

THE OHIO STATE UNIVERSITY STATISTICS DEPARTMENT NEWS

editor: Bill Notz

Letter from the Chair by Tom Santner

This has been a year of extremes. We have experienced one of the snowiest Columbus winters in history, and witnessed one of the best Ohio State football teams and worst basketball teams in recent years. I invite you to peruse Volume 4 of the Newsletter for the extreme performances taking place in the Department of Statistics. The number of books co-authored or co-edited by faculty this past year was a record and there are several other volumes near publication. We had the greatest number of visitors in the Department's history; among them were Sir David Cox and Noel Cressie. The Department hosted the 12th Annual Ohio Statistics Conference in November. For the first time the Department has gone cyber with its own homepage (check it out! <http://stat.mps.ohio-state.edu/>). In two more years we will have the 25th anniversary of the founding of the Ohio State Department of Statistics.

You can also update yourselves concerning

the many less extreme changes in our department that have occurred this past year and find out about new departmental initiatives. Some of the highlights are as follows. On the faculty front, we welcomed a new faculty member, Professor Shili Lin, who comes to us from the University of Washington after a two year sojourn at the University of California, Berkeley. With her, we now have a strong working group of faculty interested in genetic applications. A Biostatistics Center that will serve the entire campus is in its embryonic stages. Angela Dean was elected a Fellow of the American Statistical Association. The list of students who have completed their degrees in 1995 and entered the "real world"; the complete list is on page 16 of the newsletter.

We have received some feedback on previous issues of the Newsletter but we are always looking for more. Tell us what is happening and, if you know of students who are not on our list, please let us know how we can reach them. And do stop by the Department when you visit Columbus.

WHAT IS HAPPENING IN RESEARCH

In this article, we describe some of the applied research that is going on in the Department. We highlight the work of Joe Verducci and H. N. Nagaraja.

Joe Verducci has been active in a number of applied research projects, a few of which are described below. He has also been involved as an expert witness in several court cases, but those will be saved for a future newsletter (unless they appear on one of the TV talk shows first!)

GRIEF STUDY -- Joe and Elizabeth Weller of the Dept. of Psychiatry are conducting a longitudinal study of children and adolescents who have lost a parent. These subjects are followed for five years to see if such a loss puts them at greater risk of depression. Of particular interest is the identification of additional risk factors; for example, loss of the same-sex parent, a family history of depression, age of parent at time of death, a long duration of grieving, etc. The bereaved groups are also compared

with normal and clinically depressed control groups in terms of several other outcomes, such as academic performance, social functioning, etc. Some statistical problems that have been encountered are modeling parent-child agreement with different sized families, and adjusting for missing data in discrete longitudinal models. Graduate students Nicole Demers and Dionne Swift are working on these problems.

DEPARTMENT OF GENERAL SURGERY -- As statistical consultant to the Department, Joe has been working on survival analyses for several disorders, including gastrinoma and cholangiocarcinoma. An interesting statistical problem is to find a simple method of tumor typing in addition to the known risk factors of gastrin level, liver metastases, and non-resection.

Another study that Joe is involved in is Intensive Care Unit (ICU) usage. The goal is to identify patients who would receive more efficient care in a "step down" unit. Due to fairly involved accounting methods, it is difficult to assess the cost of a day's care in the ICU; estimates range from \$2,000-\$5,000. Finally, a state-wide survey is being conducted to estimate the percentage of cases in which laparoscopic cholecystectomies are aborted in favor of traditional surgery.

OHIO OFFICE OF CHILD CARE AND FAMILY SERVICE -- It is the mission of this office to monitor child abuse and child placement cases as handled by each of the 88 counties. This has been done on a sampling basis, but unfortunately, many of the case files sampled contain incomplete, erroneous, or ambiguous information. Joe and the Office are

conducting an investigation into the sources of these problems and are trying to devise an efficient sampling scheme that will determine compliance of county agencies with state laws.

H. N. Nagaraja has been collaborating with scientists from the OSU College of Medicine for some time now. In 1995 he was given a joint appointment in the Department of Internal Medicine as Professor of Medicine. During the past year he has been involved in projects with researchers from Cardiology (heart rate variability modeling and the study of left atrial kinetic energy index), Neurology (Duchenne muscular dystrophy and Kennedy disease - a muscle wasting disease), Obstetrics and Gynecology (Amniotic fluid increase treatment during delivery) and Pulmonary and Critical Care Medicine (HIV-induced emphysema study).

The work on the gene treatment of injecting healthy muscle cells for the control of muscular dystrophy was published in *The New England Journal of Medicine*. Muscular dystrophy is a muscular disorder caused by deficiency of the protein dystrophin. Weakening of the muscles begins at a young age and muscle conditions slowly deteriorate over time. It has been hoped for years that replacing defective genes with healthy ones might ultimately lead to treatments for many diseases such as cystic fibrosis and cancer, as well as muscular dystrophy. While the OSU research yielded mixed results, it received nationwide media attention. The research was mentioned in such places as *Newsweek* (for those interested, see page 60 of the October 9, 1995 issue), *The Columbus Dispatch*, and on television!

WHAT IS HAPPENING IN BIOSTATISTICS

On May 17, the Department will host the annual Biostatistics Conference jointly sponsored by the Cleveland Clinic Foundation, Case Western Reserve

University and Ohio State. The conference will be held in the James Cancer Hospital Auditorium at Ohio State. The featured speaker will be DNA fingerprinting expert

Bruce Weir of North Carolina State University. In addition, there will be one

speaker from each of the three groups sponsoring the conference.

VISITORS AND SEMINARS

Smarajit Bose is visiting the Department this year. This is his third year here as a visitor. He continues work with Finbarr O'Sullivan of the University of Washington on clustering algorithms for image segmentation problems, and with Charles Kooperberg of the University of Washington, and Charles Stone of University of California, Berkeley on classification problems. He is also collaborating on two projects on diagnosis of low back disorders with the Biodynamic Group (headed by Bill Marras) in the Department of Industrial Engineering at OSU.

Noel Cressie visited the Department during the Spring Quarter, 1995. He came to us on leave from Iowa State. While here, he offered a topics course on Spatial Statistics.

Ashish Das is visiting the Department for the 1995-96 academic year. This is his second year as a visitor, on leave from the Indian Statistical Institute. While here, he teaches full time and pursues joint research with Angela Dean and Bill Notz.

Jay Kadane is visiting the Department during the Winter and Spring Quarters while on leave from Carnegie-Mellon. He is pursuing joint research with Elizabeth Stasny and Angela Dean.

Ki-Hoon Lee, from Jeonju University in South Korea, completed his sabbatical year of stay in our department and has returned home. During his time here, Ki-Hoon Lee worked with Doug Wolfe on developing nonparametric methods for comparing patterned treatment effects between several groups. The first results of this collaboration will be published over the next year, and the collaborative effort is expected to continue.

Fred Lombard visited the Department during the summer of 1995. Fred came to us from the Department of Statistics at Rand Afrikaans University in Johannesburg, South Africa, where he is Head of the Department. While here, Fred taught Statistics 145 and pursued research in time series and change point problems.

Panickos Palettas is visiting the Department for the next two years. He is our first Visiting Professor in Statistical Education, a new visiting program instituted by the Department. He comes by way of Virginia Polytechnic Institute. Professor Palettas received his Ph.D. from OSU in 1988 so his visit is a homecoming of sorts. While here, Panickos will be directing the Statistical Consulting Service and working on developing computer lab based undergraduate courses for engineers.

Ken Russell from the University of Wollongong in Australia, visited the Department for three weeks in January 1996. While here, Ken worked with Angela Dean on research. Ken also visited the Department during 1993.

Andrej Yakovlev joined the Department in the Winter Quarter, 1995, and is visiting the Department through June 1996. He is a Professor in the Department of Applied Mathematics at St. Petersburg Technical University, Russia, and was previously Head of the Department. Andrej began his career as a physician in 1967, received a Ph.D. in Biology in 1973, and a D.Sc. in Physics and Mathematics in 1981. He is a member of the Russian Academy of Natural Sciences, a member of the Council of Fellows of the Collegium Ramazzini, and the European Study Group for Cell Proliferation. Not surprisingly, his interests are in biostatistics, most recently in models for tumor latency.

During Spring Quarter 1995, the Department held the annual Chotey Lal and Mora Devi Rustagi Memorial Lecture. Professor **Valery Nevzorov**, from St. Petersburg State University, Russia, delivered the lecture. His talk was on ordered random variables and sums. Valery is a former visitor to the Department, having spent the Winter and Spring Quarters of 1994 here.

We were fortunate to have a very distinguished visitor -- **Sir David Cox**, FRS, from Nuffield College, Oxford, and Imperial College, London, UK visit the Ohio State campus in mid-November. Sir David is the author of 15 text books and over 200 papers; he is well known for his pioneering work on proportional hazards models and several other important contributions to the theory and applications of statistics. In addition to being the keynote speaker at the Ohio Statistical Conference and the speaker at the Tuesday Departmental colloquium, David interacted with students, faculty, and administrators during his visit. The Department held a reception in his honor and, among other activities, hosted a special lunch for him and statistics students.

George Box, Director of the Research Center for Quality and Productivity Improvement at the University of Wisconsin, Madison, gave a special talk in the spring of 1995 on the quality movement and the role of statistics in scientific discovery.

Derrick Rollins of the Departments of Chemical Engineering and Statistics at Iowa State University gave a talk during Spring Quarter 1995 on simple approaches to predictive modeling of non-linear dynamic processes. Professor Rollins is a graduate of the Department of Statistics and the Department of Chemical Engineering at Ohio State. He was highlighted in last year's newsletter as a recipient of a National Science Foundation Presidential Faculty Fellows Award.

The Department hosted the **Twelfth Annual Ohio Statistical Conference** in Columbus on Thursday, November 16, 1995. The goal of this annual conference is to promote statistics among Ohio's undergraduate students and to provide a forum for interaction between Ohio statisticians in academia, industry and government. The theme of the conference this year was "Synergy of Statistics and the Sciences". The keynote speaker was Sir David R. Cox, Nuffield College, Oxford, UK. Sir David spoke on the relation between theory and application in statistics. He was joined by eight other speakers representing Ohio industry, universities and the National Institute of Standards and Technology. Over 170 statisticians and aspiring statisticians attended the meeting. Several units within OSU and many Ohio organizations sponsored the event for which registration was kept free for all student attendees. Next year the Ohio Statistical Conference will be held in Cleveland.

LINKS WITH INDUSTRY AND GOVERNMENT

Over the years, the Department has fostered links with industry and government through its research and seminar programs and its Industrial Relations Board.

INDUSTRIAL RELATIONS BOARD

Members of the Statistics Department Industrial Relations Board interact with the faculty on research projects; they help obtain internships for students; they recommend topics to be included in the curriculum for

students who intend to work in industry or government, and they facilitate the funding of fellowships for students. The Statistics Department is very happy to have the following people currently serving on its Industrial Relations Board.

- **Dr. Joseph J. Chmiel**, Director of the Statistics and Data Management Department of Abbott Labs.
- **Dr. Elizabeth Margosches**, Section Chief of the Epidemiology and Quantitative Methods Health Effects Branch of the EPA.
- **Dr. Daniel Meyer**, Statistics Department at the Lubrizol Corporation.
- **Dr. Randall Potter**, Quality Engineering Department, AT&T Microelectronics.
- **Dr. Stephen J. Ruberg**, Global Vice President, Statistics and Clinical Data Management, Hoechst Marion Roussel, Inc.
- **Dr. Robert Tortora**, formerly Chief of the Statistical Research Division, U.S. Bureau of the Census, and currently a Vice President of Gallop.

This year, the board met with the Department on October 27. Several issues were discussed, including the following:

- The realization of a need for some training in how to implement quality improvement within the department.
- Implementing quality improvement methods to improve the experience of first year graduate students. A team of senior students and faculty, will attempt to accomplish this, following training in quality improvement methodology. The Department will report on the success of this effort to the Board. The success of this effort will determine the feasibility of using quality improvement in addressing other concerns in the Department (for example, improved access to time in the consulting service, better communication between staff, faculty, and students, etc.).
- Awareness of the availability of internships in quarters other than the summer quarter. We need to encourage senior students to apply for such positions and address concerns that students may have regarding depart-

mental support and classes missed.

- Developing a system whereby senior students serve as mentors for incoming students.

Dr. Daniel Meyer also spoke in the Department's Colloquium series during the

Autumn Quarter prior to the meeting of our Industrial Relations Board. His talk dealt with the design and analysis of efficient industrial experiments within the Bayesian construct.

THANK YOU!

We wish to say a special thank you to all of you who help support our Department activities through your donations to the University. You are helping to make lives richer for the students who are following in your footsteps. We encourage you to specify your University donations to be applied to one of the following Statistics Department funds:

525898 Powers Award (teaching awards for graduate students and faculty)

536826 Whitney Scholarship (awards for consulting and research for graduate students)

526245 Rustagi Memorial Lecture

537669 Statistics Support Fund (support for visiting colloquium speakers and conference travel awards for graduate students)

INDUSTRIAL SUPPORT

Each year the Department of Statistics is able to offer special recruitment Fellowships to some of the very best new applicants to our graduate programs. These Fellowships are funded through the generous support of sponsoring industrial organizations, for which the Department is always grateful. The sponsoring organizations, their Fellowship stipend amounts and the 1995-96 student recipients are as follows:

Lubrizol Foundation Fellowships

Two awards in the amount of \$1,500 each are provided; the 1995-96 recipients are **Jennifer Rossi** from Duquesne University and **Gregory Stark** from Kenyon College.

The Dow Chemical Company Foundation Fellowship

One award in the amount of \$1,500 is provided; the 1995-96 recipient is **Jason**

Gordon from Ohio Northern University.

Marion Merrell Dow Fellowship

One award in the amount of \$1,500 is provided; the 1995-96 recipient is **Michael Starsinic** from the University of Maryland.

We appreciate all the past support from the Lubrizol Foundation, Marion Merrell Dow, and the Dow Chemical Company Foundation.

WHAT IS HAPPENING IN TEACHING

New Courses

H. N. Nagaraja developed a new short course for clinical researchers during 1994 which went into full implementation in 1995. Offered twice a year, "Basic Biostatistics for Clinical Researchers" is a ten-hour noncredit course offered under the auspices of the General Clinical Research Center. It is intended for Fellows, residents, faculty, and other young researchers from the OSU Medical School. Its novel feature includes four hours of hands-on experience with statistical packages on Macintosh computers.

Another NSF Grant for teaching!

Professors **Bill Notz**, **Dennis Pearl**, and **Elizabeth Stasny** have obtained another grant from the Undergraduate Curriculum and Course Development program of the National Science Foundation. This is a two-year grant. The goal of this project is to base statistical examples and exercises on real life problems of broad interest, especially current video clips from news shows and special broadcasts on television. Through this project, prototype video resources are being developed and additional features created to enhance a package of multimedia resources for learning statistics. Key components of this package, developed under previous NSF funding, are already in place: an Electronic Encyclopedia of Statistical Examples and Exercises (EESEE)

and an online Data Archive and Story Library (DASL). This project continues the collaborative effort between The Ohio State University and Cornell University. Material for EESEE will continue to be developed at The Ohio State University and material for DASL will continue to be developed at Cornell.

During the period covered by this grant, the project will

- collect prototype video quotes, the data associated with them, and provide discussions of related issues intended to support statistics teaching.
- integrate these prototypical video quotes and associated statistics teaching material into EESEE developed by Professors Notz, Pearl, and Stasny under previous NSF funding.
- include closed captioning of the video quotes to support hearing-impaired students, those for whom English is a second language, and others who may prefer to read the narrative script.
- expand DASL developed by Professors Notz, Pearl, and Stasny under previous NSF funding, to accommodate digitized video and related stories and data, and deliver selected video quotes, data sets, and stories over the Internet.
- have a form-based interface to accommodate contributions of data and stories for the expanded DASL from the community of statistics teachers.
- create extensive support for teachers

using the video quotes in courses and discussions of potential class projects motivated by the videos.

Plans for dissemination of the current version of EESEE through publishers are being finalized. New material developed under this project will be disseminated through the same publishers and evaluated by the beta-testers already being used to evaluate EESEE. DASL will be available free through the World Wide Web.

More on Teaching

The Department currently has two students pursuing "one-of-a-kind" degrees in Statistical Education. These students are **Greg Elfring** and **Jackie Miller**. Greg should be finishing his degree in the coming year. Jackie has just started her program. This degree combines almost all the coursework required for the Ph.D. in Statistics with considerable coursework from Education. The Ph.D. committees for both students consist of two faculty in Statistics and two faculty in Mathematics Education. Should this degree continue to be popular, the Departments of Statistics and Mathematics Education may consider developing a permanent program in Statistics Education. To the best of our knowledge, such a program would be unique in the United States.

Statistics 601 students have a new opportunity this year. Six students have volunteered to act as statistical consultants to project teams of undergraduate students who are taking a sensory evaluation class in the Nutrition Department. Each consultant will work closely with just one team and guide them through the process of planning, running, and analyzing an experiment.

1995-6 Special Topics Courses

In the Spring Quarter, 1995, **Noel Cressie** offered a topics course in Spatial Statistics while on leave from Iowa State. The course was based on his textbook on Spatial Statistics. The course was "packed" with

auditors from Statistics as well as Geodetic Sciences. We suspect that Noel's course holds the record for attendance in a topics course!

In Autumn Quarter 1995, **Tom Santner** and **Elizabeth Stasny** offered a course on the Statistical Analysis of Longitudinal Discrete Data. The course was a follow-up to Discrete Data Analysis (Statistics 865) and addressed the issue of how to analyze correlated discrete data such as that arising from longitudinal studies. Examples of correlated discrete data include a longitudinal medical study of the number of seizures suffered by patients taking a new drug versus those on a standard treatment and the numbers of crimes committed against respondents to the longitudinal National Crime Victimization Survey. The course covered three types of models that allow for correlation in discrete data: marginal models, random effects models, and transitional models. Because nonresponse can be severe in longitudinal studies, the course included models for handling missing data.

In the Winter Quarter, 1996, **Nandini Raghavan** offered a special topics course in Nonparametric Regression. The course was an introduction to the theory and application of smoothing techniques in regression with emphasis on the methodological and computational aspects. The philosophy guiding the use of nonparametric regression methods is that one does not make rigid assumptions about the form of the regression function and instead looks to the data to indicate the appropriate functional form. The initial part of the course covered several methods such as splines, kernels and local polynomials. Methods for selecting the bandwidth of a smoother were also considered in some detail. Other topics included regression with multiple predictors and non-Gaussian regression models (generalized additive models).

About the Consulting Service

This year has been one of transition for the consulting service. **Mike Fligner** ended

his two-year term as Director in the Spring of 1995. During Summer 1995, **Rob Leighty** served as both Manager and Director. In the Autumn Quarter, **Bill Notz** served as Interim Director. Beginning Winter Quarter 1996, **Panickos Palettas** took over as Director, a position he will hold through the 1996-97 academic year while he is visiting the Department. This is not the first time Panickos has been involved in the Consulting Service. Some of you will recall that he served as Manager of the Consulting Service in 1987 and 1988.

The Consulting Service has been involved in some interesting projects from outside the University this year, in addition to the many

projects the Service handles from the Ohio State community. An ongoing project with Bank One involves statistical advice for the use of software developed by Bank One. This software allows the tracking of credit card usage and provides financial institutions with the ability to investigate the effects of various credit card policies on usage. Another project is with the Longaberger Basket Company. This project involves the design and analysis of a study to investigate the effects of ergonomic tool design on injuries experienced by basket makers. Professor Palettas is also in the process of obtaining some additional long term projects for the lab.

AWARDS

POWERS TEACHING AWARDS

The **Thomas and Jean Powers Teaching Awards** are presented each year to (i) an outstanding instructor from among 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. These awards were instituted in 1986, via a generous donation to the Statistics Development Fund by Tom and Jean Powers.

In 1995, the faculty award was presented to **Kimberly Kinateder**. Past award winners have been Mark Berliner, Doug Critchlow, Steve MacEachern, H. N. Nagaraja, Bill Notz, and Elizabeth Stasny.

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 1995, the award for best lecturer was presented to **David Jeppesen**. The best recitation instructor awards were presented to **Jackie Miller**, **Laura Salter**, and **Peiling Yang**. Each of these TA's made

an outstanding contribution to the teaching mission of the Department.

WHITNEY AWARDS

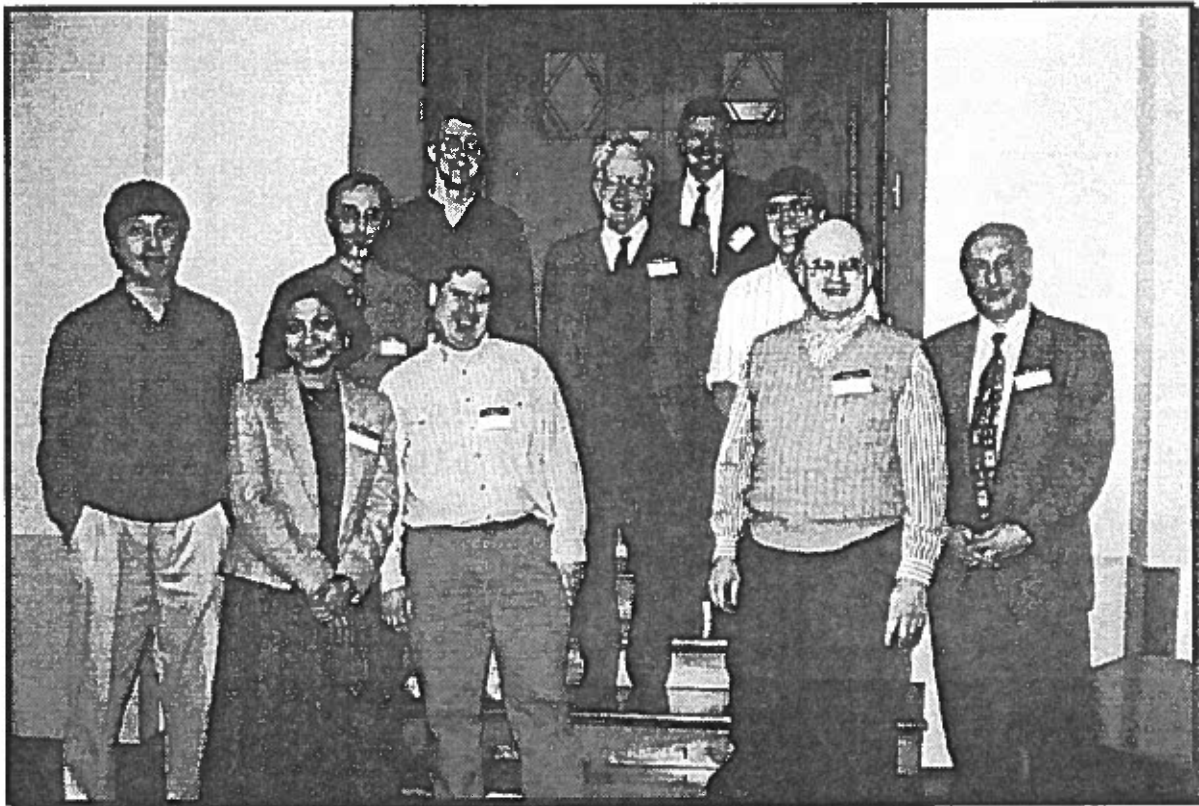
In 1992, Professor Emeritus **Ransom Whitney** and his wife **Marian Whitney** made a generous donation to the Statistics Development Fund to institute three new awards for graduate students. These awards are for Statistical Consulting, performance as a Graduate Research Associate, and for Ph.D. research. In 1995 the winner of the best consultant in the Statistical Consulting Service was **Glenn Hofmann**. The award for the best consultant working as a research associate on a research grant was presented to **Craig Cooley**. The award for the best research leading to the Ph.D. was presented to **John Lawrence**. John presented his research in the Department's colloquium series in February 1996, after which he was formally presented with the award. We congratulate these people and thank them for their hard work.

We also recognized **Srinath Sampath** with the one time "Perry White" award for outstanding service as a proofreader and editor of the graduate student newsletter!

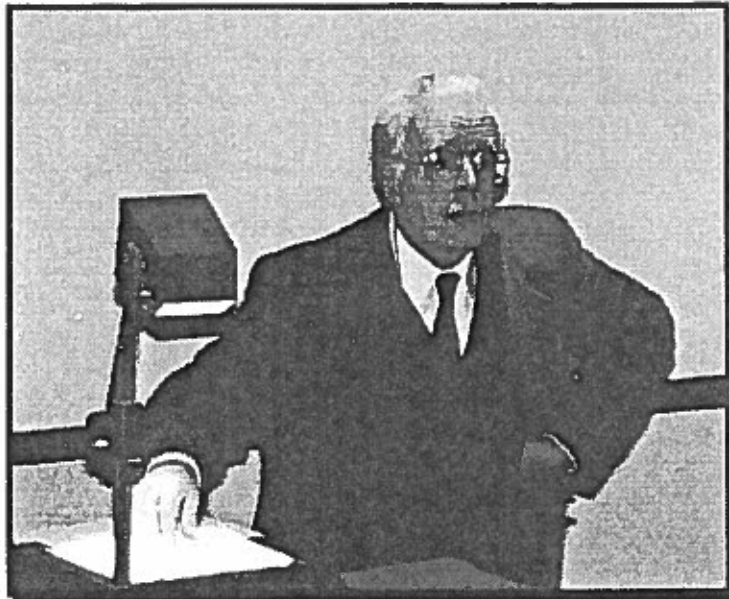
PHOTO HIGHLIGHTS FROM 1995 -96



Professor Whitney congratulating John Lawrence, winner of the 1995-96 Ransom and Marion Whitney Award for Best Research leading to the Ph.D.



Sir David Cox and faculty at the reception held in honor of his visit.



Sir David speaks at the Ohio Statistical Conference



Sir David with students at the graduate student luncheon in his honor

NEW GRANTS AWARDED TO FACULTY

Michael Browne received a grant from the NIMH to study New Factor Analysis Technology in Personality Testing. He is co-principal investigator with Robert Cudeck of the University of Minnesota. Research will be carried out to provide standard errors for rotated factor loading. The results will be applied to data collected by collaborators who are carrying out research on Personality.

Hani Doss received a grant from the Air Force Office of Scientific Research. This is a two-year grant to study Bayesian survival analysis.

Bill Notz, Dennis Pearl, and Elizabeth Stasny have obtained a grant from the Undergraduate Curriculum and Course Development program of the National Science Foundation. For more information, see "What is Happening in Teaching".

Elizabeth Stasny and Prem Goel have had their USDA grant renewed for an additional year, through September 1996. They continue to work on methods for obtaining county estimates of crop yield. In the next phase of the research, they will be exploring the use of satellite and weather data to improve the estimates.

THE FACULTY AND STAFF

New Faculty

Shili Lin received her Ph.D. from the University of Washington in 1993. She then spent two years at the University of California at Berkeley as a Neyman Visiting Assistant Professor before joining the Department in Autumn 1995. She is interested in various problems in statistical genetics. Her current research projects include developing statistical methods for summarizing and combining genetic linkage maps and continuing the development of Markov chain Monte Carlo methods for genetic pedigree analysis. She has also started a joint research project with several researchers at Florida State University on the genetic mechanism of idiopathic epilepsy in poodles.

Books

Jason Hsu has just written a book for Chapman and Hall, publishers. The book is entitled *Multiple Comparisons: Theory and Methods*.

H. N. Nagaraja, along with P. K. Sen and D. F. Morrison, co-edited the book

Statistical Theory and Applications-Papers in Honor of Herbert A. David. This book is published by Springer-Verlag.

Bill Notz and Becky Busam (M.A.S. 1994) co-authored two supplements, a Study Guide and a Testbank, for a new text entitled *The Basic Practice of Statistics* by David Moore. The text and supplements are published by Freeman.

Tom Santner has recently completed *The Design and Analysis of Experiments for Ranking and Selection*, (with R. Bechhofer and D. Goldsman), J. Wiley and Sons, 1995.

Faculty Honors

We are proud to report that **Angela Dean** was elected a Fellow of the American Statistical Association in 1995. Congratulations!

Elizabeth Stasny was elected an ordinary member of the International Statistical Institute this past year. Congratulations!

We are also pleased to report that **Joe Verducci** has just been promoted to Full Professor, effective Autumn Quarter 1996.

Departmental Research

In addition to the research supported by the new grants awarded to faculty mentioned on page 8, there are many interesting research projects underway in the Department. Some of these were highlighted as articles in last year's newsletter, and others in the current newsletter. A brief list of the main research interests of the faculty follows:

Robert Bartoszynski is working with **Dennis Pearl** and graduate student John Lawrence on new nonparametric one- and two-sample tests, applicable especially for highly multidimensional data. He also is working with John Lawrence and Luis Cid-Serrano on the problem of the usefulness of the measurement of the temperature differential in two symmetrically located points in the body as an auxiliary diagnostic tool for breast cancer. In addition, he is working with **Jean D. Powers**, graduate student Joe Pultz, and Yunkui Hou (OSU Ph.D. 1991) on new procedures for testing bioequivalence of drugs, based on ideas akin to those used in the construction of two-sample tests mentioned above.

Mark Berliner is currently on leave with The Geophysical Statistics Project (GSP) at the National Center for Atmospheric Research (NCAR) in Boulder, CO. He is directing research on (i) the application of modern statistical models and analysis techniques to issues of spatial-temporal analysis, (ii) combining data from various sources for assimilation in computer models, (iii) elements of statistical design of large scale experiments, (iv) modeling and analyses for understanding and assessing climate change, and (v) uncertainty modeling and model appraisal in support of climate system modeling. In addition to such statistical research, the GSP seeks to provide statistical expertise concerning the application of traditional statistical ideas for researchers at NCAR. Also, the GSP attempts to facilitate communications

between the atmospheric-oceanographic and the statistical-probabilistic research communities.

Doug Critchlow and **Dennis Pearl** are continuing their work with Paul Fuerst (Molecular Genetics) and Statistics Ph.D. students Xiong Hu, K. Nourijelyani, and Min-Hui Wang on methods of statistical inference for phylogenetic trees and nucleotide sequence data.

Angela Dean is working with Norman Draper (University of Wisconsin) on the construction of nearly orthogonal fractional factorial experiments, with Ken Russell (University of Wollongong, Australia) on cross-over designs for factorial experiments, and with Jay Kadane (Carnegie-Mellon University) on Bayesian cross-over designs. She is also working with Ph.D. student Jim Clark on the equivalence of fractional factorial designs.

Angela Dean and **Bill Notz** are continuing work on the construction of designs for multiple response drug comparison trials (with Ph.D. student H.-C. Tsai).

Angela Dean, **Bill Notz**, and **Ashish Das** have been investigating the structure of optimal block designs requiring a minimal number of observations when both the number of blocks and the size of blocks are flexible. Some of their results were presented at the 1995 R.C. Bose Memorial Conference at Colorado State University in June 1995.

Prem Goel and **Nandini Raghavan** are collaborating with Professor Somnath Ghosh in the Department of Applied Mechanics and Aviation at OSU to develop statistical models, based on spatial point processes, for representing the spatial distribution of microstructures in metals and alloys. These models will be used to obtain the distribution of the stress field on a structure.

Jason Hsu is currently working with Ph.D. students Kathy Fritsch and Peiling Yang on model selection and

variance reduction in simulated multiple comparisons. Two computational techniques for multiple comparisons that originated from Ohio State (proposed by Jason Hsu and Don Edwards, Ph.D. 1981) have been implemented in SAS 6.11. The SAS Institute also wrote a macro for multiple comparison with the best in GLM, facilitating the comparison of efficiencies of 171 rice farms in West Java and 25 floor tile manufacturers in Egypt by economists in so-called stochastic production frontier models, for example. He continues to work on biopharmaceutical statistics.

Mark Irwin is collaborating with Patricia Parker of the Zoology Department on a project investigating breeding mechanisms in two species of sea turtles. He is also continuing to work with Augustine Kong and Nancy Cox of the University of Chicago on developing efficient methods for conducting genetic linkage analysis.

Rob Leighty offered a short course to Ohio EPA field agents on "Characterizing Background Concentrations and Clean Standards and Statistical Evaluation of Soil Constituent Levels," and recently presented a talk at Ross Labs on "Longitudinal Data with Missing Values: A Likelihood Analysis using PROC MIXED". He is also continuing to collaborate with Nashaat Boutros, now a member of the Yale University West Haven, Virginia Medical Center, on the usefulness of auditory evoked potentials to help differentiate cocaine-addicted or schizo-phrenic patients from normal controls.

Steve MacEachern is continuing work that blends parametric and nonparametric Bayesian models. The models are fit with Markov chain Monte Carlo methods, and so additional work (with **Mario Peruggia**) concerns effective estimation based on Monte Carlo simulation. He is dissertation advisor to Craig Cooley who has developed classification and discrimination methods based on kernel density estimators.

H. N. Nagaraja continues to work on record values (with Ph.D. student Glenn Hofmann), order statistics (with Ph.D.

student Scott Linder and with OSU graduate Geraldine Baggs of Ross Labs), and heart rate variability analysis (with Ph.D. student Srinath Sampath). During 1995 he co-organized a conference on Statistics and Biometry at Ames, Iowa and the twelfth Ohio Statistical Conference, here in Columbus. He has just finished working on a book on record values which he is co-authoring with B. C. Arnold (University of California, Riverside) and N. Balakrishnan (McMaster University). The book is expected to be out late this year and is being published by John Wiley. In addition, as the Biostatistician at General Clinical Research Center, he is involved in several clinical trials conducted at the OSU Medical School.

Bill Notz and **Ashish Das** have been studying the effect of adding or deleting binary blocks from balanced incomplete block designs. In many instances the resulting designs were shown to be optimal.

Mario Peruggia is continuing work on Bayesian modeling of earthquakes (with **Tom Santner**), Bayesian diagnostics (with **Tom Santner** and Yu-Yun Ho, OSU Ph.D. 1994), and Markov chain Monte Carlo estimation methods (with **Steve MacEachern**).

Nandini Raghavan is currently working on a frequentist analysis of Bayesian procedures for inference in the nonparametric regression setting and developing efficient algorithms for doing importance sampling from mixture distributions.

Tom Santner is working on the design of computer experiments (with **Bill Notz**, Ph.D. student David Donley, and Ph.D. student Shen Zhang) and on the development of Bayesian diagnostics. Tom is also working with Guohua Pan of Oakland University on the selection of optimal engineering designs in the presence of "noise" factors, a problem formulation that is motivated by quality control work. He and Research Associate Brian Williams are working on several problems in Biomechanical Engineering with staff

members of the Hospital for Special Surgery (New York City).

Elizabeth Stasny continues to work on problems involving missing data. With Ph.D. student Joan Hu, she is working on missing data in the logistic regression setting and with Ph.D. student Theresa Papa, she is working on missing data problems in the longitudinal data from the Air Force study of exposure in Vietnam Veterans to dioxin (commonly referred to as Agent Orange). She is also working with a number of OSU faculty from the College of Social and Behavioral Sciences to form a Survey Research Group. This group will bring together many of the OSU researchers interested in the design, data collection, and analysis of data from sample surveys.

Doug Wolfe continues to work on various aspects of nonparametric inference. Current projects include inference about the relative shapes of two or more umbrella patterns (with Guohua Pan of Oakland University), treatment versus control procedures for umbrella pattern treatment effects in a randomized block design (with Dong Hoon Lim of Gyeongsang National University, South Korea), a confidence interval approach to assessing qualitative interaction (also with Guohua Pan), and the development of nonparametric methods for comparing patterned treatment effects in an arbitrary number of groups (with Ki-Hoon Lee of Jeonju University, South Korea).

Other faculty activities

Mark Berliner is currently on leave from the Department through the 1996-97 academic year. He is serving as the Project Leader for the Geophysical Statistics Project at the National Center for Atmospheric Research, Boulder, CO. The National Science Foundation, recognizing the importance and societal relevance of global climate change and the value of the proper application of modern statistical techniques in the geophysical sciences, is funding a five-year effort to integrate these techniques

with current atmospheric and oceanographic research. The mission of the Geophysical Statistics Project is to encourage the further development and application of statistical analysis to the problems faced in the Earth Sciences.

Saul Blumenthal is currently serving as the Graduate Chair of the Department. He has also accepted the managing editorship of the *Annals of Statistics* and *Statistical Science* for the IMS.

Michael Browne was invited to spend two weeks (June 19-July 2, 1995) as a guest professor at the Zentrum für Umfragen und Analysen in Mannheim, Germany. During this time he conducted a workshop consisting of five lectures on research topics in the analysis of covariance structures. Michael Browne was also invited by Division 5 of the APA to give a special address at the Annual Convention of the APA in New York City in August, 1995. Here he spoke on models for multitrait-multimethod matrices. His structural equation modeling computer program (co-authored with Gerhard Mels) now forms part of SYSTAT for DOS version 6. He is an Associate Editor for *Psychometrika*.

Jason Hsu is an Associate Editor for the *Journal of the American Statistical Association: Theory and Methods*.

Rob Leighty completed a four-year tenure as editor and co-editor of *The Statistical Consultant* newsletter, with the Spring 1995 issue. In one of the last issues under Rob's editorship (Winter 1994), he paid tribute to Jonathan Swift's classic satire "A Modest Proposal" and the 250th anniversary of Swift's death, by submitting his own satirical "A Modest Proposal For Preventing Colleagues in Poor Departments from Being a Burden to Statistical Consulting Centers and for Making Them Beneficial to Universities". If you locate a copy of this issue of *The Statistical Consultant*, take a look at this article.

Bill Notz has been elected to the ASA Committee on Statistical Education and is a member of the ASA/MAA Committee on Education. Bill is also serving as an Associate Editor of *Technometrics*. He served as Director of the Statistical Consulting Service during the Autumn Quarter, 1995 and continues to serve as Vice Chair of the Department.

Mario Peruggia is co-editor of the *Statistical Computing and Statistical Graphics Newsletter* for the Statistical Graphics Section of the American Statistical Association. He is also president of the Columbus Chapter of the American Statistical Association.

Thomas Santner is Chair of the Department. He has been appointed Editor of the new ASA Contemporary Statistics book series.

Xiaotong Shen is a member of the IMS New Researchers' Committee. He has spent the Winter and Spring Quarter, 1996 on leave at the Chinese University of Hong Kong.

Elizabeth Stasny is a member of the Census Advisory Committee. This committee advises the Bureau of the Census on its program as a whole, on policy and procedure particularly relating to statistical standards and methods, and on formulation of priorities. Elizabeth is also an Associate Editor for the *Journal of the American Statistical Association, Applications and Case Studies*.

Joe Verducci is a member of the Review Board for the *American Journal of Psychiatry*.

Doug Wolfe was appointed as Associate Dean in the Graduate School in Autumn 1995. He is an Associate Editor for the *Journal of the American Statistical Association*, serves as consultant to the American College Testing Program in the preparation of their Associateship Examinations for the Society of Actuaries, and as consultant to the law firm of Jones, Day, Reavis, and Pogue.

Staff news

Justin and Kelly Slauson were married on March 23, 1996. Justin is the Macintosh technical expert for the Department.

Peg Steigerwald's duties in the front office have been increased to include assistant to the Graduate Studies Chair. Peg is assisting Professor Blumenthal on all new graduate student admissions. **Kristy Kihm**, student employee, left the Department to take a research position in Nursing. We welcome new student employee, **Karen Biery**, to our office staff. Karen is a pre-med major and will continue working for the Department during the summer. Two longterm student employees in the front office will be graduating and leaving us at the end of this quarter. **Evan Schwartz** has been accepted by the Graduate School of Education at OSU, and **Tricia Yakovich** has been accepted by the Graduate School of Education at Kent State University. Congratulations to them both!

THE GRADUATE STUDENTS

Intramurals

The Statistics Department intramural volleyball team began their season looking to repeat as league champions. They completed their regular season in the Autumn Quarter with a disappointing two wins and two losses. In the playoffs, however, they won both their quarter- and

semi-final matches only to lose in the finals. While falling short of a second championship, their play in the playoffs was inspired. Congratulations to this year's team of Nicole Demers, Kathy and Joe Fritsch, Jennifer Kosa, John Lawrence, Kyle Matschke, Sonya Smith, and Vivek Venkatachalam.

The Statistics Department intramural basketball team had another disappointing season during the Winter Quarter 1996. The team finished 1-4-1. The team's only victory came in the first round of the playoffs. In spite of an all-out effort, the team lost by 5 points in the second round. Team members were Jon Baker, Roberto Campbell, Greg Elfring, John Lawrence, Kyle Matschke, Ramzi Nahhas, Matt Palmgren, Jim Rogers, Greg Stark, Vivek Venkatachalam, and Brent Worden.

Theresa Papa competed in the Columbus Marathon this past Autumn. She was featured in an article in the Columbus Dispatch prior to the race, in which her goal of ultimately qualifying for the Olympics was discussed.

Jim Colton was elected president of the Statistics Graduate Student Organization for 1995-96.

Weddings and Births.

Congratulations to the following student newlyweds. **Nicole DePriest** married Joseph Demers on June 24, 1995. **Dionne Pratt** married Ben Swift on August 6, 1995. **Min-Hui Wang** married Ing-Jye Hwang (who is in Physics) on December 31, 1995. **Jason** and **Beth Gordon** were married on November 25, 1995.

On the family front, **Dave and Denise Donley** became parents of a son, David Jacob (Jake), on March 29 1996 at 4:46 PM. Jake weighed in at 7 lb. 13 oz. and is 1' 9" tall.

CONGRATULATIONS to the following students who earned degrees in 1995!

1995 M.A.S.

Winter 1995

Nathan Buurma
Mary Krejsa
Valerie Weber

Spring 1995

Lisa Arnold
Shawn Benner
David Jeppesen
Deanna Marriott
Robert Mertens
Hilary Schieman
Troy Schneider
Danielle Van Zwet
Terrence Walsh
Weidong Wang
Yibing Wang
Michele Wishard
Christine Wong
Ju Zhang

Autumn 1995

Shawna Decker
Tsae-Wen Kung
Jian Feng Sun
Chia-hui Wang

1995 M.S.

Winter 1995

Kathleen Fritsch
Xiong Hu
Dionne Pratt
Ling Qin
Xin Ye

Spring 1995

William Anderson
Shaogang Chen
Nicole Demers

Jeffrey Hammel
Tim Voegtle
Mark Zabel

Autumn 1995

Kuang-Chi Chen
Qing Liu
Jyothi Nagaraja
Ramzi Nahhas
Sho-Ling Wang

1995 Ph.D.

Summer 1995

Brian Jones

Autumn 1995

Chunlin Qian

ALUMNI NEWS

Tiffany Reed (M.S., 1994) spent this winter in Melbourne, Australia as part of her job. Although she experienced the pleasure of two summers in one year, she missed out on the "winter of the century".

Seonwoo Kim (Ph.D., 1991) is now working as a research fellow in the clinical research center in the Samsung Biomedical Research Institute. Seonwoo began this job in November 1994. His work involves statistical consulting and joint research with the doctors in the Samsung Medical Center and researchers in the Institute.

Heng Du (M.A.S., 1994) is working for Hewlett-Packard Singapore Pte Ltd. as a process engineer and statistician. A recent project involved the parameter design for the Deskjet printer pen process. Next time you use an HP Deskjet printer, remember Heng Du!

Rebecca Busam (M.A.S., 1994) was married to Cory Sorice in Chicago, on March 9, 1996. Congratulations to the newlyweds!

Our sources tell us that **David Jeppesen** (M.A.S., 1995) became a new father this past year. Congratulations!

Darryl Yamashita (Ph.D., 1993) reports that Carrie gave birth to Elizabeth Hana at 9:17 AM PDT on August 15, 1995. Elizabeth Hana weighed in at 6 lb. 4.2 oz. Congratulations to the new parents!

Catherine Scipione (Ph.D., 1992) reports that she and Andy had a baby boy, Jeremy Ezra Forbes, on October 5, 1995; weight 8 lb. 3 oz. Congratulations!

Jay Harrison (M.A.S., 1990) and **Lora Bohn** (Ph.D., 1992) were married on June 17, 1995 in Gainesville, FL.

David Cameron (M.A.S., 1987) and his wife became parents of a daughter, Sylvia Claire, on April 13, 1996. Congratulations!

ASA MEETINGS IN CHICAGO

The ASA meetings this year are in Chicago

from August 4-8. If you plan to be at the meetings and would like to attend an Ohio State Alumni dinner, let me (Bill Notz) know. You may email information to me at win@stat.mps.ohio-state.edu. Be sure to indicate what evenings are convenient for you. I will try to arrange a dinner and contact everyone who wishes to attend.

ALUMNI, PLEASE HELP:

In each newsletter, we would like to include articles from one or two alumni. Articles might include highlights of recent activities (grants, research, personal), perspectives from an alumni's point of view, or historical notes from less recent graduates. If you would like to contribute something, please contact Bill Notz (e-mail at win@stat.mps.ohio-state.edu). Thanks to all who contributed to this year's newsletter.

*** 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 any alumni who have not received a copy of this newsletter, please ask them to drop us a line. You can also e-mail me (Bill Notz) at win@stat.mps.ohio-state.edu. ***

Information Superhighway-exit to the Statistics Department!

If you are on Internet, and have a World Wide Web browser, a graphical browser such as Mosaic or Netscape, or a text browser such as Lynx, then you can reach our departmental home page by opening the URL (Universal Resource Locator)

<http://stat.mps.ohio-state.edu>

We invite you to take a look at our Web page. We continue to develop and expand it. Recent additions include faculty and staff particulars, information on the Electronic Encyclopedia of Statistical Examples and Exercises (EESSEE) mentioned earlier in the newsletter under "What is Happening in Teaching", and links to related sites.