NEWSLETTER

Operational Research Society of New Zealand (Inc.)

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COUNCIL NOTES

From the meeting of 23 September 1974.

1. AGM to be held on Wednesday, 6 November.

2. Council have nominated Merv Rosser (AK) for the vacancy
    on the National Committee for Mathematics.

3. The Treasurer gave the following details on members in
    arrears:
    66 with some sort of sub irregularity
    22 1 year overdue
    11 2 years overdue (some coming in)

4. Resolution passed:
    'That members who are two years in arrears for subscription
    or one year in arrears for subscription plus abstracts be
    reported to Council for action to remove them from the roll
    of members'

5. The Canterbury Branch forwarded $27.47 profit from the conference
    to Council. It was agreed that the cheque be returned along with a
    congratulatory note for the running of a highly successful conference.

6. Wellington will be asked to accept responsibility for Conference 1975.

7. It was agreed that a representative from New Zealand should attend
    at least the business meeting of the 1975 IFORS Conference.

8. Dr. Barr said that the Student paper prize was under action
    (see elsewhere in this Newsletter)

9. Mr Foster informed Council that only six people had asked to be
    included in the 'Voluntary List of O.R. Practitioners'.

BRANCH NOTES

1. ## WELLINGTON

1.1 On Tuesday 30 July 1974 a tea meeting was held at which Dr Milne Jamieson of the Productivity Centre, Department of Trade and Industry spoke on 'The O.R. Man's Contribution to Productivity'.

After a preliminary discussion on the duties and responsibilities of the Productivity Centre, Dr Jamieson went on to describe how productivity was measured and analysed. Techniques such as inter-firm comparisons had given clear insight into how productivity could be improved. In discussing the contribution of O.R. to increased productivity Dr Jamieson delivered a mild reprimand on the failure of O.R. professionals to sell their capabilities. A lively discussion ensued, and the meeting ended on a high note with a view to bring notice of our activities to a wider audience.

1.2 Mr Don Henderson, Assistant Commissioner, State Services Corporation addressed the Wellington Branch on 29 August. His subject was 'Productivity in the Public sector' and he spoke at length on the worth of the State Services Commission in improving efficiency and economy in the public service. The two areas which drew the most response from the audience were his discussion of the de-centralisatio of Government departments, and the operation of government computing services. The meeting was well attended, and we were indeed fortunate in obtaining someone at the executive level who could speak with authority on matters of policy.

1.3 Two student papers were presented on the 25th September.

The first covered a study by Nguyen Van Tam on the NAC Reservations system in Wellington. The aim of the study was to determine the number of working clerks required to reach a given service standard of 95% of calls received, answered within 25 secs. Tam described the reservations system, the data collected and its analysis and the 2 models he used to represent the system. The first model was a steady state queuing model using constant arrival and service rates while the second model attempted to simulate the system using Erlang and negativ exponential distributions for the service and arrival rates.

The second paper covered a study of the NAC Check-in system at Wellington Airport by Chan Foo Looi. The objective of the study was to establish the number of clerks required at the check-in counter during peak hours so that a set quality of service could be met. Looi described several classical queuing models and how well the characteristics of these models compared with observations made at the Airport. He also described a method he had devised for predicting arrival patterns of passengers at the counters for a given timetable. Looi made some pertinent observations about the current state of classical queuing theory and its relevance in practice. He also showe how the data collection phase of a project can be used to suggest common-sense changes to work methods by O.R. men who leave their mathematical model building hats at home.

Both students made good use of visual aids with their presentations and gave further testimony to the quality of O.R. students coming out our Universities

DEFINITION OF O.R.

In September 1973, the British O.R. Newsletter initiated a competition inviting members to submit one proposed definition of Operational Research which he/she felt would be a suitable substitute for the present O.R. Quarterly definition. The set received was then published and all members were invited to express rank preferences from which a winner and runners-up would be declared. Here are a few definitions from the published set of 61 which may be of interest (the first one is from the O.R. Quarterly):

1. O.R. is ... the application of the methods of science to complex problems arising in the direction and management of large systems of men, machines and money in industry, business, government and defence. The distinctive approach is to develop a scientific model of the system incorporating measurements of factors such as chance and risk, with which to predict and compare the outcomes of alternative decisions, strategies or controls. The purpose is to help management determine its policy and actions scientifically.

   Objections to this definition included the emphasis on <u>complex</u> systems, the lack of reference to implementation, the implicit emphasis on authority from the top down (management rather than community problems) and perhaps the lack of reference to human values, or social responsibility.

4. O.R. is ... the Problem-solving Science ...

5. O.R. is ... problemology ...

9. O.R. is ... application of <u>mathematical</u> techniques to finding optional strategies for operational problems. (need they be mathematical?

12. O.R. is ... the application of scientific method to problems of management strategy ...

14. O.R. is ... the science of the art of getting the best out of the least.

22. O.R. is ... scientific method for choosing between alternative combinations of and uses of resources to obtain maximum benefit from use where outcome of choosing between any alternatives is uncertain ...

56. O.R. is ... the process of giving aid to decision makers <u>through</u> <u>measurement.</u> It relates to all phases of decision making from <u>problem formulation</u> to <u>implementation</u> of decision. It is responsible for certain <u>secondary</u> decisions, such as those of model <u>choice</u> and range of application. This <u>model</u> representing the <u>system</u> about which some <u>primary</u> decision is to be taken, is operated in an artificial world, the <u>boundaries</u> and <u>behaviour</u> of which are defined by <u>assumptions</u> and <u>constraints</u>, mutually agreed between analyst and decision maker. The <u>outcomes</u> are interpreted in relation to the primary decision in the real world....
.... the factors to be processed, by both analyst and decision maker, are not necessarily definable by arithmetic processes. As more systems are studied, less precise measurements, such as classification by sets and linguistic definition, become of increasing importance. Operational Research can never be just the <u>sum</u> of a number of <u>technique</u> mathematical and non-mathematical, since it is essentially a <u>collaborative, interactive</u> and <u>adaptive</u> process.

<u>Communication</u>, in the fullest possible sense implying mutual <u>confidence</u> and <u>understanding</u> between all concerned, is needed for such a process to be efficient.   Finally, operational research <u>never</u> takes the primary decision, although it may approach ever closer to a decision making role, through an increasingly complete and clearly communicated analysis of the elusive <u>total</u> system...

I happened to be a D.R.O. at the recent local body elections and while using up a few spare minutes I looked up the listed occupations of about a dozen people that work more or less full time in the O.R. field.   These included 'scientist', 'senior lecturer', 'analyst', 'public servant', 'assistant engineer', and 'teacher'.   Not once was O.R. mentioned !
Interesting that.

Ed.

NOTICES

1. ORSNZ 1974 Student Paper Prize – Call for Entries

    Council has asked that a student paper competition be instituted
    to encourage students to carry out O.R. projects and present their
    results. A prize of $50.00 will be awarded to the winning entry
    this year.

    Entries may be on any O.R. project of which the student was a major
    participant, but must be prepared wholly by the student.

    Typewritten entries for the 1974 Student Paper Prize should reach
    the Secretary of the Society, Box 904, Wellington by Friday November
    15. Each entry must have been preceded by an oral presentation to
    a local or national meeting of the Society. (This presentation need
    not have been strictly of the paper as written, and may have been a
    less formal discussion of the written paper's topic).

    Entries will be marked on both the oral and written presentation.
    Factors to be taken into account in the judging will include
    (i)   content including originality of the paper and understanding
           of the topic
    (ii)   clarity and structure of the presentation
    (iii) usefulness of the project.
    (iv)   difficulty of the student's task in the project.

    It is hoped to announce the winner early in the New Year.

    NOTE: All entrants must have been full-time students
           in the 1974 year.

                                        Hugh Barr
                                        Convenor
                                        Education Sub-committee

2. Our representative on the Member Bodies Committee of the Royal
    Society, Barney Campbell, has been elected to the Management
    Committee of the Society.

3. The North-Holland Publishing Company has announced a new series of
    publications entitled:
    'Mathematical Programming Studies'. It will be published in
    collaboration with the existing journal 'Mathematical Programming'.
    Initially 3 studies will be published each year. Each study will consist
    of 180 to 200 pages devoted to one subject. Supscription price
    US$49.60/Dfl. 129.00, postage included. Copies of brochure available
    from J.L. Scott, c/- N.A.C., P.O. Box 96, Wellington.

CLASSIFIED ADVERTISEMENT

University of New South Wales
School of Mechanical & Industrial Engineering

Lecturer/Senior Lecturer - Operations Research (Ref. 1481)

The Department of Industrial Engineering, within the School of
Mechanical and Industrial Engineering, offers undergraduate subjects
and postgraduate courses in the operations research area. The
successful candidate will contribute to the courses, offer an
appropriate specialisation, generate research problems for
postgraduate students and supervise projects and research theses.

Applicants should possess high academic qualifications in either
engineering, the physical sciences, mathematics, statistics or
economics and preferably postgraduate qualifications in operations
research. Industrial or academic experience in applying operations
research would be an advantage.

Salary: $9,002 range $12,352 per annum (lecturer);
          $12,643 range $14,724 per annum (senior lecturer).

          Commencing salary according to qualifications and experience.

For details of appointment and application form write (quoting
reference number) to Appointments Office, P.O. Box 1,
Kensington, N.S.W. 2033. Applications close December 2, 1974.

OVERSEAS CONFERENCES

1. The second <u>National Conference of the Australian O.R. Society</u>
    (ASOR) will be held in Sydney, 25-27 August, 1975. The theme of
    the conference is 'Models for Modern Management - Better Decisions
    through Operations Research'.

    'An important task of the skill of the Operations Research practitioner
    is his ability to depict real situations of today and tomorrow in
    representational form: mathematical models. Through his techniques
    he can endeavour to predict the effects of changes in the industrial,
    business or commercial environment which may be outside past or present
    experience. Astute managers realise that much of the uncertainty
    inherent in the outcome of their strategic and critical decisions can be
    reduced by prior simulation using models. This conference seeks to
    encourage papers contributed by both managers and O.R. practitioner
    especially those which consider questions of compatibility and mutual
    interdependence of the two viewpoints'.

    - extract from the brochure available from
    Branch Secretaries or Professor G.A. Vignaux, Department of Information
    Science, Victoria University, P.O. Box 196, Wellington.

2. The first European Congress on O.R. ('Euro 1') will be held in
    Brussels from January 27-29, 1975.

    'For several years many of those active in Operations Research
    in Europe have tried to establish contacts, to exchange information
    and to increase professional communication in Europe.

    In different meetings almost all European Operations Research Societies
    agreed that one of the most effective means of attaining these goals
    is to organise European conferences. Therefore, the first such congress
    will be held in Brussels in January 1975.

    There will be plenary sessions, parallel sessions and discussion
    panels.

    All European languages are allowed. For the sake of effective
    communication, however, it is suggested that papers be presented in
    English'.

    The conference is sponsored by IFORS. Brochures available from
    Professor G.A. Vignaux, Department of Information Science, Victoria
    University, P.O. Box 196, Wellington.