



# Annual Alumni Newsletter

University of Michigan

College of Engineering

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## FACULTY CHANGES

IOE welcomes four new faculty members this year. JAMES BEAN has just finished his Ph.D. at Stanford University where he worked with Frederick Hillier on an integer programming problem. His interests are in the areas of integer programming, scheduling and econometrics.

JOHN BIRGE also joined the faculty from Stanford University where he worked with George Danzig on large scale programming methods for stochastic linear systems. Birge's general research interests include optimization and uncertainty, and he will be teaching courses in those areas.

DEV KOCHHAR joined our staff from the University of Regina in Saskatchewan. Before this, he was on the faculties of the University of Waterloo and the University of Windsor. His principal research for the past eight years has been in understanding and utilizing the systems approach in man-machine problems. In addition to course work, he will continue his research through our Center for Ergonomics.

ROBERT SMITH joined the faculty this fall from the University of Pittsburgh, where he was a faculty member of the Graduate School of Business. His current research interests are in the areas of applied probability modeling, optimization and statistics, and capacity expansion.

We did lose two faculty members this year. JOHN BARTHOLDI and LOREN PLATZMAN have gone to Georgia Tech.

## Ph.D. GRADUATES

The following students received their Ph.D. Degrees from IOE this year. The title of their dissertation is also included:

YAHYA FATHI - On the Computational Complexity of the Linear Complementarity Problem.

ROBERT FOLEY - The M/G/1 Queue with Delayed Feedback.

SUBIR PURKAYASTHA - Design of DBMS-Processable Logical Data Base Structures.

SUNG JIN CHUNG - Structural Complexity of Adjacency on 0-1 Convex Polytopes.

CLOVIS PERIN - Matching and Edge Covering Algorithms.

BURTON SIMON - Equivalent Markov-Renewal Processes.

## ALUMNI NEWS

RICHARD A. PERELES has joined Computafone as President after 25 successful years of service in various managerial positions in industry and government. He is founder and director of the clinical consulting group named Peerless American Systems Group. He has extensive experience in information and telecommunications systems, industrial office and manufacturing engineering, and Corporation structure and organizational development.

Mr. Pereles has been on The Johns Hopkins University faculty for sixteen years, where he now teaches the graduate course "Accounting and Data Information Systems and Analysis" required for a Masters Degree in Administrative Science. In the past, he served on the State of Maryland Data Processing Personnel Examining Board; and has been a university and professional association guest lecturer.

Mr. Pereles received his formal academic training at the University of Michigan and holds degrees in Industrial and Mechanical Engineering (1953) and Business Administration (1955). He retains memberships in ASME, TIMS, AIA and SME.

DALE BECK, Industrial Engineering Class of 1968, has been promoted to Manager of Pricing for Ross Laboratories. He has been employed by Ross, a division of Abbott Laboratories, since 1971, holding increasingly responsible positions in Industrial Engineering, Materials Management, and Project Management. As Project Manager his responsibility principally was for the introduction of new products and for long range planning for the division. Beck has also been active with the Project Management Institute and has served as Vice President of the Ohio Chapter of the Institute.

This newsletter is published annually by the Department of Industrial & Operations Engineering, Edith Baise, Editor.

FROM THE CHAIRMAN

Here we go again! Last year you alumni asked us to keep you informed of what's happening at West Engineering, so Edith Baise has been busy doing just that. I hope you'll appreciate her efforts.

It certainly has been an active year. The Department has expanded numerically in both undergraduate students and faculty. Though we lost two assistant professors to Georgia Tech (John Bartholdi and Loren Platzman) we acquired four new faculty. Robert Smith joins us as an associate professor having OR experience at Bell Laboratories, University of Twente in the Netherlands and The University of Pittsburgh School of Business. Dev Kochhar also joins us as an associate professor, having previously taught in the ergonomics field at the University of Windsor, University of Waterloo and University of Regina. Jim Bean and John Birge are beginning their faculty careers with us as assistant professors after completing their Ph.D. in OR at Stanford University. We are delighted with these additional faculty as they provide outstanding technical and teaching strengths in two of the basic disciplines of our Department (i.e., ergonomics and operations research).

We continue to expand at the undergraduate level, now having an all time high of 340 undergraduate students. The graduate enrollment holds steady at about 106 students, 33 of which are seeking Ph.D.'s. Unfortunately, even with additional faculty the Department is only equal in number of faculty to its 1972 levels while the number of students has increased by 132 percent since then. Under normal economic conditions such statistics would generate additional faculty funding; unfortunately, such is not to be expected in Michigan this year and next. The funding restrictions will also mean less availability of scholarship funding, thus your support is needed more than ever before to assist both the students and faculty in our efforts to remain an outstanding resource in this country.

On a positive note, the Department research activities continue to evolve into major basic studies with many varied applications. Our human performance activities are now recognized as a Center for Ergonomics with research and teaching focused on how machines, tools and workplaces can be designed to be safer and more productive. The manufacturing engineering program has developed joint degrees with mechanical and IOE, and research on plant location and layout continues to develop. The information systems activities of ISDOS are highly sought by organizations throughout the world. The hospital planning and analysis

efforts of the Department continue to provide an educational program of interest to both IOE and hospital administration students. And finally, our operations research faculty with three new members, continue to develop new analysis methods as well as being involved in a variety of problem solving activities. Collectively this past year the faculty published 33 refereed journal papers, and 75 books, proceedings and technical reports. In short, I believe the faculty is one of the most intellectually dynamic and energetic faculty in the country who are working hard to continue the tradition of excellence that you were a part of in the past.

Let me close by reiterating my invitation to stop in and visit with us when you are in the area. Also if you have some significant professional event occur in your life, let Edith know and we'll put it in the next Newsletter. In short, our best wishes and please keep in touch!

DON B. CHAFFIN

AIIE CHAPTER NEWS

Our AIIE Chapter has been very active. At the end of last term, we were 1976 members strong and still growing. We have sponsored many activities over the past year. Plant trips included F. Joseph Lamb and the U.S. Bulk Mailing Facility. Representatives have also been attending the Senior Chapter meetings regularly. In May, six of our members attended the National AIIE Convention in Atlanta, GA.

The present officers are: (Jan. - Dec. 1980)

ALAN LEWITZ - President  
THERESA TRECHA - Executive Vice-Pres.  
ALAN KLEIN - VP of Finance  
CHARLES McELHENIE - VP of Communications  
TIMOTHY CLANCY - VP of Chapter Development  
WALTON HANCOCK - Advisor

Many activities are planned for the Fall Term. Several interesting speakers are scheduled for our luncheons which are held on Thursday at noon in Room 311 W.E. We hope to be in attendance at the conventions in Pennsylvania and Minnesota. We will be taking plant trips to the Chelsea Milling Company, G.M. Proving Grounds and Strohs. We are just underway in our involvement with the Detroit Chapter concerning the National Convention in Detroit, May 1981. Our goal is to be successful in actively involving our members and with this, it proves to be a great year!

## FACULTY ACTIVITIES

THOMAS ARMSTRONG continues to be involved in studies of cumulative trauma disorders in athletic products, food processing, furniture and automotive industries. Current work focuses on identification of common occupational risk factors and development of guidelines for design and selection of tools and tasks to minimize cumulative trauma. The vocational rehabilitation project is in its third and final year. The mobile laboratory has been used in the survey of physical work requirements of 118 jobs in six different Michigan industries.

SETH BONDER has continued in the management of Vector Research, Incorporated in his capacity as president. His major area of research at Vector is in long range planning with new approaches for considering the large uncertainties (future environments, value systems, etc.) associated with planning horizons. The focus is on developing versatile plans and systems that have the flexibility to adapt to future contingencies. He has continued to teach in the decision analysis area and the modeling of large scale systems in an advanced graduate research seminar.

LOUIS BOYDSTUN continued his work in the area of maximum reach models and driving simulators. In addition he has begun a study on the ergonomic aspects of software systems and is exploring this problem in the area of simulation. Ergonomic aspects of simulation include modeling, problem definition and the representation of the simulation model to the user. These studies have resulted in several technical reports, presentations and a journal article. Boydston is teaching simulation and information processing systems and is preparing a graduate course on the development of large scale simulations. Other research activities include the graphical depiction of biomechanical models and information processing aspects of human factors methodologies.

DON CHAFFIN has completed his third year as Chairman. During the past year he has continued his research on biomechanical injury causation and control in industry. This has resulted in four journal articles, two book chapters and 15 oral presentations. He organized a special half-day session on the topic for the American Occupational Medicine Association and American Industrial Hygiene Association, as well as co-chairing a NATO one-week scientific program on biomechanics and anthropometry held in Cambridge, England last July. Professor

Chaffin also is Director of the newly formed Center for Ergonomics, which was designated by the University Regents to develop multidisciplinary research and teaching in worker-task problem solving. This latter effort has been greatly facilitated by a new five-year, four-million dollar traineeship grant from the National Institute for Occupational Safety and Health to assist engineering students to obtain an education which will allow them to better design production systems which are free of recognized hazards. Professor Chaffin is director of this program.

HERBERT GALLIHER began phased retirement on January 1, 1980. During the Winter 1980 Term he was on leave, but resumed teaching for the Fall 1980 term, the last term of teaching before his expected full retirement.

WALTON HANCOCK is presently finishing a grant from the National Center of Health Services Research which has to do with the maximum occupancy hospitals can attain without certain problems. JIM MARTIN (Ph.D. from IOE and Associate Professor of Hospital Administration) and Hancock have a Management Information Systems group that is housed and associated with the Hospital Administration Program in the School of Public Health. This group has prospered and now has three full-time professionals, 20 students, plus Hancock and Martin. The American Institute of Industrial Engineers made Hancock a Fellow in May 1980. Last year was Hancock's final year as Undergraduate Program Advisor in the IOE Department. He says that he enjoyed the work, but six years is two years too long!

GARY HERRIN has replaced Hancock as Undergraduate Program Advisor for the next three years. Our current enrollment of 340+ students will provide a real challenge. He is also serving as Vice-President of Region IV for Alpha Pi Mu and Idea Exchange Coordinator for AIIE. Herrin's research in the area of Physical Stress has continued with support from Firestone Tire & Rubber Co., Kaiser Aluminum & Chemical Corp., United Airlines, and Owens-Corning Fiberglas, Corp. While on sabbatical leave during the Winter 1980 Term, Herrin wrote four of eight chapters and edited A Work Practices Guide for Manual Lifting for NIOSH.

GARY LANGOLF completed the third year of a Public Health Service-NIOSH grant on a longitudinal study of industrial mercury exposure. His current work involves studies of effects of paint spray solvent mixtures in addition to a further continuation of the mercury work. His research uses human performance methods to develop more sensitive medical tests which can be used to protect workers from potentially toxic health effects.

JACK LOHMANN was this year's recipient of Alpha Pi Mu's Outstanding Teaching Award. He has also been coordinating a review (with Hancock, Miller and Wilson) of the Department's Management Engineering area. He became an officer of the Engineering Economy Division of AIIE, accepted a 3-year term on the Membership Policy Committee of ASSE and was a referee and book reviewer for The Engineering Economist. He is also participating with other faculty in a grant from EDA to study the "Economic Impact of Aged Multilevel Industrial Plants."

JAMES MILLER is director of the IOE portion of the University of Michigan Rehabilitation Engineering Center. A key activity of the project has been the automobile driving simulator which is being used to assess the capabilities of handicapped drivers and to train these individuals. Miller continues serving as Special Assistant to Dr. Bingham, Assistant Secretary of Labor to OSHA. Among his activities of the past year have been negotiations of several agreements between OSHA and other governmental agencies concerning interagency jurisdictional questions relating to where responsibility lies for various worker protection. A forthcoming Handbook of Industrial Engineering will contain a chapter by Miller entitled, "The Management of Occupational Engineering." Miller has also been researching accident problems associated with the drivers of automobile transport carriers.

KATTA MURTY continued work on his two-volume book: Vol. I: Linear Programming, Vol. II: Combinatorial Programming. Three of his students received their Ph.D.'s this year; he has three still working toward this goal. AFOSR has renewed Murty's contract on "Algorithms for Mathematical Programming Problems." Four of his papers on the complexity of parametric programming, nonlinear optimization, edge covering algorithm and ellipsoid algorithms for convex quadratic programming are being published in mathematical programming journals and books.

CLOVIS PERIN, who has just finished his Ph.D. under the advice of KATTA MURTY, is teaching IOE 510 "Linear Programming" and is working on Combinatorial Optimization.

STEPHEN POLLOCK continued his application of operations research and mathematical modelling to public sector problems. He recently finished an evaluation of a local court's delay-elimination activities, and is continuing work on two projects: "Mathematical Models for Correctional Evaluation" and "Stochastic Characterization of Solar Radiation Incident at the

Earth's Surface." Pollock continues to serve as a member of the ORSA Education and Publication Committees as Area Editor for Operations Research and will be a candidate for ORSA Council. He will be program chairman for the Spring 1982 ORSA/TIMS National Meeting in Detroit.

WILBERT STEFFY, Professor Emeritus, remains active. He is interested in productivity and costs control systems, industrial purchasing systems, engineering economics, and golf handicapping research. During the past year, he has had several books and booklets published on the above areas. The ANN ARBOR NEWS on May 19, 1980 gave a half-page spread of his golf handicap research.

In addition to directing the ISDOS project and teaching basic courses in the Information Systems Option, Professor DANIEL TEICHROEW is the USA Coordinator under the USA/USSR agreement for cooperation in science and technology, of the topic area of "Application Software Development Methodology." The objective of this agreement, initially signed in 1972, and renewed in 1977, is to initiate cooperative programs in areas of science and technology of interest to both the USA and USSR.

RICHARD WILSON continues his research on Analysis of Materials Handling Systems sponsored by NSF. He also has a grant from the Bethlehem Steel Co. Educational Foundation to study interactive analytic models of steel operations. During the past year Wilson served as a member of the College Executive Committee, the IOE Department Committee and Coordinator of Manufacturing Systems Engineering Planning. Other activities include: Editorial Board, Head and Reviewer for Applications and Implementation Department of AIIE Transactions; NSF Production Research Proposal Reviewer and Pro-tem President and Co-founder, Ann Arbor Subchapter, Robotics Society.

TONY WOO is continuing the usage of microcomputers in the Data Processing course. Students have benefited from such training in their employment. A mini-computer, PDP-11, has been delivered. It will be used for teaching and research in the use of computer graphics. It is also expected that the number of computer terminals in the Department will increase in the next year. Woo is currently serving as the Alpha Pi Mu advisor.

The IOE Faculty was supplemented during the past year by Visiting Faculty and Lecturers including FRANCES FULLER, ANDRIS FREIVALDS and STANLEY SEASHORE.

## NEW GRANT IN OCCUPATIONAL HEALTH AND SAFETY ENGINEERING RECEIVED

The UM has been awarded a \$4 million grant by NIOSH to continue and expand the education of graduate students in occupational safety and health. The difference between this new grant and our present traineeship is the addition of a graduate program in occupational medicine, development of undergraduate engineering courses which will stress occupational safety and health as a basic engineering discipline and expansion and integration of various Ph.D. programs related to occupational safety and health.

This traineeship will be a combined effort between IOE, Chemical Engineering, Environmental & Industrial Health and the Occupational Medicine group of the School of Public Health.

For further information regarding the various programs, write to Don Chaffin.

## FLINT PROGRAM

The IOE Department continues to have a thriving Masters level program offered at night in Flint. One to two courses are offered per term by the Ann Arbor Campus faculty and there are currently 35 students accepted into that program and making progress toward their degrees. Nearly all of the Flint students are employed by the automotive companies in the area during the day serving in some type of engineering capacity but finding that advanced level work in industrial and operations engineering is essential for their continued success within their careers and their companies. The persons participating in the programs and the companies they represent are very appreciative of this service that the IOE faculty is providing.

## ALPHA PI MU

The Alpha Pi Mu April initiation was a great success with over 70 people attending the dinner at Weber's Inn. Two faculty members were initiated, JOHN BARTHOLDI and TONY WOO, along with approximately 37 students.

The Chapter Officers for this year are: (May 1980-April 1981)

STEVE LANGER - President  
JEFF LEBOW - Vice-President  
SUE MALLILA - Secretary  
ROGER LADY - Treasurer  
CHARLES McELHENIE - Eng. Council Rep.  
TONY WOO - Advisor

Alpha Pi Mu is planning to be very active this year. The first meeting of the Fall Term was held in October.

## ENROLLMENTS AND AWARDS

Enrollment figures for the past year have continued to increase to approximately 340+ students enrolled in the undergraduate program; 70 of these are women. Graduate enrollment is stable with 73 masters students, with 33 more working toward their Ph.D.; 23 of these are women.

The Clyde Johnson Fellowship Award was presented to BRIAN OBRECHT this year. This award is presented to students who not only have an outstanding academic record but also show an obvious interest in applying the principles and disciplines of IOE and assisting and supporting their fellow students.

The College of Engineering presented two awards to IOE students this year. They are:

MOHAMMAD PARTOVI - Outstanding Graduate Student.

SUSAN ROLL - Outstanding Undergraduate Student.

## NEW CENTER FOR ERGONOMICS FORMED

The Regents of the University have specified that the Human Performance and Safety Engineering Laboratory in IOE be enlarged to form a more multi-disciplinary center, entitled, the Center for Ergonomics. This designation was meant to recognize that a multi-disciplinary effort is necessary to understand and control the wide variety of conditions in the workplace that cause loss of productivity and harm to workers. Currently, projects include:

National Institute for Occupational Safety and Health  
State of Michigan, Bureau of Vocational Rehabilitation  
Firestone Tire and Rubber Company  
Owens-Corning Fiberglas Corp.  
Fisher Body  
General Tire and Rubber Co.  
Michigan Consolidated Gas Co.  
Kaiser Aluminum & Chemical Corp.  
Olin Chemical  
United Airlines  
Rexnord, Inc.

A new brochure further describing these activities will be available shortly by writing to Edith Baise, editor of this Newsletter.

#### GRADUATE ADMISSIONS AND FINANCIAL AID

As opposed to the significant changes in enrollment that have occurred at the undergraduate program level, our IOE graduate program for the past five years has remained reasonably stable in terms of its size. The new class of Fall graduate students consisted of 31, 23 of whom were of U.S. Citizenship, 8 of whom were foreign. These students resulted from some 200 applications to our program from which we selected 75 to whom admission offers were extended. Obviously, 31 of those accepted our offer and joined us in the program. This percent of acceptances has also remained stable for a number of years. Those not accepting admission to the University of Michigan do not so because of 1) either they do not attend graduate school at all or 2) they select one of the other good institutions, usually Stanford or Cornell. The academic capability of of our applicants and of the graduate students who

actually join us has been excellent and continues to rise. For example, this year the average undergraduate grade point average for our incoming students was about 3.5. A preponderance of the students come from either an undergraduate industrial engineering background or math program. As has been the case in past years, we have been able to provide for or arrange nearly complete financial support for all U.S. students who have joined the program both at the Masters and Ph.D. level. Gifts from alumni and companies, our extensive research activities, and a dwindling amount in University sponsored fellowship and teaching assistantship monies allow us to continue yet this year a competitive financial aid support program for graduate students. It is doubtful that our funding as it is will allow us to remain competitive for next year without some additional types of funds to overcome the significant increases in living costs and tuition in the Ann Arbor area.

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