the meeting and of the organisation of the Operational Research Society were given by Mr John Jordan and Professor Vignaux. Then in response, it was moved discussed and finally resolved "That this meeting elect a committee to organize an Operations Research branch in Auckland, this committee to collaborate with the Council of the Operational Research Society of New Zealand".

The committee was then elected as follows:

Messrs B.R. Slocombe (interim convener)  
G.S. Holmes  
M.G. Dodgson  
K.C. Nutsford  
R.J. Elder  
M.S. Rosser

with power to co-opt. The chairman asked for comments and questions from the floor for guidance of committee members.

The meeting closed at about 9.30 p.m. after a request for all to join the Operational Research Society and thanks expressed by applause for the chairman's effective staffwork.

NOTICE OF MEETING

Combined Meeting with WORK STUDY SOCIETY

DATE ; 19th JULY 1971

PLACE : I.B.M. House, The Terrace, Room 2, Second Floor.

TIME : 7 - 30

TOPIC : The topic for the meeting will be SIMULATION and will be addressed by several members of the O/R and WORK STUDY SOCIETIES. Practical demonstrations of digital computer simulations are planned.

WARNING - The Downstairs door will be open from:

7 - 15 to 7 - 45

ONLY

Please be on time.