New Zealand Statistical Association (Inc.)

newsletter

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IN THIS ISSUE

Look for an up-to-the-minute review of the very recent York GENSTAT conference, a shock/horror probe of the Broadbank Forex debacle, and, a review of a textbook written by two members of this association. Speaking of statistics textbooks, a quick search produced at least 27 titles written or edited by resident or expatriate NZ statisticians in the last 20 years or so. Not only do NZ athletes win more Olympic gold medals per head of population than any other country but NZ statisticians also appear to write more textbooks per head of population. The second assertion has not been authenticated and it should be remembered that it takes just one prolific statistician in a tiny Bahamian nation or European kingdom to wreck such a claim.

IN THE PREVIOUS ISSUE

Readers were invited to send in comments on the association's current and future publications. The editor received several private letters and the main points expressed were:

(1) Technical Institute and Secondary School applied mathematics and statistics teachers need both contact with practising statisticians and access to appropriate textbooks and resource books. One writer suggested it was time for a sequel to "Statistics at Work" and that this sequel should be aimed at the Technical Institutes.

(2) There were two requests for the association to publish a membership directory. A quotation from one of the letters follows: "With 244 local ordinary members there is clearly a breadth of statistical expertise available within New Zealand, yet I doubt whether any one of us would know more than about 60 members by name, let alone their occupations or areas of interest. If the association were to collate and publish a list of members by name, address/affiliation, occupation and area(s) of statistical interest then I believe that both research and practice of statistics in this country would be better served. It would not only enable one to identify and consult the 'local expert' but might also lead to productive collaboration between members and increase the dialogue between 'theorists' and 'consultants'."

(3) There was a call to relax the "non-technical" restriction placed on papers submitted to *The New Zealand Statistician* with the allowance of say one technical paper per issue.

The article on some aspects of statistical consulting, which was written in partial fulfillment of the Post Office requirements for a registered publication (registered publications must have at least 25% of space devoted to news and articles of comment), generated a few comments along these lines:

(1) To be fair, Professor Kempthorne has toned down his comments about the *Annals of Statistics* and in the April 1985 issue of *The IMS Bulletin* wrote, "...the Annals often look dull and irrelevant at first sight, but the issues look better as the years go by. I find myself looking at the Annals of 10 or 20 years ago with deep interest." As an aside, at AMD/DSIR a not entirely frivolous proposal has been made to remove recent and current issues of the Annals from display in the library and embargo them in the stack room for a period of at least ten years.

(2) One correspondent pointed out that the definitive treatises on "Multiple comparison procedures in the presence of heterogeneity" and "The Definition of Interaction in Higher Order Contingency Tables" have already been written (sob!)

(3) Another correspondent, Clare Salmond, pointed out that the list of statistician's responsibilities should also include, "Advising the client on procedures for editing his or her data". With large data sets from surveys, such advice, if properly taken, can avoid the costly exercise of repeating analyses. Clare has written a handbook on the subject, "Data Editing: Methods of Quality Control" (Wellington: Government Printer, 1981) and readers may find it useful if they have clients completing large sample surveys.

(4) One person asked to be enlightened about the "airline ticket sales" model. It is (Box and Jenkins, 1970):

(1-B) (1-B**12)Yt = (1-aB) (1-bB**12)et

and novitiates at a recent SAS Applied Time Series course were advised to tape a copy of this formula to their computer terminal.

THE GENSTAT CONFERENCE, 22-26 SEPTEMBER 1985

by C. Jean Thompson

The 4th International Genstat Conference opened on a cool, cloudy morning with a welcoming address by Tony Weekes of the University of York. Before him were 95 participants from 10 countries eagerly awaiting a variety of papers plus the first public preview of Genstat 5. The latter was to prove the major theme of the Conference.

The Conference programme was organized into 12 sessions with two papers in each, and 10 demonstration sessions. There were also posters and a "Problems Corner" where the Genstat authors took turns at manning the station helping people with their specific Genstat problems.

Presented papers covered the Genstat Macro library, Genstat and Workstations, Genstat 5; an overview and new facilities, Genstat in New Zealand (and Nigeria), multivariate analysis, practical applications by statistical consultants, expert systems, new macros,

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multivariate analysis in Genstat 5, Genstat 5 graphics, time series, Genstat on the IBM PC and the design and analysis (using Genstat) of general block designs. Each speaker had 25 minutes plus 5 minutes for questions. It was a credit to all concerned that these times were achieved in almost all cases. Material was, on the whole, well presented and clearly explained.

Four of the papers were presentations on Genstat 5 which has some exciting new features—rationalized syntax, truly interactive, real graphics, macros replaced by procedures—to mention but a few of the improvements. In the demonstrations, which were held between the sessions for presentation of papers, the person responsible for each part of Genstat 5 ran it interactively through a network system, live (warts and all) on a big screen. Here we saw the new improved ANOVA input and output, the new high resolution graphics, regression with warnings about large residuals and points with high leverage, curve fitting, the opening of files in the middle of an interactive session and many other encouraging things. It was interesting to note that all the warts that did appear were network warts; Genstat 5 in its prototype form performed creditably. There is however, still quite a long way to go and the authors do not see it in its final form for issue until the end of 1986. There is a possibility we could get a test version in N.Z. much earlier than this, and I would like to see this happen, as it would allow scope for input into the final form of the program and give us a period of adjustment and time to prepare material for "notes on the changeover" or some such thing.

On the social side, an afternoon of outings to local attractions was arranged. The group split into two, one part taking a ride on an old steam train across the North Yorkshire moors, while the other part went further back into history visiting an abbey and a stately home. Both outings proved very popular, aided no doubt by the sudden appearance of a fine, clear and mild afternoon. Obviously, the conference organizers had the right connections to arrange this! Then there was the Conference Dinner. This was a truly memorable affair held in a 15th century timber-framed building, St William's College, alongside the magnificent York Minster. We had our cocktails to flute accompaniment and later were ushered into the dining hall to the tones of a "cornett" and "rustic" bagpipes producing 15th century music. The three players were dressed in costume of the times and performed on a wide range of renaissance instruments including flutes, shawms, a sackbut, a hurdy-gurdy, drums, crumhorns, recorders and the rackett—an incredible thing! The meal was excellent too. After dinner, two dancers, dressed appropriately, performed renaissance dances.

The 4th International Genstat Conference was indeed a great success all around. It was notable for the friendliness and willingness to talk about things Genstat at coffee, tea, lunch and dinner breaks. It was notable for the overall quality of the papers presented. It was notable for its organization. And above all, it was notable for the unveiling of Genstat 5, to quote John Gower in his closing remarks "proving that it does exist and will come".

UNAUTHORIZED FOREIGN EXCHANGE DEALINGS
by Ross M. Renner

On 29 August 1985, Radio N.Z. reported that police were to investigate possible unauthorized dealings in foreign exchange markets which had resulted in a $7.9 million loss by Broadbank, the merchant banking arm of Fletcher Challenge. TVNZ followed with a report that police were investigating improper financial transactions, it being suggested that certain unnamed dealers had been acting on their own behalves. On 11 September 1985, Fletcher Challenge announced gross losses of $23.2 million, and that foreign exchange dealing was suspended indefinitely. Various dismissals followed at Broadbank and one or two other institutions.

Rumours abounded of course. Cynics observed that massive profits would never have been trumpeted abroad as "unauthorized transactions". It is even true that sales clerks who dip into the till to support a gambling habit, too often end up creating unrecoverable losses for their masters. But authorized or unauthorized, foreign exchange dealing is gambling (speculating if you prefer), and it is the skill (and possibly the nerve) of the gambler that is of statistical interest. The rumours, if one disregards the scurrilous bits, implicated three areas of dealing, (i) in the Australian dollar, (ii) in the New Zealand dollar, and (iii) over the major currencies. It is quite exciting to look at each of these scenarios in order to guess what might have happened.

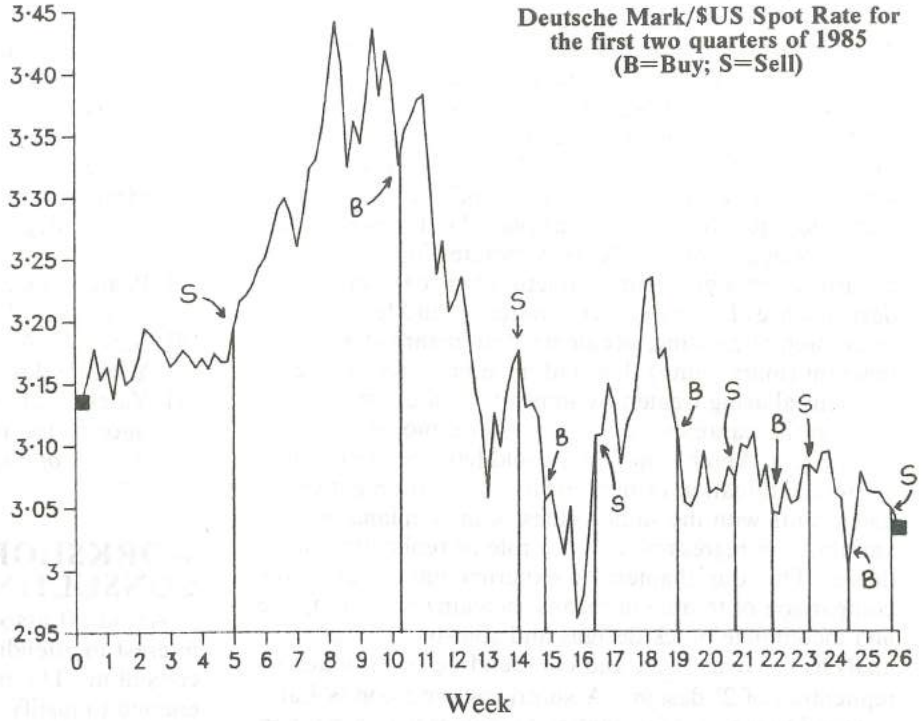
(i) Large losses buying and selling Australian dollars are possible but not very plausible. The currency was floated on 9 December 1983, and, apart from going into a decline until near the end of April 1985, did so in a relatively "well-behaved" way. From April until the end of the second quarter 1985, when all the damage was allegedly complete, the Australian dollar went nowhere.

(ii) The history of the New Zealand dollar since it was floated on 4 March 1985 has certainly created an anguish which greets us on news reports daily. It had declined somewhat after devaluation on 17 July 1984, but it stayed level (with noise) at about 45 US cents from the float until 12 June 1985, when it started to strengthen. The rumour says that the miscreant dealers having moved vast sums off-shore, did not believe the evidence of an emerging trend, and hung on for the inevitable weakening which has not so far taken place. That strategy would have required nerve, there was not after all, much of a database on which to develop skill. By the end of June, the Kiwi dollar had strengthened almost 9% in a little over a fortnight (so far, the movement is about 25%). To lose $23.2 million on the NZ dollar alone, a lot of petty cash must have been sent off-shore.

(iii) During the second quarter of 1985, large foreign exchange houses abroad which trade overwhelmingly in the $US, jumped on the fence and stayed there until the market stabilized. Recognizing instability takes skill or unrecoverable losses. It is interesting to note in the commercial literature, the extent to which banking houses are wedded to moving averages (MA's) when describing time series like foreign exchange rates. Given the ready availability of software which provides them, it is just possible that dealers have identified moving averages which in past quarters have reliably delivered optimal profits. Pursuing this possibility further, and taking the Deutsche mark/$US exchange rates as an example, it can easily be shown that an eight day MA will deliver quarterly profits taken out in US dollars of the order of 4.5%, 5.5%, 3.0%, 6.0%, 6.6%, 10.1% and 12% in the period 30 June 1983 to 29 March 1985. These constitute a remarkable performance, and any gambler would be forgiven for believing in a winning streak without end. But, the LOSS incurred in the second quarter of 1985, if the direction of this MA were used without intervention to determine the Deutsche mark trend, would have been 15.1%. Just how this might have happened is illustrated in the figure below

where the vertical lines indicate the points at which the MA would indicate a change of signal from Buy to Sell or Sell to Buy.

It is not likely that anyone will admit to employing a device as simplistic as this. Not after the event.



BOOK REVIEW
by Chris M. Triggs

"Applied Regression Analysis and Experimental Design" by Richard J. Brook and Gregory C. Arnold (Marcel Dekker, New York, 1985). Price $US39.75.

When a book with the titled "Applied Regression Analysis and Experimental Design" is published the reader is entitled to ask where it will fit on the already heavily laden shelf with similar titles and subjects. The preface of the book under review gives some clue "...this text will be found useful in undergraduate/graduate courses as well as being of interest to a wider audience, including numerate practitioners". Thus the tasks of this book are threefold. To compete directly with teaching texts such as (chosen more or less at random) Montgomery's "Design and Analysis of Experiments" [5] and "Introduction to Linear Regression Analysis", Montgomery and Peck [6]. To provide a clear discussion of those topics treated in common with the encyclopaedic Draper and Smith [3] and Seber [8] (both of which grew out of their respective authors' teaching experience), and to provide an introduction to books written for and by practitioners such as Daniel [1],[2], Dyke [4], and Pearce [7]. The existence of a university lecture course which tries to encompass both of the subjects regression analysis and design of experiments is not a sufficient condition for the success of a book trying to do the same. An additional task that the authors have set themselves is how to integrate these two subjects, apparently similar but more different than they might appear.

The preface claims that "this book represents the final version of course notes". The text shows this and would have benefited from more careful editing. Typographical errors are not uncommon but do not hinder the reader in most cases. The convention that vectors are in bold-face but matrices and scalars not, is to my mind awkward and can lead to confusion when combined with typos between (for example) $\underset{\sim}{\beta}$ and β Both Draper and Smith, Seber, and Montgomery use bold-face consistently for vectors and matrices and this does make expressions more clear particularly when the (presumably unsophisticated) reader must distinguish between upper- and lower-case random variables and realisations, or centred and uncentred data. If "parameters are denoted by Greek and their estimates by Roman letters" (p6), and if $\underset{\sim}{y} = \underset{\sim}{X}\underset{\sim}{\beta} + \underset{\sim}{\varepsilon}$ what sort of parameter is $\underset{\sim}{\varepsilon}$? A satisfying feature of the book is the inclusion of output from MINITAB for regression examples and GENSTAT for design examples. There are plenty of "real" data sets both analysed and as exercises. I wondered if the authors had experienced the problem common to many teachers quoted by Daniel and Wood ([2], Ch 5). "In looking for a multifactor example using real data we were struck by the fact that no clean-cut . . . data were on hand. By 'clean-cut' we mean 'meeting all the necessary requirements without any complicating circumstances'. When we tried to analyse text-book examples we found unforeseen complications in each . . .".

The choice of topics in the four chapters on regression is fairly standard. Models are fitted, their goodness of fit assessed and hypotheses about their parameters tested. Model choice is considered and individual data points are examined for "peculiarity". The fourth chapter, Peculiarity of Observations, is impressive because it discusses outliers, high leverage points, and variance inflation factors in a modern way, not merely relying on one or two stylised plots. Projection matrices are used not just to simplify the algebra but also as tools, accessible to the student, to explain features of the data set and fitted model. A good example of this is the discussion of confidence intervals for fitted values and for residuals. The inclusion of output from a good modern regression package such as MINITAB helps here. The authors are required to explain all the features of the output and this shapes their coverage of the subject.

Since one- and two-way analysis of variance models can be expressed in the $\underset{\sim}{y} = \underset{\sim}{X}\underset{\sim}{\beta} + \underset{\sim}{\varepsilon}$ framework many authors try to subsume design of experiments into a discussion of regression. There are links, of course, but the two subjects have many differences. The chief difference being that any treatment of experimental design beyond the most basic must consider more than one source of random variation. The passage from one subject to the other can be eased by a careful discussion

of qualitative and quantitative explanatory variates. If dummy variates are treated as numerical representations of qualitative variates or factors the links are emphasised. The GENSTAT/GLIM syntax where models with common slopes and/or intercepts can be fitted as special cases of the model, to take Example 1.5.1, COUNTRY*TIME, is outstandingly useful. In regression quantitative variates play the dominant role and in design a minor role as covariates in analysis of covariance models. This distinction between (in the design sense) factors and covariates should lead to a discussion of aliasing, accidental (co-linearity) and inherent (marginality). I would have preferred to see inherent aliasing treated by imposition of constraints only on the parameter estimates not on model parameters. Another link that could have been exploited is the identification of pure error, or variation between data points with the same values of the explanatory variables, in regression and the role of replication in design. The four chapters on experimental design cover comparison of treatment means, blocking with complete and incomplete block designs and split-plot designs, analysis of covariance, and confounding and fractional replication of 2^n designs. A surprising omission is Latin square designs. It is fascinating to read of the connection between the authors' own university and the systematic design or non-randomisation controversy. One of the delights of the subject of experimental design is that such old issues are still of contemporary interest and practical relevance.

How to introduce models with more than one source of random variation has been a pedagogical problem at least since Yates' pioneering discussion of the balanced incomplete block design, BIBD,[9]. Although there is a formal equivalence for the randomised complete block design between treating the block random variables as fixed parameters and as random variables I am certain that treating block variables as fixed is a mistake. The authors carefully introduce the concept of a stratum (p154) but then immediately turn away from it. As every regression book which subsumes design tries to show, ignoring the strata (i.e. that there are two sources of random variation) is possible for complete randomised blocks. Ignoring the strata in incomplete block or split plot designs is not. It is a give-away when in the discussion of BIBDs (pp162-165) the GENSTAT output disappears. When recovery of inter-block information is considered, the block variables which have been fixed parameters for the last four pages suddenly turn into random variables. No wonder generations of students have been confused! Having introduced strata for the randomised block they should be persisted with. Next split-plots can be treated. Here the strata are inescapable if the estimation of standard errors is to be treated correctly. The authors are to be congratulated on their clear treatment. The development can then return to BIBDs. Multiple sources of variation are inherent in design as the antiquity of the concepts of confounding and fractional replication show. With the extension of regression methodology in the last fifteen years to generalised linear models, GLMs, and the treatment of multiple sources of variation in GLMs in the last two or three years perhaps a grand synthesis with regression and design as equal partners is almost upon us. Maybe the next book by Brook and Arnold will embody the true unity of the two parts of their title.

[1] Daniel, C., *Application of Statistics to Industrial Experimentation,* New York: Wiley, 1976.
[2] Daniel, C., Wood, F.S., *Fitting Equations to Data,* 2nd Edn, New York: Wiley, 1980.
[3] Draper, N.R., and Smith, H., *Applied Regression Analysis,* 2nd Edn, New York: Wiley, 1981.
[4] Dyke, G.V., *Comparative Experiments with Field Crops,* London: Butterworth, 1974.
[5] Montgomery, D.C., *Design and Analysis of Experiments,* New York: Wiley, 1976.
[6] Montgomery, D.C., Peck, E.A., *Introduction to Linear Regression Analysis,* New York: Wiley, 1982.
[7] Pearce, S.C., *The Agricultural Field Experiment,* New York: Wiley, 1983.
[8] Seber, G.A.F., *Linear Regression Analysis,* New York: Wiley, 1977.
[9] Yates, F., (1940), The recovery of interblock information in balanced incomplete block designs. *Annals of Eugenics,* 10, 317-325.

WORKSHOP ON STATISTICAL CONSULTING

About 20 association members have expressed an interest in attending a workshop on statistical consulting. The organisers feel that this is not quite enough to justify the organisation of such an event but are prepared to press on with plans for the workshop to be held during the 1986 conference. If you are interested in attending this workshop, but haven't contacted the "virtual" organisers yet, please contact,

Colin Cryer,
N.Z. Statistical Association,
P.O. Box 1731,
Wellington.

UNIVERSITY OF OTAGO
Lecturer or Assistant Lecturer in Statistics

Applications are invited for appointment to a position of Lecturer or Assistant Lecturer in Statistics in the Department of Mathematics and Statistics, University of Otago, Dunedin. Applicants should be prepared to take up the position on or after 1 February 1986. The University will provide direct, excursion-rate fares and a contribution towards removal expenses.

Salary: Lecturer $23,622—$27,928 p.a.
Asst.Lecturer $17,698—$20,489 p.a.

Intending applicants are invited to write for further particulars available from the undersigned, P.O. Box 56, Dunedin.

Applications quoting reference number A85/50 close in Dunedin on 31 October, 1985.

D. W. Girvan
REGISTRAR

NEWS FROM THE STATISTICS SECTIONS AT APPLIED MATHS DIVISION (AMD), DSIR

Dr J. A. (Nye) John of the University of Southampton is to spend next year in Auckland at the AMD substation at Mt Albert. He will also be seconded to the W. Edwards Deming Institute. Dr John was last in New Zealand in 1984 and is remembered for his clear and entertaining talks on "Design of Acoustical Experiments" and on "Block Designs and Graph Theory" presented at the association's 35th annual conference.

NEWS FROM THE DEPARTMENT OF MATHEMATICS AND STATISTICS, MASSEY UNIVERSITY

The department has a new statistician, Dr Selvanayagam Ganesalingam from Jaffna, Sri Lanka. Dr Ganesalingam earned his PhD from the University of Queensland and has research interests in Multivariate Analysis in general and Cluster Analysis in particular. The department has also appointed Dr Graeme C. Wake, presently a Reader in the Mathematics Department at Victoria University, to the new Chair in Mathematics.

NEWS FROM THE MAF BIOMETRICS SECTION AT INVERMAY

Stuart Crosbie is leaving Invermay, where he has been a consulting statistician for the past six years, for "browner pastures" across the Tasman (as a colleague of his put it). He is taking up the position of Senior Biometrician with the Victorian Department of Agriculture in mid-October. He will be building up a biometrical team to service 250 scientists throughout Victoria, starting with the astounding scientist to biometrician ratio of 125 to 1. His new address will be:

Victorian Department of Agriculture,
Box 4041, GPO Melbourne,
Victoria 3001, Australia.

NEWS FROM THE MAF BIOMETRICS SECTION AT LINCOLN

Chris Dyson reports that the Lincoln MAF Biometrics Unit is still in its throes of comings and goings. The hoped-for replacement for David Baird, who is just starting an M.Sc. Biometry course at Reading, has not materialised. The Biometrics Unit are seeking a temporary replacement . . .

"Does a 9-12 month secondment to Lincoln appeal to you? Two adaptable biometricians seek the company, support and expertise of a numerate adventurer to share in servicing our band of eminent scientists, statistically, computationally and data-systems-wise. We move into a brand new research centre in December so a strong back and/or flair for selecting elegant WPB's could be an advantage. Also GENSTAT would help substantially. If you are willing and available to give it a go, contact Chris Dyson, P.O. Box 24, Lincoln, Phone (03) 252-811, as quick as you can."

NEWS FROM SAS INSTITUTE (NZ)

There have been several personnel changes at the SAS Institute over the past few months. The previous General Manager, Dr Kevin Hall, is now managing the new SAS Institute office in Hong Kong, and has been replaced by Steven Mayo-Smith, previously of Aetna Life and Casualty in the USA. Technical Manager, Mike Evans, has also moved to the Hong Kong office. The position of Marketing Manager in New Zealand has been filled by Terry Friel, who previously worked as a Senior Consultant in the Department of Health's Information Centre. Jill Scott has joined the Technical Staff from The National Bank.

Education Manager, Brian Bee, recently spent two weeks in the USA on a SYSTEM 2000 course SYSTEM 2000 is a new SAS database product which includes a menu driven interface to the SAS system for extraction of data and reporting.

The third annual SAS Users of New Zealand Conference (SUNZ '85) is to be held on 31 October and 1 November at The Academy in Wellington. Dr Herb Kirk, Vice-President of SAS Institute Inc., USA, will be a keynote speaker. Late registrants should telephone SAS Institute (NZ), (04) 727-595. The conference will be preceded by a public training course on SAS/AF (the SAS Applications Facility) in Wellington on 29-30 October. SAS/AF is designed for SAS software users who want to build end-user applications using menus. Anyone interested should telephone the aforementioned number.

DEADLINE FOR NEXT ISSUE

The deadline for submitted material for the February, 1986 issue of this newsletter is January 31. 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 December, 1985 issue of *The New Zealand Statistician* is November 15.

OVERSEAS CONFERENCES

XIIIth International Biometric Conference

To be held in Seattle, Washington, USA, July 27 to August 1, 1986. For further information write to International Biometric Conference, Office of Conference Management, University of Washington GH-22, Seattle, WA 98195, USA.

The Second International Conference on Teaching Statistics (ICOTS II)

This conference will be held in Victoria, British Columbia, Canada, August 11-15, 1986. Sessions will take place on teaching statistics at all levels, from school to university and in government, business and industry. The New Zealand coordinator for ICOTS II is . . .

John C. Turner,
Department of Mathematics,
University of Waikato,
Private Bag,
Hamilton, New Zealand.

American Statistical Association/Biometric Society

The 1986 joint meeting is to be held from August 18-21 in Chicago, Illinois. For further information write to ASA, 806 15th Street, N.W., Washington DC, 20005, USA.

Eighth Australian Statistical Conference

To be held at the University of Adelaide from 25-29 August, 1986. The main topics for the conference are:

(i) Analysis of Spatial Data
(ii) Geostatistics
(iii) Mathematical Genetics
(iv) Conditional Inference
(v) Medical Statistics

There will also be sessions in nearest-neighbour methods in field trials, teaching of statistics, quality control and statistical computing. For a copy of the first circular write to:

Dr D. J. Daley,
Treasurer, Statistical Society of Australia,
Department of Statistics (IAS),
ANU, GPO Box 4,
Canberra ACT 2601,
Australia.

International Association for Statistical Computing, COMPSTAT '86

This meeting is to be held in Rome, Italy, September 1-5, 1986. For further information write to COMPSTAT '86, Dipartemento di Statistica Probabilite e Statistica Applicata, Universita degli studi di Roma, 'La Sapienza', I-00185 Rome, Italy.

Bernoulli Society—First World Congress

This meeting is to be held in Tashkent, USSR, September 8-14, 1986. For further information contact S.Kh. Sirajdinov, Institute of Mathematics of the Uzbek SSR Academy of Sciences, Hodjaev F., 29 Tashkent, 700143, USSR.

International Symposium on Probability and Bayesian Statistics

To be held in Innsbruck, Austria from September 23-26, 1986, this symposium is in honour of Bruna de Finetti's 80th birthday. For further information write to Professor R. Viertl, Institut fur Statistik und Wahrscheinlichkeitstheorie, Technische Universitat Wien, A-1040 Wien, Austria.

Third Annual Conference on Criminal Justice Statistics

To be held from December 1-2, 1986 in New York. Contact Lily E. Christ, Criminal Justice Center, John Jay College of Criminal Justice, CUNY, 444 W 56th Street, New York, NY 10019, USA.

American Statistical Association/Biometric Society

The 1987 joint meeting is to be held August 17-20, in San Francisco, California. For further information write to ASA, 806 15th Street, N.W., Washington DC, 20005, USA.

MOVING?

Members are requested to notify the Treasurer, NZSA, P.O. Box 1731, Wellington of any change of address in order that newsletters and journals (and subscription reminders) can continue to be despatched to them.