THE OHIO STATE UNIVERSITY STATISTICS DEPARTMENT NEWS

editor: Angela Dean

Letter from the Chair,
by Tom Santner

Welcome to the inaugural edition of the Ohio State Statistics Department Newsletter. We hope that this issue helps to bring you up to date about the many changes that are occurring in the Department.

The Department's long term objective is to emphasize the development of statistical theory and methods through inter-disciplinary research. For a number of years, the Department has had a strong tradition of involvement in biomedical research that we seek to continue (see the article by Dennis Pearl, John Klein, H. N. Nagaraja and Doug Critchlow). Our interactions with the Psychology Department have been solidified by the joint appointment of Michael Browne. The Department's investment of resources in the Consulting Service (see the article by Rob Leighty) also speaks to our commitment to such work.

This past July, I took the reins as Department Chair from Prem Goel who completed his four-year term on June 30. During Prem's tenure the Department began it's latest round of expansion under the funding of the University's GEC (General Education Curriculum). The GEC reforms included a numeracy requirement for every Ohio State graduate. The Department developed a set of three courses with various prerequisites to allow students to meet this requirement. Thus far, the Department has received funding for three faculty members under the auspices of the GEC program and may receive support for a fourth person.

The Department is on the verge of doubling its space in Cockins Hall with the movement of mathematics department personnel to their newly completed Mathematics Tower on the site of the old Brown Hall annex (behind Cockins Hall). For the first time, this will allow the Statistics Department to house all its graduate students and faculty in contiguous space. We are anticipating that Mathematics will be making its move during the Spring quarter, and we hope to be in our expanded quarters by the start of the summer quarter. As part of the renovation of the mathematics facilities, there is another change -- we now have a new library. The new facility has spacious study areas and is a 2 minute walk from Cockins Hall. It also houses most of the other science and engineering collections.

Many of you may remember that we annually invite an eminent statistician or probabilist to speak in May under the auspices of the Choti Lal and Mora Devi Rustagi Memorial Lecture. In May of 1993 we will be expanding the Rustagi Memorial Lecture to a 2-day conference on **Statistical Innovations for Quality Improvement in Manufacturing** (additional details are provided on page 6). Professors Prem Goel and Saul Blumenthal are co-chairing the event and we welcome any of you who wish to attend to contact one of them for additional information.

Lastly, I want to mention that many of you know that the State of Ohio and thus the University continue to have budget shortfalls. The Department has lost one and a half faculty lines, a half time financial person, and several TA slots. Our efforts to improve the computing facilities for our graduate students have been hampered and the Department would gratefully accept contributions to the Statistics Development fund (perhaps via matching funds from your employer). We will respect any specific uses that you may have in mind when making such a donation. Please contact me if you wish to make such a contribution.

We hope that you enjoy the Newsletter. In future issues, we would like to include news items about Alumni. Please communicate your news to Angela Dean.

WHAT IS HAPPENING IN RESEARCH

The Department is participating in two new exciting programs in interdisciplinary research. These programs are designed to bring together researchers from different departments across the campus to share research problems and ideas for their solution.

Modelling heart rate variability data, by H. N. Nagaraja

The study of rhythmic variations in the rate at which the heart beats is of fundamental interest to scientists in many disciplines. Measures of heart rate variability (HRV) serve as useful diagnostic tools in numerous problems arising in cardiovascular research. Psychologists and physiologists are interested in the psychophysiology aspects of HRV. The raw data, which is extremely voluminous, consists of electrical signals that have to be properly recorded and processed. This data acquisition process is of special concern for an electrical or biomedical engineer. Statisticians enter into the picture through their interest in the statistical analysis of the data acquired. Their interest is to study the statistical properties of the numerous different measures of HRV which are used by the experimental scientists. The Office of Research and the Graduate School have funded an interdisciplinary seminar series, which has brought together investigators from departments as diverse as Psychology, Physiology, Internal Medicine, and, of course, Statistics. In addition to local speakers, six eminent scholars from other universities are addressing the seminar.

Seminars and discussions center around various facets of the processing, analysis, interpretation and application of HRV data. For example, the time lags of successive heart beats are available from the electrocardiogram, which exhibits the electrical activities of a cardiac cycle. There are several interesting statistical questions related to this sequence of observations. Currently we are investigating the nature of the dependence between the lengths of successive interbeat intervals by fitting a Markov chain model. We expect the order of the Markov dependence and the resulting transition probability matrix to produce useful measures of HRV.

Statistical analysis of nucleotide sequencing by Doug Critchlow.

A new interdisciplinary research effort focusing on the statistical aspects of DNA and RNA nucleotide sequence data has brought together faculty and graduate students from various departments at OSU, who are interested in studying probabilistic models of gene structure and mutations, evolutionary change in DNA and RNA nucleotide sequences, statistical inference of evolutionary trees from molecular data, and in applying these techniques to investigate the course of disease viruses (such as the AIDS virus).

During the summer of 1992, a group studies course was offered by Statistics Professors Doug Critchlow, Dennis Pearl, and Joe Verducci and by Professor Paul Fuerst (Molecular Genetics), to help familiarize Statistics students and faculty with the basic biology and the current state of the methodology needed to participate fully in an interdisciplinary effort.

A follow-up interdisciplinary research seminar series on the statistical aspects of nucleotide sequence data is being sponsored for the remainder of the 1992 and 1993 calendar years by the Office of Research, the Graduate School, the Departments of Statistics, Molecular Genetics and Mathematics, the Biostatistics program, the Cancer Center, and the AIDS Clinical Trials Unit at OSU. The seminar series features addresses by several world-renowned scientists from outside the university, and aims to encourage new working groups within OSU on various subtopics. The speakers include Professors Walter Fitch (Ecology and Evolutionary Biology, University of California, Irvine), Samuel Karlin (Mathematics, Stanford University), and Michael Waterman (Mathematics and Molecular Biology, University of Southern California).

WHAT IS HAPPENING IN BIOSTATISTICS

by John Klein and Dennis Pearl

The biostatistics faculty have been actively engaged in collaborative research with investigators in the OSU Colleges of Medicine and Biological Sciences. We currently provide basic biostatistical support to The OSU Comprehensive Cancer Center, The OSU General Clinical Research Center, and The OSU Neuro-Oncology Center which is currently being organized. Other interdisciplinary groups in which the Biostatistics faculty are active include the OSU AIDS Clinical Trials Unit; the Immune Stress Program Project; a new Stress, Aging and Neuroendocrine Changes Program Project; a predator-prey modeling and optimal pest control project; and a recently started cooperative research project with investigators in the OSU Division of Transplants. Each of these projects supports at least one graduate research associate. These projects have resulted in several publications in the bio/medical literature as well as the development of new statistical methodology.

The following three projects are illustrative of the type of collaborative research being conducted by students and faculty in Biostatistics. The first project is joint work with Dr. Edward Copeland of the OSU Bone Marrow Transplant Program and Dr. Niels Keiding of the University of Copenhagen. The data is from a multicenter bone marrow transplantation study. The terminal events are death while in remission and relapse. The intermediate events are the time of recovery of the patient's platelets to a normal level and the onset of acute graft-versus-host disease. The data were analyzed using Cox regression models. Using a framework for dynamic probabilistic causality which has calculation of prediction statements as a central tool, a technique for finding predicted probabilities of death in remission, relapse and leukemia, based on a dynamic patient history was developed. This material was presented at the recent International Transplant Society Meetings and at the International Biometrics Society Meetings.

A second collaborative project is joint work with Drs. Ron Ferguson and Ray Tessi of the OSU Transplant Unit. This project deals with interpretation of the results of the OSU kidney transplant program. Of interest is the comparison of the mortality experience of the transplant patients to the mortality of normal healthy individuals in hopes of learning if and when patients are cured and their risk of dying has returned to a normal level. Standard mortality curves from the last census are used as baseline death rates. Plots of the excess and relative mortality of transplant patients in the next year are made as a function of the post transplant time. These graphs show that after about five years patients have returned to "normal" in the sense that they are no longer at an elevated risk of dying.

A third collaborative project involves joint work with Dr. David Horn of the Department of Entomology. This project's goal is to find the optimal combination of biological (predator) and chemical resources for the control of a greenhouse pest population. We have developed a detailed realistic stochastic model of the dynamically changing relationships among plant, prey and predator. We have also created new methodology for the simulation based estimation of model parameters and have successfully applied these techniques to data from controlled greenhouse experiments using the CRAY super computer. Our current work involves developing a simulation based technique for producing the optimal control strategy and methods for transferring this technology to commercial sized greenhouse operations.

WHAT IS HAPPENING IN TEACHING

Statistical Computing
by Mario Peruggia

The computer is an essential tool in helping the statistician to analyze data. Our department offers its students and faculty ample computing resources, and a serious effort is constantly made to keep abreast of the latest technological developments and to upgrade and expand the available equipment. This remains true even during the current, difficult economic juncture, and is the result of a departmental policy decision stemming from the conviction that, in this day and age, advanced statistical research needs to take advantage of the enormous opportunities that the rapidly evolving computational technology has to offer.

Students are encouraged to familiarize themselves with the equipment and the available software in the early stages of the curriculum. Besides an introductory course specifically aimed at describing the available facilities and resources, several other courses and consulting opportunities in the first two years of the program develop the students' ability to employ standard statistical packages to tackle applied statistical problems. This training is particularly valuable for the students in the MAS program who will seek employment opportunities in industry, as it teaches them how to utilize fundamental modeling and data analytic skills in practical problems.

Most students who are pursuing a doctoral degree and the majority of the faculty have computing needs that go beyond this level of knowledge. Frequently, the development of a novel research project requires that the computer be used for purposes not yet envisioned by the developers of commercial statistical packages. Rather, the problem being investigated may require that new computational and/or graphical algorithms and techniques be developed, and that prototype software be written to implement them. This is a rather challenging task, especially in view of the fact that statisticians, for the most part lack formal training in computer science.

In order to address these concerns, the course **Methods in Computational Statistics** was offered by the department in the Spring Quarter of 1992. The principal goal of the three faculty members who organized it, Jason Hsu, Mario Peruggia, and Elizabeth Stasny, was to provide an opportunity for members of the department to overview and discuss, in a rather informal setting, some of the areas of statistics that have recently benefited from the use of the computer. Students and faculty members alike actively participated in the discussion.

The participants took turns in giving presentations on topics that included the Jackknife and the Bootstrap, Iterative Proportional Fitting, Multivariate Normal Computations, Successive Substitution Sampling Techniques, and MOTIF/X11 Graphical User Interface Programming. Whenever possible, the overview of the current literature was complemented by accounts of direct research experiences in the areas being surveyed. Since statistical computing is rapidly evolving and has applications in very diverse areas of statistics, the chosen format of self-contained presentations on selected topics proved to be very flexible and effective.

The course gave all the participants a valuable opportunity for learning and for discussion. It was not intended as a typical, well structured course, but rather as an incentive for everyone involved to get acquainted with some of the hottest, current research areas in statistics. In this sense it turned out to be a rather successful experience that we all look forward to repeating in the near future.

As an indication of the wide interest that the course generated, I should not forget to mention that even President Gordon Gee, of Ohio State University made an unannounced classroom appearance. Did he come to find out if he could apply

computationally intensive statistical methods to the solution of the pressing budget problems? Not exactly! He came . . .

UNIVERSITY TEACHING AWARD

. . . to present **Elizabeth Stasny** with a **University Alumni Distinguished Teaching Award.** Everyone was delighted to see that her overall excellence as an educator was adequately recognized. It was very appropriate that this should occur while she was lecturing in a course to the success of which she had so effectively contributed with her strong organizational skills and her contagious enthusiasm for teaching and learning.

POWERS TEACHING AWARDS

Thomas and Jean Powers Teaching Awards are presented each year to (i) an outstanding instructor from amongst the assistant and associate professors in the Department, (ii) an excellent graduate student lecturer (with sole responsibility for a class), (iii) an excellent recitation instructor, and (iv) an excellent computer lab instructor (a new type of recitiation for the GEC program which involves the use of a computer package for data analysis). These awards were instituted in 1986, via a generous donation to the Statistics Development Fund by Tom and Jean Powers.

In 1992, the faculty award was presented to Bill Notz. Past award winners have been Mark Berliner, Elizabeth Stasny, Steve MacEachern, Doug Critchlow, and Bill Notz (again!).

The Department is lucky to have a large number of excellent Graduate Teaching Associates. The selection of 'the' best instructor is never an easy task, and there are always a number of extremely good teachers who are runners-up for the award. In 1992, the award for best lecturer was presented to Sally Sikorski. The best recitation instructor award was presented to Deb Rumsey, and the award for the best computer lab instructor was presented to Cathie Hannon. Each of these TA's made an outstanding contribution to the teaching mission of the Department.

TEACHING ACADEMY

In his annual address to the University Senate on October 3, 1992, President E. Gordon Gee announced the formation of the Academy of Teaching at The Ohio State University. Membership in the Academy is limited to those recipients of the Alumni Award for Distinguished Teaching who are active faculty at the University. Comprised of nearly 100 members, the Academy will be involved in projects to promote, enhance, and recognize good teaching throughout the University. Such projects will include mentoring young faculty members, helping prepare graduate students for the teaching ranks, serving as "teaching ambassadors" for the University, participating as invited consultants/ reviewers in selected promotion and tenure cases, and advising the President, the Office of Academic Affairs, and the Center for Teaching Excellence on important issues related to teaching, such as the balance between teaching and research. Professor Doug Wolfe has been selected to be the Chairperson of the Executive Committee for the Academy for the 1992-1994 academic years.

A NEW COURSE

In the 1992-93 academic year, the Department initiated a new **three-quarter sequence in Applied Statistics** for first-year PhD. students. The course is being designed, developed and offered by Professors Bill Notz and Mark Berliner, through a team-teaching effort. The primary goal of the course is to impart a general education in applied statistics from an integrated, rather than from the traditional 'topic based', point of view. The success of the course will be evaluated at the end of the academic year, and revisions to the syllabus will be made as necessary. The texts for this year are Statistics for Experimenters, by Box, Hunter, and Hunter, Applied Linear Regression, by Weisberg, and Statistical Models in S, by Chambers and Hastie.

STATISTICAL CONSULTING

THE STATISTICAL CONSULTING SERVICE, by Rob Leighty

There are three basic objectives for the Statistical Consulting Service: training, service, and a source of research problems. The Statistical Consulting Service is a laboratory for training Department of Statistics graduate students in the art of consulting. It adds a component of realism to the educational experience. As a service agency, it is the only OSU facility to provide comprehensive statistical consulting for the entire university community and outside research groups. Methodological developments in statistics are driven by the needs of researchers in other sciences, and hence, occasionally, consulting generates new research problems.

Currently, Ph.D. students are required to obtain some consulting experience, either by enrolling in a statistical consulting service course, by serving in the Statistical Consulting Service as a Graduate Research Associate, or by performing equivalent service work under the direction of a faculty member. The consulting experience increases problem solving skills, and improves communication skills. Employers often give considerable weight to this experience in evaluating a candidates qualifications.

This past year, internships and graduate student assistantships were generated though the lab. Students worked on projects for Ohio EPA, Ohio Bell, and OI-NEG. One student is closely involved in a longitudinal study on the beneficial effects of calcium on bone-mass development. Other off-campus clients include the Vehicle and Traffic Research Center, agricultural consultants, Compu-Serve, and medical researchers. On campus, there are 60 departments that periodically avail themselves of our service. As of late, we have been involved with a series of heart-rate experiments. Occasionally, the contribution of the consulting service member to the research project is considered significant enough to warrant co-authorship in the client's research article.

The staff of the OSU Statistical Consulting Service has also been involved with the American Statistical Association (ASA) Section on Statistical Consulting. Thomas Santner and Rob Leighty were co-editors of the ASA Statistical Consultant Newsletter this past year. Prem Goel has recently assumed the responsibilities of Director for the Consulting Service.

BIOSTATISTICAL CONSULTING

The biostatistics group has recently hired Ming Zheng, who recently obtained his Ph.D. from the Department to manage biostatistical consulting activities. He will provide statistical support to the Cancer Center and the Clinical Research Center.

WHITNEY AWARDS

Professor Emeritus **Ransom Whitney** has recently made a generous donation to the Statistics Development Fund to institute some new awards for graduate students. There will be three awards to be presented for the first time in 1993. The major award will be for the **best PhD dissertation** for the academic year. Two other awards will presented for excellence in consulting - one award for the **best consultant in the Statistical Consulting Service**, and the other award for the best consultant working as a **research associate on a research grant**.

VISITORS, SEMINARS AND CONFERENCES

CONFERENCES

The Choti Lal and Mora Devi Rustagi Memorial Conference:
Statistical Innovations for Quality Improvement in Manufacturing
will be held at the Hyatt Regency Hotel, Columbus, Ohio on **May 13-14, 1993.**

The conference is sponsored by the Department of statistics and the Department of Industrial Engineering at Ohio State.

In the world markets, the importance of continually improving quality has been amply demonstrated. Statistical techniques play a major role in Quality Improvement (QI). During the past decade the use of experimental designs using orthogonal arrays and signal-to-noise ratios has been expanded to encompass off-line quality control through robust design by the efforts of Dr. Taguchi. Many industries now use statistical techniques in process optimization and product development. The conference will facilitate the exchange of ideas on urgent QI problems.

We expect to have eight or nine speakers, engineers or statisticians, representing a wide range of industries to present their accomplishments and problems related to QI. The following distinguished QI practitioners have tentatively agreed to speak:

ALCOA-- Dr. Bradley Novic
AT&T -- Dr. Randall Potter
DU PONT-- Dr. Timothy Read
GE-- Dr. William Tucker
GM-- Dr. Thomas J. Lorenzen
IBM--Dr. V. Singh and Dr. K.Wong,
LILLY -- Dr. Robert Obenchain
P & G --Dr. John Taulbee

A poster session for contributed papers is also planned to allow participants to present their current research.

The banquet keynote address, entitled "Manufacturing Research at IBM" will be given by Dr. Warren J. Grobman, Director of Technology Modeling, IBM Thomas J. Watson Research Center, Yorktown Heights, NY.

For more information or registration forms, please contact Prem Goel (614-292-8110, goel@mps.ohio-state.edu) or Saul Blumenthal (614-292-6071, sb@mps.ohio-state.edu).

VISITORS AND SEMINARS

The academic year 1992-1993 has been notable for the large number of visitors that the Department has been pleased to host. Visitors add enormously to the vitality of an academic department by bringing in fresh ideas and new research areas.

In addition to the interdisciplinary seminar speakers, the statistics colloquium series run regularly by the Department brings short term visitors to campus each quarter. In particular, the fall term of 1992, we were happy to have the opportunity to hear guest lectures by Donald Berry from Duke University, Felino Lansigan from the University of the Phillipines and Gregory Campbell from NIH. In the spring term, we are looking forward to hearing, among others, Robert Tortora from the Census Bureau, Robert Wardrop from University of Wisconsin and Steen Andersson from University of Indiana.

The Department was lucky to be able to host several visitors on sabbatical leave from their home institutions:
Chandra Gulati and Ken Russell from the University of Wollongong in Australia, David Hull from Ohio Wesleyan University, Dexter Wittinghill from Colby College, and Vasant Waikar from Miami University.

The Department was happy to be able to hire four visiting instructors for the academic year: Steven Ellis who came from the University of Rochester, Yasu Omori from the University of Wisconsin, Chiranjit Mukhopadhyay from the University of Missouri at Columbia, and Nandini Raghavan from the University of Illinois at Urbana-Champaign.

ABOUT THE FACULTY AND STAFF

Transitions

Prem Goel finished his 4-year term as Department Chair in June 1992. During the four years of his leadership, the department has (we believe!) increased enormously in prestige, and has been able to attract some outstanding scholars to the faculty. Instead of allowing Prem to put his feet up, the Department is harnessing his energy and enthusiasm for the 1992-93 academic year in the role of Director of the Statistical Consulting Service, a position that he held five years ago.

The new department chair is **Tom Santner**. We were lucky to be able to lure Tom away from Cornell University to join the department as Director of the Statistical Consulting Service in September 1988. He has a Ph.D. from Purdue University (1973) and is interested in the analysis of discrete data, statistical applications, selection and ranking problems, and Bayesian methods. He is the author of a graduate text on log-linear model theory and applications, and he has particular interest in regression problems with discrete data.

Angela Dean is now Vice Chair of the Department, and **Doug Wolfe** continues as Graduate Committee Chair.

Mike Fligner and **Jason Hsu** were promoted to full professor in October 1991.

Angela Dean and **John Klein** were promoted to full professor in October 1992.

Doug Critchlow was promoted to associate professor with tenure in October 1992.

Arrivals

The Department is excited about the close ties with the Psychology Department being provided by **Michael Browne** who was hired in 1990 as a full professor jointly in the two departments. Michael obtained his Ph.D. from the University of South Africa in 1969. His main research area is in multivariate analysis, especially in models for multivariate psychological data, minimum discrepancy estimators for moment structures, and computational aspects of the analysis of covariance structures.

The Department was happy to welcome two tenure-track assistant professors in 1990: **Kimberley Kinateder** (Ph.D. Michigan State, 1990) and **Mario Peruggia** (Ph.D. Carnegie Mellon, 1990), and one tenure-track assistant professor in 1992: **Xiaotong Shen** (Ph.D. Chicago, 1991).

Kimberley's research interests lie in the area of Markov random fields, especially the Brownian sheet, stopping sets, embedding theorems, and the connection between solutions of stochastic differential equations and multiparameter Markov properties.

Mario is interested in iterated function systems, computational and graphical methods for statistical analysis, and Bayesian inference. His most recent research projects include the analysis of CAT scan images to investigate the mechanical properties of human bone and the development of graphical methods to display confidence intervals for multiple comparisons.

Xiaotong spent the 1991-1992 academic year visiting the University of Minnesota. He has research interests in likelihood inference, high dimensional regression analysis, graphical methods and statistical applications to atmospheric science and neural networks.

The Department was also lucky to find **Rob Leighty** to became Manager of the Statistical Consulting Service in September 1990 and **Brian Smith** to become the Department Systems Administrator in August 1992. Rob has a Ph.D. from the University of Connecticut and spent several years as a faculty member at Dennison University in Ohio. Brian has a B.S. in computer and information science from OSU and has worked on Unix systems for the past three years.

Faculty members of the Department of Statistics, December 1992. Listed from left to right. Front row: Joe Verducci, Kimberley Kinateder, Prem Goel, Mike Fligner, Mario Peruggia. Second row: Angela Dean, Mark Berliner, Saul Blumenthal, Tom Santner, Bill Notz, Dennis Pearl. Third row: Robert Bartoszynski, H. N. Nagaraja, Michael Browne, Doug Wolfe, Jason Hsu. Back row: Steve MacEachern, Doug Critchlow, John Klein. (Not pictured: Elizabeth Stasny, Xiaotong Shen)

Honors

Michael Browne was elected President of the Psychometric Society for term July 1991 to July 1992. His Presidential Address to the Society was titled 'Models for Circumplex Correlation Matrices'.

Mark Berliner was a keynote speaker for the 10th National Symposium on Probability and Statistics in Rio de Janiero in August 1992. The title of his talk was 'Likelihood and Bayesian Prediction of Chaotic Systems'.

Jason Hsu and **Tom Santner** have recently been elected ordinary members of the International Statistical Institute.'

Mike Fligner has been awarded a Fulbright Scholarship (more details below).

Elizabeth Stasny was elected Publications Officer for the ASA Section on Survey Methodology.

Joe Verducci was awarded an ASA Chapter Service Award in 1992.

Births

We are happy to announce two births:

- a daughter, Alysha, to Karen and **Mike Fligner** in December 1991;
- a daughter, Evangelie, to **Sue Leurgans** and Cosmas Zachos in December 1991.

Departures

Sue Leurgans spent the academic year 1991-1992 visiting the University of Chicago. She has now taken a position as Director of Biostatistics at Rush Memorial Hospital in Chacago. Sue can now give up commuting and keep the whole family in one city, but we will miss her greatly.

Ramesh Srivastava and **Jean Powers** each took early retirement (in June 1991 and February 1992, respectively). Jean is now working as a part-time consultant for Children's Hospital in Columbus. Ramesh is enjoying being professor emeritus and is still to be seen savoring the atmosphere of Cockins Hall.

Tim Costigan took us by surprise by taking up a new position at Ross labs in Columbus in October 1992. We were grateful that Tim gallantly agreed to teach our course on clinical trials for the fall.

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Grants

Robert Bartoszynski and Dennis Pearl were awarded a 1991-93 USDA grant together with David Horn of the Department of Entomology to study the use of simulation-based estimation techniques to derive optimal control strategies for a greenhouse pest.

Bill Notz, Elizabeth Stasny and Dennis Pearl were awarded a 1992-95 NSF grant together with Paul Velleman of Cornell University to study technology-based learning for exploring statistical concepts and methods. This grant also supports four graduate students in the Department.

Elizabeth Stasny and Steve MacEachern were awarded a 3-year grant by the Bureau of the Census in 1990 to work on modelling nonresponse in business and economic censuses.

Prem Goel and Elizabeth Stasny have received a renewal of their USDA grant for studying small area estimation for crop yield.

Prem Goel was awarded a 4-year grant from Howard Hughes Medical Institute to develop an elementary statistics course for biologists and an applied stochastic modeling course for honors students in biology.

John Klein and Mel Moeschberger were awarded a 3-year grant from the National Cancer Institute in 1991 to study problems in analyzing longitudinal data. They have also received a grant form NATO for joint research with Niels Keiding and Per Andersen of the University of Copenhagen.

Angela Dean was awarded an SERC Visiting Fellowship (UK) for summer 1991 to visit Southampton University to work on the design of mixture experiments in orthogonal blocks.

Temporary Absences

H. N. Nagaraja took a sabbatical leave in the 1990-91 academic year to visit the University of California at Riverside and Iowa State University.

Angela Dean spent the 1991-92 academic year in Madison. visiting the University of Wisconsin.

Both Elizabeth Stasny and Joe Verducci are currently on sabbatical leave. Elizabeth is busy supporting the tire industry by diving back and forth to Carnegie Mellon University each week where she is visiting the department. Joe preferred to get away from it all and is currently 'down under' visiting Australia National University.

Mike Fligner will be spending the six months at the Charles Darwin Research Station in the Galapagos Islands (- at least, that's what he tells us -) supported by a Fulbright Scholarship.

Recent books published

Mike Fligner and Joe Verducci have co-edited the volume "Probability Models and Statisitical Analysis of Ranking Data" (1993, Springer-Verlag). This is a collection of papers presented at a conference that they held at the University of Massachusetts, Amherst, in June 1990.

John Klein and Prem Goel have co-edited the volume "Survival Analysis: The State of the Art", (1991, Kluwer). This is a collection of papers presented at a NATO Advanced Research Workshop held at Ohio State University in 1991.

Prem Goel and N. Sreenivas Iyengar have co-edited "Bayesian Analyses in Statistics and Econometrics" (1992, Springer-Verlag). This is a collection of papers presented at an Indo-US conference held in Bangalore, India in 1989.

Dennis Pearl and Elizabeth Stasny have written a lab workbook to accompany the GEC data analysis course: "Experiments in Statistical Concepts" (1992, Kendall/Hunt).

H. N. Nagaraja has written a textbook with B. C. Arnold and N. Balakrishnan called "A First Course in Order Statistics", (1992, Wiley).

Mario Peruggia has just completed a monograph "Discrete Iterated Function Systems" to be published in July 1993 by A. K. Peters Ltd.

ABOUT THE GRADUATE STUDENTS

We started the 1992-1993 academic year with 108 graduate students, of whom 63 were American. The international students came from afar afield as Taiwan, China, Korea, The Phillipines, India, Tunisia, Greece, Iran, Bangladesh Sri Lanka and a Fulbright scholar from Germany.

A number of students have received special awards this academic year. The departmental teaching awards are listed earlier in this newsletter. In addition, awards (consisting of a subscription to a statistical journal) are given for academic achievement. In 1992, these awards were won by Brian Jones, Jen-Fue Maa, Nancy McMillan, Guohua Pan and Darryl Yamashita.

Ming Zheng has recently been selected a finalist for in ENAR's Student Paper Competition and has been awarded travel support to the spring Biometrics meetings.

1992 MAS graduates
Ignacio Alarcon-Mendez, California State University at Bakersfield
Mary Bednarski, Peace Corps in Kenya
Ghayour Chouchene, returned to Tunisia
Richard Connelly, Cleveland Clinic Foundation
Sudhir Kartha, returned to India
Inyoung Casey Kim, continuing for Ph.D. in College of Education
Maneesha Mankad
Evangela Mattocks
Brenda Schulwitz
Tom Shannon, Information Resources, Inc.
Laura Snader, ICI Americas, Inc.
Lee Ann Trufant
David Waggoner

1992 MS graduates
Jennifer Arnette, Peer Review Systems, Inc.
Weimin Gai
Gail Gill, G.T.E. Labs
Nancy Niemuth, Battelle Memorial Institute
Sharon Repik, General Motors Proving Ground
Geraldine Rosario, The Fair, Isaac Companies, Inc.
Guohua Pan, continuing for Ph.D. in Statistics at OSU
Chunlin Qian, continuing for Ph.D. in Statistics at OSU

1992 PhD.Graduates
Lora Bohn, University of Florida
Lin Fei, Procter and Gamble
Bradley Hartlaub, Kenyon College
Lourdes Padilla, Citadel University, Charlston, S.C.
Mohammad Raqab, University of Jordan
Catherine Scipione, Monash Univerity, Australia
Hong-Long Wang, National Chung-Hsing University, Taiwan
Ming Zheng, Manager of the Biostatistical Consulting Unit, Ohio State University

Please keep us up to date on your address and place of employment. We would like to know where all our graduates are and how they are doing. If you know an alumnus who has not received a copy of this newsletter, please ask them to drop us a line.