

statistical society of australia incorporated

newsletter

31 March 1996

number 74

## SYDNEY INTERNATIONAL STATISTICAL CONGRESS (SISC-96)

The Sydney International Statistical Congress (SISC-96) will be held in Sydney's Sheraton-Wentworth Hotel from 8 to 12 July 1996.

SISC-96 is a joint meeting of:

- The Statistical Society of Australia Inc.;
- The Interface Foundation of North America;
- The Institute of Mathematical Statistics.

### Satellite Events

A number of satellite events are being planned around SISC-96. These include:

- Nonparametric Statistical Methods: The Road Ahead
- Workshop on Recent Developments in Time Series and Chaos
- Continuing Education: Extending the Cox Model
- Statistical Education Workshop
- Dynamic Statistical Graphics Workshop
- Stochastic Networks Workshop
- Introductory and Advanced Mathematical Morphology
- Ecological Risk Assessment and Indices of Aquatic Pollution
- Third International *S* Conference
- 2nd Australia-Japan Workshop on Stochastic Models in Engineering, Technology and Management

Further information is contained in the Congress brochure which is available from the Conference Secretariat, Conferention Action Pty Ltd, PO Box 1231, North Sydney NSW 2056; phone (02) 956 8333; fax (02) 956 5154.

Up-to-date information on progress with various aspects of the Congress can be obtained from the Congress's World Wide Web Home page

<http://www.dms.csiro.au/sisc/index.html>

### Statistical Education Workshop, 5 - 7 July 1996

This workshop, which will consider issues associated with teaching and learning statistics, is being held immediately prior to SISC'96. A WWW home page has been set up at

<http://www.stat.mq.edu.au/sew/>

This contains details of the workshop and a registration form. An email list has also been established. Subscribe to this by sending the message

subscribe StatEd\_List

to [maiser@efs.mq.edu.au](mailto:maiser@efs.mq.edu.au)

Four sessions are planned for the workshop:

- Graphical perception and other psychological underpinnings of understanding statistics
- Multimedia
- Bringing "gown" and "town" together in applied statistics
- Teaching statistics at the secondary and tertiary level: where are the interactions?

Requests for additional information can be sent to Pamela Shaw, Statistics Department, Macquarie University NSW 2109, or to [Pamela.Shaw@efs.mq.edu.au](mailto:Pamela.Shaw@efs.mq.edu.au)

### Third International *S* Conference, 15 - 17 July

The third International *S* conference is intended for a target audience of *S* developers and high end users both of the language itself and its advanced application modules. Numbers will be strictly limited to 70 delegates.

*Editors: D.E. Shaw, CSIRO, DMS, Locked Bag 17, North Ryde, NSW 2113.*

*E. Brinkley, Australian Bureau of Statistics, PO Box 10, Belconnen, ACT 2616.*

*R.I. Forrester, CSIRO, Biometrics Unit, INRE, GPO Box 1666, Canberra, ACT 2601.*

*The views of contributors to this Newsletter should not be attributed to the Statistical Society of Australia, Inc.*

*Deadline for next issue: 15 April 1996*

*Printed by Koomarri Printers, Canberra*

The program will involve parallel streams, one concentrating on computational issues, such as

- The S language itself, Version 4 and beyond
- Graphics in S
- User Interfaces (GUI's etc.)
- Large Objects

and a second stream with emphasis on advanced applications, covering (possibly) areas such as Wavelets, Survival analysis and Spatial Statistics.

The registration fee is not yet fixed but is likely to be between \$100 and \$200. Expressions of interest will be invited via the WWW page address below.

The venue will be Macquarie University, North Ryde NSW 2113. The university campus is set on a 135

hectare site about 18 kilometres north-west of the central business district of Sydney.

Accommodation has been reserved in the Stamford Hotel (about \$130 per night) and Robert Menzies College (about \$55 per night including meals).

Further information is available via the WWW page

[http://www.dms.CSIRO.AU/sisc/third\\_s.htm](http://www.dms.CSIRO.AU/sisc/third_s.htm)

Glenn Stone

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[Glenn.Stone@dms.csiro.au](mailto:Glenn.Stone@dms.csiro.au)

<http://www.dms.CSIRO.AU/~gstone>

## CENTRAL COUNCIL

### Notes from the meeting of the Central Council held at DMS, CSIRO, Sydney on 16 February 1996.

#### Co-operation with the New Zealand Statistical Association (NZSA)

SSAI is moving towards closer co-operation with NZSA. Ian James reported on discussions with NZSA about merging the Australian Journal of Statistics and the New Zealand Statistician to form a joint journal. He also mentioned a proposal from Blackwell Publishers to market the new journal if SSAI and NZSA decide to proceed with amalgamating the journals. Further discussions with the NZSA Executive on possible models and editorial policies for the joint journal will take place over the next few months.

The NZSA adopted a Code of Conduct at their AGM in 1995. The Central Council passed a motion to look at the possibility of the our Society having a Code of Conduct. A small group was set up to examine existing Codes of Conduct held by other Statistical organisations (including NZSA and the RSS) to see how they relate to the Australian situation. The President stressed that adopting a Code of Conduct was independent of the Accreditation issue.

#### Strategic Review of the Mathematical Sciences

The final report was launched on 23 January 1996 by the Academy of Science and there will be a public launch on 23 February at the University of NSW.

#### EJG Pitman Prize

This prize is to be awarded for the most outstanding talk given by a "young statistician" at an Australian Statistical Conference. The rules for awarding this prize were established at the meeting. These rules are published separately in this Newsletter.

#### Sections

Pamela Shaw was appointed as Chair of the Statistical Education Section until July.

The Treasurer reported on new banking arrangements available for Sections and groups organising Society sponsored Workshops. The Society now has credit card facilities available on its central accounts.

#### Accreditation

The Council discussed the responses on the 81 fax-back forms received commenting on the accreditation model that appeared in the November Newsletter. There were many valuable points raised and appropriate refinements were made to the model. The draft model and Rule changes will now be looked at by a lawyer before the Rule changes are put to a vote at the July AGM.

The responses to the statement "I support the Society introducing optional accreditation for members" were: 72 Yes, 5 No and 4 Neutral.

#### AMSC

FASTS and AMSC have been very active in the last 6 months leading up to the federal election. Nick Garnham reported on the last AMSC meeting and noted that since then AAMT have withdrawn from AMSC. The Australian Society of Operations Research (ASOR) is now an observer on AMSC, and a representative of the Australian Institute of Engineers will also attend the next meeting of AMSC on 22 February 1996.

#### ASC 14

The fourteenth ASC will be held at the Conrad Jupiters Conference Centre on the Gold Coast on 5-9 July 1998.

#### Annual General Meeting

The AGM of the Society will be held in conjunction with SISC-96 on Wednesday, 10 July 1996 at the Sheraton-Wentworth Hotel, Sydney. The AGM of the Council will be held at 12 noon on Sunday, 7 July 1996 also at the Sheraton-Wentworth Hotel.

## PITMAN PRIZE

### The EJG PITMAN PRIZE at SISC-96

In 1994 the Central Council of the Statistical Society of Australia Inc proposed the EJG Pitman Prize for the best paper presented by a young statistician at an Australian Statistical Conference (ASC) as an appropriate use of a bequest made by Professor Pitman in his will.

The Prize, valued at \$500, will be available for the first time at SISC-96.

If you are eligible for the prize and would like your talk to be considered for the EJG Pitman Prize please notify the organising committee by facsimile on (02) 325 3243 or by writing to:

The Director, SISC-96  
CSIRO, DMS,  
Locked Bag 17  
North Ryde, NSW 2113.

At the February meeting of Central Council the following rules for the award of the EJG Pitman Prize were established.

#### Rules for the EJG Pitman Prize

This prize is awarded for the most outstanding talk presented by a "young statistician" at an Australian Statistical Conference.

The following rules apply:

- (i) Only members of the Statistical Society of Australia Inc. are eligible.
- (ii) "Young Statistician" will mean a person enrolled for a degree who is studying either full-time or part-time without age limit  
OR a person who graduated with a Bachelor's degree within the past 5 years  
OR a person awarded a postgraduate degree within the past year.
- (iii) The Prize is to be at a value determined by the Council from time to time.  
A certificate will also be presented to the winner.
- (iv) A Prize Committee, consisting of three members of the Society, will be appointed by Council after consultation with the Conference Convenor. The Prize Committee will attend all eligible talks at the ASC and after proper discussion make a decision. The Prize Committee's decision will be final.
- (v) If, in the opinion of the Prize Committee there are no candidates of sufficient merit then no prize will be awarded.
- (vi) The EJG Pitman Prize can be awarded at most once to any given person.
- (vii) The existence of the Prize will be well publicised in the Conference literature.

#### Criteria for the award of the EJG Pitman Prize

In awarding the Prize the Prize Committee will consider the following:

- (i) the motivation and setting of the general context,
- (ii) the organisation and structure of the lecture,
- (iii) the originality of the substance of the lecture,
- (iv) the presentation of the material and rapport with the audience.



#### Senior Statistical Consultant

#### Statistical Consultant

Data Analysis Australia, a Perth based statistical and mathematical company with clients across Australia, requires statisticians to expand its consulting services. We are looking for experienced graduates with strong computing skills and the wish to work in a commercial environment.

The Senior Statistical Consultant would ideally have a higher degree and several years consulting experience. The ability to manage projects and liaise with clients is essential.

The Statistical Consultant would be a graduate in statistics, mathematics, computer science or a related area with particular skills in data management. In general the Consultant will work as a team member.

For further information contact Dr. John Henstridge on (09) 386 3304 or [john@daa.com.au](mailto:john@daa.com.au). Applications should include a full resume.

**Data Analysis Australia Pty Ltd.,**

Unit 8, 154 Hampden Road,  
Nedlands, WA 6009.

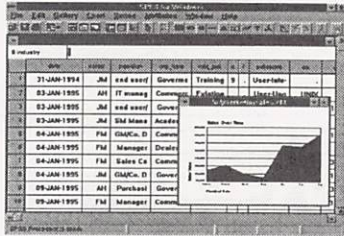
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# Statistically Speaking, SPSS Is The World's Leading Statistical Software Package

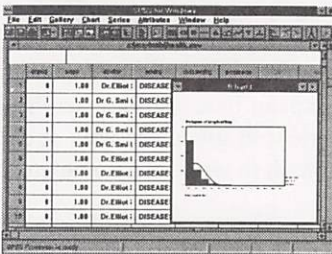
## ... No Matter How You Analyse It

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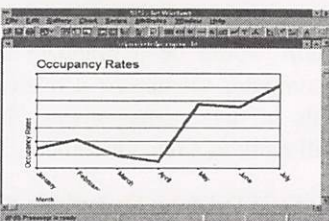
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## BRANCH REPORTS

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### New South Wales

1995's last lecture was presented by Dr Peter Petocz and Katrina Roster from the School of Mathematical Sciences, University of Technology Sydney. Katrina discussed her research on preparing introductory statistics courses.

The introductory statistics course is especially important since it may be the only statistics course taken by future users of statistics. Hence it will colour their whole approach and attitude towards the subject.

During the talk Katrina presented a framework for the design and analysis of introductory statistics courses. Four approaches or theories of statistics teaching were put forward together with a questionnaire that Katrina had designed to assist in deciding which approach or combination of approaches is most useful in any particular case. Examples of situations where the methods have been used were given.

After this talk we had our usual Christmas BBQ followed by a quiz. Yours truly managed to be a member of the winning team, not through any great ability to answer the questions but by attaching herself to the right team!

### Victoria

#### Football Tipping and Other Applications of Statistics in Sport

Mr Stephen R. Clarke, from the School of Mathematical Sciences, Swinburne University of Technology talked on this topic at the September meeting. Stephen has been providing Melbourne Newspapers computer tipping on Australian Rules football for the last 15 years. His computer tipping program can be adapted to a wide range of sports like golf, soccer and cricket where quantification of sporting effects can be made. Stephen showed how a qualitative sporting effect, home ground advantage, can be quantified and used to predict future outcomes in football and soccer. He showed that some clubs who thought they had a home ground advantage really had a negative advantage. Using his program it was shown that West Coast Eagles had the highest home ground advantage in Australian Rules football. Stephen identified at least three models in which home ground advantage can be quantified as a factor in Australian Rules football: (1) all clubs having the same home ground advantage, (2) all clubs having a different home ground advantage, and, (3) all clubs having a different home ground advantage for each ground; and this occurs when clubs share grounds.

Stephen's message was, applying statistics to sport is a wonderful way to gain the interest of students, but there is a real need for quantification of the many sporting effects and the publication of statistics which measure variability.

#### Workshop for Australia's Young Statisticians (WAYS 95)

The 1995 Young Statisticians Conference was attended by 25 people from vastly different backgrounds to network,

share knowledge and present findings at the Redgate Motel in Alexandra on September 22 to 24. It seems that the YSC in the Victorian Branch of the SSA is gaining an international reputation as people came from as far as the University of Zurich to attend. The young statisticians themselves seemed to be separated by such distances in their research interests, as we had presentations ranging from the experimental design of popping popcorn through to the analysis of solar flares from the sun. Three guest speakers, Damien Jolley and Stephen Farish (both from the Department of Public Health and Community Medicine, University of Melbourne), and Jerry Winston (from the Department of Statistics, RMIT) represented the older statisticians. Damien spoke to us about life as a medical statistician and his infectious passion for the field left many of us ready to leave then and there to go and cure the ills of the world. Stephen Farish gave us a rare insight into the world of being a consultant statistician. Surprisingly, the most difficult part of being a consultant statistician is not the application of statistics or the constant learning of methodology. No, the ulcers and nervous breakdowns which are highly prevalent in the statistical community are caused by the client. In the future, look for a new breed of consultant statisticians who will only do work for other statisticians. The most inspiring speaker, however, was quite obviously Jerry Winston. His message was quite simple, and that was to be courageous enough to take the tool of statistics into areas that are lacking in quantitative expertise. His enthusiasm and encouragement were unlimited and filled us with the realisation that, as young statisticians, the future image and well being of the profession will be determined by decisions made by us in the near future. Contributions made by the three guest speakers over the entire weekend were considerable and lent a great deal to the overall success of the 1995 Young Statisticians Conference. The weekend would not have been a success without the support of many organisations. In particular, the young statisticians wish to extend their thanks to Leather Cargo, Muirfield Computer Services, Dept of Computer and Mathematical Sciences VUT, VUT Bookshop, Dept of Econometrics Monash University, Dept of Statistics LaTrobe University, Statistical Consulting Centre University of Melbourne, and the Victorian Branch of the SSA. Any such event is doomed to failure, of course, unless the organising committee is ably led, and in this capacity Mehmet Tat was outstanding.

#### Bursary 1995

The Victorian Branch awarded Ms Violetta Misiorek a \$400 bursary to attend WAYS 95. Ms Misiorek, who is a full time Master's student at Victoria University of Technology, presented a paper entitled "Determination of the Optimal Target Value with Analysis of Dependencies of the Process Parameters".

#### Belz Lecture

The 1995 Belz Lecture given on Tuesday 24 October by Dr Ian Gordon, and was titled "Tall tales but true: some

data-based short stories". After a short introduction Ian expressed his excitement at his involvement in statistical consulting, dating back to his very early interest in statistics. He gave an example of quirky data sets from the Time Life book, such as a photo of an American family with 5 girls followed by 6 boys.

Ian went on to give some 6 short stories of quirky data sets from work at the statistical consulting centre and from the literature: they included data on AIDS, cheese, occupational epidemiology, hotel usage, and heart research.

Short story 1, "The first cause of AIDS" was a story of Kaposi's sarcoma as a proxy for recognising HIV, and the fact that recreational use of amyl nitrate was found to be very prevalent in homosexuals with AIDS. A message from this story of the conflicting interpretations in the literature of the data is that confounding in epidemiology is generally a big issue. Short story 4, "The Tchebychev Hotel", concerned a motel which had recently changed its management and had a recent increase in sales of food and drinks trying to test to see whether the improvement with the change of management had been significant. Methods used were the Tchebychev test, the t-test and a multiple regressive test. The averaging over the first 4 years from the Tchebychev test looked particularly silly. To Ian, each story told a story of the subtlety of data analysis and the statistical discipline. Some conclusions are that, when under pressure, we will all produce analyses, but many users of statistics are not good at relating methods and a little statistical knowledge can be a dangerous thing.

### **Cost Effectiveness Analysis of Health Care Programmes**

In November Dr Susan Hurley, from the Department of Public Health and Community Medicine at The University of Melbourne, described methods that evaluated the impact of health treatments or procedures. Alternative treatments or disease prevention programmes were compared using a ratio that takes into account the net cost and the impact on the patient in terms of the quality of life and longevity. The patient impact is measured in terms of the quality-adjusted life-years (QALYs) saved by each treatment. Dr. Hurley illustrated the approach via examples that involved needle and syringe provision/exchange programmes; comparison of heart attack treatments, and, evaluation of prophylactic immune globulin treatments with Leukemia patients. The value of such analysis was highlighted by the variety of outcomes, that were not obvious at first glance, and provided a relatively objective basis for comparisons to be made. Having indicated the strengths of such analysis, then followed a description of the limitations that flowed from difficulty in maintaining consistency and in handling sensitivity to key assumptions. These areas provided an opportunity for statisticians to make a valuable contribution.

Finally, a global league table was presented which compared the impact of various programmes in third world countries, with cost ratios of \$5-\$100 per QALY,

versus a quit smoking campaign in a developed country at \$1500 per QALY.

## **South Australia**

### **What is a Special Cause?**

Jock Mackay, University of Waterloo, Canada spoke to the October Branch meeting on statistical process control.

Statistical Process Control has been promoted as a set of useful and simple statistical procedures for manufacturing and other industries. This is especially true in the North American based automotive industry where component suppliers are required to implement SPC as part of their quality system. These requirements provide a good opportunity for statisticians to demonstrate the relevance of their discipline.

Past waves of enthusiasm for SPC have been followed by disillusionment and abandonment, as the costs far outweighed the benefits.

John believes that a major reason for these past failures is a lack of understanding of the fundamental concepts both among the practitioners and the professional statistical community. John explored these fundamentals from a historical perspective and suggested that we need further clarification if SPC is to be successful.

**Biographical:** Jock Mackay is an Associate Professor in Statistics and Actuarial Science at the University of Waterloo in Canada. He has been in the past and in July 1996 will resume the post of Director of the Institute for Improvement of Quality and Productivity at the University of Waterloo. Jock Mackay gained a PhD from the University of Toronto in 1971. His current research interests are in statistical methods for application in manufacturing and statistical education. He has an active consulting practice, especially with General Motors.

### **Correcting for Misclassification and other Measurement Error**

Chris Skinner of University of Southampton, England at the November Branch meeting discussed misclassification and other measurement error in survey sampling.

There is a large literature on the bias effects of misclassification, much of it in epidemiology. The main findings of this literature were first reviewed with illustrations from Census data. One approach to bias correction requires validation observations on both 'true' and measured variables. It was shown how the choice of model relating validation and primary observations can seriously affect the properties of maximum likelihood estimation. Related results for continuous variable measurement error models were presented.

**Biographical:** Chris Skinner is Professor of Social Statistics, University of Southampton, U.K. His main research interests concern statistical aspects of sample surveys, including sampling, missing data, measurement error and confidentiality protection. He is co-editor of 'Analysis of Complex Surveys' (Wiley, 1989) and is currently Vice-President of the International Association of Survey Statisticians.

## Spatial and Temporal Variations with Applications in Agriculture

Annette Ersboell of Royal Veterinary and Agricultural University, Denmark spoke to the November Branch meeting on spatial and temporal variations applied to agricultural research.

Classical statistics assume that the sampling units are independent and therefore contain no reference to the spatial distribution. Therefore, knowledge concerning the spatial relation between the observations is not included. Similarly, repeated sampling of measurements in the experiment introduces temporal correlations. Agricultural experiments often contain at least one of these two items, that is correlation in space or time. It seems therefore natural to incorporate and utilize these correlations in the analysis.

In the spatial analysis of field trials, the variation between measurements at a certain distance can be modelled using the semivariogram. The knowledge of the spatial structure can be utilized in, for example, the statistical analysis of the field trial, the design of new experiments and spatial estimation of the measurements by kriging.

Annette briefly mentioned the spatial semivariogram and described estimation using kriging. She suggested extensions of the spatial semivariogram in which repeated measurements are included in the spatio-temporal semivariogram models, giving examples of applications in agriculture.

**Biographical:** Annette Ersboell graduated with MScEng(Chem) from the Institute of Mathematical Modelling at the Technical University of Denmark in 1987, and this year has had conferred a PhD from the same Institute in the subject area of Statistics. She has held Research Assistant positions at both the Institute of Mathematical Modelling and also at the Danish Institute of Plant and Soil Science. Annette is currently an Assistant Professor in the Department of Mathematics and Physics of the Royal Veterinary and Agricultural University, Denmark (email: ae@dina.kvl.dk). Her interests are in experimental design, geostatistics, repeated measurements, system analysis and life cycle assessment.

### On the automatic estimation of left ventricle blood volume from MRI images and a comparison with manual estimation

At the December Branch meeting Bjarne Kjaer Ersboell of the Technical University of Denmark gave a talk concerned with two main topics: automatic estimation of left ventricle blood volume and comparison of the automatic estimate with an estimate found using a manual method.

The data used for estimating the blood volume is obtained from a Magnetic Resonance Imager which is located at Hvidovre Hospital near Copenhagen, Denmark. The data is obtained using a so-called synchronised turbo-flash sequence and both a short and a long settle time are recorded. The synchronisation makes it possible to obtain images at given times in the heart-beat cycle, eg at the systolic or diastolic phase. An image is taken for each 5

mm along the heart thereby making it possible to assess the volume of the ventricle.

The methods considered were a manual method, where three independent trained doctors evaluate the volume, and an automatic method. The automatic method consists of several steps, training, discrimination, template matching and volume estimation.

The discrimination step, which includes a so-called contextual adjustment, was discussed as was an evaluation and comparison between the results of the manual and automatic methods.

**Biographical:** Bjarne Kjaer Ersboell graduated with MScEng from the Institute of Mathematical Statistics and Operations Research (now the Institute of Mathematical Modelling) at the Technical University of Denmark in 1983, and in 1990 has had conferred a PhD from the same Institute in the subject area of Statistical Image Analysis. He has held several Research Assistant positions at the Institute and also at the Laboratory of Thermal Insulation. Bjarne is currently an Associate Professor at the Institute of Mathematical Modelling (email: be@imm.dtu.dk). His interests are in image analysis (within industry, medicine and remote sensing), geostatistics and general statistics.

Our Danish visitors shared their culture with us by providing Pre-meeting Gloegg and Brunkager. The speaker, Bjarne Kjaer Ersboell, and his wife Annette, treated us to gloegg, a type of mulled wine, and brunkager, Danish brown cookies.

## Canberra

### A Workshop on the Analysis of Survey Data

This workshop in October 1995 was organised to provide users of official statistics with a forum to discuss issues in analysing data.

Dr Philip Kokic of the Australian Bureau of Agricultural and Resource Economics (ABARE) presented the first of four talks, in which he discussed the modelling of broadacre farm profits using ABARE's Agricultural and Grazing Survey. Philip presented a farm level income and production model and showed how economic information collected annually by ABARE can be used to estimate parameters in the model. The model is used for forecasting changes in productivity and profits of farms.

Mr Ken Tallis of the Australian Bureau of Statistics (ABS) then spoke on the development of a model for building commencements in terms of building approvals. The model was intended to generate small-area estimates of commencements in terms of approvals, hence removing the need to collect the information on commencements.

The data on approvals and commencements are an administrative by-product, and complete enumerations of both are available. One of the problems encountered with the approvals data was that approvals tended to be stamped not with the actual date of approval, but with dates clustered round certain "magic" dates, namely the 1st, 15th and 28th of each month. Little do regional council officials know what agony this work practice

causes the ABS (or maybe they know all too well ...). Other problems that had to be dealt with included censoring, and the identification of a suitable set of covariates e.g. size and location of the building.

Ken found that the model worked well at predicting quarterly building commencements at the state level - but at the state level, much simpler models would have sufficed. The model's performance for smaller areas was mostly satisfactory, but it did not do so well with monthly predictions, nor did it do well in areas where a large number of buildings approved were not ordinary houses but blocks of flats.

Mr Phillip Bell, also of the ABS, then spoke about logistic regression analysis of household survey data, with a view to supplementing the presentation of tables in ABS reports. He issued a challenge to the audience to come up with ways of presenting the results of a logistic regression analysis that are easy to interpret, and he offered several suggestions. These ranged from qualitative statements such as "the most significant characteristics affecting the probability of ... are ..." to graphs of predicted probabilities against covariates.

Finally, Phillip drew our attention to the problem of data mining, and he commented on his experience with the different procedures in SAS that perform logistic regression.

The fourth and last speaker, Mr Geoff Parkinson of the Department of Employment, Education and Training (DEET), commenced his talk with an intriguing slide containing the four phrases "Logistic Regression", "Log-linear Modelling", "Parameter Estimates" and "Covariance". This was to prove that he could still spell these words, and then did not mention the concepts again.

He did give us a short history of the Australian Longitudinal Survey (ALS) and the Australian Youth Survey, both run by DEET, and mentioned some of the problems that had to be addressed while designing them. Geoff pointed out that interviewers will not ask silly questions, and he showed the outline of the ALS - 13 sections carefully structured so that each subject addressed flowed on from the previous one, and certain information could be obtained by combining the answers to two or three questions. Geoff also introduced us to the concept of "free-form interviewing" - where the interviewers could use any line of questioning they thought appropriate to gain information on hard-to-recall items such as the employment history of a young person over the last 12 months.

The workshop concluded (or the main monthly meeting of the Branch commenced) with a buffet dinner of Laotian food (similar to Thai but even tastier!)

### Analysis of Census Data

The speaker at the main October meeting was Dr Roger Jones, Head of the Social Science Data Archives and Director of Quantitative Evaluation and Design (Q.E.D.) Pty Ltd. Continuing the official statistics theme of the day, he spoke on non-standard uses of Census data. Standard output from the Census consists of profiles of the

population in areas such as States and Territories, and profiles of population groups such as migrants and Aboriginal and Torres Strait Islanders. Roger reminded us that the Census is just a (rather huge) survey that can be used for many purposes. He showed us two such non-standard uses - firstly, to assess the housing need of indigenous Australians, and secondly, to measure the socio-economic status (SES) of students in higher education.

It was decided to use the Census to assess the housing needs of indigenous Australians prior to running a special-purpose survey, because of the difficulty of locating indigenous people, both in remote communities and in metropolitan centres. Firstly, rules were established to define overcrowding (e.g. a married couple need one bedroom, no more than two children can share a bedroom etc.) The Census listed about 80000 dwellings with Aboriginal occupants, of which it turned out that about 20% were overcrowded. This could be due to the presence of boarders or members of the extended family in the dwelling, or more than one family sharing a dwelling.

Housing need was assessed by counting how many bedrooms would be required to relieve the overcrowding as it had been defined. Firstly, the number of extra bedrooms required in dwellings housing more than one family was counted. Then the number of bedrooms required for boarders was counted, then the number for members of extended families. In total it was calculated that across Australia, an extra 35000 bedrooms were needed to relieve overcrowding. The level of unmet housing need varied widely across the country, with some regions having up to 80% unmet housing need. Relieving overcrowding does however have a drawback because as overcrowding reduces, financial stress tends to increase, as the presence of extra individuals in one dwelling helps spread the burden of rent or mortgage payments.

Roger then went on to discuss a project related to DEET's interest in equity in higher education. It is relatively easy to identify groups such as women, Aboriginal and Torres Strait Islanders and people living in remote areas, and monitor their participation in higher education. It is not so easy to identify persons of low SES and monitor their participation in higher education.

The procedure here was to take a 1% sample file from the Census, and use it to derive a measure of each student's SES from information about their parents income and education level (if they were aged 17 to 24) or their own income and education (if they were 25 or older). The postcode of each student's permanent home address was also recorded. Then the association between these SES scores and the socio-economic indicators for areas that are derived by the ABS for each postcode was examined. The aim here was to see if a measure of SES from postcode could be used, in the absence of SES scores for everyone in the Census, to determine the SES of students in higher education.

In general, it was found that students still have a higher SES than the population at large. It also proved important to treat the two age groups separately, as the SES profile



of younger tertiary students is quite different to that of older students. The overall correlation between SES derived from the Census and SES derived from the postcode was about 70% for the younger students, but only about 50% for the older students. Finally, use of SES derived from the postcode rather than SES derived from the Census worked well with students from State capitals and rural areas but the method failed with students from small towns. The reason could be that the whole town is usually allocated one postcode, yet SES is not necessarily constant within a town.

### 1995 Knibbs Lecture: The ABS Product - Issues and Prospects

Sir George Handley Knibbs was a surveyor by training and taught for a while at Sydney University. His main contribution to statistics was as the Commonwealth Statistician from 1906 to 1921, and in the light of this it is appropriate that in November 1995, the Knibbs lecture was given by his most recently appointed successor, Mr Bill McLennan. Bill has recently returned from the Central Statistical Office (CSO) in the United Kingdom. The attitude there to official statistics is very cynical compared to the attitude in Australia and Bill spoke about how that attitude is changing, helped by a more open relationship with the media and the amalgamation of two departments carrying out statistical analysis into one.

Bill presented us with two ABS statistics: each year the ABS handles over 200000 enquiries and releases about 1500 statistics. Statistics are released in many forms - on paper, electronically, and more recently via the Internet. Publications are freely distributed to over 560 libraries across Australia. A recent initiative to improve the relevance of ABS products to users involved the creation of two senior positions specifically for maintaining contact with clients and to give more high level attention to strategic issues. Bill mentioned many other current ABS projects and concerns, a small sample of which were:

- Changes - improved information on the Aboriginal and Torres Strait Islander population;
- New projects - investigation of areas of social concern such as women's safety; and,
- Methodological - how to produce environ-mental and resource accounts.

On the subject of accounts, charging for ABS products and services is no new concept - in Knibbs' day the Year Book sold for 3/6- plus postage. Bill spoke about the rules now used to decide the cost of ABS products and services, which range from minimal cost recovery in the case of standard statistics, up to market price for products such as the CD-ROM of 1986 and 1991 Census data.

The ABS also has a number of concerns regarding the quality of their work, including the difficulty of trading off timeliness and accuracy, and the importance of maintaining respondent privacy. This last issue is often expressed in terms of the release of unit record data. The ABS has been described as probably the only Commonwealth agency whose assurance of confidentiality means what it says, and Bill spoke of the provisions of the Census and Statistics Act regarding the release of such data. He suggested several ways that the full data set from a survey could be analysed without being released, which included having the ABS analyse data on behalf of researchers, or if the work was required for ABS data outputs, employing researchers to do the analysis at the ABS.

Finally, Bill spoke of his disappointment at the lack of interest in academia in research into methodology for official statistics. Bill's successor at the CSO is from the University of Southampton, and Bill questioned whether anyone in academia in Australia is qualified to follow a similar career path.

Two discussants followed Bill's talk: Dr Tom Karmel of DEET and Dr Bruce Armstrong of the Australian Institute of Health and Welfare. Both touched on the issue of pricing ABS products and services, and both revealed themselves to be in favour of the release of unit record data. In his response, Bill pointed out that some confidentialized unit record data, especially for social surveys, is already made available. He added that given the uproar a few years ago over the Australia Card, he did not think that the general public would be very keen for less rigorous procedures to be applied to protect the confidentiality of their data.

White wine had opened the evening's proceedings, served before the lecture, and red wine closed it, served at a well-attended dinner at Catchpole's Restaurant, attached to Wests Rugby Union Club.

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## MATHEMATICAL EDUCATION

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### Report from the Australian Subcommittee for the International Commission on Mathematical Instruction (ASICMI)

#### World Wide Web

The Web address for information on ICMI (the International Commission on Mathematical Instruction) from an Australian perspective is now available at this address:  
<http://www.maths.utas.edu.au/HomePage/ASICMI.html>

### ICME-8

The Second Announcement for the Eighth International Congress on Mathematical Education, ICME-8, in Seville, Spain from 14-21 July 1996, is now available at a Web site: <http://icme8.us.es/ICME8.html>

Anyone who cannot access this information and has not received a hard copy in the mail, can contact Jane Watson (Jane.Watson@educ.uta.edu.au or GPO Box 252C, Hobart 7001).

Quite a few Australian mathematics educators are involved in the programme. It should be noted that there are sessions for tertiary mathematics as well as school mathematics and ASICMI encourages all teachers, mathematics educators, and mathematicians to consider participating. Australia has been invited to make a special hour-long presentation about mathematics education in this country. Very few countries have been invited and ASICMI invites members of SSA or the Executive of SSA to make suggestions for the Australian presentation. These might include special teaching projects (e.g., the results of CAUT grants), research projects (e.g., ARC grants in mathematics/statistics education), professional development (e.g., DEET projects), software development and products, or curriculum projects and products. We are interested in innovations that Australia can show to the rest of the world. Please submit ideas to Jane Watson (address above) as soon as possible.

#### East Asia Conference

Zhang Dianzhou, of East China Normal University and Lee Peng Yee, of the National Institute of Education,

Singapore have suggested that there be a conference supported by regional ICMI bodies to take place in 1997. Some of the topics they suggest for inclusion are:

1. Examinations (effect on classroom learning and improvement, if any, under the existing circumstances).
2. Classroom culture (how does it affect the learning process, for example, group work?).
3. Technology.
4. Minorities (this includes gifted programmes and students with different cultural backgrounds).
5. Research directions in mathematics education.
6. Comparative study of mathematics education.

Further information will be provided as developments occur in 1996 but those particularly interested in Asia may want to make a mental note of this possibility.

Jane Watson,  
Chair of ASICMI

## ***At Last!***

### **The GISLINK from S-PLUS to ARC/INFO is available for Sun Workstations**

**Now you can import ARC/INFO data into S-PLUS,  
analyse the data and display the results back on the ARC/INFO map.**

This latest release of S+GISLINK provides an interface between version 3.3 of S-PLUS, and Rev 7 of ARC/INFO. This provides the ARC/INFO user with the ability to perform comprehensive statistical analyses not previously available in ARC/INFO alone.

**Free Video** - A free instructional video is available which demonstrates how to transfer data between the two products, and how to use S-PLUS for advanced modern data analysis. For more information contact Sue Clancy or Dorothy Keers:

*Phone:* (02) 325 3175    *Fax:* (02) 325 3200    *Email:* S+enquiries@syd.dms.csiro.au

## SPECIAL INTEREST NEWS

### Industrial Statistics

#### ACIS 95 Hits Target; Sets Standard for ACIS 97

A cocktail party on the evening of Sunday, December 3 was the kick-off event, the Novotel Brighton Beach in Sydney was the venue, and a nervous organising committee (Aloke Phatak, Teresa Dickinson and myself) was eagerly awaiting the start of ACIS 95, the First Australian Conference on Industrial Statistics. Registrations were a little lower than first hoped for, but the program was looking good, and the list of participants represented a potent mix of different backgrounds (engineers, statisticians and other scientists employed by industry, statistical consultants, academic and CSIRO statisticians). People were coming together from all over Australia and New Zealand. Would the next two days be the success that was hoped for, bringing together the diverse groups interested in the practice of statistics in industry, or would the organisers have to go back to the drawing board?

Happily, any nervousness was quickly dispelled by the tremendous spirit of participation evident from the first night mixer right through to the last talk on December 5. New contacts were made and enthusiastically developed, as participants took full advantage of the many mixing opportunities built into the program. Questions, comments and discussion enlivened almost every talk. The invited speakers played their part to the full, by giving excellent talks, and contributing wholeheartedly to many discussions. The poster session/mixer was a spirited success. The hotel played their part by providing excellent catering and facilities.

A few speakers lifted audience participation to new heights for an SSAI event. Notable among these were Geoff Robinson of DMS Melbourne, with his use of jelly beans in his "Assessing Sampling and Testing Errors" talk, and Greg Peterson of Alcoa, WA, for the "Advanced Industrial Statistics Kit" he handed out with an offer of a reward for the most effective "Snee plot" examination of some variance component data.

The keen competition for the "Best Contributed Talk" at ACIS 95 was eventually won, through popular vote, by Geoff Robinson, while Leigh Cavanagh and Ian Grant from Boyne Smelters emerged as winners of the "Best Poster" prize, for their excellent presentation on "Regression SPC of Temperature and Chemistry in Aluminium Reduction Cells". Hearty thanks are offered to all our speakers and poster presenters, with the hope that you and others will be encouraged to make presentations in the same spirit in 1997.

On behalf of the SSAI Industrial Statistics Section, I would like to publicly thank Aloke Phatak and Teresa Dickinson from CSIRO, DMS for all the time and effort they put into ensuring the success of ACIS 95. Sincere thanks are also due to DMS for supporting this involvement.

The plan now is to run ACIS conferences in odd-numbered (non ASC) years. If you are interested in the practice of statistics in industry, look out for ACIS 97 (or possibly ANZCIS 97, to acknowledge the involvement of our New Zealand friends). It should be good.

#### Quality at SISC-96

This year, the key conference event for industrial statisticians will be SISC-96. On day one, Monday 8 July, the SISC-96 program features a one-day workshop on Quality and Statistics, comprising four sessions:

1. Statistical and Engineering Process Control (Stu Hunter, Princeton University and John MacGregor, McMaster University)
2. Measuring Organisational Performance (Joe Orsini, California State University - Sacramento, Geoff Eagleson, AGSM, Sydney and Ian Saunders, CSIRO, Adelaide)
3. Industrial Experimentation (Jeff Wu, University of Michigan and John Eccleston, University of Queensland and Nye John, University of Waikato)
4. Getting the Most out of Statistics in Industry (a panel session featuring Australian and overseas panellists).

On the second and third days of SISC-96, industrial statisticians should look out for the other sessions (five in all) with Quality themes, namely:

Quality in Health Care, Software Quality and Metrics, Quality-Applications I & II, Monitoring and Modelling Air Quality (a joint Quality/Environment presentation).

#### July 15-17 MacGregor, Hunter and Harris "SPC Interfaces" Workshop

The first three days of the week following SISC-96 will see the third presentation in Australia of "SPC Interfaces", the excellent workshop on statistical and engineering process control and their interfaces conducted many times internationally by Professors John MacGregor (Chemical Engineering, MacMaster University), Stu Hunter (Princeton) and Tom Harris (Chemical Engineering, Queens University). The previous two presentations in Australia, conducted in conjunction with ASC12 in 1994, were fully subscribed and very enthusiastically received by the mix of statisticians and engineers they attracted. This year's workshop will be held at the Greenmount Beach Resort, Coolangatta. Further details are available from the leaflet accompanying this newsletter.

Geoff Riley, Alcoa WA

### Survey and Management

Following on from a highly successful workshop on Analysis of Survey Data in Canberra in October last year, the next major activity for the Survey and Management Section is the Workshop on Survey Design and Analysis, to be held in Sydney on Wednesday 12 July as part of SISC96. The workshop will be relevant for both practitioners and researchers in the survey field, and

speakers will include a number of experts in the area. Professor Chris Skinner of UK University of Southampton will be presenting a paper on the implications of survey design for analysis, as well as acting as a panel member in a session on survey design. Professor Ray Chambers, now of the University of Southampton, previously of the ANU, will also speak on model based and model assisted survey

design. A range of local experts in the survey field from both the private and government sectors will present papers, and some interesting discussion, debate and learning in the relevant areas is assured. For further information on the workshop contact Susan Linacre, fax: (06) 2531093; email: [sisd.exec@abs.telememo.au](mailto:sisd.exec@abs.telememo.au).

## LETTER TO THE EDITORS

### Communication about Basic Ideas in Statistics

Late in 1992, CSIRO Division of Mathematics and Statistics arranged with the Australian Quality Council that we would edit a regular feature in The Quality Magazine. This feature appears every two months under the banner 'Statline'.

I have been the editor of Statline. It concentrates on basic statistical ideas, generally illustrated by examples. Most of the articles have been written by people in CSIRO, but I would like to get more articles by non-CSIRO authors. In order to illustrate the flavour of the feature, let me describe two articles, both written jointly by Teresa Dickinson and me.

The February 1994 article had the title 'Remember that what you measure affects behaviour'. This is an important basic idea which is not related to Greek symbols or complicated mathematics. One example familiar to most people is students asking 'Will this be on the exam?', so that they can avoid studying what they know will not be measured. Many teachers of tertiary courses have stopped bothering to teach portions of their subject, no matter how important, if they know that those sections will not be examined. (A better approach is to ensure that important topics are examined, even if this makes the examination system more expensive or more complicated.)

The April 1995 article was 'Don't be confounded by confounding'. This arose from our attempts to explain the idea of confounding in a training course on experimentation. We have found that the common approach of starting with the confounding of main effects with two-factor interactions is difficult for many people to grasp. Our approach is to start by talking about the confounding of two main effects. For instance, if Mr. Jones does his washing with 'Fresh' brand washing powder while Ms Smith does her washing with 'Chepa' and they compare the results then the difference between washing powders is confounded with other main effects

such as dirtiness of clothes, type of washing machine, wash cycle used and drying method.

A practical example of such confounding is the attempt to compare the road maintenance strategies used in different regions of Australia using routinely-collected rather than experimental data. The effect of road maintenance strategy is likely to be confounded with road construction practices, crushed rock characteristics and climate.

The Statline articles have been written for an audience with little background in statistics or mathematics. I have made the effort to write and edit such articles because I believe that the most important contribution that the statistical community can make is to have the basic ideas of statistics more widely understood and used. Communications about basic statistical ideas could assume more technical knowledge if they were done under the auspices of a Statistical Society.

In my opinion, the Statistical Society of Australia supports its community of researchers better than it supports its community of practitioners. In particular, the biennial conferences and the Australian Journal of Statistics seem less supportive of practitioners than I imagine medical, dental or engineering journals and conferences are of their practitioner communities. I believe that the Society should make efforts to be more supportive of statistical practitioners. In particular, I believe that we should devote more of the space in our publications to communications concerned with basic statistical ideas, with novelty being given very little weight as a criterion for selecting articles.

I believe that there have been discussions about possible closer relations with the New Zealand Statistical Society. Such discussions could provide an opportunity to reconsider how the Society should balance its efforts between supporting practitioners and supporting the statistical research community.

Geoff Robinson

Email: [Geoff.Robinson@dms.CSIRO.au](mailto:Geoff.Robinson@dms.CSIRO.au)

## OBITUARY

### Harry Mulhall

Harry [Harold] Mulhall, who retired on 29 January 1979 as Associate Professor in Mathematical Statistics at the University of Sydney, was born on 27 January 1915 and died on 26 December 1995.

His express wish was that, apart from the above information, no obituary be written. In deviating from

this, we feel that at least a modest outline of his career should be preserved for posterity and for the generations of students that passed through the classes of this excellent teacher and very private, highly principled man.

Harry spent his early schooldays at Gladesville Primary School, and later attended Sydney Boys High School, where he had the distinction of being selected from the top

three Mathematics honours students of his year for a position with the MLC Insurance company. The archival material at Sydney Boys High School reveal that Harry was one of those rare students who obtained First Class Honours in four subjects (the maximum possible) in the Leaving Certificate. After a time with the MLC, Harry enrolled in Science at the University of Sydney. He studied Mathematics and was a student during Carslaw's last year as Professor of Mathematics.

Harry gained his BSc (Hons I in Mathematics and Chemistry - with University Medal in Mathematics) at the University of Sydney in 1936, and worked in the years 1937-1940 as part-time Lecturer and as tutor at the University of Melbourne. He returned to the University of Sydney where in 1941-1942 he was Assistant Lecturer and in 1943-1944 part-time Lecturer in the Department of Mathematics, while working (1943-1945) as Lecturer in Mathematics at the Sydney Technical College.

At that time the Mathematics Department at Sydney University was in the Physics Building, with T.G. Room as Head. Harry is remembered by Eric Barnes from those early years as a conscientious and careful teacher over a range of Mathematics subjects and as forming, with his lifelong friend Bill Smith-White, a social and academic nucleus, being especially kind to young staff members coming into the Department. From 1946 until the eventual establishment of the Department of Mathematical Statistics with H.O. Lancaster as Professor in June 1959, Mulhall was responsible almost single-handedly for the organization and teaching of statistics within the Science Faculty. During that time, Mulhall held the positions of Lecturer in Mathematics (1946-1953) and Senior Lecturer (1953-1964), being promoted to Associate Professor at the end of 1964. Oliver Lancaster recalls that from the outset, Harry's teaching experience, diplomacy and organizational skills were invaluable to the newly formed Department of Mathematical Statistics.

For the period 1949-52, Sydney University's archival material lists Mulhall as postgraduate student, University of Cambridge, presumably during periods of post-war refurbishment leave from Sydney. His PhD was awarded in 1953 for a thesis entitled *The Application of Multivariate Statistical Analysis to Problems of Physical Anthropology*. The topic was suggested by John Wishart as Director of the Cambridge Statistical Laboratory, in response to a request from J.C. Trevor, Director of the Duckworth Laboratory of Physical Anthropology at Cambridge. The stimulus for the request was a large volume of anthropological data submitted to the Duckworth Laboratory by Miriam Talbot, the widow of the anthropologist Percy Amaury Talbot. Talbot had collected the data but had attempted only a preliminary analysis before his death. Mulhall combined the analysis of the data with a broader study of the application of multivariate statistical techniques in this field, to incorporate the effect of correlation, specifically the use of the Mahalanobis distance statistic. In accordance with the wishes of Miriam Talbot, Mulhall modified his thesis and, naming Talbot as joint author, published in 1962 a book entitled *The Physical Anthropology of Southern Nigeria*

with the subtitle *A Biometric Study in Statistical Method* (Cambridge University Press). This book incorporated for the user a description of sample selection as well as univariate and multivariate statistical methodology.

Mulhall's short book *Elementary Statistics* (Angus and Robertson) was first published in 1961, and was followed in 1966/7 by a sequence of high school text-books in the series *A New Mathematics for Senior Forms* (Angus and Robertson), with joint author Bill Smith-White. Harry was particularly concerned with mathematical education, was at one time President of the Mathematical Association of NSW, and is especially remembered for the assistance he provided to NSW school teachers in the difficult early years of the Wyndham scheme. (The Mulhall-Smith-White textbooks covered the new Mathematics syllabus of the scheme.)

Below is an extract from the September 1979 issue of the Statistical Society of Australia *Newsletter* of Ann Eyland's article on Mathematical Statistics at Sydney University:

"Harry Mulhall's contributions were primarily as a teacher. His beautifully structured courses have provided a framework for courses given by many of his students, now themselves University teachers."

Those of us who had the good fortune to be taught by Harry will agree, and will remember his lectures with nostalgia. He was an eloquent speaker, articulate and well-read, with a genuine concern for the needs of all his students. For those who were weak mathematically, he ran optional *practice* classes in addition to the usual tutorial classes. He was equally concerned with the needs of the brighter students and would present difficult concepts with enviable clarity, but never at the expense of rigour. It is not surprising, therefore, that despite the fact that he was deaf, his courses were very successful.

Harry's wife Joan studied French at University, and the two of them liked to spend time in the south of France, where Harry practised his "schoolboy French" (as he modestly described it), leaving Joan to do the "serious talking". He also returned frequently to Cambridge even after retirement, maintaining contacts with the University and in particular with Harold and Bertha Jeffries.

Harry's power of perception was acute and could add colour to an otherwise apparently commonplace observation. His conversation was entertaining, and at a personal level, he delighted his friends with his ready anecdotes, his spontaneous quotations and his sharp wit. A connoisseur of fine wines and food, Harry was also a gourmet cook, and his dinner parties were anticipated with relish.

For those of us whom he taught, our statistical careers are in part a tribute to him.

Our thanks for assistance and comments are due to Eric Barnes, Geoff Eagleson, Ann Eyland, Peter Hall, Chris Heyde, Oliver Lancaster, Jane Pitman, Tim Wall, Neville Weber and Sue Wilson.

Mary Phipps and Eugene Seneta

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## CONFERENCE REPORTS

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### Bayesian Computation using BUGS

A very successful three day workshop was organised by the Statistical Computing section and staff at QUT entitled "An Introduction to Bayesian Computation using BUGS"

(BUGS stands for Bayesian Inference Using Gibbs Sampling) during 4 - 6 December 1995 in the School of Mathematics at Queensland University of Technology, Brisbane. The instructors were Dr David Spiegelhalter & Dr Nicky Best of the Medical Research Council Biostatistics Unit, Cambridge, England.

David and Nicky had arrived on Sunday 3rd from a wintry England to be thrust into a week in summer in Brisbane. Sunday was spent gingerly trying out the computing system for participants and putting the finishing touches to exercises for the course. Dung Le Hoang, the maths school's computing wizard, had spent the previous week porting BUGS (and trying to leave the bugs behind) to a DEC alpha system and all was not plain sailing.

The workshop was attended by over 30 participants from as far afield as Western Australia and New Zealand and from diverse backgrounds such as epidemiology, fisheries and animal breeding as well as applied statistics.

The 3-day course introduced participants to modern Bayesian computations using Markov chain Monte Carlo simulation methods. The instructors used the BUGS software which the MRC group has developed over the last 5 years. Versions of the course had been given successfully a number of times in England, and a shortened version was offered as part of the August '95 American Statistical Association continuing education program in Orlando.

The BUGS program may be used for analysing a wide range of complex models: for example hierarchical random effects/latent variable models with repeated measures, missing data, measurement error, censoring, spatial and temporal smoothing etc. The course successfully introduced new users to the BUGS language and its capabilities, and to demonstrate how to use the software to analyse some of the above classes of models.

The course covered a number of topics including conditional independence graphs, using CODA and Splus to display results, checking convergence and summarising BUGS output, discussion of sensitivity to priors, starting values, convergence and parameterization using, measurement error, institutional ranking, survival analysis, and spatial modelling. Participants were provided with excellent notes of exercises and manuals.

David and Nicky generated great enthusiasm in the participants for modelling using BUGS and practical sessions were revealing and interactive. With 30 plus people using simulation techniques statistics had to be used on the run to confirm or otherwise surprising results. A highlight was use of the DoodleBUGS software which

allows models to be created using interactive mouse-and-point graphics.

Finally, the organisers were relieved the computing system had not crashed, participants had enjoyed the workshop and David and Nicky were not totally exhausted.

For anyone interested in getting the software, BUGS for PCs, HPs and Sparc-stations is available as shareware via ftp or on disk, and includes a manual and extensive worked examples. The ftp site is

<ftp.mrc-bsu.cam.ac.uk>

Tony Pettitt

### Sixth International Environmetrics Conference

Malaysia, a country of striking natural beauty and intense economic development was host to the Sixth International Environmetric Conference. Held in Kuala Lumpur on December 6-9, 1995, the conference brought together researchers from over 22 countries. The conference was sponsored by the Universiti Kebangsaan Malaysia, the Malaysian Institute of Statistics, The International Environmetrics Society and the Ministry of Science, Technology and Environment, Malaysia. The role of the conference was to discuss quantitative problems and solutions in the environmental arena and to bring together researchers working on environmental statistics and modelling.

The conference was opened by Dato' Abu Bakar Daub, Deputy Minister of Science, Technology and Environment Malaysia. This was followed by a Keynote Address 'Environment and Development Beyond Rio' by Professor Dato' Dr Mohd. Sham Mohd Sani. This keynote address prompted interesting discussion on equity issues between 'Northern' and 'Southern' nations with respect to emissions of greenhouse gases.

A number of invited papers were presented on topics such as models for hazards posed by the sudden release of chemicals, climate modelling, effects of pollution on cancer rates, water resources in China and changes in patterns of dog-whelks in waters near Scotland. In addition, there were numerous contributed papers and posters on a wide range of topics. A panel discussion on the interdisciplinary nature of environmetrics generated enthusiastic discussion.

The meeting was closed with a talk from the Prime Minister of the state of Selangor, Y.A.B. Tan Sri Dato' Muhammad Hj. Muhd, Taib, on the role of environmental analysis in Malaysia.

Proceedings of the conference will be published in 1996.

The Seventh International Conference on Environmetrics is planned for July 23-26 in San Paulo, Brazil. Information on that conference may be obtained through the home page of the society. The address is <http://fbox.vt.edu:10021/artsci/stats/ties/ties.html>.

Ray Correll

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## AUSTRALIAN FOUNDATION FOR SCIENCE

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As the Representative of the Statistical Society of Australia (SSAI), I attended the Australian Foundation for Science Annual Meeting on Tuesday 12 October 1995. At this meeting I accepted on behalf of the Society a certificate acknowledging the Statistical Society of Australia Inc. as a Member of the Foundation on the occasion of the Fifth Anniversary of its founding.

The Fifth Anniversary Celebrations commenced with a brief overview by Sir Gustav Nossal (President of the Australian Academy of Science) of the Foundation's role in educational activities, followed by Mr John Ralph (Chairman of the Foundation) launching the new publication Environmental Science Teachers Guide. Dr Neville Fletcher then reviewed progress on Primary Investigations which you may remember was announced recently in the SSA Newsletter. This science course, which is a whole school approach covering Kindergarten to Year 6, has already been adopted in over four hundred schools, particularly in Western Australia and the Northern Territory where it is endorsed by their education departments. Professor Frank Fenner gave a preview based on clips of the Video Histories of Australian Scientists project. The Academy will have copies of these videos which will include shortly our own eminent member, Professor Oliver Lancaster. For those interested, these videos will be made available through the Academy.

More information on these activities as well as links to other activities, can be found by browsing the World Wide Web, starting at the Foundation's home page

<http://www.asap.unimelb.edu.au/aas/foundati/foundati.htm>

Sue Wilson



*The Australian Foundation for Science  
is pleased to acknowledge the  
Statistical Society of Australia*

*as a Member of the Foundation  
on the occasion of  
the Fifth Anniversary of its founding.*

*October 1995*

G J W Nossal  
President  
Australian Academy of Science

J T Ralph  
Chairman  
Australian Foundation for Science

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Founded by the Australian Academy of Science for the benefit of science in Australia

*Copy of Certificate*

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## WORLD WIDE WEBSITE FOR SSAI

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### SSAI's Website

[http://www.mathstat.flinders.edu.au/stats/stat\\_soc.html](http://www.mathstat.flinders.edu.au/stats/stat_soc.html)

As announced in the last issue of The Newsletter, the Statistical Society of Australia Inc now has a presence on the World Wide Web.

All members are urged to browse the website (which is still being developed) and email me with suggestions for improvement.

Since the purpose of a Website is to disseminate information, please take every opportunity to advertise the Society's URL: Branch Secretaries could incorporate the URL in their Branch notice banners, conference organisers in their conference brochures, Webmasters for

other related sites could link to us and request a reciprocal link and so on. Our URL has been placed in many international listings so as to raise our Society's profile.

Individual Branches and Sections are encouraged to develop their own sites. I can provide some initial assistance if required.

An initiative currently underway is the building of an application form for Society membership on the Web, with the application automatically emailed to the relevant Branch Secretary. Browsers watch for this one!

Alan J Branford  
[alan@stats.flinders.edu.au](mailto:alan@stats.flinders.edu.au)

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## JAN TINBERGEN AWARDS

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### Competition for Young Statisticians from Developing Countries, 1997

The International Statistical Institute (ISI) announces the Eighth Competition among young statisticians from developing countries who are invited to submit a paper on any topic within the broad field of statistics for possible presentation at the 51st Session of the ISI to be held in Istanbul, Turkey, in 1997.

Participation in the competition is open to nationals of developing countries who are living in a developing country, who were born in 1965 or later.

Papers submitted must be unpublished, original works which may include material from participants' university theses.

The papers submitted will be examined by an International Jury of distinguished statisticians who will select the three best papers presented in the competition. Their decision will be final.

Each author of a winning paper will receive the Jan Tinbergen Award in the amount of 5,000 Dutch Guilders and be invited to present their papers at the Turkey Session of ISI, with all expenses paid (i.e. round trip airline ticket from his/her place of residence to Istanbul plus a lump sum to cover living expenses).

Manuscripts for the Competition should be submitted in time to reach the ISI not later than January 1, 1997.

The rules governing the preparation of papers, application forms and full details are available on request from the ISI Permanent Office. The address is as follows:

The Director  
Permanent Office  
International Statistical Institute  
428 Prinses Beatrixlaan  
2270 AZ Voorburg  
The Netherlands

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## AUSTRALASIAN CONFERENCES

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### CONFERENCE SUMMARY

**Decision Making and Risk Assessment in Biology, 24-28 July 1996,** University of Otago, Dunedin, New Zealand.

Information: Conference Administrator, Centre for Applications of Statistics and Mathematics, University of Otago, PO Box 56, Dunedin, New Zealand; tel: +64 (3) 479-7774; fax: +64 (3) 479-8427, email: [casm@maths.otago.ac.nz](mailto:casm@maths.otago.ac.nz). (Further details in this issue.)

**Sydney International Statistical Congress, 8-12 July 1996,** Sheraton-Wentworth Hotel, Sydney.

Information: Director, SISC-96, CSIRO Division of Mathematics & Statistics, Locked Bag 17, North Ryde NSW 2113, fax: (02) 325 3200, email: [sydney96@syd.dms.csiro.au](mailto:sydney96@syd.dms.csiro.au). (Further details in Newsletters 66, 68, 72 and 73.)

**Workshop on Analysing Survey Data, 10 July 1996, Sydney.**

Information: Gemma van Halderen (06) 252 7342. (Further details in Newsletter 72.)

**Third International S Conference, 15-17 July 1996, Macquarie University, North Ryde.**

Information: [http://www.dms.CSIRO.AU/sisc/third\\_s.htm](http://www.dms.CSIRO.AU/sisc/third_s.htm) (Further details in this issue.)

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**Workshop on Animal Bioassay Experiments, 17-19 July 1996,** University of Newcastle.

Information: Dr Keith Dear, Department of Statistics, The University of Newcastle, CALLAGHAN NSW 2308, tel: (049) 215527, fax: (049) 217063, [dear@frey.newcastle.edu.au](mailto:dear@frey.newcastle.edu.au), <http://frey/~dear>. (Further details in this issue.)

**ISIS: Information, Statistics and Induction in Science, 20-23 August 1996, Melbourne**

Information: David L Dowe, email [dld@cs.monash.edu.au](mailto:dld@cs.monash.edu.au). (Further details in this issue.)

**Australasian Genstat Conference, 4-6 December 1996, Adelaide.**

Information: email [genstat96@adl.biom.csiro.au](mailto:genstat96@adl.biom.csiro.au) (Further details in Newsletter 72.)

**APORS'97, Fourth Conference of the Association of Asian-Pacific Operational Research Societies within IFORS, 30 November - 4 December 1997, World Congress Centre, Melbourne, Victoria**

Information: APORS97, c/o PR Conference Consultants Pty Ltd, PO Box 326, BALWYN VIC 3103, or Pam Richards, e-mail: [APORS97@scl.monash.edu.au](mailto:APORS97@scl.monash.edu.au); tel. (03) 9816 9111; fax: (03) 9816 9287. (Further details in this issue.)

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### **Decision Making and Risk Assessment in Biology 24-28 June 1996 University of Otago Dunedin, New Zealand**

The conference is intended to bring together biomathematicians, ecologists, environmental scientists, resource managers and statisticians with a common interest in the application of quantitative methods to ecological and environmental problems, in the expectation that this interaction will be beneficial to all participants. In particular, it will provide a summary of the latest advances in the use of statistical methods in risk assessment at a level suitable for both scientists and managers. Selected papers will be published in the *Proceedings*.

At the time of writing the programme includes the following papers:

Hugh Possingham (University of Adelaide, Australia)  
General Principles of risk assessment.

Richard Barker and Bruce Warburton (Landcare Research, New Zealand)  
Monitoring changes in possum abundance following control operations

Philip Dixon (Savannah River Ecology Laboratory, USA)  
Testing for no impact when some data are censored

Murray Efford (Landcare Research, New Zealand)  
Estimating survival rate for a threatened species: making the most of mark-recapture data

Chris Francis (National Institute of Water and Atmospheric Research, New Zealand)  
Risk analysis in fisheries management  
Graham Hickling (Lincoln University, New Zealand) and Peter Caley (Landcare Research, New Zealand)  
Possum control to reduce the risk of TB breakdown in New Zealand cattle herds

Stuart MacDiarmid (Ministry of Agriculture and Fishers, New Zealand)  
Title to come

Lynn Maguire (Duke University, USA)  
Using decision analysis to solve conservation problems: past successes, current limitations, future ambitions

Henrik Moller (Otago University, New Zealand) and David Raffaelli (Culterty Field Station, University of Aberdeen, Scotland)  
Predicting risk from community press experiments; the challenge of temporal and spatial scales for adequate replication

John Parkes (Landcare Research, New Zealand)  
Release strategies for Rabbit Calicivirus Disease - decision making without certainty

Liz Slotten (University of Otago, New Zealand)  
The impact of gillnet entanglement on Hector's dolphins: quantifying risk

Grant Thompson (National Marine Fisheries Service, USA)  
Optimal risk-averse harvesting in a biomass dynamics model

For further information contact the Conference Administrator, Centre for Applications of Statistics and Mathematics, University of Otago, PO Box 56, Dunedin, New Zealand; tel: +64 (3) 479-7774; fax: +64 (3) 479-8427; email: [casm@maths.otago.ac.nz](mailto:casm@maths.otago.ac.nz).

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**ISIS  
22 - 23 August 1996  
Old Melbourne Hotel  
North Melbourne**

This conference will explore the use of computational modelling to understand and emulate inductive processes in science. The problems involved in building and using

such computer models reflect methodological and foundational concerns common to a variety of academic disciplines, especially statistics, artificial intelligence (AI) and the philosophy of science. This conference aims to bring together researchers from these and related fields to present new computational technologies for supporting or analysing scientific inference and to engage in collegial debate over the merits and difficulties underlying the various approaches to automating inductive and statistical inference.

#### Program Committee

Hirotsugu Akaike, Lloyd Allison, Mark Bedau, Jim Bezdek, Hamparsum Bozdogan, Wray Buntine, Peter Cheeseman, Honghua Dai, David Dowe, Usama Fayyad, Doug Fisher, Alex Gammerman, Clark Glymour, Randy Goebel, Josef Gruska, David Hand, Bill Harper, David Heckerman, Colin Howson, Lawrence Hunter, Frank Jackson, Max King, Kevin Korb, Henry Kyburg, Ming Li, Nozomu Matsubara, Aleksandar Milosavljevic, Richard Neapolitan, Jon Oliver, Michael Pazzani, J. Ross Quinlan, Glenn Shafer, Peter Slezak, Ray Solomonoff, Paul Thagard, Neil Thomason, Raul Valdes-Perez, Tim van Gelder, Paul Vitanyi, Chris Wallace, Geoff Webb, Xindong Wu, Jan Zytkow.

Inquiries to:

[isis96@cs.monash.edu.au](mailto:isis96@cs.monash.edu.au)

David Dowe: [dld@cs.monash.edu.au](mailto:dld@cs.monash.edu.au)

Kevin Korb: [korb@cs.monash.edu.au](mailto:korb@cs.monash.edu.au) or

Jonathan Oliver: [jono@cs.monash.edu.au](mailto:jono@cs.monash.edu.au)

Information is available on the WWW at:

<http://www.cs.monash.edu.au/~jono/ISIS/ISIS.shtml>

#### Areas of Interest

The following streams/subject areas are of particular interest to the organisers:

- Concept Formation and Classification
- Minimum Encoding Length Inference Methods
- Scientific Discovery
- Theory Revision
- Bayesian Methodology
- Foundations of Statistics
- Foundations of Social Science
- Foundations of AI

**Call for Papers:** Prospective authors should mail five copies of their papers to Dr David Dowe, ISIS chair. Alternatively, authors may submit by email to [isis96@cs.monash.edu.au](mailto:isis96@cs.monash.edu.au). Email submissions must be in LaTeX (using the ISIS style guide [will be available at the ISIS WWW page]). Submitted papers should be in double-column format in 10 point font and not exceeding 10 pages. An additional page should display the title, author(s) and affiliation(s), abstract, keywords and identification of which of the eight areas of interest (see <http://www.cs.monash.edu.au/~jono/ISIS/ISIS.Area.Interest.html>) are most relevant to the paper. Refereeing will be blind; that is, this additional page will not be passed along to referees. Accepted papers will be published in the conference proceedings, so long as at least one author is in attendance.

#### Papers should be sent to:

Dr David Dowe, ISIS chair

Department of Computer Science

Monash University, Clayton Victoria 3168

Phone: 03-9 905 5226 Fax: 03-9 905 5146

Email: [isis96@cs.monash.edu.au](mailto:isis96@cs.monash.edu.au)

Submission (receipt) deadline: 28 March 1996

Notification of acceptance: 10 June 1996

Camera-ready copy (receipt) deadline: 15 July 1996

#### Conference Venue

ISIS will be held at the Old Melbourne Hotel, 5-17 Flemington Road, North Melbourne.

The Old Melbourne Hotel is within easy walking distance of downtown Melbourne, Melbourne University, many restaurants (on Lygon Street) and the Melbourne Zoo. It is about fifteen to twenty minutes drive from the airport.

#### Registration

A registration form will be available at the WWW site

<http://www.cs.monash.edu.au/~jono/ISIS/ISIS.shtml>,

or by mail from the conference chair. Dates for registration will be considered to be met assuming that legible postmarks are on or before the dates and airmail is used. Student registrations will be available at a discount (but prices have not yet been fixed). Relevant dates are:

Early registration (at a discount): 3 June, 1996

Final registration: 1 July, 1996

#### Workshop on Animal Bioassay Experiments

17-19 July 1996

University of Newcastle

In the third in this annual series of biostatistics workshops, Paige Williams of the Department of Biostatistics, Harvard School of Public Health, will present a 3-day workshop entitled "Design and Analysis of Animal Bioassay Experiments".

Animal bioassays are conducted to evaluate the effects of exposure to chemicals or other environmental agents with potential danger to the human population. Specific topics will include bioassay design, dose-response modeling, principles of quantitative risk assessment, competing risk survival analysis, methods for correlated and multiple response data, and use of historical controls.

Knowledge of statistics at an intermediate level will be assumed.

For further information, contact:

Dr Keith Dear

Department of Statistics

The University of Newcastle

CALLAGHAN NSW 2308

phone: (049) 215527; fax: (049) 217063

[dear@frey.newcastle.edu.au](mailto:dear@frey.newcastle.edu.au)

<http://frey/~dear>

**Third Australian Conference on Mathematics and Computers in Sports**  
**30 September- 2 October 1996**  
**World Congress Centre**  
**Bond University, Gold Coast**

The 3-day conference will bring together sports scientists who are interested in mathematical modelling in sports, the use of computers in sports and application of these to improve coaching and individual performance.

Papers are invited on any of the following themes:

- Computers in Sports
- Statistics in Sports
- Operations Research in Sport
- Mathematical Modelling in Sport
- The interaction between any of these

For further details and registration circular please contact:  
 kumark@bond.edu.au (Dr Kuldeep Kumar) or  
 neville\_de\_mestre@bond.edu.au (Prof Neville De Mestre)

**APORS'97**  
**Fourth Conference of the Association of Asian-Pacific Operational Research Societies within IFORS**  
**Nov 30 - Dec 4 1997**  
**World Congress Centre, Melbourne**

For more information contact:

APORS97  
 c/o PR Conference Consultants Pty Ltd  
 PO Box 326  
 BALWYN VIC 3103

(Pam Richards)  
 e-mail: APORS97@sci.monash.edu.au  
 phone: (03) 9816 9111 fax: (03) 9816 9287

## OVERSEAS CONFERENCES

**Conference in Applied Statistics in Agriculture**, 28-30 April 1996, Manhattan, Kansas.

Information: James R. Schwenke or George A. Milliken, Kansas State University, Department of Statistics, Dickens Hall, Manhattan, Kansas 66506-0802; tel. (1) 913 532-6883; fax. (1) 913 532-7736.

**Second International Symposium on Spatial Accuracy Assessment in Natural Resources and Environmental Sciences**, 21-23 May 1996, Colorado State University, Fort Collins.

Information: Dr H. Todd Mowrer, Chair, Spatial Accuracy Symposium, Rocky Mountain Forest and Range Experiment Station, 240 W. Prospect, Fort Collins, CO 80526-2098, USA.

**Fourth International Applied Statistics in Industry Conference**, 3-5 June 1996, Dallas, Texas, USA.

Information: Tracy Caldwell, Conference Secretary, 2183 S. Cooper Ct., Wichita, KS 67207-5834, USA; (1) (316) 777-4425, fax (1) (316) 689-6889, email tracy.caldwell@acginc.com.

**18th International Biometric Conference (IBC-96)**, 1-5 July 1996, Amsterdam, The Netherlands.

Information: Paul Koopman, Secretary, Netherlands Region of the Biometric Society; fax: (31) 2940-13906.

**International Conference on Problems of Statistical Education**, 21-23 July 1996, St Petersburg, Russia.

Information: Prof. I. Elisseeva, St Petersburg University of Economics and Finance, 30/32 Griboedov Kanal, 191023 St Petersburg, Russia; tel. (812) 110-55-94; fax (812) 247-30-45.

**7th International Conference on Statistical and Mathematical Models in Environmental Sciences**, organized by The International Environmental Society, 22-26 July 1996, University of Sao Paula, SP, Brazil.

Information: Ines Iwahita (IEA/USP), fax +5511 221-9563, email ties@ime.usp.br, http://www.ime.usp.br/cpereira/index.html.

**Joint Statistical Meetings**, 4-8 August 1996, Chicago, Illinois.

Information: ASA, 1429 Duke St., Alexandria, VA 22314-3402; tel. (1) 703 684-1221; fax. (1) 703 684-2037; email: meetings@asa.mhs.compuserve.com.

**4th World Congress of the Bernoulli Society**, 21-23 August 1996, Vienna, Austria.

Information: Prof. G. Pflug, Dept. of Statistics, OR and Comp. Sci., University of Vienna, A-1010 Vienna, email: WC96@smc.univie.ac.at.

**COMPSTAT 96 \_ XII Symposium on Computational Statistics**, 26-30 August 1996, Barcelona, Spain.

Information: Prof. Albert Prat, Dept. of Statistics, Avda. Diagonal 647, 08028 Barcelona, Spain; tel. (34) 3 4016569; fax. (30 3 4016575; email Prat@eio.upc.es.

**Quality Improvement Through Statistical Methods**, 29 December 1996 - 1 January 1997, Cochin, India.

Information: Prof. Bovas Abraham, Institute for Improvement in Quality and Productivity, University of Waterloo, 200 University Ave West, Waterloo, Ontario, Canada N2L 3G1; fax: (1) 519 746 5524; email: babraham@math.uwaterloo.ca.

**International Symposium on Contemporary Multivariate Analysis and Its Applications**, 19-22 May 1997, Hong Kong.

Information: Multivar 97, c/o Dept. of Mathematics, Hong Kong Baptist University, Kowloon Tong, Hong Kong; fax: +852 2336 1505; tel: +852 2339 5056; email: multivar97@hkbu.edu.hk

**1997 Joint Statistical Meetings**, 10-14 August 1997, Anaheim, California.

Information: American Statistical Association, 1429 Duke St, Alexandria, VA 22314-3402, USA; email meetings@asa.mhs.compuserve.com

**IMS and Bernoulli Society European Regional Meeting: Mathematical Statistics and its Applications to Biosciences**, first week in September 1997, Rostok, Germany.

Information: F. Liese, W.R. Richter, University of Rostok, Germany.

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