National Science Board Looks at Undergrad Engineering Education

Recently, a task committee of the National Science Board completed a final report on undergraduate science and engineering education. The report provided an analysis of the current condition and trends in U.S. undergraduate education in the sciences, mathematics, and engineering. It contained suggestions for actions by academic institutions and their governing bodies, states and mission-oriented federal agencies, the private sector, and the National Science Foundation. I will share with you here the conclusions regarding undergraduate engineering education, in which the problems were evaluated as especially intense.

The report acknowledged that as our society becomes ever more dependent on science and technology, it also becomes dependent on the availability of talented, broadly educated engineers. Indeed, the health of our nation's engineering schools is a critical factor in determining the economic and military security of our country and the quality of American life. High demand for engineering graduates, coupled with greater interest in engineering careers by the nation's best high school seniors, has resulted in dramatic enrollment increases. This trend has persisted for nearly a decade, during which most academic institutions experienced fiscal constraints. The resulting overload on faculties and facilities during this period of austerity has generated substantial pressures on the quality of engineering education. Indeed, many believe that these pressures have caused significant deterioration in the vitality and quality of engineering programs at most of the nation's engineering schools.

While it is true that the United States lags far behind other industrialized nations in per capita production of engineering graduates, the sense of the crisis among engineering educators and employers has less to do with quantity than with the quality of undergraduate engineering education. Limits on available financial resources and an insufficient supply of doctoral graduates have held the amount of institutional space and the number of engineering faculty positions roughly constant. This situation has been aggravated by the serious obsolescence of the laboratory and instructional facilities. Finally, in the view of some educators, engineering curricula have not kept pace with the demand placed on practicing engineers—especially those joining small companies and industries where the majority of new job opportunities are created through new products and processes.

One conclusion of the report was that the serious shortage in the availability of engineering faculty, the poor quality of physical facilities, deficiencies in instructional laboratory equipment, and the failure to keep the undergraduate engineering curricula abreast of technological change confirmed that grave problems exist in engineering education.

The highest priorities for action urged by the committee were:

- strengthening the laboratory experience through increased support for acquisition and maintenance of instructional equipment;
- changing courses and curricula to better reflect the state of knowledge and the needs of practicing engineers; and
- attracting, retaining, and resharpening well-qualified faculty members.

The concerns that led to these priorities are especially intense because of both the intellectual character of engineering education and the national need for engineering graduates.

The committee also concluded that responsibility for the academic health of undergraduate education resides primarily in the nation's colleges and

(Dean's message continued on back page)
Iowa Computer-Aided Engineering Network Complete

The college recently completed the installation of a state-of-the-art integrated computer network that puts The University of Iowa in the forefront of engineering education in the nation. The Iowa Computer-Aided Engineering Network (ICAEN) provides an impressive array of sophisticated technology that enhances the training of students to meet the demands of industry. It also aids faculty members in developing course materials and in their research activities.

The network, phased in over a three-year period, became fully operational in the fall of 1986. Through the network, students have easy access to interactive computer-aided design with graphic display, database manipulation, electronic mail, technical document preparation, and windowing to process several tasks simultaneously.

At the heart of the systems are the linkages between Apollo workstations, Macintosh personal computers, and such peripheral devices as printers and plotters. The 65 Apollo workstations are connected to each other through the use of Apollo’s DOMAIN high-speed network, which allows full access to all ICAEN resources from any workstation. With the network completed, the college now has one of the largest Apollo networks among universities in the country and is unsurpassed in the availability of workstation equipment on a per student basis. Thus, the college’s commitment to providing a contemporary engineering education has provided students with an excellent environment for training in the use of modern computer-aided engineering methods.

Most of the hardware is situated in two new student laboratories that house 110 student workstations. One of the facilities, the Howard J. Elder Laboratory for Engineering Computing, is on the fourth floor of the Engineering Building. The second cluster is in newly remodeled space on the third floor. In addition, each faculty office has a Macintosh personal computer and each department has a minicluster of workstations that are available for curriculum development activities.

Complementing the significant investment in hardware is the college’s commitment to stay current in the ever-changing world of software packages. The college has entered into a consortium agreement with SDRC, a subsidiary of General Electric and a leader in the computer-aided design field. The agreement provides the college with the entire range of the company’s software packages that are compatible with the Apollo network. The pact provides sophisticated software tools for computer-based modeling and design, structural analysis, and drafting. A variety of commercial software from other vendors is also available on ICAEN, as well as a growing array of locally developed tools. In addition, the college is a member of the College CAD/CAM Consortium, a group of 20 colleges that share in developing and distributing software packages involving interactive computer graphics.

To help support the continual need to operate and update ICAEN facilities, the state Board of Regents approved a fee of $100 per semester for engineering students, beginning in the fall of 1986. The network also receives funding support from the University and from gifts being raised from corporations and alumni and friends of the college.

Faculty director of ICAEN is Jon G. Kuhl, associate professor of electrical and computer engineering. Kuhl led the planning for and the integration of the network into the college’s curriculum. He is also responsible for long-range planning that will keep ICAEN current in computer technology. Douglas A. Eltoft directs network operations with three full-time professional staff members.

Elder Lab Update

The newly established Howard J. Elder Laboratory for Engineering Computing was dedicated November 8, 1985. The laboratory, made possible by a major gift of Manuel A. Villafana and Elizabeth Elder Villafana, serves as one of two clusters of computer graphic workstations for students on the Iowa Computer-Aided Engineering Network.

The dedication ceremony featured an address by University President James O. Freedman and a demonstration of the laboratory’s state-of-the-art equipment.

Elder received his engineering B.S. degree in civil engineering from the UI in 1959. He returned to his hometown, Mason City, to operate the family’s lumber business. He later formed a new architectural design firm, Horizon Enterprises, where he worked until his death in 1981.

His daughter, Elizabeth Villafana, is a 1980 UI graduate in finance. Her husband is board chairman of GV Medical, Incorporated, a medical firm in Minneapolis, and has founded two other companies. In 1983, he was inducted into the Minnesota Business Hall of Fame.
Trummel Retires

Professor J. Merle Trummel retired June 30, 1986, after 45 years of dedicated service to the Department of Mechanical Engineering.

Trummel received his B.S. from the University of Illinois in 1939, his M.S. from Iowa State University in 1940, and his Ph.D. from The University of Iowa in 1960. Prior to joining the UI faculty as an instructor in 1941, Trummel worked for John Deere & Company in Moline, Illinois.

Early in his academic career, Trummel developed expertise in the production of energy in nuclear-powered utility plants. He spent a year and several summers working at Oak Ridge National Laboratory in Tennessee. When the field became too commercialized, the college phased out its graduate program in nuclear energy. Trummel's interests shifted to the kinematics of machines, and he developed several graduate courses on the subject. With the advent of widespread use of computers, Trummel added the application of computer graphics to his research interests. More recently, he developed a manual for computer graphics for a course that is required of all college freshmen.

Trummel served as acting chair of mechanical engineering in 1965-66 and again in 1970-71. In addition to his membership in numerous professional organizations, Trummel is a life member of the American Society of Mechanical Engineers. At a dinner in recognition of Trummel's retirement, colleagues and friends gathered to honor him for his loyal and dedicated service. Among the gifts Trummel received was a set of tools that he could use in his hobby—restoring antique Victorian furniture.

Faculty Earn Many National Honors

Professor Virendra C. Patel, mechanical engineering and Institute of Hydraulic Research, has been honored with his selection as Chalmers One-hundred-fiftieth Anniversary Visiting Professor for the 1987-88 academic year. The Board of Regents of the Chalmers University of Technology at Gothenburg, Sweden, selected Patel based on the nomination from four engineering departments within the university. Patel was selected for the scientific contributions he has made in the field of fluid mechanics. He will conduct research and deliver lectures during his year in Sweden.

Professor Patel and Professor Norbert R. Malik, electrical and computer engineering, each were awarded one of four Amoco Senior Faculty Teaching Awards for 1985-86. These all-University awards are made in recognition of excellence in teaching at the baccalaureate level. The awards were presented to the recipients at the Faculty Convocation held this past September.

Gregory R. Carmichael, professor and chair of the chemical and materials engineering department, received a 1986 Dow Outstanding Young Faculty Award from the American Society for Engineering Education. Carmichael was one of 12 recipients to receive the honor, each from a geographic region of the society. Carmichael was recognized for his exemplary achievements in research and teaching and for his contributions to the profession. Professor Carmichael also was cited as an outstanding alumnus of Iowa State University in June 1986. He was recognized for his research record, his attainment of full professor, and his promotion to department chair all within six years on the Iowa faculty.

Carmichael's research area is in the long-range transport and fate of chemically reactive air pollutants.

Professor Jerald L. Schnoor, chair of civil and environmental engineering, received one of five Walter L. Huber Civil Engineering Research Prizes that were awarded at the American Society of Civil Engineers' annual meeting in Detroit in October 1985. Schnoor has earned distinction for his research in toxic pollutants affecting water quality and for his study on the problems caused by acid rain.

1985-86 Grads Fared Well; This Year Looks Brighter

Placement of engineering graduates remained strong despite a significant decline in the national demand in the technical job market. In view of the current state of the economy, December 1985 and May 1986 graduates of the college enjoyed an excellent rate of acceptance in jobs or postgraduate programs. Beginning salaries for the graduating class remained above the national average.

Recruiting activity slowed during the spring as economic uncertainties emerged, especially in the computer and electronic industries. The number of campus visits by employers declined slightly, reflecting a national trend. Although the number of candidates interviewed for each visit increased, recruiting organizations stepped up their solicitations of résumés and applications. Demand remained highest for electrical and computer engineers, followed by mechanical engineers.

Prospects for 1986-87 graduates are brighter. The latest projection by the U.S. Department of Labor estimated a 36 percent gain in employment opportunities for engineers during the next decade. An indication of the validity of that forecast is reflected in the number of commitments employers already have made for interviewing students in the fall of 1986.
Radio Pioneer Menzer Dies

Carl H. Menzer, professor emeritus of electrical and computer engineering, died in Iowa City on September 4, 1986. Menzer, who retired from the University in 1968, was 86.

He received a bachelor's degree in engineering from the University in 1921, a master's degree in 1922, and a professional degree in electrical engineering in 1925. He served as director of radio stations WSUI, which was formally begun in 1923, and KSUI, begun in 1948, and professor of electrical engineering until his retirement.

In 1917, as a freshman in electrical engineering, Menzer broadcast by wireless code from the basement of the old Physics Building a program of weather reports, time, news, sports, and a course in the theory of radio. The first voice and music transmitter was built in 1919. In succeeding years he was responsible for many firsts: play-by-play broadcasts of sports events from outside the studio, broadcast of a public event outside the studio, radio broadcast from a classroom, broadcast by radio for University credit, conferring of a University degree in absentia by radio, public address system, broadcast of commencement ceremonies, and one of the first television broadcasting stations in the world.

Menzer not only built and maintained the equipment, but also served as announcer, news editor, sportscaster, and even musician. Many of his efforts met with opposition, but this never seemed to deter him.

A resolution was passed on the floor of the State Convention of the Iowa Broadcasters' Association on May 25, 1968, in recognition of Menzer's outstanding work in the field of radio and television. He was a charter member of that organization.

Iowa's 16th Rhodes Scholar among Award-Winning Engineering Students

Jeffrey S. McKinney (B.S. in B.M.E., '86) won a prestigious Rhodes Scholarship last year. He was the sixteenth UI student to win the coveted prize and the second in the last four years. McKinney will study physiology at Oxford University for two years before returning to The University of Iowa, where he will enroll in the College of Medicine. McKinney, of Chariton, was one of 32 young Americans selected as a Rhodes Scholar after a rigorous screening process. The honor is among many McKinney has accumulated. In 1986, he received campuswide recognition when he won the UI Hancher-Finkbine Medallion, an award given each year to only four students who are dedicated to leadership, loyalty, and learning. In 1985, McKinney received a Distinguished Student Leader Award, which honors runners-up in the competition for a Hancher-Finkbine medallion. McKinney was chosen as the student speaker at the University's commencement exercises in May 1986. He won numerous academic honors and scholarships, including a Presidential Scholarship, which recognizes academic excellence of selected incoming freshmen.

In recognition of her excellence as a student and as a leader, Margaret J. Donkers of Red Wing, Minnesota, received a Distinguished Student Leader Award. Donkers, who will complete the degree requirements for a bachelor's degree in biomedical engineering in December 1986, served as president of the Society of Women Engineers and was a member of the Society of Biomedical Engineers. She also was involved in Theta Tau, Associated Students of Engineering, and Mortar Board. She earned numerous scholarships and academic honors.

James K. Knapp, a doctoral student in the chemical and materials engineering department from Knoxville, Illinois, was awarded first prize for a paper he presented at the Midwest Electron Microscopy Conference. Knapp's paper examined the morphology of debris particles generated by an abrasive-wear process. The application of his research is to elucidate abrasion-wear mechanics for monitoring the condition of machinery. Knapp competed against students from other midwestern universities in Chicago in October 1985.

Scott A. Foster (B.S. in B.M.E., '86) was awarded a Tau Beta Pi Graduate Fellowship for graduate study during the 1986-87 academic year. Foster, of Monticello, is the sixth student from UI to be offered one of the highly competitive fellowships over a six-year period. No other engineering college in the nation has received more fellowships over this period.

W. James Herrmann, a senior from Ottumwa, won the Dwight D. Gardner Scholarship Award from the IIE. He was one of ten students nationwide to receive the award.

David Stegink of Iowa City (B.S. in Ch.E., '86) won second place for a paper he presented at the AIChE Mid-American Regional Student Chapter Paper Contest that was held in Iowa City in April 1986. Stegink wrote a paper entitled "Kinetics and Mechanism for the Enzymatic Hydrolysis of Lactose."
The Class of '48 and its Two Oil Executives

Randall Meyer (B.S. in M.E., '48), president of Exxon Company, U.S.A., was the featured speaker at the college's open house in May 1986. Meyer has maintained close ties with the college and University since he began his career with the company upon graduation. He is a member of the President's Club of the University of Iowa Foundation and a member of the steering committee for the University's $100 million Iowa Endowment 2000 campaign.

After serving in a number of technical and managerial positions with the company in Baton Rouge, Louisiana, Meyer was transferred to Houston, Texas, in 1961 in the supply and transportation department. He was named manager in 1964. Two years later, he moved to New York City as executive assistant to the president of Exxon Corporation. In 1967, he returned to Houston as senior vice-president of Exxon Company, U.S.A. and became president in 1972.

Among his many activities, Meyer is a member of the board of trustees of the American Enterprise Institute for Public Policy, a member of the board of directors of the American Petroleum Institute, and a member of the board of governors of the 25-Year Club of the Petroleum Industry.

Another loyal alumnus is Leland C. Adams (B.S. in E.E., '48). Adams, who is executive vice-president of Amoco Corporation, left the college's advisory board in the spring of 1986, but he intends to continue his close relations with the college. Adams was placed in Iowa's engineering program by the U.S. Army in World War II. He was transferred after one and one-half years, but after the war ended, he returned to the UI to get his engineering degree. Adams, who began his career with Amoco upon graduation, rose quickly through the managerial ranks.

In 1970, he became executive vice-president of Amoco International Oil Company. He became president of the company in 1975 and a year later was elected to the board of directors of Standard Oil of Indiana, which was renamed Amoco in April 1985. He was named president of Amoco Production Company in April 1981. Adams was promoted to his present position in September 1983.

Private Giving Increases 23 Percent

The college continued to enjoy strong support from alumni and friends in its efforts to strengthen and upgrade the quality of engineering programs.

Gifts totaling nearly $600,000 were received by the college from 925 contributors, an increase of 23 percent over the previous year. Of that amount, $84,000 was designated for the Engineering Development Fund, a program established four years ago to advance educational and research opportunities. Contributions to the fund increased by 16 percent, continuing an encouraging trend of support in assisting the college in areas of greatest need. The fund, for example, supports special activities for students and faculty, alumni events, and projects where seed funds are necessary to respond to new initiatives and opportunities.

The college's specially renovated faculty conference room and a new student lounge were enhanced by donations through the Class Gift Program, a tradition associated with the annual reunion weekend in May. Since 1982, alumni from the classes of 1932-36, 1942-46, 1957-62, and 1972-76 have contributed nearly $44,300 to pay for special furnishings, display boards, and audiovisual equipment. The conference room and lounge occupy space on the third floor of the Engineering Building.

Apollo Computers, Inc., joined the University of Iowa Foundation's President's Club through a commitment of equipment to the Iowa Computer-Aided Engineering Network (ICAEN). The system consists of Macintosh computers and Apollo workstations, which are interconnected utilizing Apollo's DOMAIN networking system. Other contributors to the ICAEN fund-raising effort include the Amoco Foundation and Cedarapids, Inc., a subsidiary of Raytheon Company.

Hawkeye Engineer Continues to Win National Awards

The student magazine Hawkeye Engineer, formerly the Transit, won two awards in national competition at the 1986 Engineering College Magazines Associated convention at Madison, Wisconsin.

The magazine received a third-place award for an article in its February 1985 issue that was entitled "Engineering Athletes—Survival of the Fittest." The article, entered in the best nontechnical article category, was authored by Sherri Riessen, a senior from Hartley and general manager of the magazine. The magazine produced by an all-volunteer student staff was awarded an honorable mention in the category of best single issue for the February 1985 issue, which focused on women in engineering, athletes studying engineering, and product liability.
Department Highlights: A Sampling of Recent Highlights and Accomplishments

Biomedical Engineering

The department was notified in July that the undergraduate program has been accredited by the Accreditation Board for Engineering and Technology (ABET). The department is extremely proud of this distinction, which was achieved from the department's first application for evaluation and review by ABET. The program now joins a select group of other schools across the nation with accredited programs in biomedical engineering. It is only the second accredited program at a public university. All of the designated undergraduate engineering majors in the college are now fully accredited.

Faculty Activities

Professor Krishnan B. Chandran was elected as a control group member of the Bioengineering Committee of the American Society of Civil Engineers. In August 1986, he visited the Bioengineering Laboratory of the University of Zurich and presented a paper at the annual meeting of the Cardiovascular Systems Dynamics Society held in Zuoz, Switzerland. The paper was on a three-dimensional reconstruction of a human left ventricle from echocardiographic and cine computer tomographic imaging.

Professor Edwin L. Dove developed an instructional and research laboratory to view physiological processes from an engineering perspective. Instructional emphasis in the laboratory will be through two new courses: Biosystems Analysis and Computer Systems in Biomedical Engineering. The new laboratory will expand the knowledge of how and why physiological processes work. Dove also presented a paper on the control of the respiratory system at the Federation of American Societies for Experimental Biology.

Continuing his pioneering work in cellular solids, Professor Roderic S. Lakes submitted a patent application for a polymeric cellular structure invention with a negative Poisson's ratio. This material expands laterally when stretched and contracts laterally when squeezed. Lakes also is developing a new Holography Laboratory in association with the Iowa Laser Facility at the University. The laboratory will feature a new course called Holographic Methods. Research will focus on the studies of composite materials and on novel holographic techniques.

Professors Kwan Rim, department chair, and Y. King Liu traveled to China, Hong Kong, Japan, and South Korea to strengthen collaborative research efforts in the areas of biomechanics and biomaterials.

Professors Rim and Vijay K. Goel have established the Vibration White Finger Laboratory. Working in conjunction with Deere and Company, Rim and Goel will study the vibration transmitted to the hands of foundry workers. They will share their research findings with the industry.

Professors Glen O. Njus, Goel, and Liu presented papers at the International Society for the Study of Lumbar Spine in Dallas, Texas, in May 1986.

Student Awards

Sang Jyun Park, doctoral student from Korea, received the Austin T. Moore Award from the Department of Bioengineering at Clemson University as the most outstanding graduate student in bioengineering at Clemson during the 1984-85 academic year. He received the award in May 1986 at the Hunter Lecture in Winter Park, Florida.

Chemical and Materials Engineering

With the large numbers of degrees conferred over the past few years, the department now ranks among the top 25 percent of schools in numbers of Ph.D. graduates per faculty member. Among the many activities this past year, the undergraduate students hosted the annual AIChE student paper contest for the Mid-American Region, the new Fine Particle Characterization Laboratory with many new and unique instruments was dedicated, and the biochemical research area was enhanced with new research equipment, including a 14 liter air-lift fermentor and data acquisition system. A big project for this year is the modification of the undergraduate curriculum to provide students with options in biochemical engineering, materials science, and catalysis and surface science.

Faculty Activities

Professor J. Keith Beddow was a plenary lecturer on morphological analysis at an international symposium on the Science of Form in Japan last year. From Japan, Beddow traveled to Beijing, China, where he visited the Chinese Academy of Sciences to make preliminary arrangements for a trilateral conference there in 1988 between Japan, China, and the United States. He also lectured on morphological analysis at a special international symposium on Pressing Technology in Sweden. Beddow authored a new book, Particle Characterization in Technology, that was published in two volumes in May by CRC Press.

Professor Gregory R. Carmichael, department chair, presented a paper in May at the International Conference on Air Pollution Modeling that was held in Leningrad, Soviet Union. Carmichael is currently the principal investigator for several federally supported new projects in air pollution modeling. He also is studying new methods of sensitivity analysis under a National Science Foundation supercomputer initiation grant and has begun a project for NASA using a massively parallel processor (16,000 individual processor) to perform chemical calculations.

Professor Ravindra Datta, who was promoted to associate professor in 1986, initiated a research project to develop various types of hybrid catalysts. He has developed a supported liquid-phase Wacker catalyst that has commercial potential.

Professor David W. Luerkens was one of seven U.S. representatives to the First World Congress in Particle Technology that was held in Nuremburg, West Germany in April 1986. The trip was underwritten by a federal grant that was based on a UI proposal. Luerkens has been named the vice-chair of the Engineering Section of the Iowa Academy of Science. Luerkens' research has resulted in a significant breakthrough in morphological analysis theory, which will have a major impact in particle technology.

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Professor David G. Rethwisch traveled to Lausanne, Switzerland, in May 1986 to discuss a potential collaborative project on using laser techniques to make small metal clusters. Rethwisch’s discussions were with Professor Ludger Woste at the Ecole Polytechnique Federale de Lausanne. Rethwisch presented papers at the national meeting of the American Chemical Society in April 1986 and at the national meeting of the American Institute of Chemical Engineers last year. He has established a new research laboratory for heterogeneous catalysis. Among the new items of equipment are an oxygen-free glovebox, a kinetic reactor system, and a volumetric gas adsorption apparatus. Rethwisch also is the principal investigator on a new project funded by the Petroleum Research Fund.

Professor Arthur F. Vetter was appointed chair of a task group on characterization of wear-causing particles (under the ASTM Committee on Erosion and Wear). Vetter led a workshop on this topic at the ASTM meeting in Philadelphia in May 1986.

Randall A. Yoshisato, who was appointed as an adjunct assistant professor, has been elected secretary of the Iowa Section of the American Institute of Chemical Engineers and of Omega Chi Epsilon, an honors society. In association with three investigators from the Department of Botany, Yoshisato is pursuing several projects in plant biotechnology.

David J. Monk of Cedar Rapids was presented the AIChE Award for Scholastic Achievement.

Six graduate students, James K. Knapp, N. B. Hsyung, Gordon Young, M. Govindaraju, Amy Blankenfeld, and Leon Blankenfeld, received Grant-in-Aid of Research awards from Sigma Xi.

Civil and Environmental Engineering

Professor Konstantine Georgakakos joined the department after completing his Ph.D. at Massachusetts Institute of Technology. He has spent the last several years working for the Hydrologic Research Laboratory of the National Weather Service. He will continue his research in stochastic hydrology.

Professor Gene Parkin, whose interests are in anaerobic treatment of waste materials and hazardous chemicals, came to the department from Drexel University.

Faculty Activities

Professor Jasbir S. Arora continues to serve on the editorial advisory board for the International Journal of Computation Mechanics. He chaired a session at the International Conference on Computational Mechanics in Tokyo, Japan. He also attended a North Atlantic Treaty Organization advanced study institute in Portugal.

Professor Dan Branson was invited to China for a lecture tour, where he spoke on concrete structures at the Wuhan Institute, the Nanjing Institute of Technology, and the IWHR Research Institute in Beijing.

Professor Robert Ettema organized the Eighth International Symposium on Ice that was held in Iowa City in August 1986. The symposium attracted representatives from more than 20 countries.

Professor Forrest M. Holly, Jr. traveled around the globe in conjunction with a UI Faculty Scholar Award. He was a visiting scientist at SOGREAH Consulting Engineers in Grenoble, France. He delivered lectures on computational hydraulics in Beijing, China, and visited Kyushu University in Japan. Holly was awarded a joint National Science Foundation grant with National Taiwan University to study sediment transport.

Professor John F. Kennedy, director of the Iowa Institute of Hydraulic Research, became the first foreign scholar to be awarded an endowed professorship.

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Student Activities

Carol A. Blewett, a senior from Bloomingdale, Illinois, and David Stegink (B.S.E. in Ch.E., ‘86) served as cochairs when the student chapter of the American Institute of Chemical Engineers hosted the Mid-American AlChE student chapter regional meeting and paper contest in April 1986. Eleven schools were represented by 120 students and faculty members, and 16 technical papers were presented.

Student Awards

Paul D. Guidotti (B.S.E. in Ch.E., ‘86) was the 1986 recipient of the Outstanding Leader Award from the University’s chapter of Omega Chi Epsilon, the chemical engineering honor society. He also received the 1986 American Institute of Chemists Award for Student Research.

During a banquet in China, Professor Ching-Jen Chen, right, chair of mechanical engineering, presents an Iowa pennant to Professor Zou Renjun, president of the Hebei Academy of Sciences. A delegation of Dean Robert G. Hering, shown at left, Associate Dean Paul D. Scholz, Chen, and Steve Arum, director of the University Office of International Education and Services, visited nine universities and engineering institutions during a month-long tour of China last March. Over the past five or six years, the college has established exchange agreements with several engineering schools in China, and the principal purpose of the trip was to visit those schools and further develop the exchange arrangements.

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elected an honorary fellow of the Institute of Water Conservancy and Hydroelectric Power in Beijing, China. He was also appointed an honorary professor at Nanjing Technical University. Kennedy attended a meeting of the International Association of Hydraulic Research in Europe. While there, he delivered a lecture at the Free University in Brussels, Belgium, and served as a reviewer of instrumentation techniques at the Aachen Institute for Hydraulic Engineering. He was appointed by the World Bank to an advisory panel for the Three Gorges Dam Project in China.

Professor A. Jacob Odgaard was appointed chairperson of the ASCE Committee on Hydromechanics. He traveled to Romania in July to participate in a workshop on hydraulic engineering. Odgaard continues his research on the Iowa Vane, a stream bank protection device that will be manufactured and marketed by an Iowa company under a licensing agreement.

Professor Jerald L. Schnoor, department chair, serves as chairman of the Acid Precipitation Committee of the Water Pollution Control Federation and of the Iowa Groundwater Association. Schnoor's research includes a National Science Foundation grant from Switzerland to study acid lakes in the Alps.

Professor James W. Stoner served as a consultant to the Department of Transport in the United Kingdom on the privatization of public transportation. He also evaluated economies in pupil transportation under a grant he received from the Iowa Legislature.

Professor Richard Valentine was appointed to the review board of the *Journal of the Society for Environmental Chemistry and Toxicology*. Valentine's research includes a project funded by the state of Iowa and the Federal Environmental Protection Agency to refine a technology that he developed to remove radium from drinking water.

Professor Wayne L. Paulson received the Water Pollution Control Federation's Sidney Bedell Award for extraordinary personal service.

**Student Awards**

Scott Wallace, a senior from Muscatine, received the Iowa Outstanding Senior Award from the Iowa Chapter of the American Society of Civil Engineers.

Chad Jafvert (Ph.D., '85) received a National Research Council Post-doctoral Fellowship.

Penny Schmidt, a graduate student, received the Department of Interior Service Award.

Deborah McKechnie, a doctoral student, received the Environmental Chemical Graduate Student Award from the American Chemical Society. Terry Mudder (Ph.D., '81) received one of two Phillip Morgan Awards for Industrial Wastewater Treatment from the Water Pollution Control Federation.

**Electrical and Computer Engineering**

Five new assistant professors were added to the department's faculty over this past summer. Professor Salim U. Chowdhury, who obtained his Ph.D. from the University of Southern California, arrived in June 1986, bringing his expertise in the area of VLSI circuit design. Professor Anjan K. Ghosh has interests in the areas of optical signal processing and optical computers. Ghosh came in June after working two years for AT&T Bell Laboratories. He earned his Ph.D. from Carnegie-Mellon University.

Joining the faculty in August were Professors David R. Andersen, Martin W. Dubetz, and Hyun Yang. Andersen, who received his Ph.D. from Purdue University, has interests in solid-state devices and material properties. Dubetz, whose contributions are in computer graphics, earned his Ph.D. from the University of Alberta, Canada. Yang's research interests are in the areas of robotics and computer vision. He also received his Ph.D. from Purdue University.

Assistant Professor Rajendra K. Lagu left the department in the spring of 1986 to return home to India. He joined the Department of Electrical Engineering at the Indian Institute of Technology in Bombay.

**Faculty Activities**

Professor Norbert R. Malik spent six weeks in Indonesia last summer, serving as a consultant to the University of North Sumatra. He assisted in the development of a curriculum for an electrical engineering program.

Professors Steve M. Collins and David J. Skorton edited a book titled... (continued on next page)

A newly installed two-way special projects microwave television system was used to begin broadcasting a course to graduate engineers in the Cedar Rapids area in the fall of 1986. The course covered radio frequency circuits and was taught by Dr. Robert Weber of Rockwell-Collins.

Professor Jon G. Kuhl is serving as the first faculty director of the Iowa Computer-Aided Engineering Network. Using one of the network computers, Professor Karl Longren finished a manuscript for a book on electrical engineering materials and devices. As part of the network development, all faculty members are developing instructional software for their courses.

Industrial and Management Engineering

Professor Gary W. Fischer, who joined the faculty in the fall of 1985, has begun developing laboratories in manufacturing engineering. He has acquired computer-controlled welding equipment and computer equipment for process planning and control.

Professor Voratas Kachitvichyanukul has started a new Computer Graphics and Simulation Laboratory. The laboratory has stand-alone, color-graphic workstations and numerous peripherals and is linked to the college's Iowa Computer-Aided Engineering Network and the University's Weeg Computing Center.

Professor Tari Raz and the staff of the University Audiovisual Center completed a videotape on Computer Integrated Manufacturing in Industry and Education. The tape was presented at an education conference at Virginia Tech University in the fall of 1986. Raz also was awarded a variety of software by the Society for Manufacturing Engineers for use in computer-aided design and manufacturing.

Professor John M. Littschwager helped develop a new interdisciplinary graduate program in quality science with the departments of Statistics and Actuarial Science in the College of Liberal Arts and Management Sciences in the College of Business Administration.

Student Awards

Richard Sikora, a senior from Downers Grove, Illinois, won the outstanding senior award from the Associated Students of Engineering. The award was announced and presented at the College of Engineering convocation program that followed the University commencement program last May.

Ellen England (B.S.E. in I.E., '86) won the J. Wayne Deegan Award for professional and scholastic excellence. The award recognizes the top undergraduate student in the department.

Nancy Botten, a graduate student, was awarded a grant from the Iowa Civil Rights Commission to develop an expert system for use in the commission's field offices.

Steven Winn (B.S.E. in I.E., '86) represented the IIE chapter in the Midwest Regional Conference at Lafayette, Indiana. He won fourth place in the student paper competition.

A scholarship given by Cedarapids, Inc. was awarded to Maureen Noonan, and Sharise Jean Phelps received the Lloyd Knowler Scholarship.

Mechanical Engineering

Faculty Changes

Professor J. Merle Trummel retired June 30, 1986, after serving 45 years in the department.

Assistant Professor William N. Patten, whose specialty is in the area of dynamics and mechanical systems, joined the department in August 1986. He came from Virginia Polytechnic Institute.

Kyung Kook Choi and Lea-Der Chen were promoted to associate professors.

Faculty Activities

Professor Ching-Jen Chen, department chair, was appointed as consulting professor of the Shanghai Institute of Mechanical Engineering in China. He also was appointed consulting professor at the East China Technical University of Water Resources. A Ching-Jen Chen Scholarship was established at the East China Institute of Technology and the first three recipients were selected in 1986.

Professor Patrick (Barry) Butler received a National Science Foundation grant to study the removal of particles from surfaces of integrated circuit chips by using acoustic waves.

Professor Kyung Kook Choi and Edward J. Haug delivered lectures on computer-aided optimal design for structural and mechanical systems at the North Atlantic Treaty Organization's Advanced Study Institute in Troia, Portugal, in June and July of 1986.

Professors Haug, Choi, and V. Komkov authored a book, Design Sensitivity Analysis of Structural Systems, which was published in May 1986 by Academic Press.

Professor Ralph I. Stephens presented a paper on fatigue and fracture mechanics at the International Conference on Prospect of the Development and Applications of Fracture Mechanics at Dubrovnik, Yugoslavia, in June 1986. The following month, Stephens presented a paper at the International Conference on Structural Failure, Product Liability, and Technical Insurance at Vienna, Austria. He also was appointed to the Executive Committee on Fatigue of the American Society for Testing and Materials for a two-year term.

Student Activities

Members of the student chapter of the Society of Automotive Engineers built to specifications a radio-controlled airplane that won first place in a first-ever regional competition at Kansas City, Missouri. The competition, sponsored by the national organization in May 1986, rated airplanes by the amount of cargo weight they could fly. Also in May, the students competed in a race of student-built, off-road vehicles at a regional Mini-Baja Competition and Race held at Michigan Technological University. One of the two vehicles entered was completed in 1986.

Special Activities

The Computer-Aided Design Center in the department has been designated as The University of Iowa's High-Speed Computing Facility. The University is now in the process of installing high-speed computers.
Professor Thomas Farrell, 1911-1986

A distinguished emeritus faculty member, Thomas Farrell, died in July 1986 in Iowa City. Farrell, who was a professor of engineering communications, earned the respect and admiration of students and colleagues for his devotion to the teaching of writing.

Paul Scholz, associate dean of the college, said Farrell always was available to help students. “He was an excellent teacher—tough and demanding. He was always striving for perfection in oral and written communication,” Scholz said.

Professor J. Keith Beddow, a close friend and colleague, said, “He was an extremely dedicated educator in the best sense of the word. He had the best way of teaching communication of anyone I’ve ever seen. And he was very modest; he never took credit.”

Farrell was born December 2, 1911 in Iowa City. He earned three English degrees from the UI, including a bachelor’s degree in 1935, a master’s in 1947, and his doctorate in 1949. He served as an instructor at Iowa from 1939 to 1943 and from 1946 to 1949, after which he became an associate professor in the English department until 1956. At that time, he accepted an appointment at the University of Michigan and Michigan State University to teach communications in engineering and business. He returned to The University of Iowa in 1968 and taught engineering communication courses until he retired in 1980.

Farrell served as a consulting editor for numerous government agencies and industrial firms, including the U.S. Department of Commerce, the Department of Transportation, the Institute for Defense Analysis, Lear-Seigler Corporation, Deere and Company, and the publishing companies of John Wiley, Addison-Wesley, and McGraw-Hill. On a national level, he served on the Advisory Committee to the President’s Transportation Committee from 1960 to 1965, on the Advisory Committee to the President’s Crime Commission from 1963 to 1965, and also on the Advisory Committee to the Civil Rights Division of the Department of Health, Education, and Welfare.

On the College of Engineering level, Farrell was responsible for public relations with alumni and industry and served as director of placement from 1968 to 1980. He also served as faculty adviser for the student publication Hawkeye Engineer, formerly known as the TRANSIT. Farrell was an active member in many professional and technical societies.

Anyone wishing to make a remembrance in Farrell’s name may send it to The University of Iowa Alumni Association for use in the College of Engineering.

Iowa Alumni Honored

Bingnan Lin (M.S. ’47, Ph.D. ’51 in M. and H.) was selected by the UI Alumni Association to receive one of nine 1986 Distinguished Alumni Achievement Awards for his outstanding achievements. Lin, retired director of China’s Institute of Water Conservancy and Hydroelectric Power Research, was influential in solving difficult problems in developing a system of large dams in China, including the Three Gorges Dam on the Yangtze River. The Iowa graduate helped organize the International Research and Training Center of Erosion and Sedimentation, one of the most vibrant centers of its kind in the world today.

Chun H. Cho (Ph.D. in M.E., ’73) was awarded the 1985 Donald P. Eckman Education Award from the Instrument Society of America. Cho, senior technical consultant at Fisher Controls International, Inc. of Marshalltown, was honored for his contributions in developing technical education programs through publications, lectures, and leadership. He has served as adjunct associate professor at the UI, has written more than 40 technical articles on energy conservation and process control applications, and holds a patent on an electrohydraulic actuator. Cho currently serves as chairman of the ISA/China Instrument Society Bilateral Committee and is a member of the American Society’s Admission Committee.

OPEN HOUSE  Guests at the College of Engineering’s open house for industry in May 1986 were treated to a collection of new and ongoing research projects that should be beneficial to industry and economic development. Among presentations were plans for a new interdisciplinary program in laser science and engineering and a proposal for a consortium to address health safety issues affecting workers. The open house is an annual event that’s designed to promote and strengthen relations between the University, business, and industry.
Kwan Rim’s Scientific Expertise Benefits Countries around the World

Kwan Rim, professor and chair of biomedical engineering, has brought distinction to The University of Iowa for his assistance to developing countries. His expertise as an educator and as an administrator has benefited such diverse countries as Korea, Saudi Arabia, and Bangladesh. Indeed, his network of international acquaintances could provide measurable help to Iowa in its efforts to build a stronger economy.

Rim, a UI faculty member since 1960, was instrumental in developing strong ties between his native country of Korea and the University. Rim served as president of the Korea Advanced Institute of Science and Technology from 1982 to 1984 while on developmental leave. Rim, who had spent time teaching and conducting research at the institute in two previous visits, was responsible for more than 550 faculty and research scientists and more than 1,500 graduate students.

During his tenure as president, Rim said he learned the value of using science to benefit people. In one case, a fermentation process was used to make cattle feed from rice husks and low-grade vegetables. “It is not of major interest to developed countries,” he said of the process. “But it’s very important to developing countries.” The technique enabled Korea to improve food production for its people. Rim said the technology was transferred to Saudi Arabia, a major provider of oil to Korea. Fermentation was used on leaves from date trees to provide fodder for cattle. Because of his work in the Mideast country, Rim served on the board of directors for the Saudia Arabia National Center for Science and Technology.

The Korean institute also developed a process of extracting a high-grade, nutritious oil from rice bran. Rim said the bran normally spoils rapidly, but researchers found a way to prevent it from deteriorating for four weeks. That provided sufficient time to process the bran to obtain the oil. Again, the technology was transferred to other countries including Bangladesh, Malaysia, and Indonesia.

A few months after he returned to the UI from the institute, Rim received Korea’s Order of Merit, the Moran, for his contributions to the country. The prestigious award was presented by the president of Korea. “Science can play a catalytic role in economies of developing countries,” Rim said.

Rim said the knowledge and skills he obtained as president of the institute can be used to help Iowa develop a more solid economy. By taking an accounting of the state’s strengths and weaknesses, a strategic plan can be formulated to implement programs that will provide long-term benefits to Iowa, he said.

Rim’s international reputation may provide Iowa with more immediate benefits. In September 1986, Rim joined a contingent of eastern Iowa leaders on a trip to Korea, Japan, and China to explore business opportunities. He was helpful in advising the lowans during their conversations with influential business leaders from the three countries.

What’s New with You?

To help us keep our files up-to-date and accurate, please use this return form to provide information on your current career status.

Name __________________________________________________________________

UI Degree(s) and Years __________________________________________________

Home Address __________________________________________________________

Work Address __________________________________________________________

Position Title __________________________________________________________

Recent career information about yourself, or comments you’d like us to see:

__________________________

☐ Please send me information on how I may help Iowa engineering students through the UI Alumni Association’s Career Information Network.

☐ Please send me information on the Engineering Development Fund.

This issue was written by Jerald Heth, a free-lance writer from Iowa City. Editing and production provided by Diane Rarick, Office of Public Information.
universities and their governing bodies. Responsibility for the financial health of the educational institution lies primarily with states, municipalities, and the host of supporters of higher education; and

- the National Science Foundation cannot assume responsibility for the financial health of higher education. But the foundation can and should expand and establish programs that assist in restoring academic health to undergraduate education in appropriate fields.

At Iowa, plans have been made and actions have been taken to minimize any reduction in the quality of education provided to our engineering undergraduates. The college has established a limit on the number of undergraduate students it could enroll and still maintain a high-quality engineering education for all of its undergraduates. The financial support from alumni, friends, industry, foundations, and the University to establish the Iowa Computer-Aided Engineering Network (ICAEN) has assured us that our engineering undergraduates will utilize modern first-rate computing facilities. The University has acknowledged the college’s space needs by providing research laboratory space in a nearby building and has given first priority in new academic building on campus to an addition to the Engineering Building. Also, the college has increased its faculty resources by about 20 percent in the last decade—an increase that is about twice the national average but insufficient to accommodate our total needs in faculty resources. Thus, the faculty believes that the erosion of the quality of education provided to our undergraduates has been minimized as the University continues to experience austere financial conditions.

I welcome your comments and suggestions. I invite you to write or to visit the college at your earliest opportunity. The faculty and I look forward to renewing our acquaintance with you and learning of your career experiences.

Robert G. Hering, Dean