As college changes leadership, it shows continuing strength
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Professor who says little things count is honored for his years as caring mentor
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Encouragement pays off for student who plans to pass it on
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Yes, It Floats  Iowa women's team members Tracy Golden (left, in canoe) and Irene Schroeder (right) prepare for their run in the ASCE regional concrete canoe competition, held April 24 at the Coralville Reservoir. Golden (B.S. in CE, '93), a Milwaukee native, and Schroeder, a civil engineering sophomore from Iowa City, paddled Iowa's student-built canoe, "Eat My Wake," to a first-place finish in the women's race, winning out over teams from Iowa State, Minnesota, North Dakota, South Dakota State, and Wisconsin-Platteville. The women's finish helped Iowa win overall victory in the regional meet and earn a berth in the national competition at Sacramento, California. The races followed a morning session of paper presentations and poster displays, and early afternoon judging of the canoes. In order to qualify for the contest, the boats, which are fashioned from light-weight concrete, foam, and wire mesh, must be able to float when full of water.
Dean Remarks on College’s Strengths, Outlines Some Areas for Development

As recent arrivals in Iowa City, my family and I have adjusted well to the change in climate and the well-publicized “unusual” weather of last winter. In fact, coming from California, we find something comforting about living in a place where the news headlines are consistently focused on the weather!

While we were beginning to feel at home in Iowa, the College of Engineering also was making a transition—one to new leadership. Since the last edition of Iowa Engineer, the college has made great strides in that direction.

Last December two half-time interim associate deans joined me in the work of administering the college. These gifted and dedicated deans are Professor A. Jacob Odgaard, of the Department of Civil and Environmental Engineering, and Professor John P. Robinson, of the Department of Electrical and Computer Engineering. Between them they represent more than 40 years of experience in the college, and they have made an enormous impact already. More information about their background is found elsewhere in this issue [see story on page 6].

The college has performed remarkably well through this transition period. Demand for engineering education at Iowa continues to be strong. Our students continue to be our principal concern, and their quality has never been higher.

Applications Buck National Trend

The number of applications for fall semester freshman admission has increased about 20 percent over the past two years, in spite of negative national demographic trends and declining applications at many other engineering colleges. Due to limited resources, our enrollment has remained essentially constant over the last decade, so the quality of incoming students has continued to rise—to an extent that may surprise you.

For example, each year University President Hunter Rawlings awards Presidential Scholarships to 20 of the most qualified students in the entering freshman class, which usually numbers about 3,500. Since engineering students make up only about 6 percent of this entering class, one would expect that, on average, only one of these prestigious scholarships would go to an engineering student. However, for next fall eight of the 20 scholarships—a full 40 percent and a record high—have been awarded to engineering students. In addition, the ACT scores of last fall’s freshman engineering class ranked at the 93rd percentile nationally.

It is also noteworthy that slightly more than 20 percent of our entering freshman engineering students last fall were women. Our efforts to develop programs attractive to women and to recruit women appear to be bearing fruit, since our percentage is substantially higher than the national average.

Given the quality of our students and our strong commitment to teaching, it is not surprising that our graduates continue to win a disproportionate share of awards. For example, this spring Trina Buhr, a graduating senior in biomedical engineering, was our first student to win three separate University-wide awards: a Hancher-Finkbine Medallion, the Virgil Hancher Award, and the Susan Hancher Award. Buhr was chosen for each award by an independent faculty committee. In addition, Margo Melendez, who will be a senior this year in mechanical engineering,
won the University's Philip G. Hubbard Human Rights Award.

Among our many outstanding graduate students, S. Keith Hargrove, who received a Ph.D. in industrial engineering this May, was presented with a University Student Leadership Award at the Third Annual Multicultural Graduation and Recognition Banquet. Keith has accepted a position as assistant professor of mechanical engineering at Tuskegee University.

**College Leads in Teaching**

In keeping with the college's long-standing tradition, teaching continues to be regarded as our principal mission, and it has never had a higher priority. A recent University survey revealed that the College of Engineering leads the University in commitment to undergraduate teaching. In fact, 94 percent of all undergraduate instruction in engineering is done by regular tenure-track faculty, not by teaching assistants or part-time lecturers.

The college's enduring resource and strength, not just in teaching but in all endeavors, is its faculty. On a per-person basis, our faculty productivity equals or exceeds that of many of the best-known engineering colleges in the country. In the past year, faculty members have won national awards and honors that are too numerous to list. However, I want to share just one recent example with you. Professor Soura Dasgupta, of the Department of Electrical and Computer Engineering, recently was chosen to receive a prestigious National Science Foundation Presidential Faculty Fellow award. These awards are extremely selective—only about ten will be made nationally to engineers this year.

**Faculty Productivity Rises Again**

Faculty research productivity has increased substantially again this year. The faculty continues to attract federal and corporate research funding that exceeds state support by an increasing margin each year. Opportunities for undergraduate students to participate in research laboratories continue to increase, as well.

A word about teaching facilities at the college: They are our single greatest need. With the increasing demand for access to engineering education in our region, and the limitations of our current facilities, we are forced to seriously restrict our attempts to serve the needs of the state in several ways. We simply can't ignore these needs much longer. This topic deserves a great deal of attention, and I will say more about it at a later date.

An example of the positive role our college already plays in the economic development of the state is Neural Applications Corporation's recent decision to locate in Coralville, near the University campus, rather than in California's Silicon Valley. According to company president Robert Staib, a major factor in that decision was the potential for interaction in teaching and research with The University of Iowa's engineering faculty.

Neural Applications Corporation plans to hire about 100 engineers and scientists over the next few years, significantly contributing to growth of the high-technology industry in the region. In addition, the College of Engineering is engaged in dialogue with other technology-based local firms interested in economic growth in the region. I expect our college to become more involved in this type of industry partnership in the years ahead, as resources allow.

In summary, I am most enthusiastic about the College of Engineering and its future. The quality and achievements of our students and faculty already are outstanding by many measures. I look forward to working with them and with our alumni, our corporate neighbors, the University administration, and state government to help the college advance in the many ways necessary to fulfill its true potential.

Richard K. Miller, Dean


Goel was an invited participant at the November 1992 workshop on age-related changes in the musculoskeletal soft tissue, sponsored by the National Institute of Health and the National Institute of Aging.

**Roderic Lakes**, professor, was a visiting engineer at Boeing Commercial Airplanes during September and October 1992 and taught a short course on holographic and other optical methods in Nagano, Japan, and at Boeing in Seattle, Washington.

Lakes serves on The University of Iowa dental biomaterials research core committee and is a reviewer for *The Journal of Biomechanics*, *The Journal of Composite Research and Technology*, and *The Journal of Rheology*. He has conducted research on ophthalmological applications of scanning confocal microscopy with William Mathers, associate professor of ophthalmology, and has received a University of Iowa Foundation grant to upgrade computers.

**Roderick Lakes and Joon B. Park**, professors, coauthored *Biomaterials*, which was published in 1992 and is currently used as a classroom textbook.

**Y. King Liu**, professor, was invited to be the keynote speaker at the Pakistani Orthopaedic Association meeting, held in Lahore, Pakistan, in November 1992. He also participated in the post-symposium workshop on surgical spinal implants.

Liu was appointed to a three-year term as a member of the Injury Prevention Grants Review Study Section of the Centers for Disease Control and Prevention, in Atlanta.

**Joon B. Park**, professor, was elected member-at-large and chair of the student awards committee at the Society of Biomaterials 1992 meeting. Park organized and chaired the American Society of Engineering Education meeting on biomaterials education in undergraduate and graduate programs in biomedical engineering, held in Toledo. He also was in charge of the College of Engineering high school laboratory visiting program for 1992.

Park has received a one-year grant from the Iowa High Tech Council, with which he will study development of ferromagnetic implants for use in clinical hyperthermia treatment of inoperable tumors.

**Kwan Rim**, professor, taught biomechanics as a visiting professor at Toky Denki University during summer 1992. He organized the biomedical engineering division session "Biomechanics Engineering—A Global Perspective" for the 1993 meeting of the American Society for Engineering Education, which was held in June at the University of Illinois.

Rim is a member of the executive committee for the Center for International and

Continued on next page
Teacher's Dedication to His Students and Their Concerns Earns High Praise

"An expert in his field" . . . "The first person I go to about coursework problems or career planning" . . . "Someone who obviously enjoys working with students and who significantly enhances our education" . . . "A teacher who encourages students to think like engineers."

With opinions like these from his students, it is easy to see why Wayne Paulson, professor of civil and environmental engineering, recently was awarded a University of Iowa Collegiate Teaching Award. The award, which was presented by President Hunter Rawlings, recognizes Paulson's exemplary performance as a classroom teacher.

"I've always liked teaching," says Paulson, who began teaching engineering courses at The University of Iowa in 1960. "I try to impress upon students that while they have to learn the material, they can also have fun in the process."

Paulson teaches at all levels, from first-year to graduate students, virtually all of whom he knows by name. He also is known as the faculty member students can turn to when they need help with curriculum or career dilemmas.

To encourage students who worry about making a career commitment, Paulson often recounts his own path to the profession and his ongoing struggle to determine where that path ultimately would lead.

"I guess I began to get interested in engineering as a kid," he says. "My father was a construction supervisor of bridges and highways and was the only licensed dynamiter in La Crosse County. I got to tag along with him on weekends, helping him as he removed hillsides or made duck landing ponds."

When he graduated from high school, Paulson was leaning toward a career teaching math and science and coaching high school sports. While serving in the Navy, he became interested in chemical engineering. When he left the service, Paulson studied a different area of engineering, earning a B.S. in Civil Engineering at the University of Wisconsin—Madison. By the end of his undergraduate studies, he was finding the study of hydraulics to his liking. But the work he saw going on in environmental engineering enticed him even more, so he earned an M.S. in that subject, also at Madison.

Environmental engineering must have hit the mark with Paulson, because he stuck with it for his next graduate degree, a Ph.D. (with, of course, an emphasis in chemistry) from The University of Iowa.

Paulson's active interest in student affairs is reflected in extra efforts, such as the freshman questionnaire he distributes several weeks after the beginning of the fall semester.

"When I hand out the questionnaire," he says, "I tell the first-year students that they can ask me about anything that's of concern or interest to them, whether it's careers, courses, how to study, whatever. I think it helps them just to know that someone cares. Little things can make a big difference."

Paulson also compiles and publishes Who Is Who, a resource listing students and faculty members in the environmental engineering and science program, their educational backgrounds, areas of research, hometowns, hobbies, and their spouses' names and professions.

"Even though students, staff, and faculty in our environmental program are scattered among five buildings, members are pretty good about keeping in touch, socializing, and maintaining something of a sense of family," Paulson says.

Paulson's emphasis on teaching is apparent in his workload: He teaches four courses each academic year plus one course during most summers, and he frequently substitutes for faculty members on sabbatical.

In addition to regular University courses, Paulson coordinates and presents short courses on water and waste water management, which draw some 200 operators, managers, and engineers twice each year. Participants come from municipalities, consulting engineering firms, private industry, and state regulatory agencies in Iowa and surrounding states.

Paulson also has been active in
research over the past 30 years. His recent work on oxygen transfer in waste water treatment systems has resulted in the development of an oxygen transfer measurement standard for ASCE as well as the development of energy-efficient fine pore aeration systems.

**Job Search Lasts Longer for This Year's Graduates**

Students in the College of Engineering looking for employment last fall had their work—if not their jobs—cut out for them, says Sharon Kurtt, career services director at the College of Engineering. Despite positive trends in the economic indicators that affect hiring, engineering graduates faced the weakest job market in years.

American employers have been cautious about hiring over the last 18 months, Kurtt says. Across the country, on-campus interviews for all new college graduates declined as much as 20 to 40 percent during fall 1992 and into spring 1993. Some large companies undergoing massive lay-offs declined to interview. Engineering students at The University of Iowa found that many of the companies that did interview on campus were unable to commit to hiring decisions.

Kurtt says job seekers should plan for a longer-than-usual search and approach a wide range of potential employers.

**Alumnus Remembers Time at Iowa Fondly, Sets Trust for College**

Although Donald Tweed (B.S.M.E., '55) doesn't miss midwestern winters a bit, he has no regrets about the four years he spent at Iowa earning a degree. In appreciation, Tweed recently established the Donald and Jeanne Tweed Trust Fund for the College of Engineering, through The University of Iowa Foundation.

"I thoroughly enjoyed my years at Iowa," Tweed says. "In fact, I remember it more as fun than work. I liked the small-town atmosphere and the personal attention the engineering college faculty gave to the students. The longer I worked and was away from school, the more I realized what an excellent education I received at Iowa."

The college, he adds, can hold its own with the country's top engineering schools.

As an undergraduate, Tweed was active in Pi Tau Sigma and Tau Beta Pi and played baritone horn and French horn in the marching and concert bands. After graduation, he worked for nine years at Bell Telephone Laboratories, where he developed the touchtone phone. Tweed holds 18 patents on the device.

"The touchtone phone is a nice thing to have patents on," he says. "Everyone uses it, and no one complains about it."

After leaving Bell Labs, Tweed ventured west to California, where he worked for Bourn's, a manufacturer of electronic components. He garnered several other patents before joining General Telephone in the San Francisco Bay area.

During the last 16 years, Tweed worked for Raychem, where he was a manager of applications equipment before his retirement.

The newly established trust fund will provide income to the Tweeds during their lifetimes, with the principal bestowed upon The University of Iowa Foundation at the termination of the trust.
Long-time Civil, Electrical Engineering Professors Bring Extensive Experience to Interim Roles

A. Jacob Odgaard, professor of civil and environmental engineering, and John P. Robinson, professor of electrical and computer engineering, have been serving as interim associate deans in the College of Engineering since December 1992.

Odgaard, a specialist in hydraulic engineering, received his M.S. (1966) and Ph.D. (1970) degrees in civil engineering from the Technical University of Denmark. Since coming to The University of Iowa in 1977, he has served as a research scientist at the Institute of Hydraulic Research and has taught a range of courses in hydraulics and fluid mechanics. Odgaard's current research focuses on flow and sedimentary processes in river meanders, structures for the control of sediment and protection of river banks, and hydraulic design of fish bypass systems for hydroelectric power plants.

Robinson is a specialist in communication and information theory, digital electronics, logic design, and digital systems. He received his B.S. (1960) degree from Iowa State University and his M.S. (1962) and Ph.D. (1965) degrees from Princeton University. He has taught at Iowa for 28 years and has been an active college committee member. Robinson's research examines coding and communication, reliable computers and systems, and combinatorial search.
Hers Is a Non-Stop Dance with Success

After only a few minutes talking with LaShawn Freeman, it’s clear that The University of Iowa College of Engineering has made a big impact on her life. The feeling is mutual.

In addition to carrying 17 semester hours each of the last four semesters, the chemical engineering major is president of the Associated Students of Engineering (ASE), a member and past vice president of Zeta Phi Beta sorority, and a member of the Multi-Ethnic Engineering Students Association (MESA). She also is on Theta Tau’s chapter development committee.

And to let off steam? Freeman tap dances, something she’s done since age 2, and spends time with friends.

By the time Freeman graduated from Chicago Vocational High School, she knew she wanted to be an engineer.

“I had three great science and math teachers and a high school guidance counselor who really encouraged me to explore engineering,” she says. “I didn’t know what to expect, so I did a lot of research on different colleges and talked with everyone who knew anything about the field.”

Freeman says the crucial factor in deciding to apply to Iowa was her visit to the engineering college, arranged through a University outreach program.

“Representatives of the college came to my high school’s Honor Society and Beta Club and spoke about the engineering profession, the college, and Iowa,” she says. “Later the college brought me to Iowa City for a visit. It was so exciting to be in a college town for the first time! I toured the University, talked with faculty members, and saw a town very different from Chicago.”

Although Freeman has been active in University organizations throughout her academic career at Iowa, she has been particularly busy this year. As president of ASE, she does everything from making arrangements for speakers to organizing professional workshops for students.

But, she says, her role extends beyond facilitating professional development activities. She also is responsible for helping students convey their concerns to the faculty and administration.

“My job is to speak for students,” she says, “and to incorporate their desires into the educational experience at Iowa.”

Freeman also attends most meetings and events sponsored by MESA, which, she says, “lets minority students know that there is support here and job offers out there.” Through MESA, Freeman was able to meet Lilia Abrom, keynote speaker at last year’s National Engineers Week—a celebration that Freeman organized.

“Abrom really gave me some good advice,” Freeman says, “including suggesting some possible graduate schools and encouraging me to take the Engineer in Training exams. And it was great to talk with such a successful woman engineer who is also an Iowa graduate.”

Freeman, who will graduate in December, says she will decide soon whether to enter graduate school or go to work in industry. This summer she will work as a summer intern at Abbott Laboratories, in north Chicago.

Freeman also has a special long-term goal: to return to Chicago high schools as an advocate for minorities and women in engineering.

“I was lucky,” she says. “I had counselors who helped me and a mother who kept me out of trouble and made me stick with it. I want to show high school students that they can make it, too.”

Freeman

Continued on next page
Gene F. Parkin, professor, was an invited speaker at the 19th annual Hazardous Waste Research Symposium, held in April in Cincinnati.

Wayne L. Paulson, professor, received a University of Iowa Collegiate Teaching Award in December. He was elected a member of the Iowa Chapter of Chi Epsilon honorary civil engineering fraternity last fall.

Jerald L. Schnoor, professor, was the keynote speaker at the Purdue Industrial Waste Conference, held in May. Next August he will present the keynote address at the International Association of Hydraulic Research, in Tokyo.

James W. Stoner, associate professor, organized and chaired the ground vehicle session at the Army Research Institute's 100th anniversary celebration in December. He was elected a member of the American Society of Civil Engineers (ASCE) and received the university's Outstanding Teaching Award in December.

Anita Patocka, a junior from Kalona, Iowa, and Jeff Barlow, a junior from Sioux City, Iowa, and Ben Schaffer, a senior from San Francisco, California, have been chosen undergraduate transportation scholars. They will be as-

Transportation scholars. Each has received a one-year stipend to work on research projects organized and chaired the ground vehicle session at the Army Research Institute's 100th anniversary celebration in December. He was elected a member of the American Society of Civil Engineers (ASCE) and received the university's Outstanding Teaching Award in December.

Han-Chin Wu, professor, presented a paper, “An endochrony theory for porous and granular materials,” at a workshop on modern approaches to plasticity, held in Hanoi, Vietnam, last June.

Wu has received a one-year contract from Sandia National Laboratories, Livermore, California, to build an axial-torsional extensometer for use at the lab. The extensometer was invented by Wu and his graduate student, Gordon Zhiyou Xu, and has been patented by The University of Iowa.

Student Activities

John Beck, a junior from Kalona, Iowa, Anita Patecka, a junior from Sioux City, Iowa, and Ben Schaffer, a senior from San Francisco, California, have been chosen undergraduate transportation scholars. Each has received a one-year stipend to work on research projects with professor James Stoner and associate professor M. Asghar Bhatti.

Jim Hannah and Jeff Barlow, graduate students, have been designated graduate transportation scholars. They will be assigned to a research project and provided a one-year stipend. The awards are renewable after the initial award.

Vincent S. Neary, a graduate student, participated in a two-week summer school for stability of river and coastal forms, held at Hokkaido University, Sapporo, Japan. The school was sponsored by the Civil Engineering Research Institute and Hokkaido Development.

Dedicated Space

Mark MacMillan, manager of the Geographic Information Systems Laboratory, talks with graduate student David Cairns in the laboratory. The GIS laboratory, part of the new facilities dedicated to the Center for Global and Regional Environmental Research at the Iowa Advanced Technology Laboratories building, was set up to provide working space for students of the center's faculty members.

New Building Offers Ideal Environment for Collaboration Among Researchers

It has that "new carpet smell," and its vast empty spaces echo with every word or footstep. But the Frank Gehry-designed Iowa Advanced Technology Laboratories building soon will come alive with the sounds of faculty members and graduate students conducting, demonstrating, and discussing their scientific research.

The Tech Labs building will be a physical embodiment of the University's philosophy of fostering research that bridges disciplines and enables researchers to study common problems. Scientists in the Center for Global and Regional Environmental Research (CGRER) and the Center for Computer-Aided Design (CCAD) are among the many specialists finding new homes for their research in the recently completed building.

"The philosophy behind this building is that researchers from many different, traditionally separate disciplines should get together and talk," says Jane Frank, CGRER administrative assistant. "It will allow the center's 46 faculty members and 100 graduate students—from engineering, law, anthropology, economics, geography, geology, and physics and astronomy—to work together on their research."

The environmental research center occupies project cubicles, administrative offices, and a computer lab on the second floor of the building, which is located along the Iowa River north of the Iowa Memorial Union. Space in the building is assigned to projects rather than to individuals, who will continue to be based in their home departments on campus.

Frank says the center's computers are already hooked up and scientists in different buildings will be able to communicate with each other via electronic mail.

Researchers in the Center for Computer-Aided Design also are scheduled to move to Tech Labs. CCAD's relocation will be its third move in a decade.

"Three years ago, the move from the Engineering Building to our facility on Madison Street went well," says CCAD administrative assistant Rozanne Huff. "We expected the administrative offices to be down for three days while everything got organized and hooked up. In fact, we were down less than a day."

While CCAD awaits completion of its space on the third and fourth floors of Tech Labs, Huff and others assign rooms and change phone numbers.

Huff notes that not everyone in CCAD will move to the new facility.

"Between 70 and 80 people in the computer-aided engineering group, headed by CCAD deputy director Kyung K. Choi, will have Tech Labs research space," Huff says. "But the Iowa Driving Simulator and the National Advanced Driving Simulator working groups will not be moving into the new building."

Continued on next page
Bow to Pressure? Not This Bridge

The mission? Build a steel bridge 20 feet long and three-and-a-half feet wide that can support 2,500 pounds without deflecting more than two inches.

The team? Fifteen University of Iowa undergraduate engineering students and one faculty member willing to give their time, energy, creativity, and even their money to meet the challenge.

That bridge-building challenge was met by student chapters of the American Society of Civil Engineers (ASCE) at a February contest in Fargo, North Dakota. Host school North Dakota State welcomed teams from U.S. and Canadian universities.

Wilfrid Nixon, the lone faculty member on Iowa's team, gives his student teammates credit for a bridge well-built.

"Our entry is very much a student-directed effort," says Nixon, ASCE chapter adviser and assistant professor of civil and environmental engineering. "The students decide on the design, make the parts, and build the structure at the competition. I just stand by and applaud."

Entries must meet strict standards for materials, size, strength, cost, and completion time. Bridges are built over a mock-up of roads and a river. If the student "construction workers" drop a tool into the "river" while building their bridge, their team is penalized. If a worker steps into the river, the team is cited for one worker death, and its costs increase accordingly.

"The students learn a lot about how to build a real steel bridge," Nixon says. "They learn that although sketching the idea might be relatively easy, when it comes to actually building the thing, you have to confront all those little details: how do you weld, how should the joints be made, how many bolts should you use?"

And, Nixon says, until the bridge is actually built, no one really knows whether it will take the load.

Shortly before leaving, the Iowa team made some last-minute design revisions and, with paint barely dry, sent bridge pieces and building crew off to Fargo.

Nixon says he didn't exactly cover his eyes when it came time to place the one-and-a-quarter-ton weight on the completed bridge, but the moment of truth was a little nerve-racking.

And how did Iowa's entry hold up under pressure?

"It took the load!" Nixon says. "I was extremely proud of the students—it was a tremendous effort by all of them. Working with students who volunteer, work hard, and do well is one of the delights and rewards of teaching."

The Iowa bridge captured second place in the weight category, but Nixon feels it could justly have won an award for looks, too.

"Our bridge was the most beautiful, by far," Nixon says. "The other entries were mundane. Ours carried the load majestically."

Sponsors for this year's University of Iowa entry included the College of Engineering and local merchants. The annual contest is sponsored and funded in part by the American Institute of Steel Construction and ASCE. Next year's contest will be held in Iowa City.

Simulation Techniques Specialist Joins Faculty

Dingus

A specialist in advanced simulation techniques and human factors recently joined the industrial engineering department as an associate professor. Thomas Dingus comes to Iowa from a joint faculty position in the departments of mechanical engineering and psychology at the University of Idaho.

Dingus received his B.S. (1979) from Wright State University and his M.A. (1985) and Ph.D. (1987) in industrial engineering and operations research from Virginia Polytechnic Institute. He has been a consultant on human factors, advanced automotive systems, and computer product design for General Motors Research Laboratories, Hughes Aircraft, and the U.S. Army.

Alumni Activities

Edward Moreno (M.S., '88), assistant superintendent of Iowa City's water department, and Geraldene Felton, dean of the College of Nursing, have received a Best Paper Award from the American Water Works Association for their paper, "Accommodating the biological clocks of shift workers."

Irene Schroeder, a senior from Des Moines, has been awarded an Iowa Section ASCE Scholarship.

Robert L. Wubbena (B.S. in CE, '67; M.S. in EnvE, '68), president of Economic and Engineering Services of Olympia, Washington, became vice president of the American Water Works Association in June 1992, and will become president-elect of the 54,000-member organization in June 1993.
Electrical and Computer Engineering

Faculty Activities

• David R. Andersen, associate professor, spent spring semester as visiting fellow at the Laser Physics Centre of the Research School of Physical Sciences and Engineering, The Australian National University.

• Thomas L. Casavant, associate professor, presented a tutorial, "Software tools for visualization of parallel programs and systems," at the International Conference on Parallel Processing, last August in Chicago.

• Steve Collins, professor, has received the College of Engineering's 1993 Exceptional Service Award. The award cites Collins' "extraordinary contributions to the college and the University."

• Soura Dasgupta, associate professor, was one of 15 engineers and scientists nationwide to win a National Science Foundation 1993 Presidential Faculty Fellowship. Dasgupta was recognized for his work in systems engineering.

• Karl E. Lonngren, professor, was awarded the Distinguished Service Citation from the University of Wisconsin College of Engineering last October. He is consulting editor for the McGraw Hill Encyclopedia of Science and Technology, which includes the yearbook and 8th edition.

• Theophano Mitsa, assistant professor, has received an equipment grant from Hewlett Packard to develop a color halftoning technique. She also has received an NSF research initiation award to develop visual-model-based halftoning algorithms.

• Helen Na, assistant professor, has received an NSF research planning grant to study specialized algorithms for tomographic reconstruction of electron density distributions in the ionosphere.

• Irith Pomeranz, assistant professor, has been chosen to receive a National Science Foundation Young Investigator Award. Pomeranz also won the best paper award for "SPADES: A simulation for path delay faults in sequential circuits," which she presented in September at the Euro-DAC '92 conference in Hamburg, Germany.

Student Activities

• Satish Tadikonda, a graduate student, was one of ten finalists in the International Student Paper Contest held in conjunction with the 14th International Conference of the IEEE Engineering in Medicine and Biology Society. In October Tadikonda attended the society's Paris meeting, where he presented his paper, "Efficient coronary border detection using heuristic graph searching," prepared in collaboration with Steve Collins, professor, and Milan Sonka, visiting assistant professor.

Industrial Engineering

Faculty Activities

• Dennis L. Bricker, associate professor, and his graduate students have been investigating algorithms for geometric programming and various scheduling problems, production planning, and evaluation of productivity. Bricker, an advocate of the APL language for teaching and research, recently received a software grant of an APL*PLUS system for the college's new HP Unix workstations.

• James R. Buck, professor, James W. Stoner, professor of civil and environmental engineering, and several graduate students are working on a three-year research project on the ergonomics of automated highway systems. The project is funded by a grant from the Federal Highway Administration. Buck also is writing a textbook on ergonomics design, which he is using in a course on that subject.

• Gary W. Fischer, associate professor, and his graduate students are conducting research in machining process control, high performance arc welding, and concurrent engineering methodologies. The machining studies focus on tool wear, process modeling, and productivity/ improvement. The welding studies focus on process simulation and a novel quality sensor concept. The concurrent engineering studies focus on process selection, process planning, and application of object-oriented database structures.

• Andrew Kusiak, professor and chair, has been invited to make plenary presentations at conferences in Australia, Belgium, France, Italy, Japan, and Taiwan. Kusiak's books, Intelligent Design and Manufacturing and Concurrent Engineering, have been published by John Wiley.

Research by Kusiak's undergraduate and graduate students is supported by a grant from the National Science Foundation and a number of contracts with Rockwell International and Daimler-Benz Company.

• John W. Littschwager, professor, has served as chair of the Engineering Faculty Council this year. Among the council's activities is preparation of a report on undergraduate instructional improvement.

• Edward M. Mielnik, associate professor emeritus, has written a paper, "Design of a drilling experiment: A discrete two-variable problem," which has been accepted for publication by Quality Engineering. Mielnik is writing another paper, "Hot machining retropect and review," and has proposed a design for a new addition to the Engineering Building.

• J. Richard Simon, professor of industrial engineering and psychology, is on developmental leave in the United Kingdom. Simon intends to complete a monograph and write research papers.

• Hsu-Pin (Ben) Wang, associate professor, has received two awards, the Institute of Industrial Engineers Rockwell-the-Year Award and the Society of Manufacturing Engineers M. Eugene Merchant Manufacturing Textbook Award, for Computer-Aided Manufacturing, which he coauthored. He continues to conduct research on integrated predictive maintenance and mechanical tolerancing design, with support from Caterpillar and the National Science Foundation. He also served as a proposal review panelist for the NSF Strategic Manufacturing Initiative.

Student Activities

• Lara Thorius, a senior from Woodbridge, Virginia, has been awarded one of seven Outstanding Graduating Senior Awards from the college. Thorius also was a regional winner in the Society of Women Engineers technical writing competition, for which she was awarded $200 from Hewlett-Packard and a trip to the national convention in Orlando, in June 1992.

While at the national convention, Thorius presented her paper "The production of human monoclonal antibodies," for which she won second place nationally and was awarded $1,000 by Hughes Aircraft.

• Matthew G. Lane, a graduate student, has been awarded a University of Iowa Graduate Fellowship.

Mechanical Engineering

Faculty Activities

• Christoph Beckermann, associate professor, presented talks on modeling of transport phenomena in solidification at the Foundry-Institute and The Laser Center of the University of Aachen, Germany, last fall.

Beckermann served as the organizer and session chair for the symposium on micro/macro scale phenomena during solidification at the 1992 Winter Annual Meeting of the American Society of Mechanical Engineers, last November.

Beckermann has received a NASA three-year grant to study flow and heat transfer phenomena during solidification of metal alloys.

• Lea-Der Chen, professor, became interim chair of the department last July. Chen co-organized a session on marine propulsion and high-energy density fuels at the 1992 AIAA/ASME/SAE/ASEE Joint Propulsion Conference, and is a session organizer for the 1993 conference meeting.

• Edward W. Freeman, assistant professor, has received a grant from the Air Force Office of Scientific Research to study heat transfer, fouling, and combustion of supercritical fuels.

• Kyung Kook Choi and Edward J. Haug, professors, led a team of six researchers from the Center for Computer-Aided Design who demonstrated research results of their DARPA initiative for Concurrent Engineering (DICE) project at the DICE Phase V kick-off meeting, at Washington, D.C., in February.

Choi and Haug have received DICE Phase IV funding for a three-year project to develop a successful simulation-based concurrent engineering environment for tracked vehicles. They also have received continuing funding for their DICE Phase V project to further enhance the concurrent engineering environment. They will work to develop collaboration technologies for large-scale mechanical system concurrent engineering.

• Jeffrey S. Freeman, assistant professor, is chair of the ASME Design Engineering Division vehicle design committee, session chair, and conference organizer for the fourth ASME Symposium on Advanced Automotive Technologies, to be held in conjunction with the 1993 ASME Winter Annual Meeting in November.

Freeman has received the first installment of an anticipated three-year grant from the National Highway Traffic Safety Administration to develop dynamic vehicle models and software for the National Advanced Driving Simulator. He also has been awarded a three-year Department of Defense AASERT award to fund a graduate research assistant to work on the Iowa Driving Simulator.

Freeman will present his paper "Mixed planar and spatial modeling for multibody dynamics" at the 1993 ASME design automation conference, at Albuquerque this September.

This year Freeman served as faculty advisor for the Society of Automotive Engineers, the largest student organization in the college. He is on the editorial board for Heavy Vehicle Systems, a new journal published by the International Association for Vehicle Design.

• Edward J. Haug, professor, received the American Society of Mechanical Engineers Machine Design Award during the society's design automation conference last September. The award recognizes Haug's fundamental research and development contributions to structural design optimization, computational dynamics methods, and software for machine design, and his work on the design of real-time driving simulators.

• Robert G. Hering, professor and former dean, has been appointed University of Iowa Foundation Distinguished Professor of Engineering Education. Hering will return to the department this summer to resume his role as a full-time faculty member.
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Alumni Awards

Hugh D. Guthrie (B.S. in CE, ’43; M.S., ’78), director of extraction projects for the U.S. Department of Energy’s Morgantown Technology Center, won the 1992 Robert L. Jacks Memorial Award from the management division of the AIChE Foundation. The award recognizes individuals who have made substantial contributions to the management of engineers involved in the chemical processing industry.

Tae Hee Lee (Ph.D., ’91) has been awarded a Postdoctoral Fellowship for Foreign Researchers by the Japan Society for the Promotion of Science. The prestigious one-year fellowship will take Lee to Japan, where he will work with Professor T. Salomi, of Tokyo Denki University, on applying optimization theory to develop transducers for measurement of contact stresses at joints.

Lee completed his doctoral work under Professors Jasbir Arora and Kwan Rim. He is a postdoctoral fellow working in Rim’s lab.

William B. Morgan (M.S. in MHE, ’51), associate director of the David Taylor Research Center, has been inducted into the National Academy of Engineering. Election by one’s peers into NAE, a sister organization to the National Academy of Sciences, is one of the highest recognitions an engineer can receive.

Joseph E. Musil (M.S. in ME, ’63) has won a second Raytheon Corporation Excellence in Technology Award. The 1992 honor was given for Musil’s work to develop a cost-effective process that removes gasoline, diesel fuel, and other petroleum products from contaminated soil. Musil, who also won the award in 1990, is the first person to have been chosen twice for the honor.

Rebecca Lance Svatos (B.S. in CE, ’82), department manager at CH2M Hill in Gainesville, Florida, received the Distinguished New Engineer Award at the 1992 Society of Women Engineers national convention. Svatos was honored for her success in significantly improving groundwater quality in the Persacola Bay area and for her professional and community leadership.

Faculty Honors and Awards

John F. Kennedy, late professor of civil and environmental engineering and director emeritus of the Institute of Hydraulic Research, posthumously was presented the 1992 Hans Albert Einstein Award by the American Society of Civil Engineers. Hydraulics Division, last August. Kennedy’s widow, Nancy Kennedy, accepted the award during the society’s Water Forum ’92.

Kennedy, who died in December 1991, was an internationally recognized authority on applied fluid mechanics and engineering hydraulics. The award recognized Kennedy’s contributions to the engineering profession in the areas of fluid mechanics, river mechanics, sediment transport, and erosion control. The citation said, “Dr. Kennedy was an inspirational educator, hydraulic engineering visionary, problem conceptualizer, and international emissary.”

Stephens organized and chaired the ASTM International Symposium on Case Studies for Fatigue Education, held during May in Atlanta. At the symposium he presented the case study “Equalizing a damped vibration to constant amplitude fatigue loading for a thick-walled pressure vessel.”

This spring Stephens presented a series of lectures and seminars on fatigue, fracture mechanics, and engineering education at Russia’s Samara State Aerospace University. He also presented a paper, “Fatigue behavior and life predictions for AZ91E-T6 cast magnesium alloy,” at the International Conference on Fracture, in Kiev, Ukraine, in June.

Student Activities

Alan Kalimeyer, a graduate student, received the H.O. Fuchs Travel Award, which enabled him to present his M.S. thesis to a group of professors of Fatigue, Fracture, and Elevated Temperatures at the Materials and Nondestructive Evaluation of Advanced Materials, at Miami last November.

Stephens also presented a seminar, “Fatigue fundamentals and recent fatigue research,” at the University of Puerto Rico in November. At the March SAE Congress in Detroit, he presented two papers, “Corrosion fatigue and stress corrosion cracking of AZ31E-T6 cast magnesium alloy in 3.5 percent NaCl solution” and “Low-cycle fatigue behavior and variable amplitude fatigue-life predictions for an SRIM polymer matrix composite.”

In May Stephens presented “Constant amplitude fatigue of a particle-reinforced cast aluminum alloy MMC at room temperature and 150°C” at the Fatigue ‘93 Conference in Montreal, Canada.

V.C. Patel, professor, served as United Nations consultant to the Central Water and Power Research Station at Pune, India, in July 1992, working to develop computational models for hydraulics applications.

Last August Patel gave a talk on three-dimensional flow separation at the plenary session of the fifth Asian Congress of Fluid Mechanics, in Taipei, Korea. He also presented papers and chaired a session at the 19th Office of Naval Research Symposium on Naval Hydrodynamics, in Seoul.

Patel and Fred Stern, associate professor, are local organizers of the Sixth International Conference on Numerical Ship Hydrodynamics, to be held this August in Iowa City.

Theodore F. Smith, professor, has been named an associate editor of the Journal of Thermophysics and Heat Transfer, which is published by the American Institute of Aeronautics and Astronautics.


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Water Mover Subhash C. Jain, professor of civil and environmental engineering and a researcher at the Iowa Institute of Hydraulic Research, poses with the model of a unique water dropshaft he designed for the Tokyo Metropolitan Government and the Japanese Institute of Construction Engineering. Jain's dropshafts will be constructed in Tokyo's dense population areas to handle floodwaters caused by the city's heavy rainfall. The spiral, or helicoidal, design of the dropshafts will slow the water's descent, preventing erosion. It also will limit the amount of air entrained by the descending water, making unnecessary the construction of costly air removal chambers and venting systems at the bottoms of the shafts.