**Notes and Comments**: A subset of members met at the Third International Conference on Teaching Statistics (ICOTS III) in New Zealand. At that time we discussed changing the name of our group and different names were suggested. I hope you like the name I selected. It's not very different from our previous name. We also discussed changes in the study group, and decided not to break into smaller subgroups according to research interests. Members expressed their satisfaction with the group as it is now, and did not want to complicate things by making it more formal, or adopting a platform of what we believe are the concepts and skills students need to learn. One suggestion that people endorsed was to have special theme issues of the newsletter from time to time. Our first theme issue will be in May, and will be on assessment of student learning. If members would like to send in notes, comments, articles or E-mail messages regarding assessment of student learning and understanding of probability and statistics, please send them to me by April 1.
If I don't receive anything, we'll not have this theme issue. If there are other themes of interest to you, please let me know.

**Papers at ICOTS III**: At ICOTS III there were three sessions of papers relating to research on learning probability and statistics. Although brief versions of these papers will appear in the conference proceedings, I am collecting the full length papers and will distribute them at cost of copying and postage.

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These papers are:
- Introducing the Concept of Chance: A Teaching Episode, by Heinz Steinbring.
- The Loss of Intuition - A Lesson for the School Teacher, by Flavia Jolliffe.
- The Origin of Inconsistencies in Probabilistic Reasoning of Novices, by Clifford Konold.
- Use of the Arithmetic Mean: An Investigation of Four Properties, by Marjorie Leon and Judith Zawojewski.
- The Use of Multiple Items to Identify Misconceptions in Probabalistic Reasoning, by Robert delMas and Joan Garfield.
- Exploring the Stability of Student's Conceptions of Probability, by Joan Garfield and Robert delMas.
- A Longitudinal Study of Children's Probability Concepts, by David Green.
- A Complementarity Between Intuitions and Mathematics - The Key to Empirical Research on Understanding Probabilities and Statistical Concepts, by Manfred Borovcnik.
- What's Typical? Students and Teacher's Ideas about Average, by Susan Jo Russell and Janice R. Mokros.
- Learning about Sampling: Trouble at the Core of Statistics, by Andee Rubin.

Please let me know if you are interested in purchasing the collection, so I know how many copies to make.

Other papers at ICOTS III that may be of interest to members are:

"Improving student learning: Using computer-generated data sets to individualize student assignments," by M. J. Glencross, Dept. of Math and Science Education, University of Transkei, Private Bag x1, Umtata, Republic of Transkei, South Africa.

"Solving problems is not enough: Assessing and diagnosing the way in which students organize statistical concepts," by Anthony Nitko and Suzanne Lane, University of Pittsburgh.

"Simulations in Mathematics - Probability and Computing. Learning Probability Concepts and Modeling with Computer Simulations," by Gary Kader, Dept. of Math Science, Appalachian State University, Boone, N.C. 28607, USA.

Two papers of interest from the August, 1990, issue of the <u>American Statistician</u> are:

"Improving the teaching of applied statistics: putting the data back into data analysis," by Judith Singer and John Willett.

and "A Study of Student Reaction to the Use of Minitab in an Introductory Statistics Course," by W. Robert Stephenson.

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<u>New Members</u>: I'd like to welcome the following new members to our study group:

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Andrejs Dunkels
Math Dept.
Lulea University
Lulea, S-95187
SWEDEN

**Information from Members:** Carmen Batanero has sent me copies of her student's thesis and a related paper which was presented at PME last July. The paper is titled "Strategies and Arguments in the Descriptive Study of Association Using Microcomputers." The paper analyzes 18 trainee teachers' experiences solving problems of statistical association using microcomputers. The effects of several didactical variables are studied. Of particular interest in this paper are the assessment methods used as part of the evaluation of student learning. One method involved recording and analyzing students computer interactions. Another method had students answer a series of questions (on the computer) about the analysis of a real data set.

At ICOTS III, David Green gave me copies of two papers. One, "Using Computer Simulation to Develop Statistical Concepts" appeared in _Teaching Mathematics and Its Applications_, Volume 9, 1990. This paper describes the Microcosm Software: probability and statistics programs for the BBC micro. Students were tested before and after using the software to determine how their conceptions of probability were affected by the program.

The other paper is the "Probability Tests Report," which reports results of tests taken by English School children ages 7 to 14 during 1986 and 1990. Student responses to all test questions are reported, broken down in various categories (e.g., gender age, and ability).

Anne Hawkins sent the following comments in response to Andrei Matuszewki's letter in the May newsletter:

It appears from vol. 3(2) that Andrei Matuszewski is advocating that we should insist on correlation topics in order to prevent data analysts finishing "their analysis after the marginal (i.e. one-dimensional) calculations". I concur with the spirit of this, but want to press strongly for a MULTI-dimensional perspective rather than an artificially limiting BI-variate perspective which can often be as dangerously misleading as a UNI-variate education.

I am pressing for exploratory, graphical, intuitive perspectives from the earliest stages in statistical education. ("PERSPECTIVES", not necessarily "METHODS".)

She also sent the follow item of information: ANNUAL APPLIED STATISTICS COMPETITION FOR SCHOOLS AND COLLEGES OF FURTHER EDUCATION.

Details of the U.K. Statistics Prize 1990-91, now in its eighth year, are currently being circulated to schools and colleges of further education. The competition encourages cross-curricular data-handling and is open to students aged 9 to 19 years. This year, the following themes are being particularly promoted.

1) Simulations and experiments are just as important applied statistics activities as are questionnaire surveys.

2) Probability is an integral part of statistics. It has relevance in modelling and simulating aspects of the real world for research purposes, as well as for interpreting and generalizing research results.

3) Probability can be expressed, by even the youngest students, using terms such as 'possible', 'likely', 'probable', 'certain', etc., long before they start to quantify probability on a formal scale of zero to one. Such informal approaches to the language of probability can pave the way to

important skills of judgment and research evaluation, as well as developing crucial powers of statistical communication.

4) There are many more innovative possibilities for exploiting the (micro-) computer in applied statistics than its traditional uses for data storage, graphics and analyzes, and word-processing.

The Competition is sponsored this year by the British Nutrition Society, the Royal Statistical Society and the Institute of Statisticians. Further particulars may be obtained from; Anne Hawkins (Statistics Prize), Institute of Education, University of London, 20 Bedford Way, London, WC1H OAL.


## Address changes

Bob delMas has taken a new position as assistant professor of Psychology at N.E. Missouri State. His new address is:

Robert delMas
Division of Social Sciences
Northeast Missouri State University
Kirksville, MO   63501
USA

George Bright has moved also. His new address is:

George W. Bright
School of Education
University of North Carolina at Greensboro
Greensboro, NC   27412-5001


Flavia Jolliffe has a new position and address:

Mrs. Flavia Jolliffe
Epidemiology and Public Health Research Unit
University of Surrey
Guildford, Surrey
GU2 5XH
UK


Ruma Falk is spending her sabbatical year in the USA, where she will be participating in Cliff Konold's NSF-funded project. Her current address is:

Runa Falk
Department of Psychology
University of Massachusetts
Amherst, MA   01003
USA


Andee Rubin has left BBN to go work at TERC (with Susan Jo Russell and colleagues). Her new address will be:

Andee Rubin
TERC
2067 Massachusetts Avenue
Cambridge, MA   02140

E-Mail: TINKERRO@HUGSE1.BITNET

Georg Schrage will be visiting Virginia Tech until the end of December, 1990. His address is:

College of Education
Virginia Polytechnical Institute and State University
Blacksburg, VA    24061-0313
USA
E-Mail: GESCHRA@VTVM1

Other information about members:

I received a flyer announcing a forthcoming book: <u>Teaching Statistical Concepts,</u> to be published by Longman Group U.K., in Spring 1992.  The authors are all in our study group:  Anne Hawkins, Flavia Jolliffe, and Leslie Glickman.

Address Corrections (from the previous newsletter):

After December, Georg Schrage E-Mail will be:  UMA016@DDHRZ11,BITNET

Anne Hawkin's E-Mail address is:  TEUE102@UK.AC.LON.IOE

Andrzej Matuszewski's address is:

Institute of Computer Science
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Claude Gaulin's address is:

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Laval University
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CGAUUN@LAVALVM1.BITNET

Margaret Gallimore has become Margaret Rangecroft

## ICME 7

While at ICOTS, a suggestion was made that several of us discussed involving a one-day research round table to be held immediately prior to the ICME meeting in Quebec in 1992.

Ten to fifteen people would prepare research papers to present in groups of 2 or 3.  There would be ample time for detailed discussion.  If anyone is interested participating in this research round table, please let me know.

At the regular ICME meeting there will be 2 working groups of interest.  They are:

Working Group 12 "Probability and statistics for the future citizen"

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|---|---|
| Chief Organizers: | James Schultz (USA) & Mary Rouncefield (UK) |
| Local Organizer: | Jim Swift (Canada) |

Advisory Committee:  Kirsten Vannmen (Sweden), Manfred Borovcni (Austria) and Jordan Stoyanov (Bulgaria).

Topic Group "Statistics in the School and College Curriculum"

Chief Organizer:  Richard Schaeffer (USA)

## Membership

It's time to clean up our membership list and find out who really reads these newsletters and wants to ke receiving them.

If you would like to remain in the Study Group, and receive the next set of issues, please complete the following section and send it to me before January 1, 1991.

Yes, keep my name on your mailing list.  I want to keep receiving newsletters.

Name        _____

Address     _____
            _____
            _____
            _____
            _____

Research  interests:


Any suggestions or comments: