

EDITORIAL

Much has happened on the New Zealand statistics scene since the last issue of this newsletter. Early in May we had the visit of Dr W. Edwards Deming, the publication of the "Science and Technology Plan 1984, The First Steps" by the NRAC, the "Time Series and Multivariate Analysis Day" in Wellington, and the "Experimental Design Day" in Auckland. More recently we have "suffered" the association's 35th Annual General meeting and enjoyed the associated annual conference, Statistical Computing Display and satellite Medical Statistics seminars and Applied Mathematics Division Statistics mini-seminar.

The Deming visit may well have a welcome impact on employment opportunities for statisticians in NZ. Apparently the top management who attended his course were urged to hire statisticians and elevate the status of statistical methods in their manufacturing processes and service organisations. We hope to carry an article on the Deming visit and its implications for our profession in a future issue of the newsletter (when the editor has located somebody who could afford to attend the Deming seminar in Auckland – a potential reporter has since left the country!). In the meantime we will have to make do with the report published in the May 21st issue of the **National Business Review**.

The Science and Technology Plan, after a cursory first reading, appears to contain no specific references to Mathematics in general or Statistics in particular. Perhaps we should be worried. The plan does however contain the phrases "quality assurance", "transport demand forecasting", "calibration", "modellers and computer scientists" and does call for "application of mathematical techniques" in the manufacturing and processing industries. So it would appear that the need for some quantitative expertise is envisaged by the NRAC sages – they just need some consciousness-raising vis-a-vis STATISTICS. The plan does contain lots of vague words such as "technology transfer", "intermodel coordination", "holistic view", "Tu tangata", "information technology", "strategic objective", "technological learning curve" and "mission-oriented research" so that the omission of "statistical methods", "experimental design" and "data analysis" may well be a blessing. We hope that a future issue of this newsletter will contain a commentary on the 1984 plan and possible stances our association should adopt in future planning exercises.

Readers are reminded that contributions to the newsletter, in the form of news items, notices, articles, reviews and letters-to-the-editor are always welcome. Send your contribution to John Reynolds, Newsletter Editor, AMD/DSIR, P.O. Box 1335, Wellington.

THE KIND OF STATISTICS IN USE

by L.T. Tan and R.J. Brook

In 1983, a pilot study was carried out to shed light on the kind of statistics in use in New Zealand. The study was directed at people who were likely to use statistics

as part of their job, rather than 'professional' statisticians who teach, do research or consult in statistics. This study was limited in size as it was conducted by Ms Tan as a one paper honours project with some financial assistance from the Massey University Social Sciences and Humanities Research Fund. For this reason, and for ease of administration, job descriptions were selected which were most likely to involve people who use statistics.

Questionnaires were sent to 287 students who graduated from Massey University in 1981 and 1982, and the selection of these students was made on the basis of the occupations they entered on graduation. After a reminder letter was sent out, the total number of usable completed questionnaires returned was 181.

The sample was not a random one and the results, therefore, may not be widely generalisable as they may be biased in a number of ways. Most notably, the social sciences (despite the funding!) were under-represented due to the occupations selected. Areas such as economics may also be under-represented due to the fact that the sample only included Massey students. Nevertheless, the results are of interest as they indicate the extent and type of statistical methods used by this group of young graduates.

The main findings are:

1. 76% of the respondents indicated that they use statistics in their job. Of these, the life scientists and related technicians form the largest group (see Table 1). Most of the statistics users in this survey, however, considered statistics as only a small part of their job as Table 2 indicates.
2. The most widely used applications are shown in Table 3 to be descriptive statistics and graphical displays, followed by probability, regression and correlation, and sample surveys.
3. Overall, the respondents expressed interest in further training in most of the traditional statistical methods, as shown in Table 4. From the comments received, however, it is clear that most of them wanted more exposure to practical applications rather than theory. The category "others" included some who were keen to learn about all areas of statistics, but, alas, they were far outnumbered by those who were apathetic towards any further statistics education.
4. About three fifths of the users of statistics currently have access to computers to help solve their statistical problems. Nearly half of the users indicated that they are keen for further training in the use of statistical packages or basic computing.

Discussion

This study deliberately concentrated on graduates who were in the early years of their careers because one of the objectives was to find out how relevant and effective their university courses had been in preparing them for the work situation. It could be argued that their knowledge of statistics would be limited so that their responses recorded in Tables 3 and 4 may reflect their memory for "buzz-words" rather than substantive knowledge of statistics.

Extending this study would involve defining more carefully the categories of users of statistics as well as locating

them for although there are some high concentrations of statisticians in a few government, or semi-government departments, their distribution throughout the workforce is likely to be diffuse and, consequently, it may be difficult and expensive to contact them.

This study concentrated on the statistics in use and the statistical background of the respondents. It did not address the question of what statistics should be in use, particularly in the light of the ubiquitous microcomputer.

Table 1 THE NUMBER AND PERCENTAGE WHO USE STATISTICS

OCCUPATION	NO. (% OF TOTAL) WHO use statistics	WHO do not use stats	ROW TOTAL
Physical scientists and related technicians	4 (2.2)	2 (1.1)	6 (3.3)
Architects, engineers and related technicians	11 (6.1)	3 (1.7)	4 (7.8)
Life scientists and technicians	67 (37.0)	8 (4.4)	75 (41.4)
Statisticians, mathematicians and system analysts	7 (3.9)	19 (10.5)	26 (14.4)
Economists and social research workers	8 (4.4)	2 (1.1)	10 (5.5)
Industrial and general managers	11 (6.1)	0 (0)	11 (6.1)
Professional and technical workers	22 (1.1)	3 (1.7)	25 (13.8)
Other professions	8 (4.4)	6 (3.3)	14 (7.7)
COLUMN TOTAL	138 (76.2)	43 (23.8)	181 (100)

Table 2 THE PERCENTAGE OF THE JOB WHICH INVOLVES STATISTICS

% OF JOB INVOLVES THE	ABSOLUTE FREQUENCY	% OF RESPONDENTS
0%- 20%	73	52.9
21%- 40%	43	31.2
41%- 60%	11	8.0
61%- 80%	5	3.6
81%-100%	6	4.3
Total	138	

Table 3 THE AREAS OF STATISTICS EMPLOYED BY THOSE WHO USE STATISTICS

Only those who use statistics in their job answered this question.
Respondents could tick more than one area.

AREAS OF STATISTICS USED	NO. OF RESPONDENTS	% OF TOTAL
Descriptive statistics	123	89.1
Graphical displays	113	81.9
Contingency tables	27	19.6
Probability	78	56.5
Quality control	33	23.9
Regression and correlation	72	52.2
Experimental designs	38	27.5
Multivariate analysis	19	13.8
Nonparametric methods	14	10.1
Sample survey	53	38.4
Time series	12	8.7
Others	3	2.2
Total number of statistics users	138	

Table 4 AREAS WHICH USERS OF STATISTICS WANTED TO KNOW MORE ABOUT

This table refers only to the 138 users of statistics, and they could list more than one category.

AREA OF STATISTICS	ABSOLUTE FREQUENCY	% OF RESPONDENTS
Experimental designs	24	17.6
Sampling methods, surveys	15	11.0
Multivariate analysis	13	9.6
Regression & correlation	13	9.6
Quality control	10	7.4
Graphical displays	8	5.9
Time series	6	4.4
Nonparametric methods	5	3.7
Others	37	27.2
No response	62	45.6

CALLING DR VON BORTKIEWICZ

“Road toll drops.

Ministry of Transport efforts to combat the road toll seems (sic) to be working, according to the Hawke's Bay St John Ambulance Service.

In the four months from December 1983 to March 1984 there were 296 accidents, compared with 305 in the same period the previous year.

This was the period when the MOT's checkpoints and blitzes were in force.”

The Daily Telegraph, April 28, 1984, p.1.

PEARCE ARROW

“Again the theoreticians have missed the essential point. Contrasts of interest exist apart from the experiment actually designed to elucidate them. They justify the design, not the other way around. That relates to one of the oddities of statistical nomenclature, namely the use of the word ‘estimable’ to describe a contrast that a particular experiment can estimate. The writer has long marvelled that there are people — and they are clearly conversant with the English language — who imply that a contrast should be esteemed because they can estimate it. However, an awful suspicion arises. Perhaps they do think that. Certainly a lot of statistical mathematicians proceed as if they did.”

Pearce, S.C. (1983) *The Monstrous Regiment of Mathematicians. The Statistician* 32, 375-378.

A “PURPOSIVE” SAMPLE OF CLIPPINGS FROM THE DEPO PROVERA FILE

“Birth control study unbiased.

A controversial study to examine the benefits and risks from long-term use of the pill, IUD, and depo provera should continue, the Medical Research Council says.

The council's standing committee on therapeutic trials said the study, involving 7500 women, had been the victim of misconceived criticism and emotional and unobjective public discussion.

The committee began reviewing the study's protocol last year after public concern that it was paid for by the Upjohn Company which manufactures depo provera.”

The Evening Post, May 23, 1984, p.11.

“SENTENCED. Roger Gauntlett, 41, an heir to the Upjohn pharmaceutical fortune, who had pleaded no contest to a charge of sexually assaulting his stepdaughter, 14; to a year in jail and five years of “chemical castration” with Depo-Provera, which decreases the male sex drive and is manufactured by Upjohn; in Kalamazoo, Mich. With the drug, said Circuit Court Judge Robert Borsos, ‘it is now possible to castrate a man and at a future time reverse the effects.’ Both sides plan to appeal.”

Milestones, *Time*, February 13, 1984, p.61.

TWO RECENT INTERNATIONAL CONFERENCES

by John H. Maindonald

Last year (1983) I was funded by DSIR to attend the American Statistical Association conference in Toronto in August, and the International Statistical Institute conference in Madrid in September. Alec Neill reported on the ASA conference in the April issue of this newsletter. This was short and hectic 4-day conference. The ISI conference extended from the Monday of one week to the Friday of the next, and was leisurely. There were other striking contrasts also between the two conferences.

ASA

At the ASA conference I took a particular interest in the sessions on statistical computing. There were interesting sessions on ‘Software for Microcomputers’, on ‘Impact of New Technology on Statistical Computing’, and on ‘Monte Carlo Methods’. In addition I attended some first rate papers on statistical methodology. Several sessions demonstrated graphical techniques, for multivariate as well as univariate data.

ISI

The ISI conference had one first rate session on ‘the use of statistical techniques to improve food production’. Much of it was devoted to practical aspects of experimental design. There was a lively session on developments in microcomputer technology and an interesting paper on exploratory data analysis. Professor Finney presented the Fisher lecture — on bioassay. I cannot comment on papers whose direct relevance was to government or economic statistics — not really my

area of interest. Few of the other papers struck me as having much practical relevance to the analysis of data. The statistical computing sessions gave too much time to detailed and largely uncritical descriptions of survey packages, with insufficient attempt to place them in the context of other software designed for similar purposes. Participants at the ISI conference provided an impressive line-up of statistical expertise. There was plenty of time for discussion outside of the formal sessions and this was, for me, much the most valuable aspect of the ISI conference. The ISI has an unwieldy bureaucracy, designed to accommodate its various interest groups. Those who are interested in statistical analysis, or in computing aspects of statistical analysis, appear not to have been well represented when sessions were planned.

Such interests fall between the often esoteric mathematics which finds a place in the Bernoulli Society, and the emphasis on hardware and on data processing in the International Association for Statistical Computing. None of the special interest groups in the ISI caters, directly, for the area of interest represented by the journals *Biometrics*, *Technometrics* and *Applied Statistics*. I think it a serious disability. However, the programme for the invited papers meetings at the 1985 session of the ISI in Amsterdam does look much more interesting than Madrid.

Micros

At both meetings (ASA and ISI) microcomputers were all the rage. Two speakers at the ASA conference enthusiastically sported TRS80 Model 100 microcomputers. There were plans for teaching laboratories full of IBM Personal Computers, perhaps running such packages as MINITAB. Large research establishments seemed more interested in machines

(such as the CALLEN, FORTUNE, HEWLETT-PACKARD 9010, SAGE and WICAT) which use the 16-bit Motorola 68000 processor and are well capable of running any of the standard statistical packages. In most cases these machines run the UNIX operating system.

Now that the Apple's Macintosh has appeared, it will be interesting to see where it fits in. This machine uses the same 68000 processor as in the machines just mentioned, but has a radically different and innovative design. It has its own operating system, quite different from UNIX. It seems almost certain that it will eventually be possible to run standard statistical packages on an enhanced Macintosh (with additional memory and hard disk). The Macintosh suggests exciting possibilities for a radically new approach to interactive statistical computing, where direct manipulation of objects shown on the screen will often be a better alternative to a cumbersome command language. The user should be able to get further information about an outlier by pointing to it with a mouse, as is possible in some implementations of the 'S' statistical package. One of the meetings at the 1985 session of the ISI in Amsterdam will be devoted to "Non-programming Interfaces to Statistical Systems".

The Macintosh has developed directly from the very much more expensive Lisa. To start work on the Lisa one uses the mouse to select an object, and then chooses a menu item that works on that object. The object (e.g. a disk, or the icon for the MacPaint program) then opens up, revealing a window containing icons relevant to that object. Users quickly get the idea; very little written documentation is necessary.

Statistical Graphics

On the Sunday prior to the ASA conference I attended a seminar on statistical graphics, run by two of the authors of the book 'Graphical Methods for Data Analysis'; see the reference below. The session began with a couple of preliminary points, relevant to any use of scatterplots:

(1) Scatterplots must accurately show the density of data points. When points coincide it is appropriate to jitter points after the first — they are moved slightly to one side so that the local density of ink is suitably increased. (Other techniques are available which perform a similar function.)

(2) Quite drastic smoothing may be needed to pick out the underlying trend. Use of the "fowess" method (described in 'Graphical Methods ...') was suggested.

The speakers then demonstrated a variety of devices for laying out a series of scatterplots to reveal a structure which is too complex for a straightforward two-dimensional representation. Thus when there are several variables each of the possible two-way scatterplots may be laid out in the form of a correlation matrix, to give a "draftsman's display". As a second example of such devices suppose that x and y are each categorised. One can plot each category against each other in a two-way layout, with the marginal plots (obtained by superimposing all plots along a row or a column) shown in the margin. From this "multiwindow" display one can check whether the form of the relationship changes with x and/or y . The possibilities are endless, and the book by Chambers and his co-workers pursues them in detail. For routine application of such techniques they need to be incorporated into good graphics software — the Bell Laboratories 'S' statistical and graphics package perhaps represents the state of the art. Unfortunately DSIR does not have 'S' or anything equivalent. That seems to me sufficient excuse for not giving examples of any of these plots here.

The seminar came to an end with a report on investigations into graphical perception, along the lines of the three papers, referenced below, with Cleveland as first author. Among the graphical displays which came in for criticism were pie-charts, divided bar charts, and any charts which

rely on the use of coloured or shaded areas to convey quantitative information. Estimates of relative magnitude made by comparing areas are likely to be strongly biased, with the bias depending on the individual.

It may be that statistical graphics remains as much an art form as a science. As an aside, anyone who has to prepare graphs should read and savour Tufte's delightful book.

References

- Chambers, J.M., W.S. Cleveland, B. Kleiner and P.A. Tukey (1983) *Graphical Methods for Data Analysis*. Wadsworth.
- Cleveland, W.S., C.S. Harris and R. McGill (1983) Experiments on quantitative judgements of graphs and maps. *Bell System Technical Journal* 62(6): 1659-1674.
- Cleveland, W.S. and R. McGill (1983) A theory of graphs based on human perception. *Bell Laboratories Memorandum*.
- Cleveland, W.S. and R. McGill (1983) A colour-caused optical illusion on a statistical graph. *American Statistician* 37(2): 101-105.
- Tufte, E.R. (1983) *The Visual Display of Quantitative Information*. Graphics Press, Box 430, Cheshire, Connecticut 06410, U.S.A.

AUCKLAND EXPERIMENTAL DESIGN DAY by Chris M. Triggs

An Experimental Design Day was held on Friday 11th May at the DSIR, Mt Albert Research Centre, Auckland. Thirty-two people attended for the whole day but up to 15 non-statisticians from the DSIR joined for particular sessions. Although originally planned as a regional event, judging by the attendance the Auckland region starts at Palmerston North and extends northwards.

The keynote speaker was Professor John Aitchison from the University of Hong Kong who at the end of his New Zealand tour gave a wide ranging talk on compositional data. He described the sources of such data where observations consist of a set of two or more proportions inherently constrained to sum to 1 and discussed methods of analysis of such data analogous to regression and principal components for continuous variables.

Elizabeth Stevenson and Chris Triggs, Applied Mathematics Division, Lincoln and Mt Albert, talked about Nearest Neighbour (NN) Designs. In these designs for field trials the spatial arrangement of the experimental units is explicitly considered in the allocation of treatments. The designs are defined in terms of the number of times a pair of treatments occur adjacent to one another. Some trials on barley were laid out in 1983 by Crop Research Division, DSIR using NN designs and Elizabeth discussed results from these. Chris Triggs talked about the performance of Wilkerson's estimation techniques on data generated from processes with known spatial correlations. Discussion from the floor ranged widely and vigorously over the legitimacy of, and alternatives to, NN designs and the proper role of randomisation.

During the lunch break there was a tour of the Research Centre and grounds. Areas of particular interest were the shade house where new varieties of plants of horticultural interest are raised, the food processing hall, and the insect rearing section where large numbers of many different kinds of insects are raised for entomologists to use in their experiments.

The second overseas speaker was Nye John from the University of Southampton. He spoke of his experiences designing experiments for a wide variety of investigations in acoustics and demonstrated his skill in constructing analysable (via GENSTAT and GLIM) designs for factorial experiments which must be carried out in small blocks. In acoustical research, blocks are people who naturally tire of discriminating between many stimuli during a session.



Speakers at the Auckland Experimental Design Day (from left to right): Chris Triggs (AMD, DSIR), Nye John Cox (MAF), Brian Hawthorne (PDD, DSIR) and Elizabeth Stevenson (AMD, DSIR).

The day concluded with a panel discussion on what scientists expect of statisticians and vice versa. The scientists' case was put by Margaret Hogg, Division of Horticultural Processing, DSIR and Brian Hawthorne, Plant Diseases Division, DSIR and answered by Neil Cox, Biometrics Section, MAF. Many familiar topics were aired; the proper role and treatment of significance tests and probability levels, why statisticians are not issued at birth with a notebook full of appropriate CVs for different kinds of experiment, why, despite the advent of large scale computing, statisticians still take a long time to complete analyses, and so on. Neil Cox argued persuasively that the major contribution of a statistician to experimentation is not in the analysis of results but rather in careful consideration of experimental design in the wider sense and in the presentation of results. Again vigorous but not acrimonious discussion ensued and the meeting ended resolving yet again to try to break the tyranny of the 5% significance level.

NEWS FROM THE 35TH ANNUAL GENERAL MEETING AND CONFERENCE

The 35th annual conference of the New Zealand Statistical Association was held on Tuesday and Wednesday, June 26-27 1984. Attendance at the various sessions ranged from about 60 to 100 but plummeted to about 45 for the AGM. Attendance peaked for the statistical computing talks which saw speakers and discussants brazenly slipping in commercials for their own software or software agencies. Several important developments occurred at this year's AGM. Most notable was the apology for absence received from Honorary Life Member H.S. (Stan) Roberts, who was missing his first AGM in 35 years (holidaying in Italy is really no excuse at all).

The AGM arrived at a formula for the Executive Committee to grant money to the Royal Society's Prince and Princess of Wales Science Awards Scheme. The annual cash grant will be calculated on the basis of \$1 for every ordinary member and \$2 for every corporate member (under this regimen last year's lump sum grant of \$300 would have been \$312).

Dr Geoff Jowett was elected by acclamation to Honorary Life Membership of the association (the next issue of *The New Zealand Statistician* will contain a profile of Dr Jowett).

Subscriptions for 1984/85 were set at the level recommended by the outgoing Executive Committee, namely \$15 for ordinary members and \$30 for corporate members.

Discussion of alternative venues for next year's Annual Conference and AGM, and the nature of the association's support for the Pacific Statistical Congress (to be held in Auckland in May 1985) resulted in four resolutions. The main thrusts of the four motions were ...

- (1) The 36th Annual General Meeting will be held in Auckland during the week of May 20-24 1985.
- (2) The New Zealand Statistical Association supports (blesses?) the Pacific Statistical Congress.
- (3) The 36th Annual Conference of the association will merge with the Pacific Statistical Congress.
- (4) The Executive Committee may grant the organisers of the Pacific Statistical Congress a sum not to exceed \$2000. The Executive Committee is to decide whether this grant will be in the form of a donation or some kind of "guarantee".

Many of those present at the AGM felt that the association should sponsor a one-day "Wellington Regional Meeting" (admission free) in June 1985 so that a 35 year tradition would not be completely broken.

As an aside, a call for papers for the Pacific Statistical Congress can be found in this issue of the newsletter. As a result of this association's pledge to morally and financially support the congress, members of this association will probably be eligible for a discounted registration fee (this is to be negotiated with the organisers by the Executive Committee). A student discount is also to be negotiated. The organising committee is anxious to receive any ideas members may have for session topics, invited speakers, satellite activities (displays, workshops, short courses, etc) and fund-raising. Send topic and invited paper suggestions to Prof. I.S. Francis, University of Otago. Suggestions for satellite activities should be sent to Prof. G.A.F. Seber, University of Auckland, and offers of financial support should be sent to Dr R.B. Davies, Director, Applied Mathematics Division, DSIR.

The 1984/85 Executive Committee elected at the AGM is:

President:	G.E. Dickinson	(Department of Statistics)
Secretary:	D.J. Cox	(Department of Statistics)
Treasurer:	W.A. Neill	(Applied Mathematics Division, DSIR)
Committee:	C. Cryer	(Wellington Clinical School)
	J.H. Maindonald	(Applied Mathematics Division, DSIR)

C.E. Salmond (Wellington Public Hospital)
 M.G. Roberts (Wallaceville Animal Research Centre)
 J.H. Jowett (Biometrics Section, MAF)
 Corporate Members' Representative:
 V. Duoba (Department of Statistics)

SOCIAL SCIENCE RESEARCH FUND COMMITTEE (SSRFC) 1984 SEMINAR SERIES

A series of seminars with the theme "Change and Diversity in New Zealand" has been organised by the Social Sciences Research Fund Committee and sponsored by the Justice Department and the Social Sciences committee of the National Research Advisory Council.

The remaining two seminars will be held in the Conference Room, 14th Floor, Charles Fergusson Building, Bowen Street, Wellington. Dates and tentative topics for these seminars are as follows:

Friday 14 September, 11 a.m. - 1 p.m.

Medical and Social Research: Different Perspectives on Health and Lifestyle? (Chairman, Professor Michael Cooper, University of Otago)

Friday 26 October, 11 a.m. - 1 p.m.

Community and Society: Where should research focus?

For further information contact The Executive Officer, Social Sciences Research Fund Committee, P.O. Box 1092, Wellington, (Telephone (04) 727-666, Ext.772).

VACANCY

STATISTICIAN WANTED

The Applied Mathematics Division has a vacancy for a statistician at its Lincoln substation. The work consists of providing statistical advice to DSIR scientists, particularly regarding biological experiments. However it is intended to extend this service to local industry and other organisations in the Christchurch area requiring statistical advice. The person appointed will also be encouraged to carry out research in areas of interest to the Applied Mathematics Division. On the job training will be provided.

Requirements:

- Good honours degree, MSc, or Diploma in Statistics;
- Ability to use statistical computer packages;
- Ability to communicate;
- Potential to solve practical problems;
- Enthusiasm, common sense, etc.

Apply to the Director, Applied Mathematics Division, DSIR, P.O. Box 1335, Wellington (7th Floor, Rankine Brown Building, Victoria University).

DEADLINE FOR NEXT ISSUE

The deadline for submitted material for the September issue of this newsletter is September 3. Please send all notices of seminars, news items, letters-to-the-editor, etc to . . .

John Reynolds
 Newsletter Editor
 AMD/DSIR
 P.O. Box 1335
 WELLINGTON

The deadline for "News and Announcements" for the November issue of *The New Zealand Statistician* is October 30.

PACIFIC STATISTICAL CONGRESS - 1985

**AUCKLAND, NEW ZEALAND
 MAY 20-24 1985**

FIRST ANNOUNCEMENT

AND

CALL FOR PAPERS

Sponsoring Societies

A regional statistical congress will be held in Auckland, New Zealand, May 20-24 1985. The sponsoring societies are:

- The Biometric Society
- The Institute for Mathematical Statistics
- The International Association for Statistical Computing
- The International Association for Survey Statisticians
- The Bernoulli Society
- The Statistical Society of Australia
- The New Zealand Statistical Association
- The New Zealand Organisation for Quality Assurance

The New Zealand Operations Research Society

Themes

Themes for the Congress will include Biological and Medical Statistics, Survey Sampling, Statistical Computing, Experimental Design, Quality Assurance, Social and Economic Statistics, and Statistics for Developing Areas. Professor Peter Armitage will be a keynote speaker. A selection of papers will be published in the Congress Proceedings.

Congress Committee

Ivor S. Francis, Convener, Chairman of the Programme Committee. George A.F. Seber, Chairman of the Local Organising Committee. Robert B. Davies, Chairman of the Finance Committee.

Submission of Papers

Those wishing to present a paper should submit a one page abstract, including key references, to:

The Committee Secretary
 Pacific Statistical Congress
 Department of Mathematics
 University of Otago
 Box 56
 DUNEDIN
 New Zealand

Please use a black, preferably carbon, ribbon, clean typewriter keys, and double spacing. The abstract will be reproduced as submitted by the author(s).

Other Presentations

Poster sessions and workshops may be organised. Facilities will be available to enable participants to demonstrate non-commercial statistical software provided advance notice is given. Information for commercial displays of books, software, hardware, etc, may be obtained from the organisers.

Registration

Registration fee is \$NZ125 or \$US85 if posted by September 15, 1984, and \$NZ150 or \$US100 thereafter. [Note that the N.Z. Statistical Association is currently negotiating a discount for its members.]

Accommodation

Accommodation and meals will be available at Auckland University's hostels, and at nearby hotels.

The SAC

Can it help you?

The SAC is the Survey Appraisals Committee, jointly sponsored by the N.Z. Statistical Association and the N.Z. Market Research Society. Each body contributes 3 members to the SAC, and the chairmanship alternates yearly between the two societies.

What does it do?

Acts as an independent assessor of survey methodology and survey findings where criticisms have raised potentially serious doubts about the propriety of aspects of a survey design or the validity of data interpretation. Encourages the adoption by surveying groups of proper standards of disclosure in regard to survey design, implementation, presentation of results and statistical error.

What doesn't it do?

The SAC does not design surveys or act as an approving body for survey designs.

The SAC does not analyse survey data.

Who can approach the SAC?

In general, any individual or organisation can make use of the SAC services. However persons with recourse to Government services, such as the DSIR or Department of Statistics, or other professional bodies, should consider using them first.

When should you approach the SAC?

You might be dissatisfied with the reporting of a survey in the news media. You might feel that the claims are not supported by the data or that the survey design and operation are inadequate.

How can you contact the SAC?

You can write to the . . .

Chairman, SAC
C/- NZSA
P.O. Box 1731
WELLINGTON

Names and contact telephone numbers of the three N.Z. Statistical Association SAC members are . . .

Prof. J.J. Deely
Department of Mathematics
University of Canterbury
CHRISTCHURCH
Telephone: (03) 482-009

Mr V. Duoba
Department of Statistics
Private Bag
WELLINGTON
Telephone: (04) 729-119

Mrs C.E. Salmond
Epidemiology Unit
Wellington Public Hospital
Private Bag
WELLINGTON
Telephone: (04) 855-653

OVERSEAS CONFERENCES

7th Australian Statistical Conference

This conference, sponsored by the Statistical Society of Australia, will be held at the University of Queensland, in Brisbane, August 27-31, 1984. For late registration write to The Conference Secretary, Department of Mathematics, University of Queensland, St Lucia, Q.4067.

The XIIth International Biometric Conference

To be held in Tokyo, Japan, September 2-8, 1984. For information on late registration write to:

XII IBC Secretariat
C/- Prof. T. Okuno
Department of Management Science
Faculty of Engineering
Science University of Tokyo
1-3, Kagurazaka
Shinjuku-ku, Tokyo
162 JAPAN

5th International Meeting on Clinical Biostatistics

Sponsored by the International Society for Clinical Biostatistics, this meeting is to be held in San Marino, Italy, September 9-13, 1984. For further information write to:

ISCB-5 Secretariat
Institute of Biometry and Medical Statistics
University of Milan
1, Via Venezian
20133 MILAN, ITALY

ASA-IASC-SIAM Conference – Frontiers in Computational Statistics

This interdisciplinary conference is jointly sponsored by the American Statistical Association, the International Association for Statistical Computing, and the Society for Industrial and Applied Mathematics. It is to be held in Boston, MA, USA, October 22-24, 1984. The program will consist of invited presentations, "organised" informal discussion groups, contributed paper and poster sessions. Invited presentations include:

- (1) Impact of Computer Architecture on Statistical Computing – G.W. Stewart, University of Maryland, and M.H. Kalos, New York University.
- (2) Graphical Methods in Data Analysis and Computational Statistics – R. Gnanesikan, Bell Operating Companies, and J.H. Friedman, Stanford University.
- (3) Algorithms for Numerical Optimization in Statistical Computing – J.E. Dennis, Jr, Rice University, and T.J. Mitchell, Union Carbide Corporation.

For further information write to the . . .

Conference Manager
SIAM
117 South 17th Street
Philadelphia, PA 19103
U.S.A.

Workshop on "Time Series and its Applications"

To be held at the National University of Singapore, October 24-26, 1984. The workshop is jointly organised by the Department of Mathematics, National University of Singapore and the Singapore Mathematical Society with the support and recognition of the Southeast Asian Mathematical Society, the Bernoulli Society and UNESCO.

The emphasis in the workshop will be on methods and applications, such as modelling and forecasting. As well as contributed paper sessions, several lectures by invited speakers from North America and Britain are planned.

Those wishing to attend the workshop, or to receive the second circular, should write to . . .

Dr K.S. Lim
Organising Secretary
Time Series Workshop
Mathematics Department
National University of Singapore
Kent Ridge
SINGAPORE 0511

Applied Probability Group of ORSA/TIMS – 3rd Biennial Meeting

To be held in Williamsburg, VA, USA, January 7-9, 1985. For further information contact: Carl M. Harris, Department of Systems Engineering, University of Virginia, Charlottesville, VA, 22901 USA.

Biometrical Problems in Population Biology

To be held in Oslo, Norway, January 14-15, 1985. For further information contact: Jon Stene, Institute of Statistics, University of Copenhagen, Studiestraede 6, DK-1455 Copenhagen K, Denmark.

American Statistical Association/Biometric Society/IMS Joint Meeting

The 1985 joint meeting of the American Statistical Association, Biometric Society and the Institute of Mathematical Statistics is to be held from August 5-8 in Las Vegas, Nevada. For further information write to ASA, 806 15th Street, N.W., Washington DC, 20005, USA.

International Statistical Institute - 45th Biennial Session

This conference, which marks the centenary of ISI, is to be held in Amsterdam, Netherlands, August 12-22, 1985. The conference will also include meetings of the Bernoulli Society and the International Associations of Statistical Computing and Survey Statisticians. Invited paper topics and their organisers include:

- The evolution of statistical theory and practice – the last 100 years – J. Durbin (UK)
- Statistics in Epidemiology – N.E. Breslow (USA)
- Statistics in nutrition – E.L. Scott (USA)
- New equipment and fields of application of statistical computing – J.A. Nelder (UK)

Non-programming interfaces to statistical systems – J.A. Chambers (USA)

Factorial experiments with discrete and continuous data – O.E. Barndorff-Nielsen (Denmark)

For further information write to ISI, 428 Prinses Beatrixlaan, P.O. Box 950, 2270 AZ Voorburg, Netherlands.

International Time Series Meeting (ITSM) 1985

For preliminary information (including the date and venue) about this 1985 meeting, prospective participants should write to . . .

- O.D. Anderson
9 Ingham Grove
Lenton Gardens
Nottingham NG7 2LQ
ENGLAND

29th Annual Fall Technical Conference

To be held in Corning, NY, USA, October 24-25, 1985. For further information contact: J. Edward Jackson, Management Services Division, Building 56, Eastman Kodak Co., Rochester, NY 14650, USA.

41st Annual Conference on Applied Statistics

To be held in Newark, NJ, USA, December 4-6, 1985. For further information contact: Walter R. Young, Medical Research Division, American Cyanamid Co., Building 60, Rm 203, Pearl River, NY 10965, USA.

TWO FOOTNOTES

“Weirus, a German physician of the sixteenth century, a time when most Europe was gripped by the fear of demons and witches, calculated that exactly 7,405,926 demons inhabited the earth. Most people believed that the figure 7,405,926 sounded ‘about right’ for to them demons were a reality and Weirus was a learned man.”

“The story is told about a man who, when asked about the age of a certain river replied that it was about 3,000,004 years old. When asked how he could give such an accurate figure, his answer was that four years ago it was reported that the particular river was three million years old.”

Rao, C.R. (1983) Statistics, Statisticians and Public Policy Making, *Sankhya*, Series B, 45:151-159.

GERMANE ADVICE

“And of course, always watch for spelling errors, both in the manuscript and on the galley proofs. I am not an astronomer, but I suspect that a word is misspelled in the following sentence: ‘We rely on theatrical calculations to give the lifetime of a star on the main sequence.’ (Annu.Rev.Astron. Astrophys. 1:100, 1963).”

Day, R.A. (1983) *How to Write and Publish a Scientific Paper*. ISI Press.

CRANIAL CAPERS

“When I found this phenomenon of differential preservation of skulls in the graves, I thought it was interesting. So I took the first opportunity of talking about it at a statistical conference. I showed by statistical analysis of several series of skeletal data that the chance of a small skull being preserved is greater than that of a large skull (Rao and Shaw, 1948). At the end of my talk, the chairman of the meeting wanted to comment. He said he was taking a guided tour of a Museum in Paris along with some tourists. The guide stopped near a glass case and said ‘The well preserved skull you see in the glass case was Caesar’s’. Someone among the tourists who obviously read about Rao’s discovery exclaimed, ‘Caesar had such a small skull. It is no wonder that it was well-preserved’. Hearing this, the guide said, ‘Actually this was Caesar’s skull when he was sixteen.’”

Rao, C.R. (1983) Multivariate Analysis. Some reminiscences on its origin and development. *Sankhya*, Series B, 45:284-299.

**APPLIED MATHEMATICS DIVISION
SUMMER STUDENT PROGRAM**

Applied Mathematics Division of DSIR employs mathematics and statistics students at its Wellington head office and Auckland substation over the summer university vacation. The students are usually at least third year and towards the top of their classes. The work consists of assisting Division scientists with some project of interest to the Division. Occasionally joint publications result from this work.

The summer student program enables AMD to evaluate students who might be interested in eventually joining AMD and vice versa. At the same time it gives students an insight into solving real problems and perhaps helps them to decide on a choice of career.

Any student interested in working for AMD this summer should write to the Director, Dr Robert Davies, AMD/DSIR, P.O. Box 1335, Wellington by September and enclose details of the courses they have taken, their grades and the name of one of their lecturers who could be contacted for more details.

NEW ZEALAND STATISTICAL ASSOCIATION (INC).
P.O. BOX 1731, WELLINGTON, N.Z.

