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# New Zealand Statistician

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Volume 6, No. 2, June 1971

## Programme for the Twenty-Second Annual Conference of THE NEW ZEALAND STATISTICAL ASSOCIATION

in conjunction with

### THE OPERATIONAL RESEARCH SOCIETY OF NEW ZEALAND

VENUE: Shell Theatrette, The Terrace, Wellington

DATES: 29th June – 1st July 1971 (Tues–Thurs)

#### TUESDAY, 29 June 1971

- 9.30 a.m. Mr.H. Offenberger: "A Follow-up Survey of New Zealand Technical Certificate Holders"  
11.00 a.m. Mr.I.D. Livingstone:" Towards a More Uniformly Efficient Accrediting Procedure for University Entrance"  
2.00 p.m. Mr.W.D. Rose: "Short Term Economic Forecasting"  
3.30 p.m. Mr.G.E. Jackson: "Input–Output Analysis of the New Zealand Economy"

#### WEDNESDAY, 30 June 1971

- 9.00 a.m. Mr.A.A. Teague: "The 1971 Census of Population"  
10.30 a.m. Mrs.J.P. Roberts: "Problems and Possibilities in the Estimation and Interpretation of Crime Rates"  
11.30 a.m. Annual General Meeting  
2.00 p.m. Mr.I.D. Dick: "Accidents in Mines"  
3.30 p.m. Prof. G.H. Jowett: "The Computing Cuckoo in the Statistical Nest"  
5.00 p.m. Cocktail Party

#### THURSDAY, 1 July 1971

- 9.30 a.m.  
11.00 a.m. **Operational research papers – details not yet available**  
2.00 p.m.  
3.30 p.m.

*See pages 6 to 8 for Abstracts of the Conference papers*

## ANNUAL GENERAL MEETING

Notice is hereby given that the 1971 Annual General Meeting of the New Zealand Statistical Association (Inc.) will be held in the Shell Theatrette, The Terrace, Wellington at 11.30 a.m. on 30 June 1971.

- Agenda: 1. Apologies  
2. Confirmation of minutes of 1970 AGM.  
3. Matters arising.  
4. Presidential report  
5. Financial report.  
6. Election of officers (nominations accepted from the floor)  
7. General.

### 1970-71 COMMITTEE

President	S. Kuzmicich
Secretary – Treasurer	H.S. Roberts
Committee	B.I. Hayman (resigned March 1971) A. Milkop H. Offenberger J. Revfiem H. Thompson D. Walker (corporate representative)

### ACKNOWLEDGEMENT

Once again the Committee has to acknowledge the support given to the Association by Shell Oil (NZ) Ltd, by allowing free use of the Theatrette, Shell House, for the Annual Conference.

### PRESIDENT'S REPORT

#### Annual Conference

Activity during the year was confined to the three-day Annual Conference held in Wellington in association with the Operational Research Society of New Zealand. The usual varied range of papers was presented over the three days, 30 June to 2 July 1970, illustrating mainly applications of statistical techniques in decision-making processes and scientific and technological research in New Zealand.

#### Twelfth New Zealand Science Congress

The Royal Society of New Zealand has invited the Association to participate in the Congress to be held in Palmerston North early in 1972, the Congress theme being "The Cost of Growth". Contact has been made with the organising group and I expect that some Association members will be contributing papers.

### **Commemorative Donation by Professor J.T. Campbell**

To mark the completion of 21 years of existence of the Association, our first president, Professor J.T. Campbell made a donation of fifty dollars for the purpose of improving the Association's publication. During the year the committee gave consideration to the precise use of this generous donation, but no definite decision was taken. The sum will remain a separate item in our financial statement until the appropriate use of the money is firmly decided. This could well be discussed at the coming annual general meeting.

### **Membership**

At 31 March 1971 the ordinary membership was 129 (13 unfinancial) and the corporate membership was 9 (8 unfinancial). One year earlier the ordinary membership was 126 (12 unfinancial), so the position has not changed significantly.

### **Finance**

As is seen in the Treasurer's report the Association is in a sound financial position. With the more usual number of issues of "N.Z. Statistician", however, we can't look forward this year to a similar increase in our funds, assuming that subscription rates remain basically unchanged. In an attempt to boost student interest in the Annual Conference the Committee proposes that the subscription for full-time student members be reduced by fifty cents. A motion to this effect will be moved at the AGM.

### **Statistical Education**

In accordance with representations from the Department of Statistics the N.Z. Technicians' Certification Authority has been considering widened course prescriptions for the Certificate of Statistics to provide more explicitly for technician-level training in the subject-matter areas of economic and social statistics. The proposed extension has been favourably received by the Authority and the formalities of making the change are well advanced. While the Association's Sub-committee on Statistical Education has not been engaged officially in these formalities individual members have been in other capacities.

### **Appreciation**

Committee members have given full support to me during the year, for which I express my thanks. Mr Roberts, the Secretary-Treasurer, warrants special mention for his excellent contribution to the running of the Association. Professor Hayman unfortunately had to submit his resignation in March 1971 because of altered work commitments which made it inconvenient to travel to Wellington for committee meetings.

## FINANCIAL REPORT AND STATEMENT FOR THE YEAR ENDED 31 MARCH 1971

The balance of funds in hand increased again this year, from \$333 to \$512. This was partly due to only one issue of the "N.Z. Statistician", the Conference Issue, being published. Expenditure followed the usual pattern, the Conference costing \$46.50. The 8oz. drinking glasses owned by the Association have been sold for \$8.00. The build-up in funds was also assisted by a donation from Prof. J.T. Campbell of \$50. In accordance with the donor's wishes this sum has been earmarked for the improvement of Association publications.

It is recommended that the subscription rate for members remain at \$1.00, with a reduction to 50 cents for students, and \$8.00 for corporate members. It is anticipated that more copies of the "N.Z. Statistician" will be published this year, one having already being distributed. This will result in a decrease in our funds. It is considered prudent to maintain an adequate general reserve to finance an increased level of Association activity when membership support makes this possible.

**Receipts and Payments for the year ending 31 March 1971**

<b>RECEIPTS:</b>		<b>PAYMENTS:</b>	
BALANCE AT 1.4.70	\$	CONFERENCE	\$
In Hand	2.58	N.Z. Statistician Vol.5(1)	63.50
In Bank	330.47	Donation (Shell Oil)	10.00
	333.05		73.50
SUBSCRIPTIONS		COCKTAIL PARTY	
Ordinary	117.00	Liquor	29.00
Corporate	72.00	Food	9.50
	189.00	5 Tickets (Speakers)	5.00
DONATION	50.00		43.50
CONFERENCE		PRINTING	
OR Society	24.00	Name Tags	11.50
Tea Money	3.00	Subscription Cards	10.80
	27.00		22.30
COCKTAIL PARTY		STAMPS and Stationery	2.50
Sale of Tickets	37.00		<b>141.80</b>
SALE OF GLASSES	8.00	BALANCE at 1.4.71	
INTEREST FROM BANK	10.34	In Hand	23.58
		In Bank	489.01
			512.59
	<u>654.39</u>		<u>654.39</u>

**Income and Expenditure Account for the Year ending 31 March 1971**

<b>EXPENDITURE:</b>		<b>INCOME:</b>	
NZ. Statistician	-	Subscriptions & Donations	239.00
Cocktail Party	6.50	Sold Glasses	8.00
Conference Expenditure	46.50	Interest from Bank	10.34
General	24.80		
Excess of Income over Expenditure	179.54		
	<u>257.34</u>		<u>257.34</u>

H.S. Roberts  
TREASURER

**AUDIT REPORT:** I have audited the books and accounts of the New Zealand Statistical Association (Inc) for the year ended 31st March, 1971 and, in my opinion, and in accordance with the information and explanations given to me, the above statements of Receipts and Payments and Income and Expenditure show a true and fair view of the Association's financial position.

O.J. Ball A.C.A.N.A.  
Hon. Auditor

## ABSTRACTS OF CONFERENCE PAPERS

### **A FOLLOW-UP SURVEY OF NEW ZEALAND TECHNICAL CERTIFICATE HOLDERS** by H. OFFENBERGER, Wellington Polytechnic.

In the period 1958-1969 more than 2,000 New Zealand technical certificates have been awarded. Little was generally known about the men and women who had earned this qualification by the arduous route of part-time study. This survey was an attempt to find quantitative answers to questions concerned with this new group of sub-professionals. Problems ranged over a wide field such as manpower flow, employment patterns, usage and careers, social and socio-economic factors, and educational problems.

The method involved the use of a postal questionnaire, interviews with certificate holders and their employers in many parts of New Zealand.

### **TOWARDS A MORE UNIFORMLY EFFICIENT ACCREDITING PROCEDURE FOR UNIVERSITY ENTRANCE** by I.D. LIVINGSTONE, N.Z. Council for Educational Research.

The paper outlines a method to assist secondary school principals and teachers arrive at a more just and defensible accrediting procedure. It makes use of the distribution of School Certificate marks obtained by the University Entrance candidates in a school as an 'anchor measure' to establish an accurate 'quota' for that school of those who might be expected to gain the qualification. The particular candidates to be recommended for accrediting can then be determined by the school from a ranking list prepared on the basis of a normalised 25 point scale in every subject.

The method is sufficiently uniform to operate in the absence of any external examination at the University Entrance level, and flexible enough to provide grades for single subject passes both for University Entrance and Sixth Form Certificate, with standards of achievement articulated between subjects within a school, and also between schools on a national basis.

### **SHORT-TERM ECONOMIC FORECASTING** by W.D. ROSE, N.Z. Institute of Economic Research

In Quarterly Predictions the New Zealand Institute of Economic Research attempts to provide business and government with a relevant and accurate picture of economic development of the year ahead. The paper will consider the relevance of the adopted forecasting framework, will describe the methods followed in preparing the forecasts, and will compare past forecasts with the actual outcome of events. This will be followed by a description of current efforts to improve forecasting methods.

**INPUT-OUTPUT ANALYSIS OF THE NEW ZEALAND ECONOMY** by G.E. JACKSON, Department of Statistics.

It is difficult for student and practitioner alike to distinguish the applicable from the inapplicable and the lasting from the passing in the flood of literature which issues on economic theory, theoretical systems and models. To what category does input-output analysis belong? The paper describes, in plain language, the basis of the analytical system and the statistical tables which purport to fit the requirements of the theoretical assumptions of the system.

New Zealand made a relatively early start in its attempts to assemble the relevant statistics into useable tables. These were produced without benefit of electronic data processing and were highly aggregated accounts, somewhat limited in application. Access to computer facilities has allowed much more disaggregated forms to be handled, but consequently the demand for more adequate statistical data has increased enormously. As a result New Zealand has shared the experience of most other Western countries in having to accept a delay of several years between the accounting period to which the raw data of production transactions belong and the publication of results of the analysis. How does such a delay affect the usefulness of the published tables? A summary of overseas work in the field is included, leaving the question posed as to whether the problems to be solved are such as to impede much further development of this type of analysis in New Zealand.

**1971 CENSUS OF POPULATION** by A.A. TEAGUE, Department of Statistics.

A Census in New Zealand is taken only in each fifth year; it therefore reflects changes in economic and social life and technological developments which have occurred during the intervening period. The 1971 Census of Population is no exception; it presents similarities to and differences from its predecessors. The address will cover briefly the objectives and nature of the New Zealand Census, the most comprehensive statistical survey of this country's people. However, the major preoccupation will be a review of those divergences which 1971 manifests from the previous census, with some incidental references to developments which have taken place over the speaker's long association with Census taking. Differences reviewed relate to content and international comparisons, organisation, publicity, distribution and collection difficulties of various kinds and in processing of output.

**PROBLEMS AND POSSIBILITIES IN THE ESTIMATION AND INTERPRETATION OF CRIME RATES** by Mrs. J.P. ROBERTS, Department of Justice.

Statements are often made about increases or decreases in crime rates on the basis of published statistics. The question of what these statistics measure will be discussed, together with some of the problems involved in expressing crime statistics in terms of rates.



The "delinquent generations" hypothesis is an example of a thorough going attempt at making meaningful statements about changes in crime rates and their relationship to social events. Although the initial techniques used to examine this hypothesis have since been shown to be inadequate for the complexity of the problem, the interpretation of the meaning of changes in crime rates remains a challenge to statisticians and criminologists.

**ACCIDENTS IN MINES** by I.D. DICK, Mines Department.

Applications of statistical methods to measure the progress of an accident prevention campaign. The development of control charts both to see that the overall accident record of the mine is under control and also to keep a statistical control of the accident record of individual mine workers. Passing comment will be made on what the speaker believes to be the inadequacy of certain theoretical work dealing with accident processes.

**THE COMPUTING CUCKOO IN THE STATISTICAL NEST** by PROFESSOR  
G.H. JOWETT, University of Otago

Since computers form the most important present-day working-tools of statistical practitioners, they must obviously be given an appreciation of their scope and some instruction in the technique of how to use them. This suggests that the use of computers should find a place in statistics courses at all levels, from the humble statistical methods course to the higher powered final-year course in mathematical statistics. Unfortunately there is not much time. Too great an emphasis on computing can distract the student from the statistical issues, particularly since in its early stages computing gives a greater immediate sense of achievement than statistics and is easier to grasp. Also they can get the idea that statistics requires a computer.

In the statistical methods courses at Otago University an appreciation is given by discussing a simple statistical programme, allowing students to use a short deck using a library stored programme, analysing one-observation-per-student data which they have punched themselves (e.g. porta-punch cards), keeping class records by computer, and conducting tests and terms examinations by computer, in all cases showing them, broadly, how this is done.

In the mathematical statistics courses, the mathematical processes are associated with computer sub-routines (e.g. for matrix manipulations), and develop simultaneously a feeling of tangibility in the former and confidence in using the latter. Just how to give enough about computing without letting it get out of hand is a difficult problem, and views and ideas could well be ventilated in discussion.

**ABSTRACTS FOR OPERATIONAL RESEARCH PAPERS WERE NOT AVAILABLE AT THE TIME OF PRINTING**