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NEWSLETTER

Operational Research Society of New Zealand (Inc.)

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

COUNCIL NEWS

MARCH 1982

EDITOR P.J. GARGIULO,
21 MAHER STREET,
UPPER HUTT

Membership

WELLINGTON BRANCH MEETINGS

As always, new members are welcome and participation in Branch events obviously encouraged. If you need help recruiting new members, know people who would like to join, or can suggest people/companies who might be interested, then please get in touch with:
Prof Rosser - Auckland area
Dr Hugh Barr - Corporate member in other areas.

Thursday 6th. May

Topic: Talks by several ex-students from Victoria and Canterbury will discuss last years student projects.

and either Hugh or Branch Secretaries:
John Hayes: (B.P. Wellington Tel:729729)
or Don McNickle - (Economics Department, University of Canterbury) Christchurch (Tel 792-260)
for any other membership enquiries.

Venue: Shell Theatre,
Shell House,
The Terrace
12.30p.m.

Tea/Coffee from noon, bring lunch.

At a Wellington Branch meeting last year it was suggested that we should approach the Operational Research Society in the U.K. to arrange reduced subscriptions for members of the NZ ORS. We have written to the U.K. ORS and await a reply.

SCIENCE POLICY

Professor Tomlinson is coming (details in future Newsletter).

Professor Sergeant - non-linear programming, algorithms expert -
September

Contact - John George,
Economics Dept., U. of C.

THE ROYAL SOCIETY OF MEMBER BODIES - THE SCIENTIFIC SOCIETIES OF NEW ZEALAND - ARE HOLDING THEIR ANNUAL MEETING AT THE END OF APRIL. IT'S AN OPPORTUNITY TO RAISE ISSUES OF GENERAL CONCERN TO NEW ZEALAND SCIENCE AND SCIENCE POLICY, SUCH AS FUNDING, CONDITIONS OF WORK IN THE SCIENCE SECTOR, ETC. IF ANY MEMBER HAS ANY POINTS THAT THEY WOULD LIKE TO SEE ORSNZ RAISE AT THE MEETING, PLEASE CONTACT OUR ROYAL SOCIETY REP., HUGH BARR, BY MID APRIL.

(Review of a seminar presented on
26 February 1982 at B.P. House, Wellington).

Over forty people attended the informative
and well-presented roadshow presented by
the Operational Research section of the
DSIR Applied Mathematics Division.

Hugh Barr, the section's leader described
the history of their role, starting in the
late 'fifties when a study was made of
over-bookings at TEAL

Karen Garner described for what purpose
she used the N.Z. Energy Resources
Planning Model. Not only for Linear
Programming but also Liquid Petroleum,
Methanol plants, and Refining expansions.
Liquid Protein was the concern of
Bruce Benseman's production planning
model for the N.Z. Cooperative Dairy
Co. Ltd. And with an eye to
horizontal integration, Bruce also
simulated cargo handling at a port.

Finally, Vicky Mabin described her
studies of where to put warehouses so
as to maximize customer ~~customer~~
satisfaction while minimizing costs.
Which reminds me of "Operational Res-
earchers do it best".

Reviewed by
Peter Mellalieu

Should anyone be interested in making
use of the services of the Operational
Research Section contact should be
made with Hugh Barr,
Applied Mathematics Division,
Box 1335, Wellington
Phone:727855

Dept. of Industrial Management and
Engineering - Massey University.
1982 Seminar for Industry
Topic - The successful development of
new Products

24-26 May 1982

Full details: Beth Ryba Seminar Secretary
Massey University
Palmerston North

7th. World Congress on Project Management

COPENHAGEN : Sept. 12-17th. 1982

11th. IFIP Conference on System
Modelling and Optimization.

COPENHAGEN : July 25-29th 1983

Details: Secretary, ORSNZ, P.O. Box 904
WELLINGTON

- Frost and Sullivan Seminars
Frost & Sullivan return to Australia
in 1982 with a full programme of
seminars on computer related topics.

The first two "Office Automation and
Integrated Information Processing
Support Systems" and "Understanding and
Using Computer Graphics" to be held in
Melbourne and Sydney in June/July 1982.

Full details from Dr V Mabin
Secretary, ORSNZ, P.O. Box 904,
WELLINGTON

THE MANAGEMENT OF LARGE ENGINEERING PROJECTS

This was the title of a half-day discussion seminar given by the OR Conference visitor, Professor John Stringer, on the Monday after our conferenece.

John drew on his success as an OR analyst investigating ways of decreasing the maintenance downtime of large thermal power stations, to show that with planning, experience, and expertise, it is possible to more effectively manage large systems.

Australia and New Zealand were both putting their shirts on the Large Projects horse, he said, but it behoves us to think carefully about the risks we are running. A recent book "Great Planning Disasters" by Peter Hall (London, Weidenfeld & Nicholson, 1980) highlights reasons for such strategic disasters as the Concorde aircraft, and shows that careful planning is not always enough.

John proposed that the management of really large projects of the \$300 million range up, was a difficult task and that the stress and turbulence of such projects tended to increase as the project progresses, making it more difficult to meet its TCQ (time, cost, quality) targets. Many of the forces acting, such as re-design, delay to the critical path, decreasing morale, poor communication, or uncertainty, tended to have a positive feedback effect on completion. That is, when they occurred, it increased the likelihood of other delaying effects happening.

Research has shown that on most large projects the completion time is constantly larger than the average length of stay of a person in a job. This has adverse consequences on individual understanding of

the project and on the learning curve associated with improving performance. The Ministry of Works' successful hydro construction project, stretching over 30 years and involving a single union and a stable workforce (average stay: six years), was cited as an example of the way in which some of the problems of bigness can be successfully overcome.

Morale was noted as an important factor, engendering an ability to cope and catch up on targets. Similarly, trust is important, as is the need for all parties concerned to obtain some satisfaction, financial or otherwise, from the project. •

I was left with the impression of the two extremes of management: one fully planned, with major coercive pressures to meet targets, and the other for a less planned, more uncertain environment where alertness to see problems, and capability to adapt to solve them, was most important. Perhaps we should see this second extreme as more reflecting New Zealand's position. What do we do, for instance, when the only large crane in the country that we are using, breaks down?

In conversation with a representative of a well-known New Zealand company involved in construction, he agreed New Zealanders worked effectively enough with our management methods and technology to utilise our potential. The challenge to successfully complete large projects could well be with management rather than with labour.

Hugh Barr,
Applied Mathematics Division,
D.S.I.R.

O.R. IN THE ANTIPODES

by Bruce Benseman, AMD, DSIR

Last winter, Julie and I flew to Europe for a holiday. The weather and the frontier police treated us kindly, and we had a great time. I am grateful for two grants from the DSIR and ORSNZ. These enabled me to spend two weeks in the U.K. visiting their main O.R. groups, and one week at the IFORS triennial conference in Hamburg. It was an exhausting but stimulating three weeks.

British O.R. groups are bigger and better sponsored than any N.Z. group, and they seem to put more effort into making their O.R. tools easy to understand and to use. They make much more use of interactive machines and computer graphics. Opinions vary with needs of course. One group will use extremely portable FORTRAN because their systems must run in 10 different machines. Another will prefer APL because its operators, modularity and interactiveness make it many times faster to develop code. One group will use giant IBMs for allnight number crunching. Another group will use micros because they are easy to debug and to carry.

The U.K. emphasis seemed to be on simulation rather than optimisation, and on interactive rather than batch computing. Three of the O.R. groups I have met have also been able to enhance their modelling and live colour graphics. This exposes the logic to the client, and improves development and implementation. N.Z. readers may be relieved to hear their counterparts down under have the same problems with enthusiastic computer salesmen and uncooperative new machines.

The IFORS conference was a large scale affair that began with flowers, classical music, and many speeches. It comprised about 300 papers and somewhat more delegates. The papers were divided into 16 streams which ran most of the week. I concentrated on the Production Management and Simulation and Modelling streams which were mainly case studies by practitioners. Like our conferences, there were also many university people and papers there as well.

The standard of the papers varied more. The worst speakers used transparencies xeroxed from their papers. The best presentations used photographic slides and professionally drafted flow diagrams. Unfortunately many of the better publications papers will not be printed in the Proceedings, which are devoted to the theoretical advances.

Several speakers warned us that our profession would be swallowed by others unless we communicate better. This applies not only inside between the academic and the practitioner, but also outside with associated professions like economics, computer science, and psychology. Successful O.R. means knowing what is practical, being selective in projects, and having high managerial support and wide client contact. Successful groups are well integrated, good communicators, and committed to implementation.