Gauging rain
I never seem to tire of my continued amazement of the engineering profession's global impact. From massive transportation projects, construction of dams, biomedical engineering breakthroughs, and domination of electronics and computer technology, to development of sophisticated mechanical systems, chemical advances helping improve environmental health, and human factors studies making our lives safer, we sometimes are overwhelmed with the impact. However, at the same time, we often take for granted just how influential the international breadth of the profession is on our daily lives.

It's gratifying to know that you can encounter Iowa engineering alumni making a difference all over the world. We have about 1,700 alumni currently living in other countries. In a recent alumni survey, one out of every five respondents indicated that sometime during their careers they have served in foreign countries. Many are in critical positions in industry, academia, and government. For example, there are 34 members of the College's Distinguished Engineering Alumni Academy. Among them are alumni who have served as university presidents, chancellors, and vice presidents; military technology strategists; a minister of foreign affairs; two ministers of education; a multitude of corporate leaders; and even a graduate who is world renowned in music. Most of all, they are very loyal Iowans.

It's also characteristic that such a strong alumni contingent is built on a foundation of international involvement and appreciation among the students and faculty who currently study and teach at the College. The culture of global engagement for all practical purposes starts in the classroom. For example, during the past academic year, 30 undergraduate students and 215 graduate students from foreign countries specifically chose The University of Iowa. Inversely, we have an increasing population of U.S. students enrolling in our Study Abroad program, taking advantage of studies in Europe, South America, Asia, and the Middle East.

On the strength of our graduate programs and research expertise alone, The University of Iowa has carved out an enviable reputation. For instance, IIHR—Hydroscience & Engineering continues, as it has for decades, to attract the brightest students from afar to be educated in what has become the “Mecca” of hydraulic and water/air resource knowledge. Meanwhile, faculty from other countries not only come to the College to teach, but many travel for weeks and months around the world, immersed in advancing their research and sharing with others what they have learned themselves in Iowa City.

Interestingly, this issue of Iowa Engineer presents a perfect “slice in time” perspective of the College's international impact. As you browse through the magazine, you'll read about engineering alumnus Don Bently, who built a company from one person's vision into a global empire. You'll see how "Rainman" Professor Witold Krajewski emigrated from Poland to Iowa so he could work among the best at IIHR. And you'll witness how the College continues to prepare its students for the real world with its new Center for Technical Communication—a unique "inside-the-college" tool to make engineering students more skilled in both writing and speaking to a multitude of audiences they will face in their careers.

In spite of temporary setbacks, such as the tragic events of last Sept. 11, the world continues to grow smaller. And just as Iowa engineering alumni have gone on to successful careers in dealing with world issues and problems, the College is as determined as ever to produce equally prepared graduates of tomorrow. Increasing numbers of today's students are children of our alumni from other countries who want to follow in their parents' footsteps by coming here to study.

How much impact does the College of Engineering have on the world stage? Considering the reputation of its education, research, and alumni, it has a lot. But I was exposed to a classic reminder during my trip last year to Istanbul, Turkey. I saw an automobile with an "Iowa Engineer" bumper sticker prominently displayed. With a quick, proud grin, I shouted, "Go, Hawks!"

P. Barry Butler
Dean
The empire that Bently built
Donald Bently (BS 1949, MS 1950 in electrical engineering) took extension courses from the U of I while serving in the Pacific in World War II, came home, and launched an entire industry in his garage.

Gauging rain
Professor Witold Krajewski's study of weather data saves lives during floods.

Demystifying writing
A new writing center is bringing to light the creative spirit tucked into the heart of every engineer.
Many engineers who grew up in the 1930s learned the basics of their craft as children building Erector Set Eiffel Towers, wrestling farm machinery into working order, or tinkering alongside their dads in basement shops. But only one of those engineers grew up to launch a groundbreaking type of transistorized vibration and position-measuring transducer—the eddy current proximity probe—and thereby an entire industry.

Donald Bently (BS 1949, MS 1950 in electrical engineering) is the founder of Bently Nevada Corporation, one of the world's leading producers of instruments that measure, monitor, and diagnose the mechanical condition of industrial machinery.

With these measurements, technicians can pinpoint the location and cause of equipment problems, make adjustments, and greatly prolong the life of industrial machines. As recently as 2000, Bently Nevada was listed among the top 100 privately owned electronic companies in the United States. As of January of this year, Bently Nevada is now owned by publicly traded General Electric Corporation.

Bently is currently a consultant to the business, but next year plans to step down from that role. He will continue to shepherd the half-dozen other companies he founded during the last 40 years, including Bently Agrowdynamics™, which develops and tests methods of environmentally sustainable agriculture on more than 38,000 acres of Bently-owned land in and around Minden, Nev.

The soft-spoken entrepreneur also is pioneering a fully lubricated, pressurized bearing that he expects to revolutionize the mechanical world.

Based on a concept developed by a French inventor during Napoleon's reign, Bently's ServoFluid™ bearing actually forces fluid around the bearing rather than allowing the fluid to drag the oil around the bearing. The design can eliminate almost all rotordynamic instabilities, such as commonly occurring oil whirl and whip, which can damage machines and delay production.

In recognition of his considerable contributions to the science of engineering, the College inducted Bently into its Distinguished Engineering Alumni Academy in 2001 (see page 12).

Tinkering and entrepreneurship run in Bently's blood. One of his great-grandfathers built the mill that is now a historic landmark in Wildcat Den State Park, 10 miles east of Muscatine, Iowa. Bently's father was a WWI veteran and farmer. When Bently was 14, his father bought a Muscatine bowling alley.

"I got to be a pretty good pin setter," Bently recalled. "At one point, I could do two lanes at a time."

Drafted into the United States Navy during World War II, Bently earned five battle stars in the Pacific arena of Saipan, Tinian, Leyte, and Luzon. While serving in the Pacific during invasions, he took extension courses from the U of I.

"My Seabee officer once asked me, 'Why are you doing all that work? You'll probably be dead within the year anyway.' I told him, 'Maybe, but what if I survive?'" He was en route to Japan when peace was declared.

Bently returned to Iowa to study engineering and, after graduating, worked again at the family bowling alley. He then landed what he recalls as his "most interesting job," as a primary detonator engineer at the Iowa Ordnance Plant in Burlington.

"There was a certain element of danger to it, and I got pretty good at it," he said.

In 1950, the Midwesterner was lured to California, where he spent three years as an engineer with North American Aviation/Rocketdyne. At one point, Bently was also taking evening courses at UCLA Westwood, planning to earn a PhD. He left academia to build his new product—the eddy current nontouching measuring system.

"I'd buy rejects from electronics shops for $10 apiece and use them till they burned up," he said. "I burned up a lot of point contact transistors experimenting with oscillators in my basement. That's how I got in on the ground floor of this amazing new technology."

By 1955, the Bently Scientific Company was designing and selling instru-
mentation via a mail order catalogue—from the owner’s garage.

One of the company's best sellers was Bently's own invention—a transistorized version of an existing vacuum tube design for a proximity transducer that measures vibration and position in industrial machinery. Bently's design made the device commercially feasible and suitable for the rigors of real machines and real plant environments.

Today Bently Nevada, known for its commitment to the environment, has more than 2,000 employees, over 1,000 of whom work at the company's headquarters in the small town of Minden. Operations include nearly 100 offices in over 40 countries and annual sales of more than $250 million.

Bently recalls his student years with fondness.

"Edwin Kurtz was a great teacher," he said about the late professor and head of electrical engineering.

Bently's studies continued with professor Edward Chittenden, a pioneer in teaching Boolean algebra, who wanted Bently to continue in mathematics. Bently declined because he thought he could make a better living as an electrical engineer.

"Education is the key," Bently said. "In spite of the enormous number of students after WWII, I got an excellent background education in engineering at The University of Iowa."

One evening a well-known local engineer who happened to be a bowler, took young Bently aside and gave him advice he's never forgotten. "He told me that whatever I decided to do in life, it should be something I enjoyed and could do well," Bently recalled. The engineer who offered that advice was Max Stanley (BSE 1926; MS 1930 in hydraulics), founder of Muscatine's world-class engineering firm, now known as Stanley Consultants.
Witold Krajewski appreciates the saying, “Life’s uncertain; eat dessert first.” Actually, the University of Iowa Joseph and Rose Summers Professor of Water Resources Engineering, professor of civil and environmental engineering, and research engineer at IIHR—Hydroscience & Engineering might well refine that aphorism to say, “Life’s uncertain. Estimate the probability that it will rain on your dessert first.”

For the last two decades, Krajewski has developed algorithms, then applied them to weather models to quantify the uncertainty of rainfall predictions. His work has enabled meteorologists and radar specialists to test the accuracy of their data collection and predictive models and adjust both accordingly. In the process, he has become a world-renowned expert in the quantification of hydrometeorological uncertainty.

“T’m interested in the framework of risk,” said Krajewski, who in 2001 received the College of Engineering Faculty Excellence Award in Research (see page 13), and whose work focuses on hydrologic models that help predict flooding.

“If we find that weather data is highly uncertain, then our predictions of flooding may not help people decide whether to evacuate. If, on the other hand, we find that flood predictions are highly accurate, people should heed them.”

His far-reaching influence on the study of rainfall, weather, and climate prediction is reflected in the number of his graduate students who have
become influential researchers and teachers, and by the range of prominent funding sources that support his work.

In the past five years alone, the National Weather Service, National Science Foundation, National Oceanic and Atmospheric Administration, and NASA have funded the University of Iowa researcher and a dozen of his graduate students as they develop and refine their risk-estimation techniques. A recent $200,000 NASA grant is helping Krajewski validate rainfall maps that are used to describe rainfall in Florida, Brazil, and Guam.

"Some people may not understand why engineers are involved in researching issues of weather and climate," he said. "Actually, engineers bring many unique skills to these problems. As engineers, we like to quantify what we observe. Atmospheric scientists are so happy to see and describe storms—and then we start quantifying the uncertainty of their models."

Krajewski is currently assessing the accuracy of some of the latest weather prediction models, including those developed using the 10-year-old $1 billion NEXRAD national weather radar system.

Implemented and maintained by the National Weather Service, NEXRAD (Next Generation Radar) measures precipitation and wind. This Doppler radar can detect most precipitation within 90-some miles of the radar, and intense rain or snow within approximately 155 miles. However, light rain, light snow, or drizzle from shallow clouds can prove difficult for NEXRAD to detect.

So while satellite and radar weather maps may be fascinating shows of color, Krajewski says it is difficult to determine their accuracy. This can throw doubt on the appropriateness of civil defense warnings.

"We see red on the national weather radar map," he said, "but we still don't have the tools to really evaluate what 'red' means. It's wonderful to see storms move across the radar map on TV, but quantification and prediction of rainfall amounts on the ground is much more difficult."

Krajewski and his students obtain data from NEXRAD and apply algorithms to convert the data to rainfall amounts. The data is then used to create maps that indicate rainfall variability and to test predictive models. Other variables can affect the certainty of predictions.

"Radar is affected by the size of individual raindrops as well as their distribution in space," Krajewski said. "Small drops create weak radar reflectivity as opposed to large drops. But even though radar signals may indicate otherwise, the rainfall amounts in two areas with different size raindrops may actually be identical."

Raindrop shape also affects radar images. Larger drops tend to be less spherical, and therefore reflect radar pulses more than smaller, more spherical drops. Rainfall distribution can vary greatly through space and time.

"OF COURSE, AS A CITIZEN, ALL I REALLY WANT TO KNOW WHEN I WATCH THE WEATHER CHANNEL IS, 'DO I NEED TO TAKE AN UMBRELLA TODAY?'" WITOLD KRAJEWSKI
“Our interest isn’t in the point where the rain gauge sits,” he said, “but in measuring space/time distributions so that we can better predict flooding. The rain falling into a bucket left out in someone’s backyard may have little relevance to the weather happening five miles away.”

Weather and flooding predictions based on satellite photographs are even chancier than those based on Doppler radar. NEXRAD provides data every six minutes, while satellites pass overhead only once or twice a day. On the other hand, satellites provide data in areas where NEXRAD can’t reach and provide additional information about earth’s large-scale meteorological systems, including the relationships between land, the oceans, and the atmosphere.

“Of course, as a citizen, all I really want to know when I watch the Weather Channel is, ‘Do I need to take an umbrella today?’ ” Krajewski said.

Krajewski-the-researcher has always wanted to know much more. As a student at Warsaw University of Technology, Krajewski had studied water resources, but from a broad perspective.

“I didn’t even know what radar was,” said the native of Poland, whose father also is an engineer. “Then I got an opportunity to come to the United States for a postdoc position. That position was a big break for me.”

Traditionally, many engineers are part of the scientific community that studies hydrology, which includes Krajewski’s own areas of interest, rainfall and flooding. In addition, scientists turn to engineers to design, build, operate, and test equipment to gather and record data and to test their theories.

“One of the things I enjoy most about my work is interacting with researchers from many different backgrounds, including atmospheric scientists, hydrologists, electrical engineers, and other civil engineers,” Krajewski said.

In particular, Krajewski says that IIHR—Hydroscience & Engineering is an engaging, and intellectually challenging community. He credits his colleagues and collaborators, especially Dr. Anton Kruger, associate research engineer, for their support.

Krajewski also enjoys working with graduate students who bring novel approaches to their endeavors. Sometimes they worry too much, he said.

“My students are concerned there won’t be anything left to study by the time they are professionals,” he said. “I tell them, ‘Enjoy life! Look at the shapes of the clouds. Do you think we will solve these mysteries any time soon?’”

The professor who quantifies uncertainty is quite certain of the answer.

Witold Krajewski throws himself into his vocation and his avocation: judo.

A black belt, fourth-degree, Krajewski coaches a local club team that boasts two nationally ranked members, both women. In 1998 with the help of a few fellow judo enthusiasts in Poland, he created an interactive multimedia CD-ROM, “40 Basic Judo Throws.”

Krajewski believes judo benefits his engineering research and teaching.

“Judo gives me mental strength and provides physical energy,” he says.

“Plus it helps me be a good role model because my students can see that I manage to combine a dedication to both work and sport.”

Photo by fisheye
Demystifying writing

Engineers are honing secrets for success

If Scott Coffel had his way, he would bring to light the creative spirit tucked into the heart of every engineer.

"Engineers and writers actually have a lot in common," said Scott Coffel, the coordinator of the College of Engineering's new Center for Technical Communication. "Both are confronted with problems that demand higher-order thinking. To succeed, they must concentrate and persevere. And the work produced by engineers and writers is much more than the sum of its parts."

The Center was created to transform engineers into articulate technologists. Although writing has always been an important part of the engineering profession, increased competition, globalization, and computerization have catapulted communication skills to a pivotal role in the success of a 21st-century engineer. Thus, engineering students who can write are in great demand.

The Center teaches writing strategies for practical genres, including lab and project reports, grant proposals, specification documents, memoranda, management documents, and e-mails.

Coffel and associate coordinator Lezlie Hall are building these fundamental elements from the ground up—literally.

"We began planning last April when much of the Seamans Center for
the Engineering Arts and Sciences was still dust and mortar," Coffel said.

The Center opened in September, armed with input from writing center directors across campus and with a program tailor-made for engineers, and flexible for evolving needs.

The Center helps engineering students become confident and effective writers and public speakers by working one-on-one with students, offering communication workshops, and assisting faculty with weaving writing projects into their courses. Students receive feedback from writing consultants culled from the local community, and from peers who are advanced undergraduate engineering students and adept writers, and because of their experience, student mentors, as well.

"Developing strong technical writers is a shared enterprise," Coffel said. "Faculty members who challenge and encourage their students to write well are an important piece of this educational puzzle."

During the fall semester, Coffel and Hall worked with four faculty members, incorporating writing into first-year curricula. Students were assigned writing projects that drew on their technical expertise and honed their writing skills. They were required to consult at least once with the Center staff, who helped students analyze the assignment and model strategies for its successful completion.

"We don't assess students' arguments or comment on the technical content of their writing," Coffel explained. "That's up to their professors. We try to make their writing assignments transparent and walk them through the elements of good writing."

"We try to make writing less threatening by demystifying it," said Hall. "We show engineering students that just as they learn principles of engineering, so they can learn the principles of writing."

Wilfrid Nixon, professor of civil and environmental engineering, incorporated this approach in his fall semester statics course. Working closely with the Center, Nixon developed a proposal writing exercise that incorporates statics principles. His students are required to meet with the Center's peer tutors.

Students are encouraged to consult with Center staff and peer tutors on any engineering writing assignment. Business is brisk. During the Center's first eight weeks, more than 100 students sought help to perfect their technical writing skills.

The Center is funded through The University of Iowa's Writing Initiative and its activities help the college address the Accreditation Board for Engineering and Technology (ABET) 2000 guidelines for engineering college accreditation.

Coffel offers real-world experience from the field of technical writing. He has a master of fine arts degree from The University of Iowa's Writer's Workshop and was a communication specialist for the Boeing Company. During the five years prior to joining the College, he served as a senior technical writer for a number of local engineering companies with ties to the University, including CADSI, Inc., Diversified Software Industries, Inc., and Ascend Technologies, Inc.

After earning her PhD in English from The University of Iowa, Hall worked as a medical and grant writer at the University of Washington. She also teaches composition and literature at Kirkwood Community College in Cedar Rapids, Iowa.

Coffel and staff are already launching new projects. Coffel and John Forys, engineering librarian, teach a 2-credit elective course, "Essentials of Technical Communication," which explores methods of gathering and communicating information, including patent searches, oral presentations, and team writing. An online system for real-time peer consultation is in the works.

"In everything we do," Coffel said, "we try to encourage engineering students to take pride of ownership in their writing. We hope engineers at Iowa will appreciate that good writing is a goal worth achieving."
College welcomes six new faculty

Nicole Grosland
Assistant professor, biomedical engineering
- BS (1994) and PhD (1998) in biomedical engineering, The University of Iowa
Professional experience
- Assistant research scientist, postdoctoral fellow, visiting assistant professor, The University of Iowa
- Member, Orthopaedic Research Society and American Society for Biomechanics
Special fields of knowledge
- Finite element modeling; orthopaedic biomechanics
Research interests
- Adaptive element algorithms; upper extremity biomechanics; voxel-based FE techniques and applications

Khalid Kader
Assistant professor, biomedical engineering
- BS (1994) in chemistry, Augsburg College
- PhD (2000) in biomedical engineering, Case Western Reserve University
Special fields of knowledge
- Biomaterials and tissue engineering
Research interests
- Basal lamina reconstruction; cardiovascular tissue engineering; cell phenotype control; diabetes; polymer surface modification

Zhiqiang Liu
Assistant professor, electrical and computer engineering
- BSc (1981) in electrical engineering, Peking University
- MSc (1994) in electrical engineering, Institute of Electronics, Chinese Academy of Science
- PhD (2001) in electrical engineering, University of Minnesota
Professional experience
- Graduate research assistant, University of Minnesota
- Graduate research assistant, University of Virginia
- Research scholar, National University of Singapore
- Research assistant, Peking University
- Member, Association of Mechanical Engineers
Special fields of knowledge
- Communication theory
Research interests
- Diversity techniques for wireless communications (spacetime coding, spatial multiplexing, linear precoding); signal processing for wireless communications (multicarrier, multirate, OFDM, channel estimation, equalization); multiuser communications (multiuser detection, interference suppression, CDMA, code design)

Jia Lu
Assistant professor, mechanical and industrial engineering
- BS (1985) in applied mechanics, Beijing Institute of Aeronautics
- MEng (1988) in engineering mechanics, Tsinghua University
- PhD (1999) in mechanical engineering, University of California, Berkeley
Professional experience
- Senior member, technical staff, ANSYS, Inc.
- Postdoctoral researcher, graduate student researcher, graduate research assistant, University of California, Berkeley
- Research assistant, University of Manitoba, Canada
- Junior faculty (lecturer), Tsinghua University, China
- Member, Association of Mechanical Engineers
Special fields of interest
- Solid/computational mechanics
Research interests
- Anisotropic material; computational plasticity; finite strain homogenization methods; nonlinear finite element methods

Oquz Poroy
Assistant professor, biomedical engineering
- BS (1992) in electrical and electronics engineering, Bogazici University, Istanbul, Turkey
- MS (1995) in electrical engineering, Tuskegee University
- PhD (2000) in applied science, The University of Arkansas at Little Rock
Professional experience
- Assistant research scientist, The University of Iowa
- Postdoctoral research associate, University of Texas, Dallas
Special fields of interest
- Embedded programming; instrumentation; signal processing
Research interests
- Speech processors for cochlear implants: hardware, software, and processing strategies

James P. Schmiedeler
Assistant professor, mechanical and industrial engineering
- BS (1996) in mechanical engineering from the University of Notre Dame
- MS (1998) and PhD (2001) in mechanical engineering, the Ohio State University
Professional experience
- Member, American Society for Mechanical Engineers (ASME) and the American Society for Engineering Education (ASEE)
Special fields of knowledge
- Robotics, machine design, kinematics, dynamics, CAD/CAM
Research interests
- Robotics, mechatronics, machine design, biomechanics, legged locomotion, and theoretical kinematics
The University of Iowa College of Engineering dedicated the Seamans Center for the Engineering Arts and Sciences in ceremonies Sept. 28. More than 300 guests—including alumni, faculty, staff, students, corporate partners, friends of the college, government leaders, and university administrators—assembled in the John Deere Plaza for the ceremony.

The four-year, $31 million modernization project preserves much of the original 1906 Engineering Building while adding state-of-the-art classrooms, labs, and student-oriented study and meeting areas for the College’s 80 faculty and 1,400 students.

“The Seamans Center will allow our faculty to remain at the forefront of engineering research well into the 21st century, and it will help our students receive the best, most up-to-date engineering education possible,” said UI president Mary Sue Coleman, addressing the crowd.

Gary F. Seamans of St. Charles, Ill., a 1971 UI College of Engineering graduate and chair of the Engineering Building Campaign Steering Committee, said, “Iowa engineering students are not only smart—they’re also dedicated, creative, hardworking, and focused. The engineering staff and faculty share those same qualities, which they brilliantly nurture in their students. Now we have a state-of-the-art engineering facility that will provide the synergy to help make the best become even better.”
One school year ago, the Seamans Center for the Engineering Arts and Sciences was dedicated by dignitaries. One school year later, the state-of-the-art building has been christened by the next generation of engineers, and the engineering professors who pass torches of knowledge.
College inducts three new members into its Distinguished Engineering Alumni Academy

The University of Iowa College of Engineering inducted three members into its Distinguished Engineering Alumni Academy in June 2001 for contributions toward personal engineering achievement, leadership, and service to the profession and society.

Donald E. Bently, Herm M. Reininga, and Joseph B. Summers were inducted into the academy during the College’s spring alumni reunion dinner June 9 in Iowa City.

Bently (see pages 2-3), who received his bachelor’s and master’s degrees in electrical engineering from The University of Iowa in 1949 and 1950, respectively, is founder of Bently Nevada Corporation, a $250 million per year manufacturer of electronic systems for monitoring the mechanical condition of machinery. He is also owner of Bently Agrowdynamics®, the agricultural business of the Bently Family Limited Partnership, of which he is general partner. He is also owner and president of Gibson Tool & Supply Company and has served on the board of directors of Sierra Pacific Resources. His pioneering work in the field of vibration measurement gave rise to an industry involving the use of vibration instrumentation to protect and diagnose machinery. His many awards and honors include: the American Society of Mechanical Engineers (ASME) Frederick P. Smarro Award and R. Tom Sawyer Award, board member and benefactor of The Institute of World Politics, and foreign member of the St. Petersburg Academy of Engineering in Russia (1992).

Reininga, who joined Collins Radio Company after earning his bachelor’s degree in industrial engineering from The University of Iowa College of Engineering in 1965, is vice president of operations for Rockwell Collins, a leading manufacturer of communication and aviation electronics for commercial, military, and government customers. Recognized for leadership in integrating commercial and defense manufacturing technology, as well as manufacturing policies, he has received numerous awards, including the Department of the Navy Meritorious Public Service Citation in 1999 and the Defense Manufacturing Excellence Award in 1998. He is also a member of the UI College of Engineering Development Council and Mechanical and Industrial Engineering Advisory Board, and a past member of the College’s Advisory Board, Building Campaign Steering Committee, and Industrial Engineering Interaction Board.

Summers, who served as a bomber crew member with the U.S. Army Air Corps in Europe during World War II, received his bachelor’s degree in civil engineering from the University of Iowa in 1948.

Since its inception in 1962, his firm, Summers Engineering of Hanford, Calif., has provided consultation services to major irrigation and drainage projects around the world. In 1972, he served as a United Nations consultant on irrigation and drainage in the Pampas region of Argentina. In 1990, he helped implement a $100 million agreement between the Metropolitan Water district of Southern California and that state’s Imperial Irrigation District. Summers received the inaugural Merriam Improved Irrigation Award from the U.S. Committee on Irrigation and Drainage in 1999.

He also serves on the College of Engineering Development Council. He is a past member of the College’s Campaign Steering Committee and Advisory Board. He currently is president of the Hanford (Calif.) Community Foundation. In June, Summers received the Distinguished Alumni Award for Service from The University of Iowa Alumni Association.
Three professors honored for contributions to UI College of Engineering

Three University of Iowa professors have received College of Engineering awards for their individual contributions to research, teaching, and service.

They are Lea-Der Chen, professor of mechanical and industrial engineering, for service; Witold F. Krajewski, Joseph and Rose Summers Professor of Water Resources Engineering and professor of civil and environmental engineering, for research; and Tonya Peeples, associate professor of chemical and biochemical engineering, for teaching.

Chen, who joined the UI faculty in 1982, served as chair of the Department of Mechanical Engineering from 1992 until 1998. Since 1999, he has been director of the National Advanced Driving Simulator (NADS), designed to become the world's leading center for driving simulation research, including the study of human factors associated with both on-road and off-road vehicle dynamics and driving safety.

Chen received his master's degree in 1979 and his doctorate in 1981, both in mechanical engineering, from Penn State University. He earned his bachelor's degree in mechanical engineering from National Taiwan University in 1974.

In presenting the service award, Engineering Dean P. Barry Butler noted that Chen's long record of service to the Department of Mechanical and Industrial Engineering, in addition to his 1992-98 service as chair, includes serving on undergraduate and graduate committees and developing undergraduate laboratories. In addition, he served as chair of the 1997 internal review of the college, chair of the Dean's Ad Hoc Committee on Curriculum 2000 during the 1999-2000 academic year, and as a member of the committee for education reform within the college.

Krajewski, who came to the UI in 1987, is a research engineer in the Hydrometeorology Group within IIHR—Hydroscience & Engineering and an internationally known researcher in the field of remote sensing of precipitation (see pages 4-6). His research experience includes water resources systems planning and development and water quality modeling. His active areas of research are radar hydrometeorology, stochastic hydrology and remote sensing.

Krajewski received his master's degree and doctorate in environmental engineering in 1976 and 1980, respectively, from the Technical University of Warsaw, Poland.

Butler said Krajewski's research award includes a strong element of leadership, since Krajewski is one of the best-known researchers in the fields of remote sensing, uncertainty assessment and hydrometeorology. He is considered the leading expert in developing algorithms for quantitative precipitation estimation using weather radar observations.

Peeples, who came to the UI in 1995, is a researcher in the field of organisms that thrive in extreme environments, including the ocean floor.

Prior to coming to the UI, Peeples earned her bachelor's degree in 1988 from North Carolina State University and her doctorate in 1995 from Johns Hopkins University.

In presenting the teaching award, Butler noted Peeples' leadership in developing and implementing new teaching methods, including the creation of new laboratory experiments and open-ended design problems for courses that previously relied only on lectures. He also noted her creation of a new graduate course, Biotechnology of Extremophiles, blending topics from current literature in the field with examples from her own research and from the research of experts around the world. Her service to local and national educational committees includes: panelist, Women in Science and Engineering (WISE) 1998 Leadership Conference; panelist, Society of Women Engineers (SWE) 1999 High School Conference; advisor, SWE, 1997 to present; and member, minority affairs committee, American Institute of Chemical Engineers (AIChE).
Biomedical Engineering
Andrew D. Bries, a senior from Zwingle, Iowa, was awarded the inaugural Rita Schaffer Undergraduate Award. Bries was cited for his outstanding leadership abilities as an officer in the local Alpha Eta Mu Beta and Biomedical Engineering Student Society.

Joseph Reinhardt, assistant professor, received a Faculty Early Career Development (CAREER) Award from the National Science Foundation. He plans to develop software tools to help analyze pulmonary images, lung behavior, and lung tissue properties.

Karsten Temme, a senior from Casper, Wyo., was named a Goldwater Scholar for the 2001-2002 academic year.

Chemical and Biochemical Engineering
Gregory Carmichael, Karl Kammeyer Professor of Chemical and Biochemical Engineering, associate dean of graduate studies and research, received nearly $1 million in grants to study how Asian pollution is affecting air quality in California and the rest of the western United States. The research is supported by NASA and the National Science Foundation.

Vicki Grassian, associate professor of chemistry, and Greg Carmichael, professor, received a four-year, $640,824 U.S. Department of Energy grant for atmospheric studies.

Victor G. Rodgers, associate professor, is collaborating with College of Medicine colleagues on a total of $1.4 million in research projects. In collaboration with Garry Buettner, Rodgers is working on a four-year, $872,129 grant from the National Institutes of Health (NIH) to determine whether vitamin E or nitrile oxide is more effective as a chain-breaking antioxidant in cellular membranes. Rodgers will collaborate with Dr. Stephen K. Buettner and Dr. Baoli Yang, on a $215,800 NIH grant to determine the effectiveness of genetically altering beta cells to improve their insulin productivity in low-oxygen environments. Rodgers will team up with Andrew Zydney, professor of chemical engineering at the University of Delaware, on a $357,285 National Science Foundation grant on the development of a novel membrane separation process. The goal is to find a process combining transmembrane pressure pulsing with electrostatic forces to improve protein separations.

Civil and Environmental Engineering
Jasbir Arora, F.-Wendell Miller Distinguished Professor of Engineering, and professor, received a five-year appointment to the executive committee of the Technical Activities Division (TAD), Structural Engineering Institute of the American Society of Civil Engineers.

Allen Bradley, associate professor, was nationally recognized by the American Society of Civil Engineers (ASCE) for his role of advisor to the UI ASCE student chapter.

Forrest M. Holly, Jr., professor, research engineer, IHR—Hydroscience & Engineering, and associate dean of academic programs, was elected for a second two-year term as president of the International Association of Hydraulic Engineering and Research at its 29th Biennial Congress held Sept. 16-21, 2001, in Beijing, China.

Sondra Miller, doctoral student, participated in the Young Scientists Summer Program (YSSP) through the International Institute for Applied Systems Analysis (IIASA) in Vienna, Austria. Miller was part of an international team that studied transboundary air pollution issues in Europe. She was one of six students from the U.S. selected for the program.

Wilfrid Nixon, professor, was a keynote speaker at the 13th Argentine Congress on Roads and Transportation held Oct. 1-5, 2001, in Buenos Aires, Argentina, where he presented a paper, "Developing a Long Term Strategy to Enhance Winter Mobility in Argentina and across the Andes." Nixon was appointed to a second three-year term as chair of the A3C09 Winter Maintenance Committee on the Transportation Research Board.

A. Jacob Odgaard, professor, and research engineer, IHR—Hydroscience & Engineering, received the American Society of Civil Engineers 2001 Hydraulic Structures Medal in recognition of his innovations in experimental and engineering design, and his innovative and creative design of structures for river restoration and control, at the World Water and Environmental Resources Congress, May 20-24, 2001, in Orlando, Fla.

Jerry Schnoor, Allen S. Henry Chair of Engineering, and professor, was featured Jan. 10, 2001, in a major Associated Press news story on his research at the Alliant Energy, Ottumwa, Iowa, generating plant. The plant has been retrofitted to burn switchgrass along with its primary fuel as part of a test project.

Lizhi Sun, assistant professor, received a grant from the National Science Foundation to do large-scale dislocation dynamics simulations for the computational design of semiconductor thin film systems.

Electrical and Computer Engineering
The Medical Imaging group had strong presence at the Society for Optical Engineering International Symposium on Medical Imaging, Feb. 17-22, 2001, in San Diego, Calif. Faculty members Milon Sonka, Gary Christiansen, and Joseph Reinhardt, and graduate students Blake Carlson, Steve Mitchell, Li Zhang, Baojun Li, and Jerug Tschirren gave a total of five oral presentations at the Image Processing Conference. Sonka was chair and Reinhardt was a member of the program committee for the conference.

Milan Sonka, professor, was elected Fellow of the Institute of Electrical and Electronic Engineers in recognition of his contributions to medical image analysis and computer vision.

Mechanical and Industrial Engineering
Karim Abdel-Malek, associate professor, served as co-chair of the Second International Symposium on Mechanics of Human Movement and Biomaterials held in Ottawa, Canada, Aug. 5-7, 2001. As part of the conference Abdel-Malek was guest editor of a special issue of the International Journal of Integrated Computer-Aided Engineering on Digital Human Simulation.

Christoph Beckermann, University of Iowa Foundation Distinguished Professor, and professor, was elected Fellow of the American Society of Mechanical Engineers International. He is internationally known for his research in the solidification of metal alloys and composites.

Jill Hunt, a senior from Taylor Ridge, Ill., received one of six $1,000 national Alpha Pi Mu scholarships.

John Lee, associate professor, was interviewed on National Public Radio regarding his research on driver distraction due to new in-vehicle devices.

Inviscid Incompressible Flow, written by Jeffrey S. Marshall, professor and departmental executive officer, is a one-stop resource for students, instructors and professionals. Published by Wiley, the textbook has a companion web site containing subroutines for calculations in the book.

Thomas Schell, assistant professor, was awarded a two-year $120,000 grant from the Iowa Space Grant Consortium to assess pilot performance in flight decks equipped with synthetic vision information systems (SVIS).

Sharif Rahman, associate professor, received the 2001 Junior Research Prize in Stochastic Fatigue, Fracture and Damage Mechanics at the 8th International Conference on Structural Safety and Reliability held in Newport Beach, Calif., June 17-21, 2001. The international award, given only once every four years, recognized Rahman for the development of computational models for stochastic fracture mechanics. He is also chair of the American Society of Mechanical Engineers (ASME) Materials and Fabrication Committee.

Ralph Stephens, professor, co-authored the second edition of Metal Fatigue in Engineering, published by Wiley Interscience.

Geb Thomas, assistant professor, Greg Gerling, graduate student, Edwin Dove, professor of biomedical engineering, and Alicia Weissmann, assistant professor of family medicine, developed a model breast that improves the ability of women and their doctors to detect tumors during breast exams.

H.S. Udaykumar, assistant professor, received a Faculty Early Career Development (CAREER) Award from the National Science Foundation. Udaykumar's research involves processing of innovative materials, such as metal-matrix composites and cryopreservation. The UI student chapter of the Institute of Industrial Engineers (IIIE) hosted the 2001 IIIE Regional Conference for Regions 8 and 11, March 1-3, 2001, in Iowa City. More than 250 participants from 20 universities attended the conference.
Center for Computer-Aided Design

K.K. Choi, professor of mechanical and industrial engineering and director, Center for Computer-Aided Design, attended a Max Planck workshop Oct. 12-13, 2001, in Nyborg, Denmark. The workshop brought together 70 researchers in the area of design optimization from 16 countries to discuss ongoing work and future directions for the field. Participation in the workshop was by invitation only.


Yang You and Sangpil Yoon, graduate students in the Center for Computer-Aided Design were two of six finalists for the Robert J. Melosh Medal Competition for the Best Student Paper on Finite Element Analysis. The papers were presented at the 13th Melosh Medal Symposium held March 31, 2001, at Duke University, Durham, N.C.

IIHR—Hydroscience & Engineering

Marian V.I. Muste, assistant research engineer, and Cornelia F. Mutel, scientific historian, received the 2000-2001 Instructional Improvement Award from the Council on Teaching, which will be used to document and preserve selected research instrumentation and equipment in the Hydraulics Laboratory.

Cornelia F. Mutel, scientific historian, received a grant from The National Endowment for the Humanities (NEH) to rehouse materials documenting the history of technology and water use in the Upper Mississippi Valley.

V.C. Patel, professor of mechanical and industrial engineering and director, IIHR—Hydroscience & Engineering, and George Constantinescu, research associate, Center for Turbulence Research at Stanford University, won the American Society of Civil Engineers Journal of Hydraul.


Fred Stern, professor of mechanical and industrial engineering and research engineer, IIHR—Hydroscience & Engineering, received a $1 million grant from the Office of Naval Research for his study on Towing Tank Motion Tracking.

1940s

Willis F. Perley (BS 1940 in civil engineering) lives on and operates a small farm near Portland, Ore.

Melvin W. Naylor (BS 1942 in electrical engineering) is retired and living in Elizabethtown, Ky. During his career he served as staff aerospace quality control engineer for the commanding general of the Department of Defense Quality Control and as advisor and coordinator with NASA on the Saturn, Apollo, and Space Shuttle programs.

Norman I. Stein (BS 1943 in mechanical engineering) retired from Naval Sea Systems Command, Department of the Navy, and lives in Potomac, Md.

Margaret S. Petersen (BS 1947 in chemical engineering, MS 1953 in mechanics and hydraulics) was selected by the American Society of Civil Engineers Water Resources Engineering Division to receive the 2001 Hunter Rouse Hydraulic Engineering Award and Lecture. The award presentation and lecture were held May 21, 2001, at the Inaugural World Water and Environmental Resources Congress in Orlando, Fla.

1950s

Vern L. Petersen (BS 1950 in electrical engineering) is retired and living in Davenport, Iowa. During his career he was employed as a transmitter engineer for the Palmer Broadcasting System, Davenport, Iowa.

Owen Mann (MS 1950 in mechanics and hydraulics) is professor emeritus of mechanical engineering at the University of Saskatchewan, Saskatoon, Canada.

David Jacobs (BS 1951 in mechanical engineering) is a violinist in the Bucks County (Pennsylvania) Symphony and ensemble groups. He enjoys overseas travel, antique cars, and woodworking. He was featured in a series on UI alumni in the July 22, 2001, Iowa City Press-Citizen.

Vernon A. Rose (BS 1953 in chemical engineering) toured the new Seamus Center for Engineering Arts and Sciences in November 2001. "A very impressive facility," he remarked. Rose is retired and lives in Jacksonville, Ill.

George H. Miller (BS 1956 in mechanical engineering) retired in 1994 as a patent attorney with the U.S. Patent Office. He recently published Optimum Fitness: How to Use Your Muscles as Peripheral Hearts to Achieve Optimum Muscular and Aerobic Fitness on Xlibris.com.

Richard D. Bolsinger (BS 1957 in mechanical engineering) is retired and living in Cincinnati, Ohio. He visited the College of Engineering on June 11, 2001.

1960s

Roger L. Stoughton (BS 1958 in civil engineering) retired senior materials and research engineer, Transportation Laboratory, California Department of Transportation, received the Kenneth Stonex Award for significant contributions in the field of roadside safety from Committee A2A04-Roadside Safety Features at the annual meeting of the Transportation Research Board held January 2001 in Washington, D.C.

Philip H. Francis (MS 1960 in mechanical engineering, PhD 1965 in mechanics and hydraulics) authored Product Creation:The Heart of the Enterprise from Engineering to E-Commerce. The new book, written for those trained in technology as well as business-oriented industrial managers, provides methods and tools to orchestrate the entire enterprise for creating a legacy of product excellence. It presents a holistic view of product creation. The book is published by The Free Press of New York, N.Y., and is distributed by Simon & Schuster Inc.

Jon A. Flower (BS 1961 in mechanical engineering) is retired and lives in Coralville, Iowa.

1970s

Richard K. Johnson (BS 1970 in civil engineering) retired from the Department of Defense and lives in Orlando, Fla.
Donald Laughlin (MS 1961 in electrical engineering) is treasurer of the 1-Renew (Iowa Renewable Energy Association). The organization offered a workshop accompanying installation of a 10,000-watt, 100-foot high wind generator that provides electricity to his house in West Branch, Iowa. Laughlin was featured in a series on UI Alumni in the June 24, 2001, Iowa City Press-Citizen.

Richard K. Riley (BS 1961, MS 1965 in mechanical engineering) is retired and lives in Friday Harbor, Wash.

James R. Rollins (BS 1961 in mechanical engineering) retired after 33 years in the aerospace industry. He enjoys playing and arranging music, and community theater activities in San Jose, Calif.

Dale Vander Linden (BS 1961 in electrical engineering) was on campus in January 2002 to see the "great new building." He is retired and lives in Delano, Minn.

Norman Crandall (BS 1962 in mechanical engineering) is president of Crandall Medical Devices, San Clemente, Calif.

Donald Gurnett (BS 1962 in electrical engineering; MS 1963, PhD 1965 in physics and astronomy), and Robert Mutel, professors in the UI College of Liberal Arts and Sciences, Department of Physics and Astronomy found a novel way to remotely pinpoint the source of Earth's most intense naturally occurring radio noise. The professors presented their findings on radio noise, called auroral kilometric radiation (AKR), at the American Geophysical Union annual meeting in San Francisco, Dec. 10–14, 2001. Gurnett was named UI faculty member with the most external funding, more than $5.3 million, for fiscal year 2001.

Michael A. Hanso (BS 1962 in civil engineering) is an environmental engineer with the Department of Defense, U.S. Navy, Great Lakes, Ill.

Gael Miller (BS 1962 in chemical engineering) is manager of quality control for Presta Products, Carrollton, Tex.

Donald Srinivasan (MS 1962, PhD 1965 in mechanics and hydraulics) is the author of Smart Structures, Analysis and Design, published by Cambridge University Press in November 2000. He was invited by the Indian Institute of Science, Bangalore, India, to teach a course using his textbook.

Richard H. Stanley (MS 1963 in sanitary engineering), chairman of The Stanley Group and chairman and president of The Stanley Foundation, Muscatine, Iowa, received the Hoover Medal from the American Society of Mechanical Engineers at the International Mechanical Engineering Congress and Exposition in New York City, November 2001. The award recognizes individuals who advance the engineering profession and contribute to the broader community.

John C. Calhoun (BS 1964, MS 1966 in civil engineering) was named Outstanding Civil Engineer at the annual meeting of the Iowa Section of the American Society of Civil Engineers held Sept. 14, 2001, in Ames, Iowa.

Eugene J. Hubka (BS 1964 in chemical engineering) retired from Mobil Oil in March 2000 after 36 years of service.

Edward H. Brinton (BS 1965 in civil engineering) is a project manager with MMS Consultants, Iowa City, Iowa.

Richard A. Neff (BS 1965 in mechanical engineering) is retired and lives in Manchester, N.H. He visited campus on July 15, 2001.

Gary R. Shelangoski (BS 1965 in chemical engineering) retired as plant manager of Reichhold Chemical, Raleigh, N.C. He now lives at Bull Shoals Lake in Yellville, Ark.

Joseph R. Papp (BS 1966 in mechanical engineering) was named chairman of the Rader School of Business at Milwaukee School of Engineering.

Allen P. Schneider (BS 1966 in electrical engineering) is a product line manager, John Deere Waterloo, Waterloo, Iowa.

David R. Heltne (BS 1967, MS 1969, PhD 1979 in chemical engineering) is an engineering advisor with Equilion Enterprises, LLC, Houston, Texas.

Dale L. Bacon (BS 1958, MS 1969 in civil engineering) is a technical director for 3M Environmental, Technical and Safety Services, St. Paul, Minn. He was in Iowa City in August 2001 to visit the new facilities.

L. D. McMullen (BS 1968 in civil engineering, MS 1972 in civil and environmental engineering, PhD 1975 in environmental engineering), CEO and general manager of the Des Moines Water Works, was featured in a cover story in the July 2001 issue of Environmental Engineer.

Dr. Kwang-Kuk Koh (PhD 1968 in chemical and biochemical engineering) is CEO, Secretary and Treasurer of Chrysan Industries, Inc., Plymouth, Mich. His wife, Dr. Kook-Wha Koh (PhD 1970 in chemical and biochemical engineering) is president of the company. Chrysan Industries, Inc., is an established manufacturer of metalworking fluids and lubricants.

William A. Gearman (BS 1969 in chemical engineering) is Regulatory Programs Manager with Westinghouse Savannah River Co., Savannah River Site, Aiken, S.C. He is responsible for process engineering and safety documentation for the Defense Programs Division.

Joseph N. Meade (BS 1969 in civil engineering) is a pavement engineer with the Minnesota Department of Transportation.

1970s

Patrick J. Mulvihill (BS 1970 in chemical engineering) is a development engineer working in research and development with Central Soya Company, Fort Wayne, Ind.

Leslie D. Thede (BS 1970, MS 1971 in mechanical engineering) is professor of electrical and computer engineering at Ohio Northern University, Ada, Ohio.

Daniel B. Baumgartner (BS 1972 in mechanical engineering) is a principal engineer with NMC/Alliant Energy, Palo, Iowa.

Randall R. Beavers (BS 1972 in civil engineering, MS 1973 in civil and environmental engineering) served as chairman of the Iowa Environmental and Land Surveying Examining Board April 2001–March 2002.
O.H. “Dean” Oskvig (BS 1972 in civil engineering) is president of Power Delivery, Black & Veatch, Overland Park, Kan., a global infrastructure consultant, engineer, designer and builder. Business areas include water, energy and information.

Jerome J. Gehl (BS 1973 in mechanical engineering) is a radiologist specializing in mammography in Little Rock, Ark.

James A. Kalina (BS 1974 in mechanical engineering, MS 1976 in environmental engineering, MS 1979 in mechanical engineering) is an environmental engineer at John Deere Waterloo Works in Waterloo, Iowa.

Hiroto Tajima (MS 1974 in industrial and management engineering) left Toshiba Corporation after 36 years of service and moved to Hong Kong.

Stanley S. Dederich (BS 1976 in electrical engineering) is vice president of product development with Marconi Data Systems in Wood Dale, Ill.

David C. Elschlager (BS 1978 in electrical engineering) is superintendent of Ameren Union Electric in Keokuk, Iowa. After reading about the Mississippi Riverside Environmental Research Station (MRERS) in the last issue of Iowa Engineer, he contacted Tatsuki Nakato and offered to host a group of MRERS—Hydroscience & Engineering students for a tour of Ameren's Keokuk Power Plant and dam.

1980s

Barbara J. Sines (BS 1980 in industrial engineering), vice president and general manager of electronic operator interface business for Rockwell Automation, Milwaukee, Wis., received the Dean’s Award for Distinguished Alumni Service in recognition for setting an extraordinary example for aspiring students, dedicated faculty and staff, and fellow alumni. The award was presented at the Honors Club Dinner held Sept. 28, 2001, in Iowa City.

Pearl L. Cheng (BS 1981 in biomedical engineering) was elected in November 2001 to the Cupertino, Calif., Union School District Board.

Chii-Jau Tang (MS 1981, PhD 1987 in mechanical engineering) is an associate professor in the Department of Hydraulics at National Cheng Kung University, Taiwan.

Rachel A. McQuillen (BS 1982, MS 1984 in civil engineering) national vice president of transitioning, Society of Women Engineers (SWE), was the keynote speaker at the SWE East Central Iowa Charter Banquet held April 10, 2001, in Iowa City.

Jill M. Clough (BS 1983, MS 1985, PhD 1993 in industrial engineering) is professor and program coordinator of the Department of Industrial Engineering at the University of Wisconsin—Platteville, Wis.

Dharmvir Krishan Bhatnagar (MS 1984 in environmental engineering) is an environmental engineer with the State of Iowa Division of Soil Conservation.

Kew-Ho Lee (PhD 1984 in chemical engineering) is director and principal research scientist at the Membrane and Separation Research Center, Korea Research Institute of Chemical Technology, Taejon, Korea. His research group was selected as a national research laboratory for functional membranes and awarded a $300,000 annual grant for research of “high efficiency membranes for separation and reaction” for the next five years.

Gloria Borgenstahl (BS 1985 in biomedical engineering, PhD 1992 in biochemistry) is assistant professor of chemistry at The University of Toledo. She was recently featured in the Toledo Blade for her research on protein crystals. Space Shuttle Endeavour mission STS-108 recently carried 35 of her experiments to the international space station.

Bao J. Do (BS 1985 in electrical engineering, MS 1988 in electrical and computer engineering), president and co-founder of ABC Virtual Communications, West Des Moines, Iowa, was honored with the Dean’s Award for Distinguished Alumni Spirit of Entrepreneurship at the Honors Club Dinner held Sept. 28, 2001, in Iowa City. Do was a participant in the Sandage Entrepreneurial Speaker Series sponsored by the UI John Pappajohn Entrepreneurial Center on Nov. 12, 2001.

Curtis R. Fuller (BS 1985 in mechanical engineering) is an industrial team leader with Shihe-Hattery, Inc., Cedar Rapids, Iowa.

Jody L. Howard (BS 1986 in electrical engineering) is an engineering manager of ACERT Engine Software Programs, at Caterpillar, Peoria, Ill.

Doug Kirk (BS 1986 in electrical engineering) is principal engineer with Waltco Railway Electronics, Cedar Rapids, Iowa.

Scott D. Wallace (BS 1986 in civil engineering; MS 1989 in environmental engineering) was recently awarded U.S. Patent No. 6,200,469 for his work on wetland treatment systems. He was selected by the Water Environmental Research Foundation (WERF) to develop a manual on the feasibility, design, and operation of small-scale constructed wetland systems for wastewater treatment.

Steven M. Cash (BS 1987 in electrical engineering) was awarded two U.S. patents. He was sole inventor of the “Vehicle Rollover Sensor” (Patent No. 6,202,488) awarded March 20, 2001. Cash was a member of the team that was awarded a patent for “Method and Apparatus for Controlling an Actutable Occupant Protection Device.” (Patent No. 6,341,252) on Jan. 22, 2002.

Gregory J. Kirsch (BS 1987 in electrical engineering) is co-teaching the Advanced Patent Law class at Emory Law School, during the Spring 2002 semester. In July 2001, he was an invited speaker on current issues involving software and business method patents, at an Internet Law Roundtable event held in Chicago, Ill. The roundtable was held in conjunction with “Internet World,” a leading Internet industry trade show. The roundtable brought together leading experts on various legal topics relating to the Internet, and the proceedings were published in Internet World magazine, the largest circulation magazine devoted to Internet topics. Kirsch is a partner with Needle & Rosenberg, P.C., the Southeast’s largest intellectual property law firm. Kirsch heads the firm’s software, communication technology, and electronics patent practice, and represents numerous technology clients across the United States and overseas in patent and Intellectual Property matters, from small startups to large multinational technology companies.

Thomas A. Kratzer (MS 1987 in industrial engineering, PhD 1992 in industrial and management engineering) is Dean of the School of Business at Malone College in Canton, Ohio.

P. Russell Price (BS 1988 in mechanical engineering) is principal mechanical engineer with Stanley Consultants, Muscatine, Iowa.

John M. Wiitala (BS 1988 in mechanical engineering) is director of engineering at Continental Airlines, where he is responsible for engines, systems, structures, and avionics as they relate to the confined airworthiness of the aircraft. The current fleet is about 380 aircraft.

Ted Habte-Bagr (BS 1989 in industrial engineering) serves as an at-large representative to the UI Alumni Association Board of Directors.

Kuruvilla John (MS 1989, PhD 1996 in chemical and bio-chemical engineering) is associate professor of environmental engineering at Texas A&M University, Kingsville, Texas. Governor Rick Perry appointed him to the State of Texas Council on Environmental Technology.

Zablon Isaboke Oonje (MS 1989, PhD 1993 in civil and environmental engineering) is a lecturer with the University of Nairobi, Nairobi, Kenya.

1990s

John W. Crowley (BS 1990 in chemical engineering) is a process engineer with American Ordinance LLC, Milan Army Ammunition Plant, Milan, Tenn. He specializes in medium and heavy-caliber high explosive ordnance.

Scott D. Ferguson (BS 1990, MS 1991 in biomedical engineering) is a staff engineer in research and development at SaluMedica, Atlanta, Ga. SaluMedica is developing implantable devices based on a proprietary new biomaterial—Salubria.

Andrea L. Hoffman (BS 1990 in chemical engineering) is associate risk manager with GE Capital Aviation Services, Stamford, Conn. Hoffman is participating in GE Capital’s three-year rotational program in Risk Management. Her experience in Structural Finance and Aviation Services provided underwriting experience in energy and telecom equity investments and commercial aircraft leasing structures.
Randal R. Heizer (BS 1991 in chemical engineering) is plant manager at Amrep, Inc., Lancaster, Texas.

Matthew G. Lane (BS 1991 in industrial engineering, MS 1994 in industrial and manufacturing engineering) is director of marketing, service providers, and telecom for Hewlett Packard North America. He is responsible for marketing and sales strategy to service provider and telecommunications companies in the U.S. and Canada.

Mark A. Sornsin (BS 1991 in mechanical engineering) started a fire protection engineering firm in Fargo, N.D.

Brian L. Thorn (BS 1991 in industrial engineering) is a quality engineer with Keokuk Steel Castings, Keokuk, Iowa.

Craig Folkers (BS 1992 in biomedical engineering and chemical engineering) is a refinery superintendent in the Corn Milling Division of Cargill, Cedar Rapids, Iowa.

Thu-Hua Liu (PhD 1992 in environmental engineering) is an environmental engineer with Keokuk Steel Castings, Keokuk, Iowa.

Jennifer A. (Price) Kelly (BS 1993 in biomedical engineering) was appointed chief resident in the Department of Radiology at Henry Ford Hospital, Detroit, Mich. Kelly returned to The University of Iowa in fall 2001 for a fellowship in musculoskeletal radiology.

Matthew A. Schneider (BS 1993, MS 1996 in mechanical engineering) is a research engineer with The Ford Forschungszentrum Aachen (FFA), Aachen, Germany.

Paul L. Schultz (BS 1993 in electrical engineering) is an engineering assistant manager of supplier quality at Panasonic MCUSA, Peachtrees City, Ga.

David J. Benson (MS 1993 in civil and environmental engineering) is an environmental attorney with the U.S. Army Corps of Engineers, Kansas City, Kan. He provides legal services to the Corps’ Hazardous, Toxic and Radioactive Waste Center, civil works, and government procurement divisions.

James C. Griffin, Jr. (BS 1994 in electrical engineering), executive vice president of NEXIQ Technologies, Coralville, Iowa, was honored with the Dean’s Award for Distinguished Alumni Spirit of Entrepreneurship at the College of Engineering Honors Club Dinner held Sept. 28, 2001, in Iowa City.

D. Dean Houdeshell (BS 1994 in mechanical engineering) received his Professional Engineer license in February 2001. He is an engineering supervisor with Altec Industries, Inc., and was selected as part of a start-up team for a new plant being built in Roanoke, Va.

Kevin I. Koos (BS 1994 in mechanical engineering) is a senior engineer with Case IH, East Moline, Ill.

Hwa Liang (MS 1994 in electrical and computer engineering) is a senior engineer with CIENA, Alpharetta, Ga.

Michael Benda (BS 1995 in industrial engineering) is an industrial engineer with Rockwell Collins, Cedar Rapids, Iowa.

Hormoz Janssens (BS 1995 in mechanical engineering and business administration) is an associate with Pizzetti & Associates, San Francisco, Calif.

Chun-Ling Chuang (MS 1995 in industrial engineering) is an instructor in the Industrial Management Department at Tung-Lin Institute of Technology.

Upenda D. Belbe (PhD 1995 in industrial engineering) is senior data warehouse analyst with American Eagle Outfitters in Warrenville, Ill.

Yu-Chih Hsieh (PhD 1995 in industrial engineering) is professor of industrial management, National Huawei Institute of Technology, Taiwan.

Benjamin P. Langton (BS 1996 in mechanical engineering) is the lead designer for the Service Trucks International division of Sioux Automation Center, Inc., Sioux City, Iowa.

Brian Macek (BS 1996 in industrial engineering) is vice president of manufacturing at Reliable Machine and Manufacturing Co., Cedar Rapids, Iowa.

Douglas F. Manternach (BS 1996 in mechanical engineering) is manager of product design engineering for Indian Motorcycles, Gilroy, Calif. He was featured in a series about UI Alumni in the July 8, 2001, Iowa City Press-Citizen.

Gary Remick (BS 1996 in biomedical engineering) is enrolled in the 20/20 program at Johns Hopkins University, a part-time master’s in applied biomedical engineering. As part of the program, Remick is working with the Applied Physics Laboratory (APL) Institute for Advance Science and Technology in Medicine.

Timothy J. Bechen (BS 1997 in electrical engineering) is a patent attorney registered before the United States Patent and Trademark Office, practicing mainly patent prosecution and litigation with electrical and electromagnetic technology. He is associated with Vedder Price, Kaufman & Kammholz, Chicago, Ill. Bechen received one of the first Technological Entrepreneurship Certificates when he graduated.

April A. Privett (BS 1997 in civil engineering) is a design engineer in Large Weldments, Track-Type Tractors Division of Caterpillar, Inc., Peoria, Ill.

Jeffrey Reynolds (BS 1997 in mechanical engineering) is product engineer with John Deere Davenport Works, Davenport, Iowa.

Jeremy West (BS 1997 in civil engineering) is a structural engineer with SRF Consulting, Minneapolis, Minn.

Stephen Wilkinson-Gruber (BS 1997 in electrical engineering) designed with SiGe BiCMOS analog/mixed-signal IC’s for IBM Microelectronics’ multi-gigabit optical networking products.

Phannee Ngaosuphanvongs (MS 1997 in industrial engineering) is senior supervisor: ISO9000 coordinator for Nestlé Thailand Group, Bangkok, Thailand.

Brian A. Boeck (BS 1998 in civil engineering) is employed by Snyder & Associates, Cedar Rapids, Iowa.

Robert P. Fuhrmann (BS 1998 in industrial engineering) is a supply chain consultant with Accenture specializing in procurement and exchange.

Kathryn L. Rose Musson (BS 1998 in electrical engineering) is senior software engineer with Cenus Technologies, Draper, Utah.

Grant W. Robbins (BS 1998 in mechanical engineering) is a manufacturing team leader with the 3M Abrasives Manufacturing Organization, St. Paul, Minn.

Angelica Williams Thomas (BS 1998 in mechanical engineering) is a process support engineer with Applied Materials at the Texas Instruments account in Richardson, Texas. She works in the dielectric chemical vapor deposition group.

Franz C. Alvarez (BS 1999 in mechanical engineering) is a mechanical engineer with Shive-Hattery, Cedar Rapids, Iowa.

Sarah E. Bohmann (BS 1999 in civil engineering) is a geotechnical engineer with Qore, Inc., Duluth, Ga.

Mark R. Gillick (BS 1999 in industrial engineering) is an industrial engineer/productivity executive with NEXIQ Technologies, Coralville, Iowa.

Daniel J. Hanson (BS 1999 in electrical engineering) is a patent attorney practicing with the firm of Shumaker & Sieffert, Woodbury, Minn.

Karmen K. Bries Heim (BS 1999 in civil engineering) is a civil engineer with Stanley Consultants, Muscatine, Iowa.

Brian P. Sisco (BS 1999 in civil engineering) is employed with the Village of Bloomingdale, Bloomingdale, Ill.

Jamie J. Stahulak (BS 1999 in civil engineering) is employed with Precision Planning, Inc., Lawrensville, Ga.

Xinglin Tong (PhD 1999 in mechanical engineering) is a senior engineer with Thermoflow, Inc., Sudbury, Mass.

2000s

Michael D. Farrell, Jr. (BS 2000 in industrial engineering) published two articles on distributed computing in the Web Services Journal. He is a grad research assistant at Georgia Tech, Atlanta, Ga.

Aaron Guffey (BS 2000 in civil engineering) joined the Peace Corps and is stationed in Honduras until May 2003. He is working on community water quality projects around western Honduras.

Kristina K. Kuraitis (BS 2000 in mechanical engineering) is a vehicle research engineer with Honda R&D Americas, Dublin, Ohio.

Thomas E. Robbins (BS 2000 in mechanical engineering) is studying for his MS in mechanical engineering at Indiana University-Purdue University Indianapolis.
In Memoriam

Clarence A. Butler (BE 1925 in mechanical engineering) of Asheville, N.C., July 11, 1996.


Colonel Ford D. Loveland (BS 1930 in civil engineering) of Mesa, Ariz., July 1991.


Elwin Lohse (BS 1933 in civil engineering) of Waynesboro, Va., April 13, 2001.


Fu-De I (PhD 1938 in mechanics and hydraulics) of T'ai-pei, Taiwan, Nov. 19, 1998.


M. Melvin Sirotas (BS 1940 in chemical engineering) of Los Angeles, Calif., Oct. 15, 1999.


A. Ralph Crandall (BS 1943 in chemical engineering) of Bartlesville, Okla., January 1980.


Phillip S. Hubbard (BS 1944 in electrical engineering, MS 1949, PhD 1954 in mechanics and hydraulics) of Iowa City, Iowa, Jan. 10, 2002.


Hubbard changed our world

by Jean Florman

A few years ago, an English teacher at Iowa City West High School asked her students to write profiles of someone important. It is a measure of Philip Hubbard’s life and influence that the student who wrote about him did not need to explain to her classmates who her subject was. Despite two generations separating the teenagers from the septuagenarian, the young students were familiar with this warm, generous, intelligent, and quintessentially fair-minded Iowa humanist.

Phil Hubbard died Jan. 10 at the age of 80. His impact on the College of Engineering, The University of Iowa, the Iowa City community, and American society is immeasurable. In his own quiet way, Hubbard changed the direction of the University by leading it into a long overdue era of equality. His patience and persistence served as a role model for his colleagues and students. His legacy will be long-lived.

Hubbard arrived on campus in 1940, a young man from Des Moines who had spent a year-and-a-half earning money for college by shining shoes. He enlisted in the Army in 1943, and attended military training classes at Pennsylvania State University. At the end of the war, Hubbard returned to Iowa City and in 1946 completed a bachelor’s degree in electrical engineering, with honors. He earned an MS degree in 1949 and a PhD degree in 1954, both in mechanics and hydraulics, and was appointed professor of mechanical engineering.

During his distinguished half-century career, Hubbard served as a research engineer in the Iowa Institute of Hydraulic Research (now IIHR—Hydroscience & Engineering), as a professor of mechanical engineering, and—for 23 years—as vice president for student services and dean of academic affairs. His appointment as an IIHR research scientist in 1947 made history because he was the first African-American to be appointed to a faculty position at Iowa.

Last October, in recognition of Hubbard’s lifetime of dedication to helping others, the Iowa City Human Rights Commission bestowed on him its first Lifetime Achievement Award.

"Phil’s wise counsel and good example have helped see me and countless others through many significant decisions and events, and his legacy of compassion and principle will live with The University of Iowa forever," said University of Iowa President Mary Sue Coleman, commenting on Hubbard’s career.

In addition to his considerable academic achievements, Hubbard helped create the University’s first human rights code, launched Opportunity at Iowa (the University’s office to create and maintain diversity on campus), wrote two books, and championed the arts. His quiet wisdom continues to resonate in the lives of his colleagues, family, former students, and many friends.

While most people remember Hubbard for his accomplishments as a dean and vice president, his son’s most vivid memories are of his years as an engineer, working in the Hydraulics Lab, where Hubbard would take his children on Saturday mornings.

“We all became familiar with the flumes and wind tunnels, the river models in the lab annex, and also with electrical components of all kinds. He gave us the run of his workshop, which was a testament to his willingness to let people have free reign to learn,” said Peter Hubbard.

“I remember my father as being almost unfailingly patient and polite, very much the same person in private that he was in public. He was happiest when he was busy, and I am grateful that even in retirement his many friends and admirers were able to use his talents and energies,” Peter added.

A memorial to honor Hubbard has been established by the family and friends of Phil Hubbard. Contributions may be sent to the University of Iowa Foundation Philip G. Hubbard Memorial Fund.
Holly, Carmichael appointed associate deans of engineering

Two respected faculty members of The University of Iowa College of Engineering were appointed associate deans of engineering, effective Jan. 1.

Forrest M. Holly, Jr., professor of civil and environmental engineering and research engineer at IIHR—Hydroscience & Engineering, is associate dean for academic programs. Gregory R. Carmichael, Karl Kammermeyer Professor of Chemical and Biochemical Engineering and co-director of the Center for Global and Regional Environmental Research, is associate dean for graduate studies and research.

Holly replaces Gary Fischer, associate professor of mechanical and industrial engineering, who has returned to teaching and research. Holly previously served as interim associate dean for academic programs in 1999 and 2000. He currently is completing a second consecutive two-year term as president of the International Association of Hydraulic Engineering and Research. Holly received his doctorate from Colorado State University in 1975.

Carmichael replaces A. Jacob Odgaard, professor of civil and environmental engineering and researcher at IIHR—Hydroscience & Engineering, who has returned to teaching and research.

Carmichael, who holds a secondary appointment in the Department of Civil and Environmental Engineering, is a past chair of the Department of Chemical and Biochemical Engineering. He earned his doctorate in chemical engineering from the University of Kentucky in 1979.

Pennies in a pond

Have you ever thrown a rock into a lake and watched the ripples flow outward from the point of contact? Private philanthropy has a similar phenomenon here at the College of Engineering. Every coin thrown into the College’s pond has a ripple effect on all aspects of the college: touching its students, faculty, staff, and programs. It is all of these coins in the pond that allow the College to advance its mission of engineering education. And now, thanks to private benefactors and the State of Iowa, the College has a new building in which to continue its mission.

Last fall, the College dedicated the new Seamans Center for the Engineering Arts and Sciences (see pages 10–11). This remarkable renovation and building addition has dramatically enhanced the student-learning environment and has lifted the spirit of the College’s students, faculty, and staff.

On this day, we honored over 700 alumni, friends, and corporations who made gifts in support of this project. At the dedication ceremony, Gary and Camille Seamans spoke of their leadership gift to this project. They commented that their philanthropy was a way to thank the College for its role in shaping Gary’s career success, and perhaps more importantly a way for him to honor his parents for their love and guidance.

More recently, other coins have created ripples among our leading faculty, thanks to private support from alumni. For example, Jerry Schnoor, professor of civil and environmental engineering, was appointed the Allen S. Henry Chair of Engineering, through an endowment from Mr. Henry (MS 1968, PhD 1971 in mechanics and hydraulics). And Witold Krajewski, professor of civil and environmental engineering (see pages 4–6) is now the Joseph and Rose Summers Professor of Water Resources Engineering. The Professorship was established in August 2001 through a gift to the University of Iowa Foundation from Mr. Summers (BS 1948 in civil engineering). Based in the Department of Civil and Environmental Engineering, the Professorship will be converted to a fully endowed Chair through a commitment in Mr. Summers’ estate.

The personalities and stories outlined in this edition of Iowa Engineer lend credence to the forward-thinking, “can do” spirit of Iowa engineers, a spirit worthy of your continuing investment. And, thanks to the coins you have generously tossed in the College’s pond, they will be benefiting from the ripples of private philanthropy for generations to come.

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Philip Hubbard shows students his invention, the hot-wire anemometer, built through his company, Hubbard Instrument Company. The company specialized in making measurement devices. This picture was taken sometime in the mid-50s.

Hubbard died in January. His impact on American society is remembered on page 20.