Back hurt? New Iowa center takes a look at ailing spines

News From
The University of Iowa
College of Engineering
Spring 1995
As we complete another productive academic year at the College of Engineering, I am delighted to share with you our recent progress and plans for the future. This issue of *Iowa Engineer* brings news reflecting the college’s steady growth in importance to The University of Iowa’s mission.

First, our academic programs are stronger than ever, a fact recognized by *U.S. News & World Report* in its 1995 ranking of U.S. engineering schools (March 20 issue). In graduate education, the magazine rated the college’s overall program among the top 30 offered by public engineering schools nationwide—for the second year in a row. The college moved up from its rank of 45th last year to 42nd this year among all schools, both public and private, in the country.

We are proud to receive such recognition. It is evidence that our moderate-sized school with its close faculty-student interaction offers Iowa engineering students Big Ten opportunities while providing them with the individual attention usually reserved for smaller specialized colleges.

Student achievement continues to be a college hallmark. One student standout this year was Jaymie Lynn Braun, a senior in electrical engineering from Dubuque, Iowa. Jaymie was one of three undergraduate students across the University to receive a prestigious Hancher-Finkbine Medallion. This top University honor, which recognizes outstanding leadership, learning, and loyalty, has been bestowed upon engineering students for 10 of the past 11 years.

Our dedicated faculty members are superb educators: One of every five has been recognized for excellence in teaching—the highest share among all of the University’s 10 colleges. Engineering also boasts a higher percentage of undergraduate courses taught by regular college faculty members than any other college at the University can claim. Our faculty’s commitment to undergraduate education has produced innovative programs, such as Professor Ted Smith’s collaboration with John Deere Dubuque Works (see page 14), which pits senior design students’ ingenuity against problems the Dubuque plant needs to solve.

Our renowned Center for Computer-Aided Design, Iowa Driving Simulator, and Iowa Institute of Hydraulic Research—all well-established centers for specialized research—have been joined this year by a major new research initiative, the Iowa Spine Research Center (see page 6). The new center is a unique facility for the interdisciplinary study of spinal dysfunction, including lower back pain, which afflicts eight of every ten Americans.

The college recently published its first-ever engineering research report, *Advance* (see page 10). The report highlights a broad range of projects conducted by our distinguished faculty members under the sponsorship of government and industry—from design and testing of spinal implants to development of vehicle simulators for studies of human factors—illustrating the wide spectrum of resources available in the college.

In March we had the pleasure of having Cable News Network (CNN) on campus to tape news reports on three of our groundbreaking research initiatives. The reports were broadcast to the network’s worldwide audience this spring on the weekly “Future Watch” program.

We were a major partner this year in establishing the University’s Entrepreneurial Management Institute. It combines resources of the Colleges of Engineering, Business Administration, and Medicine to offer a program designed to open engineering students’ eyes and minds to the economic value of their profession and to help prepare them for the major changes occurring in business and industry. You will learn more about this initiative in the fall *Iowa Engineer*.

I am especially delighted to announce that, after months and even years of hard work and enormous patience, planning for major modernization of the Engineering Building has been officially approved by the University. Planning funds will be used to map the needs, requirements, and designs for state-funded renovation of the existing building, along with an addition funded from other sources. Much of the summer and fall will be devoted to beginning this effort, and we plan to share details with you in coming issues of *Iowa Engineer*.

I hope you enjoy reading about the College of Engineering and our plans for the future. I encourage you to share your thoughts, ideas, and accomplishments with us by letter, fax, or telephone. You can even talk to us on the net—our E-mail address is printed on the adjacent Table of Contents page.

When you return to campus, please stop by for a visit. I know you will like what you see: a college building a strong foundation to prepare graduates for challenging and rewarding careers—definitely a source of great pride among all alumni.

Richard K. Miller
Dean, College of Engineering
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Perfecting a formula for business success just might become routine for David Buchanan. Buchanan has refined his approach through three decades of launching and rescuing companies—companies that quickly experience phenomenal growth. But his formula for success doesn’t mention profit/earning ratios, return on capital, or market value trends. For Buchanan, the cornerstone of any business is as much philosophical as financial, and he articulates that philosophy in three words: fairness, empathy, and communication.

Buchanan, who received his B.S. (’58) and M.S. (’62) in electrical engineering from The University of Iowa, has been chair and chief executive officer of Three-Five Systems Inc. since 1987.

Based in Tempe, Ariz., Three-Five designs and manufactures light-emitting diode and liquid crystal display (LCD) components for consumer electronic products, mail processing equipment, and optical scanners. The company, which has captured about 20 percent of the world market in electronic display components for cellular telephones, recently moved into a new $22-million headquarters plant that will be the largest LCD-producing facility in North America.

Three-Five also is one of the fastest growing companies on the New York Stock Exchange. The Wall Street Journal recently described the company’s “seemingly endless growth,” pointing to quarterly net income that tripled last year and an annual growth rate of 28 percent.

“I enjoy ‘growing’ companies and seeing the people who work in them grow,” Buchanan says. “Sometimes I think I’m really just a frustrated gardener.”

Three-Five certainly has flourished under Buchanan’s careful tending. Nearly bankrupt in 1987, the company lured Buchanan from retirement—his second—to help rebuild the company that he and other venture capitalists had helped launch in 1986.

“When I came into this company it was full of people of broken spirit,” Buchanan says. “We reorganized the company, set tough but realistic standards, and began to move forward.”

When Buchanan took control, Three-Five’s manufacturing plant in Manila, Philippines, employed 150. The company headquarters maintained a skeleton crew of 16. Buchanan was the only engineer.

“How can you say you’re a technology-producing company with only one headquarters engineer?” he asks incredulously.

Today Three-Five employs 1,400 people in Manila, 300 of whom are engineers. Last year the Manila plant hired and trained 600 new employees and still maintained a profit. Once the lone engineer at the company’s home base, Buchanan now has been joined by 100 other engineers plus an additional 200 manufacturing line, support, and management personnel.

His success has earned recent kudos for the company from Fortune, The New York Times, and Business Week. But Buchanan himself doesn’t seem surprised, perhaps because this is merely the latest in a long line of achievements. Although Buchanan grew up in Iowa, his family moved frequently so that his father could pursue a career in chemistry.

“It’s difficult for children to change schools,” Buchanan says, “and I learned young—especially in some tough rural schools—that if I could spot and stand up to the class bully on my first day, I wouldn’t have any problems from then on.”

Perhaps because of his childhood experiences, Buchanan has no patience with traditional, rigid, top-down managers.

“I’m always on the lookout for dictators,” he says, “and I won’t tolerate office politics. If the person at the top pits one person against

He Grows Success

Entrepreneur’s fledgling companies thrive on sure-fire formula
another, a company will never succeed as a team. When you draw battle lines, you diminish opportunities for everyone.”

Buchanan encourages the leaders in his company to be tolerant of ideas and individuality. He often walks the production line, listening to line personnel and supervisors who voice their ideas for improved efficiency, safety, and workplace standards.

He cringes at traditional labor/management terminology. “To say ‘labor and management’ assumes division,” Buchanan says. “And once you impute something, it’s bound to appear.”

He adds that such terminology implies that managers don’t work. “But if managers are doing their job right, they are laboring hard,” he says, “and the best laborers effectively manage their time and skills.”

Rather than draw lines between employees, Buchanan works to make his company a place of opportunity and possibility. “Working here should be a chance for an individual to grow,” he says. “Our human resources department works hard not only to find bright, honest, committed individuals but also to discover how far and where employees want to go within the company.”

The career path of Three-Five employee Liz Sharp underscores the effectiveness of Buchanan’s philosophy. When Buchanan arrived as Three-Five’s new CEO, he recalls, the company was in shambles.

“There was a young woman in the office who basically helped me sort things out,” he says. “Liz hadn’t finished college, but she was bright and willing to work hard. After we got Three-Five rolling, the company sponsored her education, including an M.B.A. degree.”

Sharp graduated first in her business school class and now directs human resources and recruitment for Three-Five.

Buchanan likewise was fortunate to have a mentor who helped him set a course for his life. As a young engineering student at Iowa, he provided temporary lab assistance to a young physics professor, James Van Allen, who eventually would earn renown for his discovery of the earth’s magnetic fields.

Van Allen was known as a compassionate, dedicated teacher. “He was able to relate to anyone, student or faculty member,” Buchanan says. “I had been considering applying for medical school, but I couldn’t get past the idea of gross anatomy.”

One day Buchanan confessed to Van Allen that he didn’t really think he wanted to be a doctor. Van Allen said, “Be an engineer.”

“I said, ‘Do you really think I could?’” Buchanan recalls.

Van Allen's response—“Of course”—and a deep-seated love of mathematics were enough to convince Buchanan to change his major. Today he claims, “Humanity was much better off once I decided to be responsible for electronics rather than bodies.”

After earning his bachelor’s degree, Buchanan worked for General Dynamics Corporation, where he was an engineer on the Atlas Missile project and in the autopilot design group.

“It was fantastic,” he says. “I was like a kid playing with rockets, only these were real rockets.”

During the next six years he tackled a series of engineering challenges at Bendix (where he worked on Project Mercury), Sperry Flight, and General Electric. He also returned to Iowa for his master’s degree.

When General Electric moved its computer peripherals division to Oklahoma City, Buchanan decided to remain in Phoenix.

“With our meager savings,” he says, “I hired GE’s four best engineers and started my own company”—Peripherals, Inc., which designed and produced disc drive testing equipment. From Buchanan’s original funds and a small infusion of venture capital, the company grew until it was sold three years later to Wabash Magnetics, Inc. for $5.4 million.

“I retired for a while,” Buchanan says, “and played a lot of golf.”

Then he started Talos Systems, Inc., a producer of 2-D digitizers for the computer graphics industry, which also experienced explosive growth. Today the company is owned by Lockheed and is the largest supplier of digitizers in the world.

Of his second retirement Buchanan says, “I played a lot of golf.” Besides honing his game to a three handicap during his “leisure years,” Buchanan also provided venture capital for a number of start-up and young high-tech companies. By the time Three-Five collapsed in 1987, the 55-year-old entrepreneur was ready to tackle the challenge of salvaging the promising company.

“I think there is something in each of us that drives us in a particular direction,” Buchanan says, “a calling, if you will. I think I’m pretty good at the technological, but I’m really good at—and more interested in—dealing with the big picture.”

He also remains devoted to leveling hierarchies and insists that anyone who expects fairness and respect must reciprocate.

“If I can’t relate to your problems,” he says, “I can’t be an effective manager. Your problems may affect someone else in the company, and that compromises everyone’s well-being.”

Under Buchanan’s watch, Three-Five has developed a reputation for hiring young people with dedication and talent. The CEO—who fantasizes about the future golf games of his third retirement—readily offers advice to engineering students soon to enter the corporate world.

“Every engineering student should take a real—a challenging—course in economics or accounting,” Buchanan says. “And if that course doesn’t instill an understanding and appreciation for capital market systems, go out and find another one. I think engineers should be able to speak well in a public forum and should gain as broad an educational background as possible.

“Beyond that,” he adds, “I would say, ‘Do whatever your heart tells you. Give yourself all the tools possible so that when you discover what you want from life, you’ll be in a position to accomplish it.’”

“Every company we sell to becomes our partner. We want our customers to be the most competitive in the world, and to that end on every paycheck envelope is printed: ‘Compliments of your customer.’”
Iowa’s leader in spine research

The yoke may have descended onto his shoulders, but Malcolm Pope is unlikely to suffer back pain. Since arriving in Iowa City last summer to inaugurate The University of Iowa Spine Research Center, the expert in lumbar spine biomechanics has been actively engaged in recruiting personnel and shaping the future of the new research hub.

After earning his undergraduate degree in mechanical engineering from Southall College, in London, Pope came to the United States from his native England in 1966 to develop gyroscopic instruments for the Apollo 13 moon lander.

“I worked on a variety of things while I was there,” Pope says, “but the people adjacent to me were doing human factors research. I soon became more interested in what they were doing than in what I was doing.”

Pope earned a master’s degree in mechanical engineering from the University of Bridgeport in Connecticut and a Ph.D. in biomechanics from the University of Vermont, where he taught mechanical engineering and orthopaedics for 22 years before coming to The University of Iowa. During that tenure he also completed a doctorate of medical science degree from Göteborg University in Sweden.

The renowned researcher, whose own work has focused on effects of whole-body vibration on the lumbar spine, has won many awards, including Fellow of the American Society of Mechanical Engineers, American Arthroscopy Association O’Connor Award, Fellow of the American Institute of Medical and Biomedical Engineering, and the American Association of Orthopaedic Surgeons’ Kappa Delta Award.

Most recently he was elected a fellow of the Royal Society of Medicine, in London. Appointment to the prestigious society, a revered five-century-old British institution, recognizes Pope’s lifelong contributions to diagnosis, treatment, and prevention of low back pain.

Pope says he was very pleased when he was approached by Spine Center co-directors Vijay Goel and James Weinstein to become the first director. The three researchers had collaborated on a number of projects, and Goel refers to Pope as his mentor.

In addition to conducting research and fulfilling an array of administrative duties, Pope teaches a graduate course in clinical biomechanics of the spine.

Although the new position necessarily imposes considerable responsibility, Pope still manages to balance time with his family, on the tennis court, in the stands cheering Iowa sports teams, and in his home shop designing and building furniture.

According to Egyptian clay tablets from the third millennium B.C., building a pyramid can be hazardous to your health. Found near Sakkara, the tablets provide evidence that at least one workman suffered serious back injury during construction of a mastaba pyramid, a rectangular brick structure erected atop the burial chambers of important Egyptians.

Although construction techniques have improved over the last five millennia, millions of people around the world still suffer low back pain with little relief in sight. Researchers at the Iowa Spine Research Center are determined to find out why.

The center, established last October, is a unique effort by The University of Iowa Colleges of Engineering and Medicine to foster interdisciplinary research on prevention, diagnosis, and treatment of low back pain as well as mathematical modeling and testing of prosthetic devices used to help speed recovery.

“We have tremendous breadth of expertise to draw on at this university,” says Malcolm Pope, professor of biomedical engineering and of orthopaedic surgery, and director of the new center. In addition to forging ties between researchers in the Colleges of Engineering and Medicine, Pope is developing a team of international experts in mechanical engineering, vehicle simulation, preventive medicine, nursing, economics, pharmacology, ergonomics, physical therapy, and law.

“Only one other group in the world can approach the kind and depth of research we’ll be conducting,” he says. “And the Iowa center is unique in that it is deeply rooted in a college of engineering.”

Those roots reach back some 13 years to Vijay K. Goel’s arrival at the college. Now an associate director of the center and professor and chair of biomedical engineering, Goel has devoted his research to testing relative strengths of various materials used to produce spinal implants.

“When a spine becomes unstable, a surgeon needs to know benefits of certain kinds of implants,” Goel says. “We model and test a range of materials—from more to less rigid—to determine what conditions of load displacement may cause them to fail.”

In the process of developing those materials tests, Goel has worked closely with James N. Weinstein, internationally renowned UI surgeon and professor of orthopaedic surgery. Like Goel, Weinstein is an associate director of the new spine center.

“Since he arrived in 1983 and established a spine diagnostic and treatment center at The University of Iowa Hospitals and Clinics, Jim and I have been collaborating very closely and successfully,” Goel says. “When I was appointed chair of the biomedical engineering
emotional stress is incalculable. Over the last two decades the number of workers’ compensation claims has skyrocketed 2,700 percent, an increase Pope attributes largely to a growing number of back-related injuries.

According to Pope, a variety of factors have contributed to the increase in lumbar injury during the past century. "On the one hand, we are much more sedentary and out of shape than we once were," he says. "In addition, we put many more demands on our backs. We sit at desks for long periods of time, or work in heavy industry, or get bounced around for hours in vehicles whose low-frequency vibration directly affects the spine. It’s a matter of diminished tissue strength confronted by increased stress."

David Wilder, senior scientist at the spine center, agrees. Wilder has spent 14 years researching whole-body vibration and its effects on the spine. He is investigating how the everyday act of sitting, which can be extremely stressful for the back, may become a health hazard for people who operate heavy equipment or drive long-haul truck routes.

"The stress is exacerbated," he says, "when the spine is subjected to repetitive vibration or jolts. We’ve recently been contacted by OSHA (the Occupational Health and Safety Administration) regarding how companies can better deal with this critical safety issue."

Wilder, who also holds an appointment as visiting associate professor of biomedical engineering, adds that the rule of thumb for drivers subjected to whole-body vibration is to stop hourly and walk for a few minutes before bending or lifting anything.

Goel remarks that specific causes of lumbar pain may include obesity, badly designed furniture, and even disliking your boss. "Over the last decade, we have come to recognize the wide-ranging medical, social, and even psychosocial factors that feed into this problem," Goel says. "One of the things we’ve learned over the years," he continues, "is that once you suffer from low back pain, it’s unlikely to go away. Our research says very clearly: Take care of your back. We will continue to work to help people prevent injury, to encourage those with pain to do the proper exercises and not aggravate their injury, and to teach them how to live more comfortably with their pain."

Research at the center will focus on discovering what happens to the muscles around the spine when they are presented with an unanticipated load—"the kind of load," Pope says, "that might be experienced by a nurse lifting a patient who shifts his weight, or by a cook carrying a large kettle of stew that suddenly sloshes in the pot."

"Our hypothesis," Wilder says, "is that people respond differently to loads they don’t expect than to those they do. Response to unexpected loads leads to muscle overcompensation, which subjects the discs to extra loads and risks."

Wilder, who accompanied Pope from the University of Vermont to Iowa last July, says the back presents unique challenges for researchers.

"The spine is a complex mechanical system," he says. "Because it presents 288 degrees of freedom in any given posture, it has proven very difficult to understand from a mechanical perspective."

(continued on page 8)
While the Iowa engineers mathematically model and test the spine, spinal response times, and spine implants, Iowa physicians test normal subjects and those with acute and chronic lumbar pain. At present, spine center research is conducted in two Engineering Building laboratories and at the UI Hospitals and Clinics. Sometime next year, the center will move into facilities at University Hospitals' new Pomerantz Pavilion.

While grant applications from the National Institutes of Health are pending, support for the center is being provided primarily by private funds. Danek Corporation, a Memphis-based company that produces spine implant devices, has committed $2 million in grants over the next five years.

Spine center engineers will advise the company as it designs and creates prototypes of a new ceramic disc. The researchers will test the implants for fatigue resistance and mobility and then implant them in appropriate animal models. Before clinical trials of the newly developed devices in humans can begin, up to five years of research design and testing will be necessary.

"It's a very lengthy, expensive process," Pope says. "We are already fortunate to have such excellent funding, including a $100,000 grant from a Swiss company, A.O. Foundation. The College of Engineering has been fantastic, providing not only much moral support but also start-up funds, lab space, a professorship for me, and support for David Wilder."

The center's staff currently includes five faculty members, three postdoctoral research fellows, and 10 graduate students—and counting.

"As the center gets established, Dr. Pope will increasingly recruit new faculty members and students," Goel says. "In addition, one of our missions is to train surgeons and scholars from other countries. As leaders in this field, we must develop and maintain ties with other experts around the world."

The English-born Pope agrees that the center's strong international flavor is a source of pride and strength. He notes at least five graduate research fellows who have journeyed to Iowa City from Sweden, Bulgaria, Switzerland, Korea, and Finland.

"It just makes sense to have a collaborative effort among experts from many countries in many disciplines," Pope says. "Strong collaboration between the medical and engineering colleges is a major distinguishing feature of this center, something that draws scholars and researchers from around the world."

But the center also will look closer to home for expertise, working with the Iowa Driving Simulator and the National Advanced Driving Simulator, due to be built in the late 1990s at the Oakdale Research Park. Center researchers already have consulted Neural Applications, an Oakdale-based supplier of neural network and process control technology, and hope to establish ties with Iowa companies that design and produce vehicle seats.

Pope anticipates the possibility of additional directions for the center, including back problems of the elderly and a collaborative effort dealing with sport-related stress and injuries.

"Whatever the direction of our research," Pope says, "it will continue to shed light on how low back injuries occur and the kinds of therapeutic intervention that will prevent them."

"It is," Goel says, "an exciting goal, one that this center is uniquely equipped to tackle."
Living in the shadow of fame
What began as a scientific history has become a rare family portrait

In a small garret room overlooking the Iowa River, Connie Mutel has spent the last four years looking into the soul of a family. In the course of writing a scientific biography, Mutel has seen not only family documents and photographs but also the triumphs and heartaches to which every family is vulnerable. Even the family named Einstein.

As a scientific historian at the Iowa Institute of Hydraulics Research, Mutel is researching the family of Hans Albert Einstein, a hydraulician and the first son of Albert Einstein. Her work is part of a project begun in 1985 by the late John F. Kennedy, professor of civil and environmental engineering and interim director of the hydraulics institute.

"Jack [Kennedy] was always interested in history and in the history of hydraulics," Mutel says. "In 1985, while on sabbatical in Zurich, he decided to examine the history of 20th-century hydraulics through writings about the lives of the principal players. He began gathering data from well-known hydraulicists, their spouses, and their children."

Although Hans Albert Einstein had died in 1973, his second wife, Elizabeth, sent Kennedy a copy of her own manuscript about her husband's life. The treatise, however, focused more on her fascination with her famous father-in-law, Albert Einstein.

Mutel, who has a master's degree in plant ecology and is the author of *Fragile Giants*, a highly acclaimed work about Iowa's Loess Hills, decided on a more dispassionate approach. Kennedy agreed.

When Kennedy died in 1991, Robert Ettema took over work on the scientific portions of the text. While Mutel interviewed family members and mined documents, Ettema, professor of civil and environmental engineering and interim director of the institute after Kennedy's death, studied the hydraulic behavior of European and American rivers that define the landscapes in which Hans Albert Einstein lived and worked. The text weaves Ettema's analysis of these riverine environments through the chronology of Hans Albert's life.

"The story of Hans Albert's professional work in alluvial rivers and sediment transport provides a backdrop—the 'technical narrative,' if you will—for the manuscript," Ettema says. "I discuss his contributions and their impact, and how he was regarded by his colleagues."

In the 1930s and '40s, Hans Albert developed a theory of sediment transport and devised the first comprehensive formulas to determine river-bed sediment movement rates. Fortuitously, Mutel says that although Hans Albert made certain contributions to his field, his life probably would not merit such attention had his name not been Einstein.

Yet the work is more than a history of a famous family of science. Ettema and Mutel say it will appeal to many different readers, including those interested in environmental studies or the history of hydraulics and engineering.

"Even more than a biography of the Einstein family," Mutel says, "the manuscript opens a window on how humans interact with one important segment of the natural world. It also provides some insight into the more general problem of how children of famous parents struggle with their extraordinary lives."

Like many such children, Hans Albert wrestled both personal and professional demons. His father separated from his mother when Hans Albert was 10 years old. Although Albert was renowned for his charm and his brilliant theories, he was a difficult father. And several family members suffered mental or emotional disorders, including Hans Albert's younger brother, who was institutionalized for much of his adult life.

Because many Einstein family members were estranged from each other, Mutel sometimes found herself caught in a current of dissension. But after working hard to win their confidence, she ultimately gained access to unpublished information.

"In some cases, we had to pursue delicate legal negotiations with family members," she says. "University legal counsel Mark Schantz, his predecessor Julia Mears, and law professor Pat Acton provided invaluable service."

While gaining access to family information became a story virtually unto itself, Hans Albert's second wife, Elizabeth, eventually did extend complete permission to the University to use any information and documents she volunteered. Mutel says, adding that Elizabeth provided one of the more remarkable "finds" of the project: a collection of letters between the elder Einstein and his son written between 1937 and Albert's death in 1955. It is the only known trove of correspondence between the father and son.

Albert's secretary is thought to have destroyed much of the family correspondence after the elder Einstein's death, Mutel says. Existing correspondence remains in private hands and in the vaults of institutions such as Hebrew University, which holds the copyright to everything Albert wrote.

"I'm very proud of the fact that we were able to establish good working relationships with all branches of the family," Mutel says. "As a result of this goodwill, we also were able to obtain publication rights from them."

Ettema adds that the biography will fill a void in the popular literature on the history of water use.

"Although there has been much written about the use and misuse of rivers in the past," Ettema says, "the missing element in most historical treatments is a discussion of what was and wasn't understood about rivers at the time. For me, Hans Albert Einstein—the main character of this text—is the perfect vehicle for discussing the larger issues of how rivers work and how people have behaved toward rivers through time."

The institute plans eventually to deposit all of the project materials in archives, where they will be accessible to scholars.

Elizabeth Einstein died in January 1995.

Robert Ettema and Connie Mutel
Alumni business leaders gather in advisory group

Last November several distinguished Iowa graduates gathered in Iowa City for the inaugural meeting of the College of Engineering Development Council. Chaired by alumnus Gary Seamans, the council is charged with providing ongoing advice and counsel to the college.

"We are honored to have such a distinguished group of College of Engineering alumni devote their expertise to identifying and developing fundraising goals, as well as to providing an extraordinary example of volunteer leadership," Miller said.

Dean Richard K. Miller said council members will play a crucial role in development efforts for the college.

"We will be working very closely with the council to establish productive communication between the college and its alumni and friends, to benefit from the members' advice on strategic plans and programs, and to help define and meet growing financial needs of the college. We are fortunate to be able to draw upon their wisdom and enthusiasm."

Rich Wretman, director of development for the college, agreed.

"The council is made up of very impressive alumni," he said. "We appreciate their help and anticipate that they will assist in a variety of fund-raising activities in the years to come. Their input will be valuable to the College of Engineering's future."

Development Council members (left to right): Back row, Bill Van Sant, Darrell Wyrick, Phil Francis, Ron Dunmire, with Richard K. Miller, dean of the College of Engineering; front row, Cliff Smith, Gary Seamans (chair), and Tom Hanson. Sam Kaplan and Randall Meyer are not pictured.

Ron Dunmire (B.S.M.E. '61)
President and CEO (ret.) of Cedarapids, Inc., manufacturer of heavy equipment for the road paving and rock crushing industry.

Phil Francis (M.S. '60, Ph.D. '65)
Client partner, AT&T Solutions.

Tom Hanson (B.S.M.E. '60)
Managing partner of Fleming Hanson Sales, a manufacturer's representative for air conditioning products.

Sam Kaplan (B.S.M.E. '47)
President of U.S. Care, Inc., a health care company.

Randall Meyer (B.S.M.E. '48)
President (ret.) of Exxon Corp.; member of the UI Foundation Board of Directors.

Gary Seamans (B.S.E.E. '74)
Chair and CEO of Westell, Inc., and of Electronic Information Technologies; winner (1977) of a UI Distinguished Young Alumni Award.

Cliff Smith (B.S.C.E. '54)
President of the GE Foundation; winner (1992) of the UI Distinguished Alumni Award for Achievement; member of the UI Foundation Board of Directors.

Bill Van Sant (M.S. '67)
Chair, president, and CEO of Lukens, Inc., a major specialty steel manufacturer.

Darrell Wyrick (B.S.Ch.E. '56, M.S. '57)
President of the UI Foundation; member of the UI Alumni Association board of directors and the University of Iowa Research Foundation; winner (1992) of the UI Distinguished Alumni Award for Service.

Research hits TV...

CNN (Cable News Network) science editor Kate King visited the Iowa campus in March to tape news segments on three College of Engineering research projects. Associate Dean Jacob Odgaard told King about his work with salmon diversion systems for rivers of the Pacific Northwest, and Professor Jon Kuhl and research scientist Ginger Watson Papeis escorted the news team on a tour of the Iowa Driving Simulator and described several of the projects under way at the sophisticated facility. Then Professors Jerald Schnoor and Louis Licht led the news crew on a trip to Amana to view a grove of poplar trees—the object of the researchers' study of how the trees detoxify soil.

The segments were shown several times on the worldwide cable news network in March and June.

...and goes to print

The College of Engineering is spreading the word about research and graduate-level education at the college with a new publication. Advance, a 36-page color brochure, showcases the hundreds of projects that the college's talented and innovative faculty currently direct—resources that may attract business, governmental, educational, and other agencies to join in partnerships with the college.

For an insider's view of the college's academic and economic success story, request a copy of Advance by contacting the Dean's Office at the College of Engineering.
The honor clubs: Who they are, how they help

Contributions make the difference for a wide range of programs and projects

Over the past few years, I've had the pleasure of meeting many College of Engineering alumni throughout Iowa and across the country, and I look forward to meeting even more of you in the months to come. Now, with the expanded format of Iowa Engineer, I'm happy to have the opportunity to keep all of you up to date on the college's development activities and how important your help is in achieving them.

In this inaugural column, I'd like to highlight the College of Engineering recognition honor clubs. As you may know, in 1991 the college established the clubs to recognize its most generous annual contributors to college-wide funds (i.e., contributions not directed to specific departments). Generous contributors are recognized at the following levels: MECCA ($250-$499), Transit ($500-$999), and Dean's Club ($1,000 or more). Last year, 137 alumni and friends contributed $209,784 to college-wide funds at the honor club levels—a 23 percent increase over the 1993 total of $171,159. This increase is even more dramatic when compared with 1990, the year before the honor clubs were established, when the total was $133,297.

Gifts to funds such as the Engineering Development Fund are extremely important because they give the dean flexibility to meet challenges and opportunities as they arise. Private contributions provide discretionary funds to accomplish things in the college that are not covered by state appropriations.

For instance, last year private support allowed the college to provide a large number of scholarships for deserving engineering students. We were able to recruit new faculty members in a highly competitive arena and to meet expenses associated with commencement exercises because of alumni support. Most recently, we provided a grant to Tau Beta Phi to help bring a distinguished speaker to the college to lecture to engineering students. The expanded coverage in Iowa Engineer has been supported through private gifts as well.

As you can see, private funds have a definite impact on the quality of the college, and we deeply appreciate alumni who have chosen to support us in this manner. Individuals who have qualified for the above-mentioned recognition clubs through 1994 gifts are listed in an honor roll on page 12. We have made great progress recently in the area of development, and we are constantly striving to increase private support for the college. On page 10 you can read about the creation of the development council to assist the college in these efforts.

I continue to be impressed with the alumni I have met, especially their loyalty and interest in supporting Dean Rick Miller and the college's great standard for excellence. I look forward to working with you in the future to support your College of Engineering.

Rich Wretman
Director of Development
College of Engineering

Excellence fund renewed

Caterpillar Inc., of Peoria, Ill., has renewed the Caterpillar Excellence Fund at The University of Iowa by awarding a $28,000 grant to the College of Engineering through the University of Iowa Foundation. The grant was made for academic year 1995-96, the program's fourth consecutive year at the UI.

Each year the fund supports four Caterpillar student scholars from electrical, industrial, and mechanical engineering, and the Caterpillar Engineering Colloquium Series, which brings prominent engineers to campus for day-long seminars. It also provides computer equipment to help undergraduate students do on-line searches of engineering patent literature.

Caterpillar, the world's leading manufacturer of earth-moving and construction equipment, has hired more than three dozen University of Iowa engineering graduates since 1985 and has been a partner in NSF-sponsored cooperative research with the college. UI faculty members and Caterpillar staff members also collaborate on research conducted at the company's corporate facilities.

Gift sets scholarship

It was the occasion of a lifetime that brought Robert Pierce (second from right, above) and Edie Williams (third from right) to Iowa City last August. The two traveled from their homes in Hawaii and Maine, respectively, to present a gift to the College of Engineering from the estate of their uncle, engineering alumnus R. Milton Pierce (B.S.Ch.E. '33).

University of Iowa President Hunter Rawlings III accepted a check representing Pierce's gift of $522,000 for the college. College of Engineering Dean Richard K. Miller also participated.

Pierce, a long-time employee of Shell Oil Company and a Los Angeles resident, earmarked part of the gift for a scholarship, to be named the R. Milton Pierce Scholarship Fund. The remainder of the gift was designated for use at the discretion of the dean of the College of Engineering.
This honor roll gratefully acknowledges University of Iowa engineering alumni whose generous 1994 contributions qualified them for membership in the College of Engineering honor clubs, which recognize high-level annual contributions to the Engineering Development Fund and other college-wide funds. This listing shows graduates who qualified for membership in the Dean's Club (annual contributions of $1,000 or more), the Transit Club (annual contributions of $500-$999), or the MECCA Club (annual contributions of $250-$499) during the 1994 calendar year.

Other contributors, including spouses of alumni and corporate contributors, will be recognized in the college's annual honor roll of contributors (published each fall) and in the University of Iowa Foundation's Annual Report on Giving.

**Dean's Club**

Adams, Leland C. ('48), Lake Forest, Ill.
Aden, Victoria A. ('81), Houston, Tex.
Annett, Margaret E. ('80), Chicago, Ill.
Benes, Richard H. ('52), Short Hills, N.J.
Bresaw, Thomas F. ('77), Silverdale, Wash.
Breuer, Max E. ('63), Kalamazoo, Mich.
Brown, Delno W. ('43), Moline, Ill.
Buchanan, David R. ('58), Scottsdale, Ariz.
Calhoun, John C. ('64), West Des Moines, Iowa
Carns, Charles L. ('44), Tacoma, Wash.
Chaney, Robert M. ('48), East Moline, Ill.
Chrencik, Frank ('37), Birmingham, Ala.
Cole, John V. ('43), Santa Ana, Calif.
Crow, Richard H. ('47), Irvine, Calif.
Dummire, Ronald W. ('61), Cedar Rapids, Iowa
Emmett, Richard E. ('51), Avalon, N.J.
Fethke, Wayne G. ('71), Middleton, Wis.
Foderberg, Dennis L. ('65), Shoreview, Minn.
Guthrie, Hugh D. ('43), Morgantown, W.Va.
Hemesath, Norbert B. ('59), Cedar Rapids, Iowa
Henry, Allen S. ('68), Melbourne Beach, Fla.
Hinton, Cecil W. ('48), Coggon, Iowa
Jipp, Raymond H. ('43), Jacksonville, Fla.
Kaplan, Samuel X. ('47), Beverly Hills, Calif.
Kehn, Donald M. ('44), Houston, Tex.
Kerr, John W. ('59), Rochester, Minn.
Larson, Harold A. ('48), Simpsonville, S.C.
Latimer, Ray ('42), Naples, Fla.
Levine, Arnold M. ('40), Chatsworth, Calif.
Lichtenberger, H. William ('59), Ridgefield, Conn.
Lightner, James R. ('44), Dallas, Tex.
Lowenberg, Thomas J. ('62), Pine Springs, Minn.
McIntosh, James R. ('62), Metairie, La.
Meyer, Randall ('48), Houston, Tex.

**Transit Club**

Brink, Richard E. ('44), White Bear Lake, Minn.
Butler, Audra Ah Chin ('84), Iowa City, Iowa
Carlsen, Robert A. ('51), Janesville, Wis.
Carson, William L. ('64), Columbia, Mo.
Fish, Hugh A. ('64), Naperville, Ill.
Flynn, Helen E. ('76), Cedar Rapids, Iowa
Gingerich, Lando, Jr. ('59), Naperville, Ill.
Grisel, Elmer F., Jr. ('43), Cedar Rapids, Iowa
Hanson, Thomas R. ('60), Hinsdale, Ill.
Huang, Ted C. ('74), Sunnyvale, Calif.
Ihde, Wayne W. ('76), Boulder, Colo.
Kross, Burton C. ('69), Iowa City, Iowa
Kruse, Dennis R. ('79), Oberursel, Germany
Murray, Thomas F. ('52), Bronxville, N.Y.
Neely, Robert H. ('82), Grayslake, Ill.
Olleger, Bruce A. ('71), Nashville, Tenn.
Pagel, Warren C. ('53), Hudson, Wis.
Poma, Stephen R. ('78), Chicago, Ill.
Prieuter, Henry Wyatt ('84), Springfield, Ill.
Reininga, Henk M. ('65), Cedar Rapids, Iowa
Sangster, William M. ('47), Atlanta, Ga.
Smith, Clifford V., Jr. ('54), Newtown, Conn.
Smith, Robert L. ('47), Lawrence, Kan.
Strand, Carl P. ('42), Ashland, Ore.
Summers, Joseph B. ('48), Hanford, Calif.
Sword, Paul E. ('52), San Antonio, Tex.
Temple, Phillip A. ('50), Irving, Tex.
Tinker, Sharon K. ('60), Houston, Tex.
Tweed, Donald G. ('55), Mountain View, Calif.
Wolmershauer, Barbara B. ('75), Tulsa, Okla.
Woodworth, Brian R. ('84), Wayne, N.J.
Wright, Stephen E. ('47), Doylestown, Pa.

**MECCA Club**

Anderson, M. Kent ('69), Bethesda, Md.
Arona, Jasbir S. ('71), Iowa City, Iowa
Bailey, Thomas E. ('59), Sacramento, Calif.
Barrett, J. Timothy ('81), Studio City, Calif.
Beck, Dale L. ('70), Tempe, Ariz.
Bell, Robert T. ('47), Munster, Ind.
Bellinger, Thomas O. ('79), Rochester, Minn.
Brink, Eric J. ('78), Albany, Calif.
Carlson, Frederick A. ('50), Decorah, Iowa
Covert, Richard P. ('59), Lexington, Ky.
Crepinski, Sherri R. ('87), League City, Tex.
Daniels, Dale E. ('65), Fountain Valley, Calif.
Dinizole, John W. ('52), Crystal Lake, Ill.
Godfrey, Gary L. ('76), Cedar Rapids, Iowa
Hall, Jerry B. ('83), Johnston, Iowa
Harris, William L. ('79), Chandler, Ariz.
Hugg, Charles R. ('50), Little Rock, Ariz.
Johnson, Dean H. ('43), Orion, Ill.
Johnson, Paul E. ('40), San Rafael, Calif.
Jungjohann, Vernon H. ('38), Rochester, N.Y.
Kasch, Howard ('39), Scotia, N.Y.
Kaster, James W. ('57), Woodbury, Minn.
Kessler, Richard E. ('87), Eau Claire, Wis.
Lentfer, Jim ('80), Cupertino, Calif.
Lusmann, Fred W. ('37), Arlington Heights, Ill.
Marin, Steven J. ('82), Columbus, Mo.
Miller, Robert P. ('40), Cincinnati, Ohio
Monson, Robert C. ('43), Fernandina, Fla.
Mrla, Mark J. ('85), South Sioux City, Neb.
Myers, Gerald E. ('60), West Des Moines, Iowa
Newberry, F. Devere ('42), Muscatine, Iowa
Olinger, Bruce A. ('71), Nashville, Tenn.
Owen, Richard W. ('58), Scottsdale, Ariz.
Piplani, Ratan P. ('58), Chapel Hill, N.C.
Powers, Thomas M. ('43), Palatine, Ill.
Reininga, Herm M. ('65), Cedar Rapids, Iowa
Rhea, Frank W. ('47), Golden, Colo.
Schroeder, Darwin E. ('60), Bettendorf, Iowa
Stapleton, Joseph F. ('82), Indianapolis, Ind.
Stevens, Stephen A. ('77), Round Rock, Tex.
Thede, Leslie L. ('50), Cedar Falls, Iowa
Thom, Brian E. ('60), Overland Park, Kan.
Wild, Jamie C. ('67), Redmond, Wash.

This listing shows graduates who qualified for membership in the Dean's Club (annual contributions of $1,000 or more), the Transit Club (annual contributions of $500-$999), or the MECCA Club (annual contributions of $250-$499) during the 1994 calendar year.

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College welcomes new profs

Six new professors joined the College of Engineering for the 1994-95 academic year.

Karim Abdel-Malek
Assistant professor of mechanical engineering and researcher at the Center for Computer-Aided Design
B.S. in mechanical engineering (88), University of Jordan, Amman M.S. ('90) and Ph.D. ('93) in mechanical engineering and robotics, University of Pennsylvania

Professional experience
Adjunct assistant professor, Temple University; adjunct assistant professor, Penn State University

Research Interests
Dynamics of machinery, robotics, machine design, application of robotics to surgery

"There is great potential today in robotics as applied in the medical field. Interdisciplinary cooperation at Iowa is tremendous. In a couple of months after arriving here as a mechanical engineer, I was able to develop working relationships with University experts in spine surgery, biomedical engineering, and electrical engineering."

Winston Chan
Associate professor of electrical and computer engineering
B.S. in electrical engineering ('71), Massachusetts Institute of Technology Ph.D. in applied physics ('77), Harvard University

Professional experience
Postdoctoral associate at Cornell University; research and development at Bell Telephone Laboratories and Bellcore

Research interests
Application of micro fabrication technology

"I hope to use my experience in industry to do research and teach courses that relate to what the private sector looks for today."

Jiun-Shyan Chen
Assistant professor of mechanical engineering
B.S. in civil engineering ('82), National Central University, Taiwan M.S. in civil engineering ('85) and Ph.D. in theoretical and applied mechanics ('89), Northwestern University

Professional experience
Research scientist, GenCorp

Research Interests
Modeling and simulation of vehicle structure, elastic-plastic deformation, analysis of nonlinear mechanical and fatigue behavior of incompressible hyperelastic materials

"I enjoy my involvement in the University and feel I can contribute most to society by working with students."

Milan Sonka
Associate professor of electrical and computer engineering
M.S. in electrical engineering ('79) and Ph.D. in technical cybernetics and digital image analysis ('83), Czech Technical University

Professional experience
Visiting professor of electrical and computer engineering, The University of Iowa

Research interests
Medical imaging and knowledge-based image analysis

"The University of Iowa is an excellent place to conduct medical imaging research. The cooperation between the engineering faculty and the faculty in the medical college is superb and rarely found in other universities."

Malcolm H. Pope
Professor of biomedical engineering and director of the Iowa Spine Research Center
Dr. Med. Sc. ('90), Göteborg University, Goteborg, Sweden Ph.D. in biomechanics ('72), University of Vermont M.S. in mechanical engineering ('69), University of Bridgeport HND in mechanical engineering ('62), Southall College, London

Professional experience
Professor of orthopaedic surgery and mechanical engineering, and director of orthopaedic research at the University of Vermont; visiting professor of orthopaedic surgery, University of Göteborg, Sweden; senior experimental engineer, Hamilton Standard

Research Interests
Biomechanics of the spine, low-back pain, ergonomics

"I am impressed by Dean Miller's commitment to excellence. I have great people to work with, including Vijay Goel and Jim Weinstein, and my colleagues in engineering and medicine are very impressive researchers. I really appreciate the friendly community at the University and in Iowa City."

John Michael Wieneck
Associate professor of chemical and biochemical engineering
B.S. in chemical engineering ('84), University of Cincinnati M.S. ('85) and Ph.D. ('89) in chemical engineering, Case Western Reserve University

Professional experience
Assistant and associate professor of chemical and biochemical engineering, Rutgers University

Research interests
The purification and separation of very dilute chemicals from various mixtures, such as low-level toxins in water and trace amounts of chemicals or proteins that influence living organisms

"There is a strong mission at the University directed toward the research of both biotechnology and the environment. I came to Iowa knowing that the scientists who work here in these fields are held in very high regard by their peers elsewhere."

The University of Iowa Center for Computer-Aided Design (CCAD) has won a $1.9-million federal grant to conduct basic research in advanced computer simulation for the development of better cars and military vehicles. The grant is part of a $7.5-million Automotive Research Center (ARC) contract awarded by the U.S. Army Tank-Automotive Research, Development, and Engineering Center in Warren, Mich., to the University of Michigan.

The main goal of the Iowa effort, according to Ed Haug, professor of mechanical engineering and ARC director, is to "use computer simulation to understand how a vehicle will perform in a realistic environment and to optimize designs long before building prototypes."

He adds that the ARC project will complement driving simulation research currently conducted with the Iowa Driving Simulator.

In other recent developments involving simulation research:
- The National Highway Traffic Safety Administration announced last January that until the National Advanced Driving Simulator (NADS) is completed in 1998, the University's Iowa Driving Simulator (IDS) will be used to identify driving safety problems involving older drivers, who are over-represented in car crashes.
- The University is ready to hire an architect to design the proposed $32-million National Advanced Driving Simulator.
- The Iowa Driving Simulator recently tested the Humvee, a military vehicle used in Operation Desert Storm.
- Last November the Center for Computer-Aided Design and The University of Iowa Injury Prevention Research Center sponsored a day-long conference, "Health Research Using Advanced Driving Simulation."
- Darrel Rensink, director of the Iowa Department of Transportation, toured the Iowa Driving Simulator on January 13. Rensink and five of his senior staff members discussed the research contributions of IDS with UI and College of Engineering officials.
Ted Smith believes that for students of engineering there's no teacher like the real world. So Smith, University of Iowa professor of mechanical engineering, does his best to bring hands-on examples of real engineering problems to his students—even if those examples are in miniature.

"Say I'm explaining the mechanics of loading a container car," says Smith, who is well known as a collector of model trains. "I can't bring in a real container car to demonstrate for my students, so I bring one from my basement."

But Smith also has a surefire way to help students put their hands on full-size, real-life engineering problems: the Program for Enhanced Design Experience (PEDE), a collaboration between the UI College of Engineering and John Deere Dubuque Works.

Begun last fall, the program pits the creativity and skill of mechanical engineering seniors against design problems that Deere-Dubuque wants to solve.

Work begins in the fall, when students take a formal design course taught by mechanical engineering professor Ralph Stephens. After dividing into teams, the students choose the PEDE problems they'll take on. Smith, who directs the new program, teaches the spring semester. That's when the teams complete their hands-on projects.

Three Deere-Dubuque engineers—two of whom graduated from Iowa—help shepherd the projects to completion. They keep in daily contact with their student teams by E-mail or telephone. In addition, when the weather cooperates the students travel to Dubuque monthly and the engineers visit the college several times during each academic year.

"We're treating the students as if they're part of our workforce," says Larry Mc-
Mullen, manager of product development for the Dubuque plant and member of the College of Engineering Advisory Board. “When they come here they work with our engineers on real problems and see how engineers work in industry. The students have even been to our proving grounds to operate the equipment they are working on.”

This spring the student teams were wrestling with three design projects involving Deere “crawler” tractors: a low-effort steering control system; a track/tension adjuster; and a hydraulic blade pitch control.

“The teams are responsible for carrying out the project, from conceptualizing the design to creating, testing, and evaluating options,” Smith says. “Ideally, we would like to have the students walk down the assembly line with the newly designed product, but of course that isn’t always feasible in just 10 months.”

Because design specification, evaluation of manufacturing requirements, and cost considerations are integral to real-world engineering, they’re also part of the students’ projects.

That’s an important advantage of the PEDE experience, says Chip Kuper, a senior in mechanical engineering from Adel, Iowa. “This class takes students one step beyond the academic setting into the work world,” Kuper says. “We not only work on our projects with a Deere engineer but also talk with company accountants and vendors to see if our ideas are practical and marketable.”

According to McMullen, Smith himself has been integral to PEDE’s success. “The program has gotten off to a flying start,” he says, “thanks to its University coordinator.”

Smith spent two weeks last summer at the Dubuque plant, where he and Deere engineers defined PEDE’s goals and outlined potential design projects. This spring Smith returned to Dubuque to identify projects for students who will participate in the program next fall. He says Deere’s support is a vote of confidence and a measure of success.

During the first year, the company’s financial support furnished part of Smith’s salary, travel money for students and faculty members, and a computer workstation and laptop for the students’ use. Deere also provided some financial support for students who stayed in Iowa City between fall and spring semesters to work on their projects. Most of the PEDE students took advantage of this option, “although some managed to avoid staying during the break by getting married,” Smith says, tongue-in-cheek. “Some people will do anything to get away in the winter.”

In addition to funding, Deere-Dubuque has provided the time of engineering personnel as well as a number of components and parts for the students to break down—an activity crucial to understanding the machine, Smith says.

Unfortunately, lack of shop space in the college has forced at least one crawler part—which measures 16 by 3 feet and weighs several tons—to be mothballed for months on a University loading dock.

Although increased shop space is near the top of Smith’s wish list, it seems unlikely to materialize soon. But other improvements are in the works. Next year’s seniors already are aware of the course, so they will have more time to consider whether to apply and what projects to tackle.

“Several students have suggested that the course begin in the summer,” says PEDE student Kuper. “The extra time would allow the design teams to get a better verbal and visual idea of what Deere wants and what we can accomplish.”

McMullen hopes that the college eventually will offer an independent “tools” course that will dovetail better with work demands of industry engineers by providing a solid foundation in finite element analysis, modeling, and application of the computer design tool PRO-ENGINEER.

“I think it’s very important for industry to develop close working relationships with university engineering schools,” McMullen says. “If faculty members know what we’re looking for in professional engineers, they can teach and train their students accordingly, and those students will be better prepared to enter industry after they graduate.”

He adds that Deere engineers also have benefitted from contact with young, enthusiastic students.

McMullen and Smith agree that PEDE’s goals have largely been met.

“We have developed a great working relationship between industry professionals, faculty members, and students,” McMullen says. “It’s been a plus for all of us.”

Smith says the new program is a welcome expansion of the long-standing relationship between the college and John Deere Dubuque Works.

“This program, which we believe is unique, strengthens and broadens those ties,” he says, adding that students also appreciate the benefits PEDE provides. “I’ve had students from other classes ask me why they can’t ‘do projects like those in the John Deere class,’” he says. “I can’t think of any engineers I’ve worked with who had this kind of opportunity as a student. Looking back on my own educational experience, I realize just what a great opportunity this kind of program is.”

A year of design

College of Engineering professors:
Ted Smith, Ralph Stephens
John Deere liaison:
John Lukasik
Project: Low-effort steering control system
Students: Eric Bauswell, Hsiu-Ling Chang, Michael Cocayne, Chip Kuper
John Deere engineer: Dave Coleman
Project: Track/tension adjuster
Students: Brendan Devine, Wayne Hermsen, Soheil Sadakhom, Salman Tariq
John Deere engineer: Chuck Olson
Project: Hydraulic blade pitch control
Students: John Mathew, Robert Pine, Brian Sander, Matt Stevenson
John Deere engineer: Luke Less
UI, ISU exchange

Karl Lonngren, professor of electrical and computer engineering, presented the third in the Iowa Distinguished Faculty Lectures at Iowa State University in April. Lonngren, an expert in solitons, reviewed his last 20 years of research.

Established in spring 1994, the series is sponsored jointly by the engineering colleges at Iowa and Iowa State. Every year each college chooses one of its distinguished faculty members to present a lecture of general public interest at both institutions.

The October 1994 lecture on blackouts in power systems was presented by Abdel-Arziz A. Fouad, professor of electrical engineering at ISU.

In addition to the faculty lectures, the two colleges cooperate by offering graduate courses through interactive electronic media. The courses provide advanced course material not available to the students and faculty members at their home institutions.

The shared lectures and courses are the beginning of new efforts to enhance the educational resources of both colleges.

Scholz symposium

The 1995 Paul D. Scholz Symposium, “Technology and Its Role in Society,” was held in March. Featured speakers included Edward Haug, the Carver Distinguished Professor of Mechanical Engineering, who spoke on the development and emerging applications of advanced driving simulation at the University; Matthew Rizzo, associate professor of neurology; Ginger Watson Papelis, manager of project research and support at the Iowa Driving Simulator; and Jeff Greenberg, manager of driving simulation at Ford Motor Company. John Kuhl, professor of electrical engineering and deputy director for driving simulation at the Center for Computer-Aided Design (CCAD), moderated a panel discussion.

The symposium honors the late associate dean Paul D. Scholz. It is sponsored by Tau Beta Pi, the College of Engineering, the Graduate College, and the UI Student Association.

Faculty standouts touted

The College of Engineering honored three of its faculty members with collegiate faculty awards at an April 17 luncheon.

Forrest Holly, professor of civil and environmental engineering, received the College of Engineering Faculty Teaching Award for 1995. Holly, recognized for his superlative teaching and his work with students, also was one of 13 professors University-wide to win Collegiate Teaching Awards from the University’s Council on Teaching.

Students praised Holly for holding evening tutorial sessions and maintaining generous office hours, improving the college’s curriculum, providing them with information about scholarships, internships, and jobs, and being a positive role model.

Holly said students can benefit from hearing about professors’ experiences. “Engineering probably is the toughest academic path one can follow,” he said. “Students need to be reminded that their professors understand this; they need to know that great professional rewards await them upon completion of their studies.”

The college’s Faculty Service Award was presented to Adrian Korpel, professor of electrical and computer engineering. Korpel has been engaged in research for some 40 years—almost 20 of them at the University. Before arriving at Iowa in 1977, Korpel spent 17 years with Zenith Radio Corp., where he rose to the position of research director in engineering physics.

Korpel’s efforts have resulted in 37 patents and 130 publications and his election as a fellow of the Institute of Electrical and Electronic Engineers and of the Optical Society of America. His innovative work with lasers has influenced the development of television and compact disc technology.

K.B. Chandran, professor of biomedical engineering, received the college’s Faculty Service Award. Chandran twice has been acting chair of his department and has spent seven years as head of the biomedical engineering undergraduate committee, which oversees curricular matters and requirements of the Accreditation Board for Engineering and Technology. In addition, he has served the wider University community as a member of the engineering self-study committee, the engineering dean search committee, and the University Faculty Senate.

His work in professional organizations is widely recognized, and last year he was named a fellow of both the American Institute for Medical and Biological Engineering and the American Society of Mechanical Engineers.
Scholarships help school compete for top students

As universities nationwide strive to maintain adequate funding for their many vital activities, financial aid is feeling the press of tightening budgets. Recently Iowa Engineer asked Norlin Boyd, assistant to the dean, to comment on the college’s concerns about scholarship funds for undergraduates.

Which students in the College of Engineering receive scholarship awards now?

Generally we have been able to offer awards of some kind to the top 35 to 40 percent of entering freshmen. But during the last five years, the college has not sufficiently increased the amounts of its awards or expanded its pool of scholarship students.

Does this affect the standing of the college?

Absolutely. Schools that offer the best academically, competitive. If we’re going to continue to attract the brightest young people, more acute. If we’re going to continue to attract the brightest young people, we must remain financially, as well as academically, competitive.

How can that be accomplished?

Ideally, we would like to offer twice as much scholarship money as we do now. There are three principal sources of college financial aid for engineering students: industry contributions, private bequests, and discretionary funds within the college. During the last five years we have been forced to draw increasingly on funds from within the college—funds that are also in demand for other purposes, such as teaching and research.

What are students telling you about financial aid?

Today, both students and their parents are more likely to let us know what they have been offered by other schools. Of course, a generous award from Iowa tells them they’ll receive financial help along with an excellent education. But perhaps just as important, it lets them know that we care enough about our students to do everything we can to get them here and keep them here.

Are certain students affected more than others by the lack of growth in the scholarship fund pool?

The greatest competition for students among universities is always at the highest level—the top students. Because the college is very selective in its admissions anyway, the level of competition for the best students is even more acute. If we’re going to continue to attract the brightest young people, we must remain financially, as well as academically, competitive.

Students-athletes score

Nine College of Engineering students are among UI student-athletes recognized this year for maintaining a 3.0 cumulative grade-point average while participating in varsity athletics. The awards, sponsored by the UI Board in Control of Athletics, were presented at halftime during the January 22 and March 5 basketball games. Bronze awards were presented for one full year of achievement, Light Bronze for two consecutive years, and Silver for three. The Prairie Lights Golden I Book Award, sponsored by Prairie Lights Books, recognized academic effort along with demonstration of team philosophy and character.

Aaron Cotter, junior in chemical and biochemical engineering from Lincoln, Neb., gymnastics, Light Bronze

Danielle Kowalski, sophomore double major in biomedical engineering and biology from Iowa City, rowing, Prairie Lights Golden I Book Award

Marco Loureiro, sophomore in civil and environmental engineering from Curitiba, Brazil, track, Bronze

Steve Marshall, graduate student in civil and environmental engineering, track, Silver

Jennifer McMahon, sophomore in civil engineering from Tucson, Ariz., softball, Bronze

Kiersten Pauling, sophomore in biomedical engineering from Des Moines, cross-country, Bronze

Marc Roehl, graduate student in civil and environmental engineering, track, Silver

Dan Ross, sophomore in mechanical engineering from Cedar Falls, Iowa, swimming, Bronze

Rick Uptegraf, sophomore in engineering from Palmetto, Fla., gymnastics, Light Bronze

Commencement

Richard E. Emmert (B.S.Ch.E. ’51), executive director of the American Institute of Chemical Engineers, spoke to College of Engineering graduates at commencement ceremonies May 12 in Hancher Auditorium. Emmert, a member of the College of Engineering Advisory Board and retired vice president of electronics at Dupont, told the grads that as engineers, they are particularly well prepared for professional lives in a rapidly changing world. He urged them to enhance their prospects for rewarding careers by seeking professional registration, upgrading their skills through continuing education, forming mentor relationships, and joining professional organizations. Most important, he said, is to remember that engineers must consider the social implications of their work while applying modern technologies creatively.

The college conferred 109 B.S.E. degrees, 32 M.S. degrees, and 8 Ph.D. degrees at the ceremony.
Biomedical Engineering

Faculty

Krishnan Bala Chandran, professor, has been named a fellow of the American Institute of Medical and Biological Engineering.

Vijay K. Goel, professor and chair, has been named a fellow of the American Society of Mechanical Engineers. The society recognized Goel for contributing to engineering education by developing new courses and laboratories and publishing a book on spine biomechanics, for his service as a consultant to spinal device manufacturers, and for his work as an editorial board member for two professional journals.

Goel also won the 1994 Volvo International Award, presented by the International Society for Study of the Lumbar Spine, for outstanding research in lumbar spine (bio)engineering.

Goel and graduate student John Clausen won the 1994 Mayfield Award for a paper presented at the 10th Annual Meeting, Joint Section of the Spine and Peripheral Nerves, Ft. Lauderdale, Fla.

Roderic S. Lakes, professor, has been named a fellow of the American Society of Mechanical Engineers.

Y. King Liu, professor, retired from The University of Iowa last year to found and become president of the University of Northern California, at Novato.

Gerald A. Myers, assistant professor, has been elected vice president of the Iowa Center for Independent Living.

Joon B. Park, professor, has been elected to the editorial board of Medical Engineering and Physics.

Malcolm Pope, professor, was named a fellow of the Royal Society of Medicine, in London, England, for his work as an editorial board member for two professional journals.

Students

Kurt Connolly, senior from Epworth, Iowa, Mike Chidli, senior from Barrington, Ill., Tony Wagner, sophomore from Casper, Wyo., and Gary Fetzer, senior from Downers Grove, Ill., were elected 1994-95 officers of the University's Student Society of Biomedical Engineers.

Nicole M. Grossland, Pranav Patel, and Scott Steffensmeier, all graduate students, were Theoretical Design Competition winners for the college's Biomedical Engineering Department.

Vincent Magnotta, graduate student, has received a two-year predoctoral fellowship from the American Heart Association.

Jonie A. Mrystol, senior from Gillette, Wyo., won the 1994 Clark Scholarship.

Pranav Patel, graduate student, won a 1994 University of Iowa Hancher-Finkbine Medallion for achievement and leadership.

Sarah R. Pfingsten, junior from Boyden, Iowa, was awarded a 1994 General Electric Pre-Teaching Internship.

Chemical and Biochemical Engineering

Several faculty members and graduate students presented papers at a meeting of the American Institute of Chemical Engineering last November in San Francisco.

Ravindra Datta, professor, presented "Dehydrogenation of cycloalkanes over supported metal catalysts".

Jonathan S. Dordick, professor, was a session chair of the biocatalysis and protein engineering section; and

David G. Rethwisch, associate professor, was chair of one section and co-chair of another.

Graduate students presenting papers were Kyle Jensen, Nitt Patil, Somchhai Dechanapanah, Sheldon Oppenheim, Sanjiv Malhotra, Christine Mitchell-Logean, and Pramod Wangikar.

Faculty

Gregory R. Carmichael, professor, and chair, was visiting scientist last summer at the International Institute for Applied Systems Analysis, Laxenburg, Austria. He also visited China as one of six members of the United States/People's Republic of China joint committee on modeling atmospheric chemistry.

Carmichael has been named chair of the American Meteorological Society's committee on atmospheric chemistry, renamed to the Governors' Science Advisory Council (three-year term), and appointed affiliate staff scientist at Battelle Pacific Northwest Labs. He also will organize the Fifth International Conference on Atmospheric Sciences and Air Quality.

Vincent Magno, professor emeritus, was honored for his contributions to the field of membrane science by the American Institute of Chemical Engineering, at the institute's national meeting last November in San Francisco.

Victor G. J. Rodgers, assistant professor, chaired the Minority Affairs Committee at the 1994 meeting of the American Institute of Chemical Engineering. The council presented Rodgers with a certificate of appreciation.

Students

Richard Arndt, graduate student, participated in the Young Scientist Program at the International Institute for Applied Systems Analysis, Laxenburg, Austria.

Yang Zhang, graduate student, has joined the Atmospheric Processes Group at Pacific Northwest Laboratory, where he will explore heterogeneous chemical processes in a joint project with members of the Environmental and Molecular Sciences Laboratory.

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DEPARTMENTAL NOTES

creative work, and instructional development.

Irith Pomeranz, associate professor, has been appointed to the editorial board of ACM Transactions on Design Automation.

Sudhakar Reddy, professor and chair, Thomas L. Casavant, associate professor, and Balkrishna Ramkumar, assistant professor, conducted seminars for the Caterpillar Corporation Colloquium series, held January and February at the University.

Students

Jaynie Lynn Braun, senior from Dubuque, Iowa, received a 1995 Hancher-Finkbine Medalion at the 78th annual UI Finkbine Leadership Dinner in April. The winner of several prestigious awards and scholarships, Braun is a UI Presidential Scholar and a research assistant working on design and implementation of software visualization for parallel computers. She also teaches computer programming to freshmen, is production editor of the student magazine Hawkeye Engineer, and is an active member of the Society of Women Engineers and Tau Beta Pi.

Mark G. Brown, senior from Ankeny, Iowa, received the David R. Buchanan Scholarship for 1995.

J.W. Kim, graduate student, and Milan Sonka, visiting associate professor, won the best poster award at the conference Physiology and Function from Multidimensional Images—Medical Imaging '95, February in San Diego.

Industrial Engineering

Faculty

James R. Buck, professor, presented two papers at the International Ergonomics Conference last August in Toronto, Canada.

Gary W. Fischer, associate professor, has been elected president of the Institute of Industrial Engineers' Cedar Rapids-area chapter. Fischer also has been appointed senior adviser to Theta Tau, the national professional engineering fraternity, and engineering chair for the Iowa Academy of Science.

Andrew Kusiak, professor and chair, has received an honorary professorship at the Huazhong University of Science and Technology, Wuhan, China. Last fall Kusiak wrote two books on design and manufacturing, published by John Wiley and ASME Press.

John M. Littlstwager, professor, is coordinating the 50th anniversary observance of the University's first full-time course of instruction in quality control by statistical methods.

J. Richard Simon, professor, was featured in the international journal Psychological Forschung (Psychological Research), April 1994.

Sergio Almanzar, senior from Plantation, Fla., received first place in the Fall 1994 Student Paper Competition, sponsored by the Institute of Industrial Engineers' Cedar Rapids-area chapter. Pat Carothers, senior from Cedar Rapids, took second place and Lori Bendixen, senior from Bozeman, Mont., took third.

Cher Carney, Eric Sager, and Mike Mollenhauer, graduate students, have won scholarships to participate in advanced automotive research using simulation facilities at the college's Center for Computer-Aided Design.

Mechanical Engineering

Faculty

James Andrews, professor, received the 1994 Edward S. Allen award from the American Association of University Professors, Iowa Conference. The award is presented annually to recognize outstanding service to the profession.

Christoph Beckermann, associate professor, was a member of the U.S. delegation to the Brazil Joint Workshop on Thermal Sciences Cooperative Research, last December in Rio de Janeiro. Beckermann also has been invited to prepare a review paper for the Iron and Steel Institute of Japan.

Barry Butler, associate professor, received the Outstanding Faculty Award from the American Society of Mechanical Engineers, at the society's Northeast Iowa Section meeting in March.

Lea-Der Chen, professor and chair, gave an invited talk, "Mechanics and combustion of droplets and sprays," at the International Union of Theoretical and Applied Mechanics Symposium, last December at National Cheng Kung University, Tainan, Taiwan. Graduate student P.C. Sui was coauthor. Chen also attended the 25th International Symposium on Combustion last July in Irvine, Calif., where he presented a poster paper with D.P. Stetter of NASA's Lewis Research Center.

Robert G. Herling, professor, has been named a fellow of the American Society of Mechanical Engineers and the American Institute of Aeronautics and Astronautics.

Jeffrey Marshall, associate professor, has received a 1995 Old Gold Summer Fellowship Award from the University. The award supports research, creative work, and instructional development.

V.C. Patel, professor and director of the Iowa Institute of Hydraulic Research, received the Doctor Honoris Causa (honorary doctoral degree) last November from the Technical University of Civil Engineering, Ministry of Education, Bucharest, Romania.

Theodore F. Smith, professor, has been appointed program director of the Enhanced Design Experience Program, a collaborative project of the College of Engineering and John Deere Dubuque Works (see story on page 14).

Students

Michael Cocayne, senior from Dubuque, Iowa, and Jolene Grose, senior from Iowa City, won the first annual Student Project Contest, held in March by the American Society of Heating, Refrigerating, and Air-Conditioning Engineers' Cedar Valley Chapter.

Benjamin Dingel and Wendy Foels received 1994 Graduate Fellowships from the National Science Foundation. Both graduated last December.

Colin J. Dirks, senior from Center Junction, Iowa, has received the American Society of Mechanical Engineers' Outstanding Student Member Award.

The Engineering Design Research Society of Korea recently honored University of Iowa professor of biomedical engineering Kwan Rim by dedicating its third international symposium in celebration of his 60th birthday. The gathering, held at the Hilton Hotel in Seoul, was organized by one of Rim's former students, B.M. Kwak, professor of engineering at the Korea Advanced Institute of Science and Technology (KAIST).

The society recognized Rim for his commitment to teaching and research and for his continuing efforts to establish intellectual, cultural, and commercial ties between Korea and the United States. Rim has taught at Iowa for 35 years and has contributed to the careers of well over 100 Korean engineering students.

Rim chaired the department of mechanics and hydraulics from 1971 until 1974, when he began the University of Iowa's program in biomedical engineering. The same year he was invited to serve as visiting professor of mechanical engineering at the newly established Korea Advanced Institute of Science.

Rim has been instrumental in creating strong links between East Asia and the University. Recently he organized an intensive two-week exchange program—Introduction to Business and Technology in Japan and Korea—in which students learn international marketing techniques by visiting an East Asian country.

In addition to his efforts on behalf of students and colleagues, Rim has smoothed the way for University administrators and state officials to begin establishing bonds with Korea and Japan. He orchestrated ties between Iowa, KAIST, and Tokyo Denki University and has assisted visits to Korea by state and University of Iowa officials.
Her starting point?

An Iowa degree in engineering

While not all engineering grads stay in the profession throughout their working lives, engineering—with its lessons and experiences—may very well stay with them. Ruth Larson can testify to that.

Larson, one of an elite group of reporters in the nation's capital who cover federal issues and national politics, earned a B.S.M.E. at Iowa in 1981. "My dad is a mechanical engineer," she says, "and I decided in high school that I wanted to become one too, just to see what it was that he did. I also had a perverse drive to take the most challenging subject I could. For me that was math, and the most mathematically challenging branch of engineering is mechanical."

Besides enrolling in mechanical engineering, Larson also signed up for Reserve Officer Training Corps, which awarded her a scholarship. "For as long as I can remember, I wanted to be in the military," she says. Of her undergraduate years, Larson recalls long hours studying for courses such as Metal Fatigue (or "Mental Fatigue," as she and her fellow students called it), taught by Ralph Stevens, professor of mechanical engineering. "I was one of the few engineering students who actually liked to write," Larson says. "I'd tell my lab partners, 'If you explain it to me, I'll write up the lab reports and I guarantee we'll get an A.'"

She adds that although she was one of only a few women engineering students, she never felt isolated or ill-at-ease. She also cast her social and intellectual nets wide by pursuing a course of violin study in the University's School of Music.

Larson nurtured her gift for music even as an Air Force engineer, toting her violin to posts from Las Vegas to Germany.

Her first Air Force job—fresh out of Iowa—was as design engineer in charge of a $125 million construction program; her last was to oversee maintenance of an entire base. Between those she shouldered assignments ranging from hazardous waste management to environmental planning. She also was responsible for managing a $210-million housing program, overseeing 18 military bases, 22,600 houses, and 52 generals' houses.

"I squeezed a lifetime of engineering into 10 years in the military," she says. In 1985 Larson earned a master's in engineering management from the Air Force Institute of Technology, at Dayton, Ohio. She had enjoyed interviewing sources and writing her thesis so much that by 1990 she decided it was time to change careers.

"Besides," she says, "military budget cuts were getting ridiculous. When I was at Bitburg [Germany] Air Base, there wasn't enough money to repair runway lights or plumbing systems in the housing." Larson, by then a captain, turned to the base education school.

"They gave me a battery of career tests," she says. "When asked what I like to do, I said, 'write and watch political talk shows.'"

In 1990 Larson left the Air Force and enrolled in Northwestern University's Medill School of Journalism. Only 10 days after her September 1993 graduation, she landed a job as a reporter with The Washington Times. Her current "beat" covers issues relating to federal employees.

Larson says her years at Iowa provided a unique foundation for journalism. "Virtually every one of my engineering professors at Iowa drummed into me a fundamental process of problem solving," Larson says. "You don't just pluck an answer from the sky—you observe, you think things through, you're tenacious. Then you show your work."

That, Larson says, is the process she uses to delve into a newspaper story. And that's not the only way her engineer's training stays with her.

"I went from being a person who had the most trouble with math in my engineering classes," she says, "to the person most at ease with math among my journalist colleagues. I'm acutely aware of the importance of numbers, charts, and statistics. I'm also never afraid to challenge the figures and statistics someone else cites."

After a year and a half at the Times, Larson decided to put down relatively permanent roots: She bought a house in Maryland.

"I'm learning the joys of home ownership," she says, "and am becoming conversant with mowing, mulching, and painting."

"After moving 13 times in 11 years, it's nice to have a place to call my own."
1930s

John D. Cantwell Jr. (B.S.M.E. '32) is retired and living in Fayetteville, N.Y. He is listed in Who's Who in America and Who's Who in the World (Marquis).

Martin Loetcher Bardill (B.S.C.E. '34) retired in 1976 and lives in Dubuque, Iowa. Bardill worked for the former Milwaukee Railroad, first in engineering and then as assistant director of real estate. He reports that even though his health is declining, he enjoys walking.

Wilson A. Charbonneaux (B.S.E.E. '35) is a retired manufacturer of electric motors, regulators, and other products, and a former business and real estate broker. Charbonneaux lives in Dayton, Ohio, where he is coordinator for retired engineers in the Engineers Club of Dayton.

Richard E. Sears (38) lives in Houston, Tex.

W. Burke Grandjean (B.S.Ch.E. '39) is retired and lives in Baton Rouge, La.

1940s

Henry Z. Hardaway (B.S.M.E. '40) retired in 1979 from Bell Telephone Laboratories as director of outside plant systems engineering. He had been with Bell for 39 years. Hardaway reports that he lives in Lakehurst, N.J., and enjoys community activities and club sports, swimming, skiing, travel, reading, and investing.

Fred C. Vernon (B.S.E.E. '41) retired in 1980 after 39 years with ComEd Chicago electric utility. Vernon reports that he had assignments in several Chicago suburbs and was a member of the engineering department, a sales supervisor, assistant area manager, district supervisor, and construction engineer. He lives in Chicago.

Richard J. Fountain (B.S.E.E. '42) retired in 1980 after spending 38 years with Union Carbine Corp., the last 22 as plant manager at four different locations. He lives in Columbia, Tenn.

Wallis S. Hamilton (Ph.D. '43) is retired and lives in Wilmette, Ill.

Wayne Miter (R.S.Ch.E. '43) lives in Meadowood Retirement Community, Bloomington, Ind.

1950s

Herman L. Gotzter (B.S.C.H.E. '47) lives in Kennett Square, Penn.

John M. Langendoen (B.S.E. '48) retired in 1984 as a systems engineering section manager from the Jet Propulsion Laboratory. He lives in Escondido, Calif.

Joseph P. Davis (B.S.Ch.E. '49) retired in 1987 after 35 years at Goodyear Tire & Rubber Co. Davis reports that he spent the major part of his career in chemical product application research and development at Goodyear's Akron, Ohio, facility, working with commercial resins and latexes based on emulsion polymerization, and that he attained a middle management position. He lives in Akron.

All B. Cambel (Ph.D. '50) is professor emeritus at George Washington University and lives in McLean, Va. Cambel reports that after earning his Ph.D. at Iowa, he stayed at the University for a few years as a faculty member before leaving for Northwestern University, where he was Walter P. Murphy Distinguished Professor. He then worked as a special assistant in the White House, was vice president for research at the Institute for Defense Analyses, and was executive vice president at Wayne State University, and deputy assistant director of the National Science Foundation. He retired from George Washington to concentrate on chaos theory and complexity and has a book that is going into its third printing.

Vern L. Petersen (B.S.E.E. '50) reports that he retired from WOC Broadcasting Company in 1981, lives in Davenport, Iowa, and at age 81 is "still going." He married Dorothy Mercer in December 1950 and the couple had two children, Betty and Ruth. He is a member of St. Paul Luther Church, several amateur radio and television clubs, signal corps, VFW, American Legion, and Quarter Century Wireless Association. Peterson has compiled a diary of his experiences with the U.S. Army in World War II, entitled "We Were There."

Ed Stachovic (B.S.M.E. '53) retired from Deere & Co. in January 1993, after 38 years as a facilities engineering manager.

Stachovic reports that he was elected mayor of Cedar Falls, Iowa, in November 1993.

Donald C. Goetz (B.S. '55, M.S. '56) is retired from 3M after 30 years in a variety of technical positions. Of them at 3M's Hartford City, Ind., coating plant. He reports that during the 50s he was controller and general manager of Iowa Transit. Goetz is married and has four children and seven grandchildren. He lives in Hartford City and recently was elected to the Blackford County Council.

C. LeRoy Hansen (B.S.E.E. '56) has been a federal judge for the U.S. District Court, District of New Mexico, since October 1992. He earned his law degree in 1961 from the University of New Mexico and was a trial lawyer for 30 years with Giverson, Hansen & Wolff. He lives in Albuquerque with his wife, Maxine.

Francisco C. Cheng (M.S. '57) is a nuclear safety engineer for the Department of Energy. He lives in Germantown, Md.

David A. Long (B.S.C.E. '57, M.S. '59) was a faculty member at Pennsylvania State University from 1964 until his retirement in December 1989. Long reports that he served as director of continuing and distance education for Pennsylvania State College of engineering and was professor of civil engineering. He lives in State College.

Sedat Sami (M.S. '57, Ph.D. '66) reports that he has been appointed chair of civil engineering and mechanics at Southern Illinois University. Sami lives in Carbondale.

C. Kenard Roberts (B.S.M.E. '58) is retired after 36 years as a packaging engineer. Roberts reports that he spent the last 16 years as senior packaging engineer for Stanley Tools and has two U.S. and one Canadian patent for packaging. Currently a resident of Clinton, Conn., Roberts plans to move to Green Valley, Ariz., this fall.

Dinshaw N. Contractor (M.S. '59) is head of civil engineering and engineering mechanics at the University of Arizona. Contractor lives in Tucson.

Terrill J. Messer (B.S.M.E. '59) is retired after 31 years at Pfizer, Inc., and lives in New York.

Messer reports that he worked in a variety of plant engineering and maintenance management positions at Pfizer's Teerse Haute, Ind., and Brooklyn, N.Y., locations, then became director of corporate engineering at the company's world headquarters in New York.

1960s

George H. Ludvig (Ph.D. '60) retired from NASA in 1984, then launched into post-retirement work at the University of Colorado, NASA's Goddard center and headquarters, and Cal Tech. Ludvig reports that since 1981 he has been designing and building a retirement home near Winchester, Va., "in the beautiful Shenandoah Valley."


John J. Cassidy (Ph.D. '64) was inducted into the National Academy of Engineering in ceremonies last October in Washington, D.C. He was elected for his "energy, leadership, and the application of sound judgment to the indefinite aspects of flood hydrology and hydraulic flow." Cassidy is manager of hydrology and hydrology for Bechtel Corp., San Francisco.

David T. Powell (B.S.C.E. '65) is fleet manager for Chevron Shipping Company in San Francisco, Calif. Powell reports that he is responsible for operations, maintenance, and staffing of 40 company-operated tankers, the largest of which holds 3 million barrels, and 35 chartered tankers. Powell was keynote speaker at the April 1995 International Safety at Sea Conference in Baltimore, Md. He lives in Moraga, Calif.

William J. Alston Jr. (B.S.C.E. '67) retired in 1984 as a senior civil engineer for Orange County Environmental Management Agency. He also taught part-time for five years in the civil engineering department at California State University, Long Beach. Alston lives in Lake Forest, Calif.

Paul Jagnow (B.S. '67, M.S. '69) was named 1994 engineer of the Year at Collins Avionics and Communications Division and was nominated Rockwell International Corp. engineer of the year. Jagnow, who has been involved in the development of Rockwell's precision lightweight GPS receiver, lives in Iowa City.

Gary Phelps (B.S.C.E. '69) reports that he earned a master's degree in administration from the University of California, Riverside, in 1978. For the last nine years he has worked for the city of Redlands, where he was named municipal utilities director in 1993. He writes, "I recently completed an 8.5-million gallons-per-day groundwater treatment plant, which uses activated carbon filtration." Phelps lives in Grand Terrace, Calif.

1970s

Terry L. Martin (B.S.M.E. '71) has been appointed by Iowa Governor Terry Branstad to the state's Engineering and Land Surveying Examining Board. He also was recently appointed to the College of Engineering Advisory Board (see page 23). Martin is president of Brown Engineer- ing Company, in West Des Moines, and lives in Des Moines.

James A. Kalina (B.S.E.E. '74, M.S. '76 and '77) has been employed with John Deere Waterloo (Iowa) Works since 1979, holding positions in reliability, marketing, quality engineering, and materials engineering. For the past six years he has been an environmental engineer, managing solid waste handling and disposal and on-site waste cleanup in accordance with the Resource Conservation and Recovery Act. Kalins lives in Cedar Falls.

Terry W. Duffy (M.S. '75) lives in Sauk Rapids, Minn., where he is president and owner of Duffy Engineering, Inc.

Jack D. Mbligan (B.S. '76) is an environmental engineer with the Tennessee Valley Authority. Mbligan lives in Chattanooga.

David L. Osborn (B.S.M.E. '78) is energy coordinator at the Rock Island (Ill.) Arsenal. Osborn reports that in October 1994, he and the arsenal received the Federal Energy and Water Management Awards for Fiscal 1993 at a ceremony in Washington, D.C. Osborn also received the Army Materiel Command Energy Conservation Award for fiscal 1993 and was recognized by the Department of the Army with an..."
Achievement Medal for Civilian Service for his work to protect the Rock Island Arsenal during the midwest flood of 1993. Os- born lives in Muscatine, Iowa.

Richard J. Pech (B.S.M.E. '78) has moved from Canton, Ohio, to Trinity, N.C.

Henry L. Thomas (M.S. '78) is manager of data services for Martin Marietta Corp., Reston, Va. Thomas lives in Sterling.

Siri Slot (B.S.E. '79) is director of customer care and billing for Unisource Voice Services, a joint AT&T-Unisource venture to provide pan-European telecommunications networks to large multina- tional business. Slot resides in Stockholm, Sweden.

Ruth L. Larson (B.S.M.E. '91) is a reporter for The Washington Times (see page 20). Larson lives in Bowie, Md.

Michael Mascagni (B.S.E. in BE '81) runs a mathematics re- search program for Supercom- puting Research Center, a Wash- ington, D.C.-area think tank. Mascagni reports that he lives in D.C. with his wife and two sons.

Glenn O. Soderlund (B.S.C.E. '82) lives in Pasadena, Calif.

Donald Staley (B.S.E. '82, M.S. '83) is a structural engineer for Relgstad & Associates, a design firm based in St. Paul, Minn. Sta- ley, who lives and works in Des Moines, writes that the firm de- signs casino resorts in Florida, Minnesota, Mississippi, Nevada, and Tennessee: "We do the ho- tels, parking garages, bridges, skyscrapers, theaters, and floating casino buildings."

Jill Marie (McCullough) Clough (B.S.E. '83, M.S. '85, Ph.D. '93) is on the industrial engineering faculty at the University of Wis- consin—Platteville, where in 1994 she was promoted to associate professor, granted tenure, and elected coordinator of the indus- trial engineering program.

Andrea (Wolf) Crews (B.S.E. in ChE '84) works for the hospital products division of Abbott Labora- tories, Abbott Park, Ill., where she recently was promoted to section manager for device product support. Crews lives in Arlington Heights.

Edward F. Gailb (Ph.D. '84) has left his associate professorship in physics at Eastern Michigan University to become vice presi- dent for research at the Dexter, Mich., firm Clark-MXR, which makes ultrafast laser systems. Gailb lives in Saline, Mich.

Joe Gaffin (B.S.E. in EE '84) is technical support engineer at COMED, Chicago, Ill. Gaffin re- ports that he is responsible for all computer hardware and software, CAD/D and design and drafting standards, and training for six departments. Gaffin lives in Wheeling, Ill.

Steven Thomas Sherman (B.S.E. in ME '84, M.S. '86) works with McDonnell Douglas Aerospace. Sherman reports that he recently transferred from Long Beach, Calif., to MD&A-East, St. Louis, Mo., where he is prin- cipal engineer in research and development for advanced tacti- cal aircraft. Sherman lives in Chesterfield, Mo.

Mark L. Ehnen (B.S.E. in EE '85) is sales engineer and territory manager for B. Braun Medical, Inc. The firm, based in Bethle- hem, Pa., designs and markets specialized medical equipment worldwide. Ehnen and his wife, Denise, live in Sacramento, Calif.

Rhett E. Livengood (B.S.E. in ChE '85) reports that he works for Intel Corp., where he has been promoted to senior product- manager in charge of interna- tional marketing for the Mo- bile Pentium™ Processor family in the United States and Japan. Livengood lives and works in Santa Clara, Calif.

Mark J. Mrla (B.S.E. in EE '85) has worked for Midwest Power, Sioux City, Iowa, since he graduated, holding positions as plant engineer, district substition engi- neer, and process control super- visor. Now he is manager of technical information systems, a computer support group for engineering applications. Mrla lives in South Sioux City, Neb.

Alan Propp (B.S.E. in ME '85) is president and founder of Galileo Products, Inc., a Dallas, Tex., consumer products develop- ment corporation begun in 1994. Propp reports that his firm currently is developing advances in bicycle technology.

Thomas J. Seaberg (B.S.E. in ME '86) reports that in June 1994 he passed the ASQC Certified Quality Engineer exam and joined Seaberg Industries, Inc., as a manufacturing engineer. Seaberg writes that he appreci- ated the opportunity to partici- pate in the cooperative education program at the University: "It gave me a great work experience and a head start in the job market." Seaberg works in Rock Island, Ill., and lives in Moline.

Rosemarie S. Lara (B.S.E. in EE '88) reports that she has earned an M.S. in bioengineering from the University of California and works as a software algorithm design engineer at Abbott Laboratories. Diagnostics Division in Santa Clara, Calif. She is a member of St. Joseph Cathedral choir, in San Jose, and belongs to the Loma Prieta chapter of the Sierra Club. Lara lives in Sunnyvale.

Iurgen Luy (Ph.D. '89) is associate professor of industrial management at National Cheng Kung University, in Taiwan. Luy reports that he has just comple- ted a sabbatical leave at Southern Illinois University, Carbondale, and has returned to Taiwan.

(Venevve Bao) Truc Pham- Kantner (B.S.E. in EE '89) earned an M.S. in tropical public health from Harvard University in 1991. She has worked on health care financing in Africa, for the World Bank, and on AIDS policy model- ing in Johannesburg, South Af- rica. She reports that she lives in Mercer Island, Wash., and plans to begin work on a Ph.D. in health policy this year.

John R. Slusarek (B.S.E. in EE '89) is an environmental effects test engineer for commercial and military avionics equipment at Rockwell International, Collins Avionics and Communications Division. He and his wife, Michelle, live in Cedar Rapids.

Bradley J. Lake (B.S.E. in CE '90, M.S. '91) is a project engineer in hazardous waste and wastewater at Strand Associates, Inc., of Madison, Wis. Lake writes that despite living in Madison, he has kept his Iowa spirit.

Barry Mushline (B.S.E. in EE '90) earned an M.D. from the University of Illinois in 1994 and is a resident in orthopaedic surgery at Southern Illinois University College of Medicine. He lives in Springfield with his wife, Belinda (Bloor).

Martin J. Steffensheier (B.S.E. in EE '90) lives and works in Cedar Rapids, where he is a member of the technical staff at Rockwell International.

Gregory A. Bonk (B.S.E. in IE '91) is a senior consultant with the Chicago firm Andersen Con- sulting. Bonk lives in Arlington Heights, Ill.

Joel G. Burken (B.S.E. in CE '91, M.S. '93) is a Ph.D. student in environmental engineering and a research assistant at The Uni- versity of Iowa. He reports that he will complete a three-month internshipt at the Swiss Federal Institute for Environmental Sci- ence and Technology in Zurich, Switzerland, in September.

Jie Deng (M.S. '91) is a senior software engineer at Tenor Instruments, Mountain View, Calif. Deng lives in Fremont.

Jennifer Doran (B.S.E. in ChE '91) is a plant engineer at Exxon Chemical Company's Baytown, Tex., plant, where she provides technical support in the propy- lene, MTBE, and Butene areas. Doran lives in Houston.

Thomas E. Erdahl (B.S.E. in EE '91) lives in Minnetonka, Minn., where he works as an electrical engineer at Rieke Carroll Muller Associates, Inc., designing control systems for water and waste- water treatment facilities and power systems for commercial buildings. Erdahl writes that he hopes to become a professional engineer in two years.

Matt Lane (B.S.E. in IE '91, M.S. '94) is working toward an M.B.A. at The University of Iowa. Lane lives in Coralville.

Brian Rose (B.S.E. in EE '91) has completed his fourth year of medical school at the University of Illinois. He lives in Peoria, Ill.

Peter Vaillant (B.S.E. in IE '91) earned an M.B.A. from Iowa in May 1995 and began work at Paxis Medical Inc., Plymouth, Minn., that summer. The company manufactures specialized medical supplies, including vas- cular grafts for coronary bypass and for kidney dialysis. Vaillant lives in Plymouth.

Brent Wikel (B.S.E. in ME '91) is a mechanical engineer for Stanley Consultants, Inc., in Muscatine, Iowa. He and Cathe- rine Terneus, a University of Illi- nois civil engineering grad, were married in May.

Frank Zawlocki (M.S. '91) is a senior test engineer for Paceset- ter, Inc., St. Jude Medical Company. Zawlocki lives in Wood- land Hills, Calif.

Tom Blaskey (B.S.E. in EE '92) is process manager for electrical maintenance at International Paper's Texarkana, Tex., mill. Blaskey reports that he plans to complete an M.S.B.A. degree this year at East Texas State Uni- versity. He lives in Wake Village.

Kevin Henriksen (B.S.E. in EE '92) lives and works in Dubuque, Iowa, where he writes civil engi- neering and architectural soft- ware for Eagle Point Corp.

Hemant V. Joshi (M.S. '92) reports that he is pursuing an M.B.A. at the University of Houston. Joshi lives in Houston.

Lynn N. LaPlaca (B.S.E. in IE '92) is a sales engineer for Con- solidated Electrical, in Des Moines. LaPlaca writes that she and Scott Heithoff plan to be married in June 1996.

Angela Melton (B.S.E. in ME '92) lives and works in Palm Desert, Calif., where she is a product development engineer for Alphatec Manufacturing, Inc. Melton manages design, develop- ment, and marketing of orthopedic spinal implants.

Mark R. Poppen (B.S.E. in IE '92) lives in Chicago.

Craig A. Raben (B.S.E. in CE '92, M.S. '94) reports that he is the main project engineer in the Chicago office of Creelley and Hansen Engineers. Raben is working on the design of the first wastewater treatment plant for Medellin, Colombia, which currently discharges all of its wastewater into the Medellin
CLASS NOTES

Jennifer Lentz (B.S.E. in BE '93) is a graduate student at the University of Pennsylvania, Philadelphia.

Satyanarayana Golla (M.S. '94) is an associate with Morgan Stanley & Co., Inc., a global financial services and investment banking firm based in New York City. Golla lives in Roselle, N.J.

Kevin Canney (B.S.E. in CE '94) was named Cedar Rapids' sewer maintenance manager in April.

Jennifer Lentz (B.S.E. in BE '93) is a graduate student at the University of Pennsylvania, Philadelphia.

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Michael J. McWeeny (B.S. E. in EE '94) is a software engineer for Motorola, Inc., in Schaumburg, Ill., working on two-way radio communication systems in the private radio networks division of Motorola's loud mobile products sector. McWeeny writes that he still plays French horn.

Julie M. Muenchow (B.S.E. in ChE '94) lives and works in Panama City, Fla., where she is a resin production engineer at Arizona Chemical, a division of International Paper.

Jennifer Lentz (B.S.E. in BE '93) is a graduate student at the University of Pennsylvania, Philadelphia.

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In memoriam

Austin N. Stanton (B.S.E. '25), of Bonham, Tex., Dec. 27, 1994


John B. Cutler (B.S.E.E. '32), of Dexter, Mich., March 15, 1995

Alvin S. Lundy (B.S.M.E. '32), of Cincinnati, Ohio, Oct. 19, 1991

Clifford L. Morgan (B.S.C.E. '37, M.S. '38), of Fair Oaks, Calif., July 25, 1994

Kenneth E. Brown (B.S.C.E. '38), of Moriah, N.Y., January 1993

Sol London (B.S.E.E. '42), of Fort Wayne, Ind.

Advisory Board members

Terry L. Martin President and COO Brown Engineering Company West Des Moines, Iowa

Larry G. McMullen Manager of Product Development John Deere Dubuque Works Dubuque, Iowa

L.D. McMullen CEO and General Manager Des Moines Water Works Des Moines, Iowa

Herm M. Reininga Vice President—Production Operations Rockwell International Collins Avionics and Communications Division Cedar Rapids, Iowa

Gary R. Long President CalComp, Inc. Anaheim, Calif.

Donald K. McEwan President and Chair INAMED Corp. Las Vegas, Nev.

John L. Thousand President and Chairman of the Board Wolverine Western Corp. Newport Beach, Calif.

The following members have just completed terms on the board.

Thomas R. Hanson Managing Partner Fleming Hanson Sales Downers Grove, Ill.

Norbert B. Hemesath Vice President for Advanced Technology and Engineering (Ret.) Rockwell International Collins Commercial Avionics Division Cedar Rapids, Iowa

The College of Engineering Advisory Board met April 21-22 in Iowa City to hear a detailed update on curriculum advances, new programs, and major issues facing the college. In addition to advising the college on a number of academic and strategic issues, the board heard presentations by Malcolm Pope, professor of biomedical engineering, mechanical engineering, and orthopaedic surgery and director of the new Iowa Spine Research Center (see story on page 6), and Edward Haug, professor of mechanical engineering and director of the Center for Computer-Aided Design and the Iowa Driving Simulator.

Kendra Wyatt, a junior from Shell Rock, Iowa, who is pursuing a double major in industrial engineering and Russian, spoke to the group about her experiences as an engineering student at Iowa.

The board also welcomed five new members, who assumed the responsibilities of members whose terms were expiring. Board members include College of Engineering alumni and non-alumni.

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Norbert B. Hemesath Vice President for Advanced Technology and Engineering (Ret.) Rockwell International Collins Commercial Avionics Division Cedar Rapids, Iowa

Gary R. Long President CalComp, Inc. Anaheim, Calif.

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\[\text{Downers Grove, Ill.}\]

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\[\text{Vice President for}\]
\[\text{Advanced Technology and}\]
\[\text{Engineering (Ret.)}\]
\[\text{Rockwell International}\]
\[\text{Collins Commercial}\]
\[\text{Avionics Division}\]
\[\text{Cedar Rapids, Iowa}\]

\[\text{Gary R. Long}\]
\[\text{President}\]
\[\text{CalComp, Inc.}\]
\[\text{Anaheim, Calif.}\]

\[\text{Donald K. McEwan}\]
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\[\text{Las Vegas, Nev.}\]

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\[\text{President and Chairman}\]
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\[\text{Wolverine Western Corp.}\]
\[\text{Newport Beach, Calif.}\]