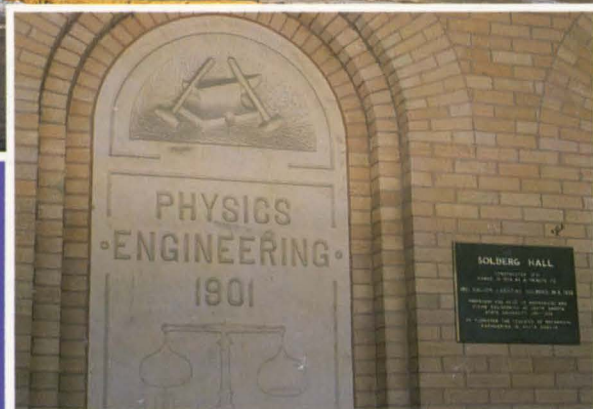
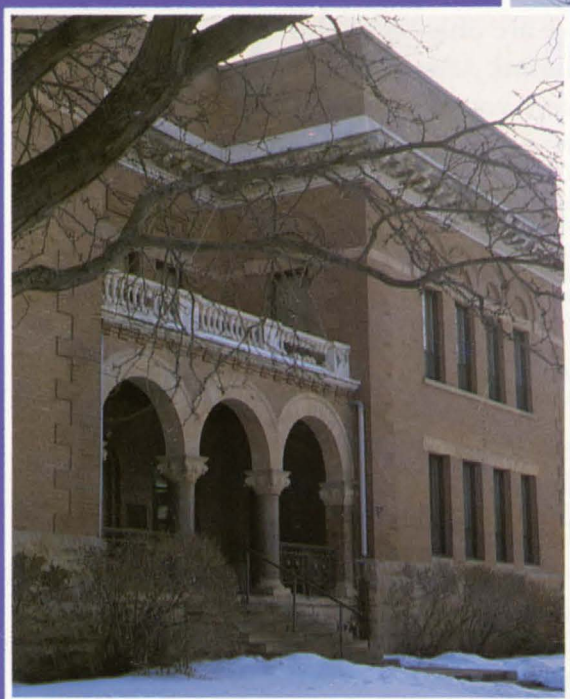


A DYNAMIC FORCE THAT INITIATES MOTION TO A BODY OR SYSTEM

IMPULSE

SOUTH DAKOTA STATE UNIVERSITY
WINTER 1994



SOUTH DAKOTA STATE UNIVERSITY
COLLEGE OF ENGINEERING, BROOKINGS



Dear Alumni:

This issue of the IMPULSE is concentrating on you—the alumni of our College of Engineering and SDSU. We are so proud of you as we hear of your accomplishments and as we continue to receive your support in so many ways. You are the people who generate the excellent reputation our College has throughout the nation and world. I am sure we are only highlighting a few of the many success stories of our alumni. After reading this issue, if you have an idea or accomplishment you would let us “brag” about, please drop us a note and let us know.

Finally, I want to update you on our engineering building project. The SDSU Alumni Foundation Capital Campaign, which was announced in 1993 to begin in 1994, has a goal to raise \$6 million for support of the building. We continue to seek federal and state matching funds to achieve the estimated \$15 million necessary to complete a state-of-the-art building. This building is critical for us to consolidate our undergraduate and graduate training and research efforts from the present nine buildings scattered on and off campus, to three clustered on-campus buildings and one off-campus research building in a new industrial park in Brookings.

As you can surmise, we will be seeking your help in many ways to accomplish this task. I ask that, as you are contacted by our students during the February phonathon, let us know how you might like to be involved in this major effort. This is the largest effort in which our alumni have been involved, and together we can accomplish this objective and make you proud of your alma mater.

I look forward to your suggestions and help in this endeavor.

Sincerely yours,
Duane E. Sander, P.E., Ph.D.
Dean of Engineering

IMPULSE

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ABOUT THE COVER:

The family of Halvor Solberg, former professor and department head at the SDSU College of Engineering, hopes to continue the legacy Halvor began years ago when he designed Solberg Hall. The family is interested in financing the immediate repairs of the building because they feel their background of learning and engineering came from SDSU and from Halvor.

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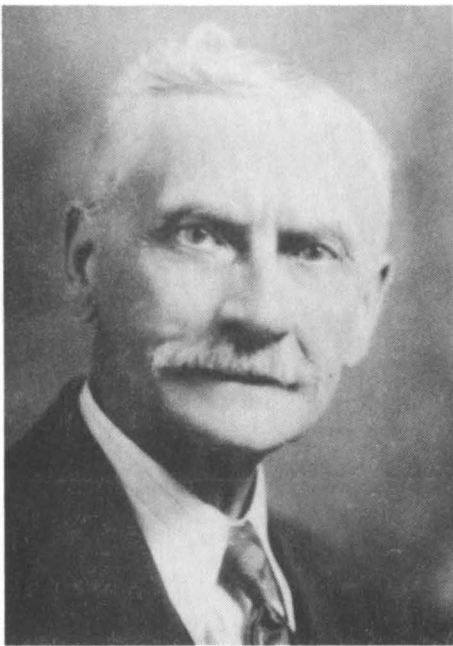
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carpenter for five years, Solberg came to SDSU in 1887 to become a student. Since President McLouth was the only person with a desk, Solberg went to work building desks and the first bookcases on campus.

Although he was only a sophomore, in the fall of 1888 Solberg was selected as woodworking instructor because of his practical experience. After receiving special teacher training at Purdue University over the 1888-89 winter break, Solberg returned to SDSU to teach and complete his degree. In May 1892 he was named professor and head of Mechanical Engineering.

Some of the new courses introduced by Solberg included the practical operating of steam tractors and instruction in the care, management

engineering building. Solberg was purchasing agent, architect and construction supervisor for the two-story building, which was later given to the Chemistry Department.

When the number of engineering students continued to grow, the Legislature appropriated \$40,000 in 1901 to construct a new engineering building, which was renamed Solberg Hall in 1966. Solberg drew the plans, designed the specifications and supervised the original construction. In 1931 he assisted in plans to enlarge and remodel the building. Solberg died in 1932 after serving SDSU for more than 40 years.

One of Solberg's interests was automobiles, so he travelled across the state preaching the need for good roads.

"Unlike many who thought cars were just a fad, Halvor thought they would stay," Russell said.

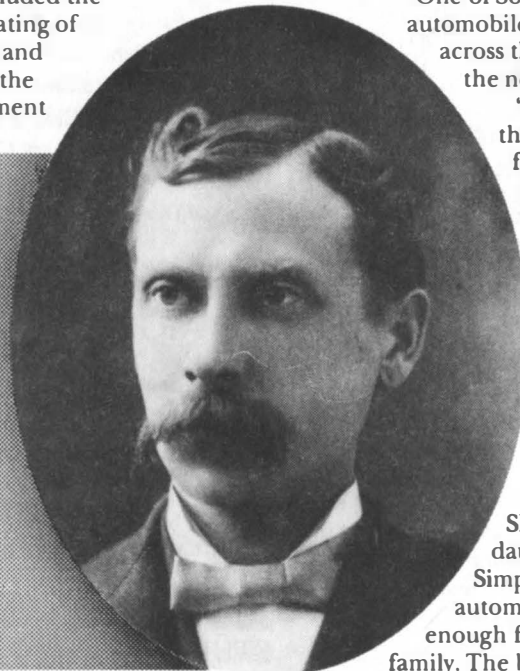
Solberg owned Brookings' first automobile, a 1904 Cadillac Model A with one cylinder, no top, no windshield, no radiator and no speedometer.

In a letter to SDSU, Halvor's daughter, Ruby Simpson, wrote, "This automobile was large enough for all six of us in the family. The back part of the

automobile consisted of two corner seats with the entrance door from the rear between the two corner seats. Mother sat in one corner seat and my sister in the other. I sat on an apple box in front of the rear door. This car had no top and when caught in the rain, we had a canvas to cover everyone but my father."

"The engine had no muffler, so this one-cylinder made a lot of noise as it traveled down the road," wrote Halvor's son,

Harry. "It was very common in those early days for a team of horses, seeing this red monster banging away down the road with lots of noise at the unheard of speed of 10 miles per hour, to scare and cause them to run away."



Solberg

family hopes to continue legacy

He was the first person in Brookings to own a car, he was among the early faculty at SDSU and he designed the building called Solberg Hall. Now Halvor Solberg's family would like to continue the legacy.

Solberg's granddaughter, Marilyn Russell of Boynton Beach, Fla., and her husband, Warren, visited SDSU in October to look at Solberg Hall and discuss improvements that can be made.

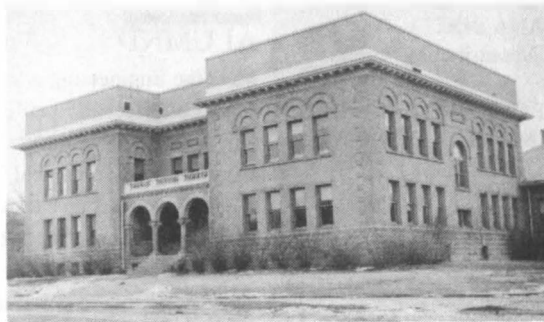
"There is interest in the family to finance the immediate repairs of the building," Russell said. "Other grandchildren, Dick and Chuck Simpson, said they wanted to contribute to the maintenance of the building because they feel their background of learning and engineering came from SDSU and from Halvor."

Solberg and SDSU have ties that go back almost as far as the beginning of South Dakota State College. After emigrating to Minnesota from Norway when he was 17 and working as a

and operation of the automobile, both of which were the first offered at any school in the United States.

Mechanical Engineering started out in the basement of the Old North Building. When it outgrew the space, sheds were constructed where the Intramural Building now stands. In 1930 Solberg wrote, "These sheds would hardly be considered substantial enough for a sheep shed on a farm, but they housed several thousand dollars worth of machinery and served as classrooms or shops for several years."

In 1897 the South Dakota State Legislature appropriated \$5,000 for an



Since no gas stations or auto garages existed, gasoline had to be shipped in by barrel on the railroad, tires were ordered from Indiana and owners had to maintain their own vehicles. Even with this inconvenience, Solberg knew the car would grow in popularity.

In the early 1900s, Solberg discovered that South Dakota would not be included in the Automobile Blue Book, the most complete road guide in America at the time, because no highways were planned for the state. Solberg wrote the company and asked if South Dakota would be included if road information was provided.

After getting the go-ahead from Blue Book publishers, Solberg plotted a road from Mankato, Minn., to Sundance, Wyo. That road is now known as U.S. Highway 14.

In a speech he gave to a convention about what he called the Chicago, Black Hills, Yellowstone to Coast Highway, Solberg described how tourists from the East Coast would travel to the ruggedly beautiful Badlands and Black Hills on their way to Yellowstone and Glacier National Parks.

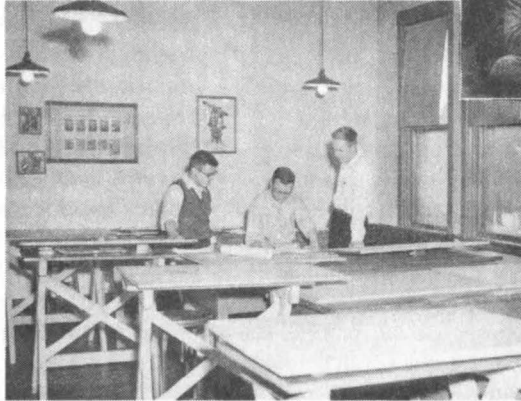
"Every little town along the road will be benefitted as well as the larger cities. Money will be scattered all along the way," he said. "I feel confident that if our roads are improved to a high standard, the benefits derived to South Dakota from tourists' travel will very soon amount to millions of dollars annually.



"Not only this, but if we had a good highway from Pierre to Rapid City, every man with a machine in the eastern part of the state would go to the Black Hills Country for his summer outing, for

health and pleasure."

Solberg and his wife, Boletta, had four children, three of whom are still living. Harry, 95, graduated from SDSU as a mechanical engineer and was



Above: Halvor Solberg (third from left in the front row) is pictured with other early faculty of South Dakota State College in 1888.

Left: Engineering students use work tables in Solberg Hall in the 1950s.

Below: Warren and Marilyn Russell (Halvor's granddaughter) and Engineering Dean Duane Sander stand in front of Solberg Hall during the Russells' October visit.

head of Mechanical Engineering at Purdue University. He now lives in Boynton Beach, Fla. Elizabeth Johnson, 93, received her general science degree at SDSU and taught high school in Washington. She lives in Tumwater, Wash. Ruby Simpson, 91, received her mathematics degree at SDSU and taught school in Montana. She lives in the Spokane Valley area in Washington. Clarence graduated from SDSU in engineering and worked for several years in public utilities. He died in 1970.

"Music and learning were very important to Halvor," Russell said. "He had an extremely large collection of library books which everyone read. All of the children were required to practice piano and learn another musical instrument. Their spouses were college educated. The importance of education has continued across the board in the family."

Russell said the fifth generation of Solbergs are involved in music, engineering

and learning.

"This from a Norwegian immigrant who believed in education and utilizing the changing times," she said.

The legacy of Halvor Solberg lives on.



Solberg Loan Fund helps needy students

Engineering students who have emergency needs have another source to turn to for short-term loans.

Family members of Halvor Solberg, including his three living children, Harry Solberg, Elizabeth Johnson and Ruby Simpson, have contributed to refinance the Solberg Loan Fund. According to the Aug. 20, 1931 Brookings Register, Solberg established the fund to help senior students "who without financial aid would be unable to complete their collegiate work." The fund was dormant for many years until the recent contributions.

Loans are granted to students for immediate needs, like travel expenses before reimbursement, unanticipated but critical costs and limited medical costs. Decisions will be guided by the applicant's need, scholastic success and professional maturity.

"This is a great help for students who run short of funds at a critical time, such as the last semester of their senior year when tuition is due or when an important interview trip must be taken," said Duane Sander, dean of the SDSU College of Engineering.

For more information about the Solberg Loan Fund, contact the College of Engineering at (605) 688-4161.

Alumnus achieves unique success

with water treatment systems, architectural/engineering and financial administrative expertise

Richard Carr was a student in the College of Engineering at South Dakota State University when he designed and participated in the construction of an award-winning float for the 1958 Hobo Day Parade. The float, called unique and ahead of its time, may have marked the beginning of Carr's winning career in engineering.

Today, Carr, a licensed engineer in several states and a member of the National Association of Contractors and the American Arbitration Association panel of arbitrators, was recently named to "Who's Who of the West" and has authored several articles. He is currently involved with the planning, design, financing and construction of water distribution and wastewater treatment projects around the world.

He is president and chief executive officer of Interwest Management Group, a professional management company providing specialized financial and administrative expertise in acquiring private funding for the development of needed public or corporate facilities that would be difficult to finance by the respective public agency or corporation.

Carr began his career in the field of water distribution and wastewater collection and treatment systems as construction engineer in 1963.

His first project included both a water development and distribution system and a wastewater collection and treatment system for a small community named Parmalee. Located on an Indian reservation in central South Dakota, portions of the movie *Dances With Wolves* were later filmed near there.

Another step in the advancement of his career involved working with an architectural/engineering firm from Omaha, Neb., the parent firm of Interwest Management Group, Inc. During the 1970s and 1980s, Carr's professional involvement grew to encompass responsibility for a variety of public works projects. During this period Carr was involved with the planning, design, financing (through government grants), fiscal management,

construction and construction management of projects valued into the billions of dollars.

He worked on water and wastewater treatment projects at Mount Rushmore and other places in South Dakota, Wyoming, Arizona, Montana, California, North Dakota and Nebraska.

Carr founded his company in 1981, utilizing investment capital from former employers.

"Many evenings were spent at our dining room table with local, national and international business men and women discussing first, and most importantly, their respective building projects," Carr's wife, Mary, said. "Projects such as high-rise offices in Los Angeles, luxury housing in Scottsdale (to be developed by a corporation from West Germany), a hotel in Mexico (to be constructed by Italian contractors) and a large retirement center (to be owned by a former member of the Joint Chiefs of Staff), were discussed."

In 1985 Carr became interested in the concept of Privatization and, as a principal of Westrends Development Company, was instrumental in the privatization of the City of Scottsdale's Central Arizona Water Treatment plant.

"This \$25 million facility continues to be a model of the financial success of privatization and public/private partnerships," he said.



Articles concerning this facility have been written in several national publications as an example of innovative and creative solutions to the problems of urban growth.

During the late 1980s Carr's skills and expertise were incorporated into the planning and development of other public works facilities. He was selected by the Scottsdale School system to assist with the identification of the need, the

planning and the subsequent construction of school facilities with a total cost of more than \$100 million.

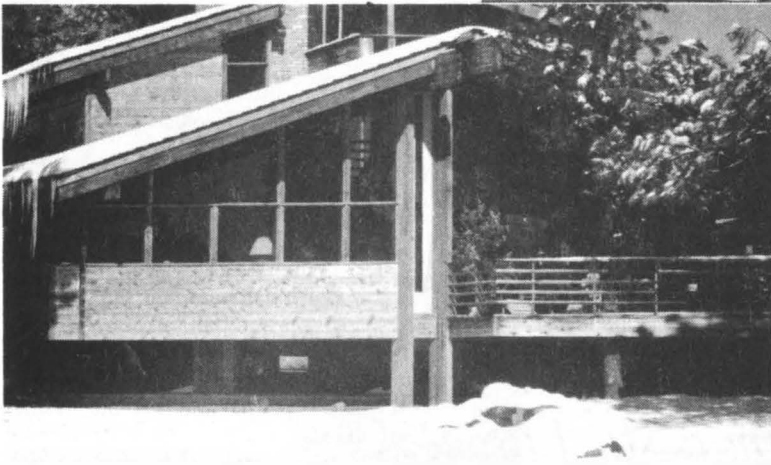
Carr was chosen by many of the nation's largest banks to oversee projects, the most significant of which resulted in his selection by the Chase Manhattan Bank of New York City to provide fiscal management for the construction of the First Interstate World Center, the largest building west of the Mississippi River.

He was the first non-structural steel craftsman to stand on top of the 75-story building in downtown Los Angeles and he provided exclusive representation of Chase Manhattan during the development of the \$400 million facility. As a result of his involvement in this very successful project, the Arizona Republic



Above: Richard Carr talks with villagers during a volunteer water project he designed and installed. The project brought running water to this remote village about 100 miles north of Mexico City.

Left: Mary Carr had a hand in the architectural design of the Carrs' award-winning vacation home, situated at the sixth tee of the Forest Highlands Golf Course near Flagstaff, Ariz.



graduated from SDSU in 1960, were married

children. John Carr, who earned a bachelor's degree from the University of Arizona, has returned to college. He is a senior civil engineering major at Northern Arizona State University.

featured him in its June 14, 1990 Sunday business section.

Carr is currently making plans to work on water projects in Russia and other places around the world where money is in short supply.

"As government budget deficits continue to grow, grants and loans from federal and state agencies become more difficult, if not impossible, to obtain," he said. "So I concluded that tomorrow belonged to those communities who are able to identify alternative means of financing public facilities."

Articles on Carr have also appeared in *Engineering News* and in newspapers in Tucson, Phoenix and Scottsdale, Ariz., and in Las Vegas, Nev.

Carr and his wife, who both

Dec. 20, 1959, during winter break of their senior year at State. They began their married life in a mobile home. Now they live in an award-winning, 3,000-square-foot vacation home.

"This \$25 million facility continues to be a model of the financial success of privatization and public/private partnerships," Carr said.

Located near the sixth tee of the Forest Highlands Golf Course near Flagstaff, Ariz., the Carr home has been featured in several magazines. Mary Carr, who earned a degree in home economics education, helped architect Eddie Jones design the home. She also did the interior design

and decorating.

The Carrs have two children. Tori Carr Martori earned a degree in graphic design from Arizona State University. She and her husband have three

Another daughter, Tami, incurred brain damage when she was six years old due to viral encephalitis. The tragedy motivated them to work with a support group of parents with disabled children. They worked with the Arizona State Legislature to get recognition for the disabled and were successful in obtaining funding to build a home for adult disabled individuals. They completed seven group homes in the greater Phoenix area, one of which was dedicated to Tami, who died in 1985.

Mary Carr said her education at SDSU has enriched her life in many ways.

"I am very grateful for what I learned and, most importantly, for the people I met at South Dakota State University," she said. "In all of our many lives, it is not the houses we build, but the people who enter them that bring the smiles to our faces and the tears to our eyes."

Even though Basilio Gonzalez had spent 10 years working for the Canadian government in Latin America and Africa, a colleague at the United Nations didn't think he was the right person for a U.N. area coordinator position in Somalia.

Because of various circumstances, the 1972 SDSU electrical engineering graduate from Montreal, Quebec, Canada, was sent to Bosaso in Northern Somalia from May to July. After his work was completed, the same colleague recommended Gonzalez for coordinator of U.N. procurement and logistics for all of Somalia.

Gonzalez started his year-long assignment in early November. He is stationed in the country of Djibouti, just west of Somalia, and spends one week each month in Somalia.

Recently, Gonzalez wrote Art and Irene Dracy of Brookings to tell them how he was doing. He stayed with the Dracys when he attended SDSU. Art is a former SDSU professor who worked in the bioengineering area.

Irene said because of his position, the U.N. is sending Gonzalez all over Somalia. Conditions there haven't improved much, but he is still healthy.

Before he left for Africa, Gonzalez came to SDSU to visit his daughter, Catharina, a biology major.

"The United Nations collects money from donor nations to give to underdeveloped countries," he said during his visit. "My job is to see the money is distributed wisely to the areas in Somalia that need it most."

And Somalia desperately needs help. "You can't imagine how a country like this looks," Gonzalez said. "I have been in many poor countries in Africa and Latin America, but when I went there, I said, 'This is the worst.'"

He said the country completely lacks organization. There are no phones, no banks, no education and very little health care. "Everything needs to be restored again, but it's complicated because they're still fighting," he said.

While in Bosaso last summer, Gonzalez looked at all sectors of the economy to determine where help was needed. He said agriculture, health, education and building infrastructure is important, but livestock is a priority.

The problem with livestock developed because most of the animals in Bosaso are sold to Saudi Arabia, which

requires them to be shipped alive for religious reasons. About 30 percent of the animals are rejected when they reach their destination because they are in poor physical condition.

"What we try to do with this program is start to re-establish their economy from the bottom," Gonzalez said.

In Bosaso, he said, there are more displaced people who are trying to escape



Basilio Gonzalez helps Somalia rebuild

"What we try to do with this program is start to re-establish their economy from the bottom."

fighting in southern Somalia than people who are native to the city. Schools there have been closed for two or three years because displaced people are living in them.

U.N. officials have been working on strategic plans for the region which will be developed in phases. Gonzalez is in charge of implementing some of these plans and spending \$2 million by the end of the year.

"We have to write a detailed plan of evaluation," he said. "The U.N. wants to see results from the money spent."

Gonzalez said it's very important for industrialized nations to send money to underdeveloped nations to slow "uncontrolled mass migration" from these nations to the north. However, it's also important to remember the humanity of all people in the world.

"These people are human beings like

the rest of us, so they have basic needs," he said.

"When you go places like that, you are half engineer who plans logistics and half missionary," Gonzalez said. "Workers should be completely dedicated to the needs of the people and be ready to work hard."

It's necessary to learn about the people and how they think.

"Once you know all this, then you can plan and say what you have to say," he said.

Gaining respect is also important for personal safety, because many Somalis have guns and could use them at any time. To help protect their personnel, the U.N. requires that bodyguards accompany workers at all times.

Gonzalez said he has had several colleagues who have been killed, kidnapped or injured in Somalia.

"This can happen to me anytime. This is a common thing you can expect," he said. "You have to be extremely careful with everything."

But Gonzalez said he wants to be in Somalia and help the country get back on its feet.

"I want to go back and show them that what I said was true. I want to show them that things do get done," he said. "I told them in a few months they were going to have all they needed to improve their agriculture, and I want to see that that happens."

Empi CEO

named 1993 Entrepreneur of the Year

A diversity can be a roadblock to success. But for Don Maurer, it was a springboard to the top.

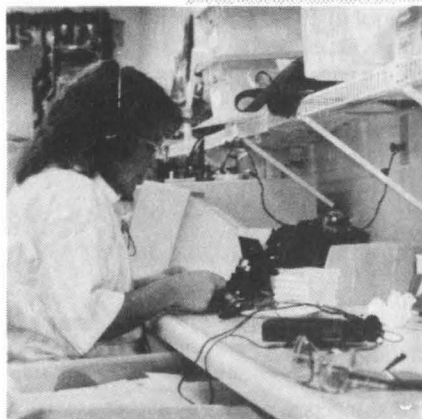
Maurer, a 1966 SDSU electrical engineering alumnus, was selected one of the region's 24 best business builders in the Ernst and Young Inc. magazine's 1993 Entrepreneur of the Year awards.

For Maurer, such an honor didn't come easy. He overcame a rough home life, where getting a meal sometimes meant digging through the grocer's garbage. In later years he battled the 'experts' and the insurance companies to make his products accessible to the public. But Maurer has always been a fighter.

Through Empi, his company, Maurer tackled problems faced by millions of people. He developed products to help alleviate incontinence in women, devices for alleviation of chronic pain, drug infusion without needles for arthritis and stimulators for movement of paralyzed muscles. Not always for a profit, either. Maurer knows how it feels to lose money. But it's the risk-taking that has put him on the pedestal of greatness.

Categories for the Entrepreneur awards are: Emerging; High Tech/Medical; Master; Retail/Wholesale; Manufacturing; Service; Construction/Real Estate; and Turnaround. Maurer was the winner in the High Tech/Medical category.

Since 1986, Ernst and Young, Inc. magazine and national sponsor Merrill Lynch have coordinated the national awards program, designed to highlight entrepreneurial accomplishment. Minnesota joined the program five years ago with the support of local law firm Gray, Plant, Mooty, Mooty and Bennett.



Empi employees at work: Top right: Tricia Louve inserts parts into printed circuit boards for Eclipse devices. Above: Sandy Duke assembles return electrodes for an Iontophoretic Drug Delivery System. Right: Workers solder components on circuit boards for Eclipse devices.

In the selection process, names of business owners are often submitted to a panel of professionals at Ernst and Young by professional advisors or customers.

Finalists are selected on the basis of innovation, financial performance and personal commitment to business and community.

Empi makes Forbes list

Striving to stay number one is a task Empi enjoys tackling. Once again, the company has proven its worth to its customers and critics by being listed in Forbes magazine as one of the top 200 small businesses in America.

Don Maurer, a 1966 South Dakota State University electrical engineering graduate, is the entrepreneur responsible for founding Empi, which manufactures electrical devices to relieve most pain due to injury or illness. But if you ask Maurer, he'll credit much of Empi's success to his employees and the hard work and care they put into the products they make.

The Forbes award, Maurer said, "is a real honor for the company. It's a nice recognition for the company and everyone involved. We've risen to the top and we're number one in the world for what we do."

Empi is no newcomer to the Forbes list. On Maurer's wall are two other plaques proclaiming the same recognition — awards that have brought a fair share of stock brokers and investors to Maurer's door.

"I get five of those guys a day, and they want me to buy something," he said with a chuckle.

One big reason for Empi's success is its high quality products and professional sales methods, with emphasis on 'selling the science,' unique customer service and direct selling to the clinics, providing products through a National Distribution Center. It was a big risk to change distribution methods and it required a large investment in computers and systems. But the risk paid off, not only for Empi, but for its customers.

Maurer is very excited about what has become of his company. And he's still a little startled about his success.

"I've been blessed and fortunate," he said. "I feel pretty lucky, too, because some of the guys that went to school with me were a lot smarter and it just seemed that they were going somewhere. I think I'm the only one in my graduating class who is listed in Forbes magazine."

Whether it's luck or skill, Empi is again on pace to make that prestigious list. Maurer just hopes that President Clinton's new health care reform bill does not interfere with the costs of developing new technologies.

"Technology can really lower the costs of medicine," Maurer said, and Innova, Empi's feminine incontinence system, is proof in point. Corrective surgery for incontinence costs about \$10,000, while Innova, which looks like a tampon and emits mild electric signals, is an excellent treatment alternative for many types of incontinence without the risks and it costs only \$1,200.

If technology is the door between cost and cure, then Maurer and Empi hold the key.



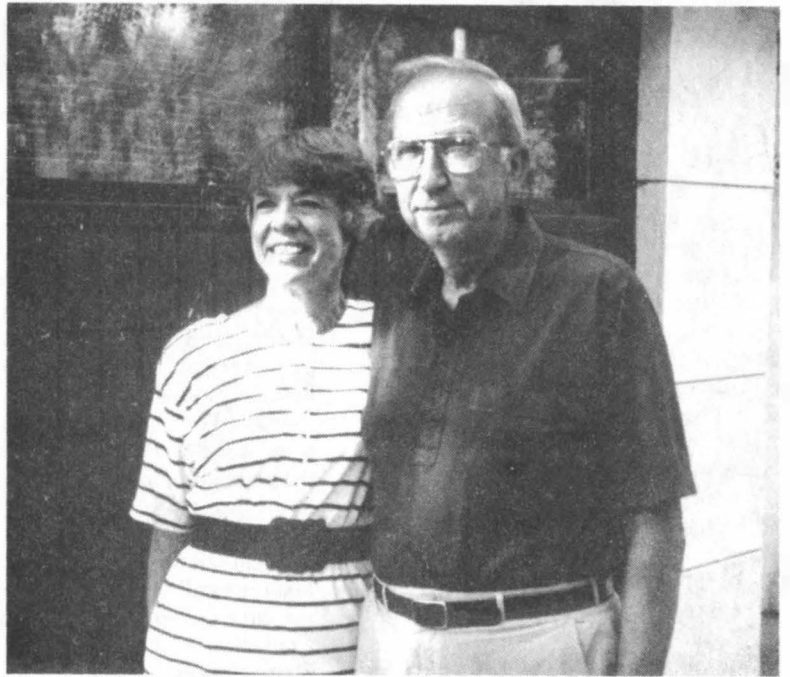
Jensen wins ASME award

SDSU alumnus Roland J. Jensen received the 1993 James N. Landis Medal from the American Society of Mechanical Engineers for "distinguished technical and managerial leadership in the electric power industry in the planning, engineering, construction and operation of large coal, nuclear, hydro and resource recovery plants."

Jensen recently retired as chairman and CEO of NRG Energy, established in 1989 when its parent company, Northern States Power, formed the non-regulated subsidiary to expand into the independent power industry. Jensen oversaw the areas of independent power, resource recovery, thermal, cogeneration and biomass operations.

Prior to joining NRG, Jensen served in many areas of NSP. He joined the company in 1960 and became chief nuclear engineer in 1964. Other positions he has held include manager of Nuclear Plant Projects in 1972, director of Internal Management Consultants in 1975 and director of Corporate Strategy and Planning in 1978. Jensen moved to NSP's Wisconsin Company and became its vice president of Commercial and Division Operations in 1981 and vice president of Power Supply in 1982. He returned to the parent company in 1985 as vice president of Engineering and Construction and in 1988 became the company's senior vice president of Power Supply.

Jensen is currently a member of the Association of Edison Illuminating Companies Power Generation Committee, American Nuclear Society, American Society of Mechanical Engineers, Dean's Advisory Council for the Institute of Technology at the University of Minnesota, Dean's Advisory



SDSU alumni Deloris and Roland Jensen stand in front of the SDSU Foundation building during a recent visit to the campus of their alma mater.

Council for the College of Engineering at SDSU and the Minneapolis Convention Center Implementation and Development Committee. He is a past member of the American Society of Mechanical Engineers Nuclear Containment Code Committee, Electric Power Research Institute Research Advisory Committee and numerous Edison Electric Institute committees.

The son of Chris and Cicely Jensen of Lake Norden, Jensen graduated from Lake Norden High School in 1947. After serving in the U.S. Air Force, he attended SDSU, where he earned a bachelor of science degree with honors in mechanical engineering in 1959. He earned his master of science in business administration from the University of Minnesota in 1963. He received the SDSU Distinguished Engineer Award in 1982.

Jensen's wife, Deloris E. Mangels Jensen, earned bachelor's and master's degrees at SDSU. She has written professionally and taught home economics and related subjects at adult, college and high school levels in South Dakota and Minnesota. The Jensens live in Golden Valley, Minn., and have two children and three grandchildren.

Jensen was recognized for "distinguished technical and managerial leadership in the electric power industry in the planning, engineering, construction and operation of large coal, nuclear, hydro and resource recovery plants."

Utility industry

a past, present and future of changes

Times have changed since Roland Jensen's father-in-law owned the Dempster electric company, when customers were charged not by the kilowatt hour, but by the number of light bulbs they used.

During a visit to the SDSU campus Dec. 8, Jensen, BSME '59, former CEO of NRG Energy, Inc., talked to engineering students and faculty about past and future trends of the utility industry.

Electricity, Jensen said, breaks down into three functions: generation, transmission and distribution. Jensen's presentation dealt mainly with generation.

During its first 70 years, the utility industry was one of fairly consistent growth. Consolidation was commonplace as small companies became more efficient. During its first 60 years, efficiency of generation continued to improve while the cost of electricity decreased. But after the 1960s, the industry saw its efficiency level off and costs begin to rise.

The electric industry is being restructured through deregulation, which provides an opportunity for companies like NSP to establish a nonregulatory subsidiary to work in electric generation anywhere in the world.

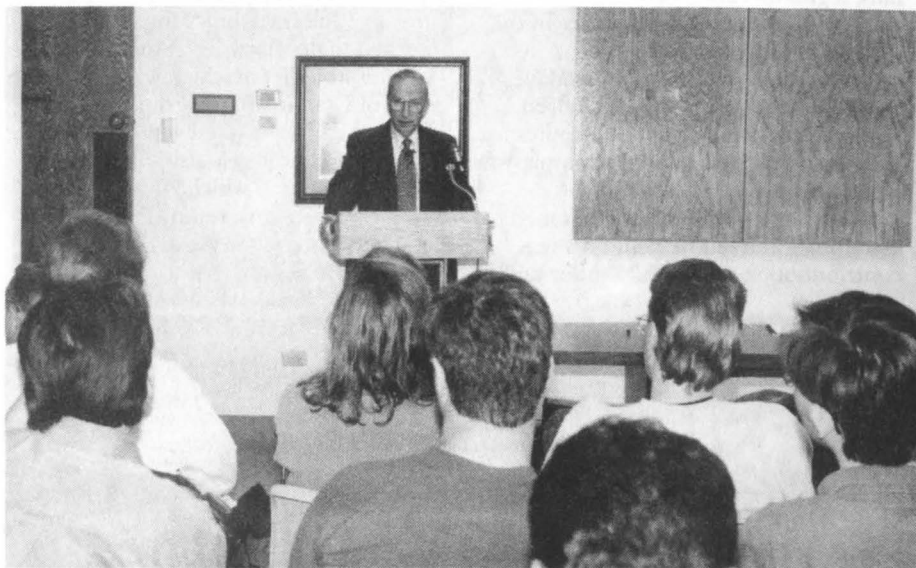
NSP set an ambitious goal for NRG: to accrue 20 percent of NSP's total earnings by the year 2000. NRG is well on its way to meeting that goal.

"We have been very successful, mainly in places not expected," Jensen said. "Sixty percent of our business is international." NRG does business in Germany, Australia, the Ukraine and South America.

NRG has projects in electric production, coal cleaning, nuclear fuel and steam. The company is the heating and cooling supplier to most of downtown Minneapolis.

A workforce reduction of 550 NSP employees since last year tells a rather bleak story of the current job market.

"NSP has always been a very cost efficient engineering company. (The credit) all goes to the engineers and engineering design and I feel midwest engineers go at that with a different approach."



Engineering alumnus Roland Jensen speaks to engineering students and faculty at SDSU Dec. 8 about the how the utility industry has changed since the first light bill was figured according to the number of light bulbs in use.

But though jobs in the industry aren't plentiful right now, Jensen said they will be in a few years again.

"Large units are aging and will need upgrading or replacement to meet requirements," he said.

What the utility industry looks for in power engineers today, Jensen said,

includes computer knowledge and language skills. "It's a far cry from what a utility person would have found a few years ago," he said. "The power industry is very different now than when I went into it.

"The first thing is, you must be completely confident with computers." For

example, transmission tower designs that were once done with a slide rule are now done on computer. "This allows engineers to do a lot of 'what ifs,'" Jensen said. "The computer shows how a tower will react under different circumstances." Because of the foreign work, it's also important for power engineers to be fluent in at least two languages. "That's a very strong asset," Jensen said.

New areas the utility industry is

concentrating on, Jensen said, include efficiency improvements (pollution control) and cost issues.

"There's a strong movement toward conservation of electricity," he said. "The government is requiring companies like 3M to become energy efficient."

On the cost side of the coin, NRG is a strong overseas competitor.

"It turns out we can go over to Germany or any other country and just cream 'em as far as cost," Jensen said. "They can't compete with our techniques." What would cost a foreign customer 17 cents per kilowatt hour, for example, NSP can supply for five cents. "One of the reasons NRG has been so successful is we've learned how to do things well and do them cost efficiently."

Though foreign utilities oppose the competition, "foreign governments support NSP coming in," Jensen said. "That's what really led us into the international business.

"NSP has always been a very cost efficient engineering company. (The credit) all goes to the engineers and engineering design and I feel midwest engineers go at that with a different approach."

Daktronics

celebrates 25th anniversary

Twenty-five years ago, two South Dakota State University electrical engineering professors thought they might make a mark in the medical instrumentation field. Luckily for sports fans, legislators and businesses, the company became a global leader in the electronic display industry.

Duane Sander, dean of the College of Engineering at SDSU, and Aelred Kurtenbach, president of Daktronics Inc., founded the Brookings company in December 1968.

"We were both interested in medical electronics and felt we could make a contribution in the field," Sander said.

"But we soon realized we didn't have the capital to do that. Since we were at a university and had an interest in sports, it was a natural transition into sports displays, which evolved into the general information display market."

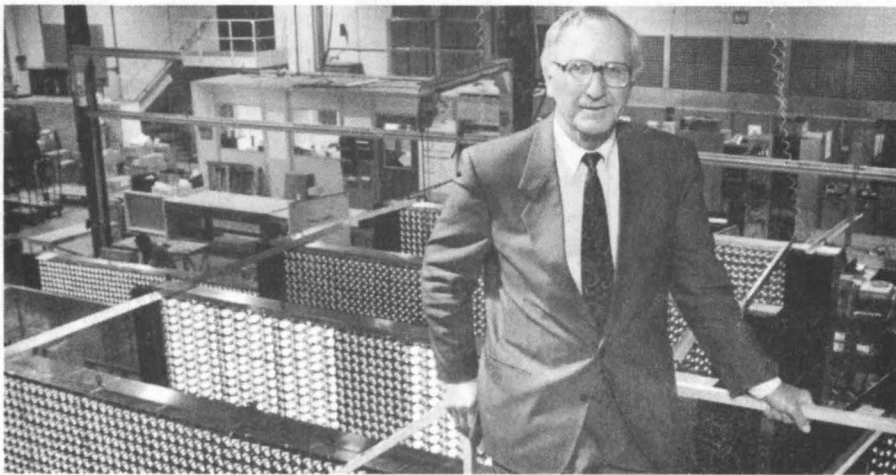
In 1969 Daktronics Inc. employees worked to develop electronic voting systems, the first of which was sold to the state of Utah in 1970. At the same time, Daktronics Inc. worked with wrestling coaches to develop Matside®, a three-sided scoreboard which rests on the arena floor so fans, referees and competitors can see the scores without missing the action.

After its first year in business, the company had \$2,352 in revenue and six employees working in 250 square feet of space. Now it employs more than 450 people working in three buildings with 122,000 square feet of space. Sales in 1993 totalled more than \$30 million.

Some of the products Daktronics Inc. manufactures are time and temperature displays and computer-programmable displays with message and animation systems. Recent innovations include the Glow Cube® reflective and Starburst® color displays, which can be seen on scoreboards across the nation, including The Omni in Atlanta, the Hoosier Dome in Indianapolis and the Giants Stadium in New Jersey. More than 40 legislative assemblies in more than 30 U.S. states have Daktronics voting or sound systems.

But the United States isn't Daktronics' only customer. The company will supply scoreboards for the 1994 Winter Olympics in Lillehammer,

Dr. Aelred Kurtenbach, president of Daktronics Inc. of Brookings, shows the company's manufacturing facilities. Kurtenbach and Dr. Duane Sander, dean of the SDSU College of Engineering, founded the corporation 25 years ago. (Brookings Register photo by Eric Landwehr)



Daktronics

wins Business of the Year, seven other awards

Daktronics Inc., an electronics display manufacturer in Brookings, won the prestigious Achievement in Business Excellence (ABEX) Business of the Year award, presented during the 1993 South Dakota Business Excellence Awards program in

September.

The awards are given biennially by the South Dakota Industry and Commerce Association. The Business of the Year award is given to one firm demonstrating outstanding performance in an individual achievement or overall

success.

Daktronics Inc. also walked away with seven finalist trophies for Community Involvement, Customer Service, Environmental Awareness/Resources Management, Exports, Plant and Environmental Safety, New South Dakota Product and Quality.

However, 1993 is not the first year Daktronics Inc. has received ABEX award recognition. In 1985, the first year of the awards, the company was a finalist in the New South Dakota product and Export categories. In 1986 Daktronics Inc. was the Export winner and a Manufacturing finalist. The following year it was named



Daktronics, an electronic display manufacturer in Brookings, was presented with the Business of the Year and seven other awards during the Achievement in Business Excellence (ABEX) Awards program in September. Pictured are, left to right: Dr. Aelred Kurtenbach, Irene Kurtenbach, Carla Gatzke, Vern Voelzke, Cathy Voelzke and Dr. Duane Sander.

Norway. Among the many other sports scoreboards Daktronics Inc. has supplied are the 1992 Summer Olympics in Barcelona, Spain, the 1988 Winter Olympics in Calgary, Canada, and the 1985 World Cup Athletics in Canberra, Australia.

"We had high expectations for the company when we started, but you never can anticipate the accomplishments that can be made with a dedicated workforce," Sander said.

Kurtenbach said much of the success of the company can be attributed to committed and capable employees, many of whom are SDSU students or graduates.

"Our major resource is people and we have not nearly exhausted that resource," he said.

Both Sander and Kurtenbach said they believe Daktronics Inc. will continue to expand in the future and increase its share of existing markets.

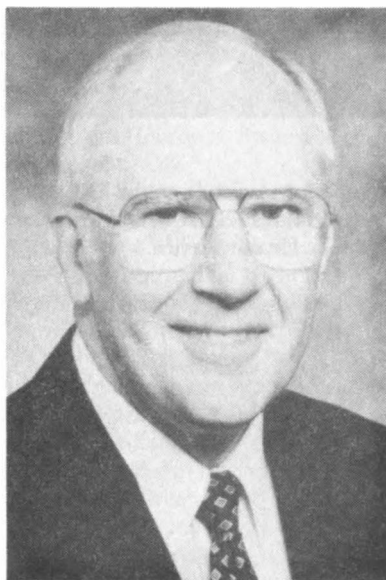
"We think there's still a lot of potential in the computer-programmable display world," Kurtenbach said. "We see new applications every day."

Daktronics' next step is to offer common stock to the public.

Business of the Year and Manufacturing winner and Export finalist.

Beginning in 1989 the awards became biennial. Daktronics Inc. was again named Business of the Year and Exports winner as well as Business Expansion/Job Creation and New South Dakota Product finalists. In 1991 the company won the Business Expansion/Job Creation and New South Dakota Product categories.

Daktronics Inc. was founded in 1968 by SDSU College of Engineering Dean Duane Sander and former SDSU electrical engineering professor Aelred Kurtenbach. It has become a world leader in designing, marketing and manufacturing electronic voting systems, scoreboards and computer-programmable displays.



Wilkens

*to retire as
CEO of
Northwestern
Public
Service*

Though Bob Wilkens will retire this year as chief executive officer at Northwestern Public Service, the 1951 SDSU electrical engineering graduate intends to maintain the ties he has built with the SDSU College of Engineering.

Throughout his outstanding career, Wilkens has been extremely supportive of the SDSU electrical engineering program, said electrical engineering professor Wayne Knabach.

Wilkens helped form the Center for Power System Studies at SDSU and, earlier in his career, spoke at many seminars concerning electrical power. Not many schools have power system studies, Wilkens said, and he is happy to see SDSU providing students this kind of education.

"Wilkens has given students a glimpse of the industry that teachers can't give students in the class," Knabach said.

Junis Storry, former electrical engineering professor, said Wilkens is a man who has shared much electrical technology with the faculty and students at SDSU over the years. Wilkens, who received the SDSU Distinguished Engineer Award in 1977, has provided training and tours for students at the Big Stone Electric Generating Station in Milbank, as well as other stations within the state.

Northwestern Public Service has hired many SDSU graduates and provided numerous internships. Last summer alone, Northwestern hired about 17 interns.

The SDSU Electrical Engineering Department has done an excellent job of keeping up with technology, Wilkens said. "We look at the SDSU engineering college as a key resource for good quality engineers," he said.

The College of Engineering, Wilkens said, made it possible for him to stay in South Dakota and enabled him to get his degree. Following his military service after graduating from SDSU, he said, the dean of engineering suggested he apply at Northwestern Public Service. That was the beginning of Wilkens' career. And though he ended up on the management side of the engineering business, Wilkens kept in close contact with SDSU.

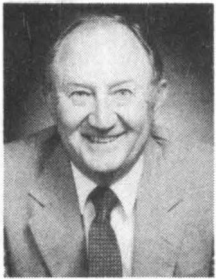
"Bob is a very articulate executive in the industry," Knabach said. "He has always possessed great communication skills."

Storry said Wilkens is a fine human being and that he has enjoyed staying in contact with him over the years.

To ensure that the ties between SDSU and Northwestern Public Service continue after he retires, Wilkens has arranged for Duane Sander, dean of the College of Engineering, Storry, Virgil Ellerbruch, assistant dean of Engineering, and Lewis Brown, assistant professor of electrical engineering, to meet with his successor, Meryl Lewis.

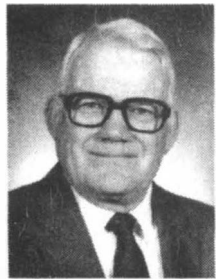
Meet the Dean's Advisory Council...

Many of the following people will be familiar to IMPULSE readers, for their names have appeared in this publication before, often more than once. This time they are mentioned as members of the Dean's Advisory Council, the group of people who advise the dean on maintaining the College's relations with outside industry and the technical as well as personnel needs of industry.



Herb Bowden graduated from high school in Hurley in 1943, served in the U.S. Navy until 1946 and earned his bachelor's degree in television technology from the American Television Institute in Chicago in 1948. He worked for Admiral Corporation in Chicago as a technical writer, field engineer and chief field engineer from 1948 to 1952, when he started Sencore, Inc. in Chicago with \$800.

Bowden built the company to \$4 million in sales per year by 1970, when he moved Sencore to Sioux Falls, where it has grown to near \$20 million in sales a year as a leading company in the state and in the test equipment industry.



Richard Coddington earned his BSCE from SDSU in 1957 and his master's in public health from the University of Minnesota in 1959. He retired with the rank of captain from the Commissioned Corps of the U.S.

Public Health Service in 1989. His career included working for three states (South Dakota, California and Michigan) and one territory (Guam) and 26 years of federal service, including three tours with the Indian Health Service and 18 years with the San Francisco region of the U.S. Environmental Protection Agency. For 10 of those years, he was deputy director of the Water Management Division in the EPA Region Office.

Coddington currently lives in Rapid City, where he works part-time as a consultant, with an emphasis on federal and state regulatory programs for environmental health and environmental protection. He has won a silver medal for

superior service from the EPA and a meritorious service medal from the U.S. Public Health Service.



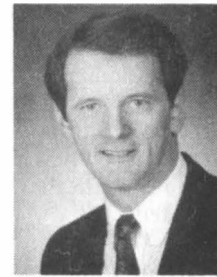
Errol P. EerNisse, a Rapid City native, earned his BSEE from SDSU in 1962, his MEE in 1963 and his doctorate in 1965 from Purdue University and his M.Ind.Ad. from the University of New Mexico in 1974. He

was with Sandia National Laboratories from 1965 to 1979, doing experimental and theoretical research on ferroelectric, diffuse ferroelectric and piezoelectric devices. From 1968 to 1979 he supervised various research divisions involved in radiation damage effects of semiconductor devices, microwave semiconductor devices and implantation physics of semiconductors, metals and insulators.

In 1979 EerNisse helped found Quartex, Inc. and Quartzronics, Inc. as research and development companies working on quartz resonators as sensors. He is president of both companies. He received the W.G. Cady Award from the 37th Annual Symposium on Frequency Control in 1983 and the Distinguished Engineer Award from SDSU in 1985.

James H. Grommersch is a 1947 BSME graduate of SDSU and attended Michigan State University to study profit performance measurement in 1979. He has 34 years experience as a senior sales and marketing executive in both domestic and international markets. From 1981 to 1983 he was consultant for Claas of America, Inc. in Columbus, Ind. From 1958 to 1981 he served the Ford Motor company in Troy, Mich., in various management positions, beginning as assistant district manager and ending as assistant general manager of sales and marketing. From 1947 to 1957 he worked as product engineer, then district zone manager for Dearborn Motors Corp.

Grommersch is listed in the 1977 Wards Automotive Who's Who and was named an SDSU Distinguished Alumnus in 1973. Since 1983 he has been involved in grain and tree farming near Brookings.



Richard C. Gustaf is a Sioux Falls native and 1973 SDSU BSME graduate. He has worked for 20 years as a mechanical engineer with emphasis on heating, ventilating and air conditioning design; plumbing, fire

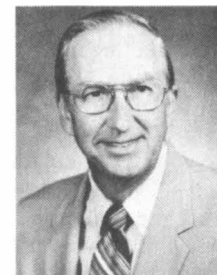
protection and building automation system design. He was associated with Ellerbe, an architecture and engineering firm in Minneapolis, Minn., for four years. He is currently president and general manager of Spitznagel Inc., a Sioux Falls company he has served for 16 years.



Harold H. Hall graduated from Parker High School in 1942 and earned his bachelor's degree in physics from SDSU in 1948, his master's in physics from the University of Oregon in 1949 and his doctorate in physics

from the University of Wisconsin in 1952. He has been affiliated with engineering development of thermonuclear weapons at Livermore and initiation of the satellite and Polaris project at Lockheed. He was manager of the first decoy project for ICBM, director of research and advanced development for Ford's Aeronutronic Division and chief scientist for Project AGILE for the Department of Defense. He was president of HRB Singer, an aerospace engineering company, and vice president for engineering development of the Office Information Systems for Xerox and is vice president of the Corporate Research Group Staff for the Xerox Corp. Dr. Hall is retired and living near Fulton, S.D.

Hall has been listed in Who's Who in America, American Men and Women of Science, and the Register of Corporations Directors and Executives.



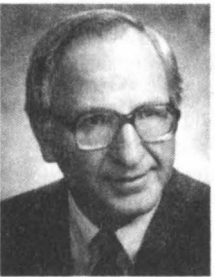
Roland J. Jensen, a Lake Norden native, served in the U.S. Air Force and earned his BSME from SDSU in 1959 and his MSBA from the University of Minnesota in 1963. He recently retired as chairman

and CEO of NRG Energy, Inc., a position he held since 1990. Prior to joining NRG, he served in many capacities at Northern States Power, joining NSP in 1960. Jensen received the James N. Landis Medal in 1993 and the SDSU Distinguished Engineer Award in 1982.



Larry G. Kappel earned his BSEE from SDSU in 1963, his MSBA from Pace College in 1974 and his SM from the Massachusetts Institute of Technology in 1980. He has worked for Northwestern Bell

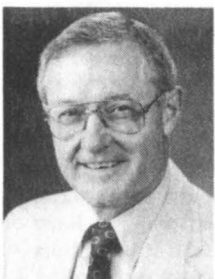
Telephone Company and US WEST since 1963, beginning as a management trainee and serving in his current position as vice president of Strategy Implementation for US WEST Advanced Technologies since December 1992.



Aelred J. Kurtenbach, a Dimock, S.D., native, earned his bachelor's degree from the South Dakota School of Mines and Technology in 1961, his master's from the University of Nebraska in 1962 and

his doctorate from Purdue University in 1968, all in electrical engineering. Co-founder of Daktronics, Inc. he has served as director, president and treasurer of the company since its origin. He taught courses on the theoretical and practical aspects of data communication at Purdue and SDSU and is currently teaching an entrepreneur class at SDSU. He has 40 years experience in the fields of communication, technical services, computer systems, electrical engineering education and small business management.

Kurtenbach was twice named South Dakota's Small Businessman of the Year, received the SDSU Distinguished Engineer of the Year award in 1990 and has been listed in Who's Who of American Business Leaders.



Ronald J. LaVallee earned his bachelor's in engineering physics from SDSU in 1958 and his master's in physics from St. Louis University in 1965. He has served for more than 35 years with McDonnell Douglas in a variety

of engineering and management roles, currently as director of the Rotorcraft Pilot's Association Program and manager of Advanced Avionics and Controls for the McDonnell Douglas Helicopter Systems organization in Mesa, Ariz.



Charles A. Lundquist, a Webster native, earned his bachelor's degree in engineering physics from SDSU in 1949 and his doctorate in physics from the University of Kansas in 1954. He began his scientific career in 1953 as

assistant professor of engineering research at Pennsylvania State University, later joining a research team at the Army Ballistic Missile Agency. In 1960 he was transferred to NASA and, in 1962, became assistant director for Science at the Smithsonian Astrophysical Observatory in Cambridge, Mass.

Lundquist rejoined NASA's Marshall Space Flight Center in 1973 as director of the Space Sciences Laboratory. In 1981 he became a visiting professor of physics at the University of Alabama in Huntsville. In 1982 he accepted the position of director of research at the university and is currently associate vice president for research.



James W. McCarville, an Ortonville, Minn., native, earned his bachelor's and master's degrees from the University of Minnesota. He worked for Proctor and Gamble for a few years and in 1967 moved to 3M, where

he worked in various laboratory and manufacturing engineering operations and as an internal corporate process and quality engineering consultant. In 1975 he moved to the Medical Surgical Division plant in Brookings as the process engineering manager. In 1984 he began the successful development and implementation of a plant-wide computer integrated manufacturing system. In 1990 he moved to corporate headquarters, where he developed the long-range architecture and plans for 3M manufacturing systems. He is currently manager of Process and Quality Manufacturing Applications.

McCarville has served as adjunct professor of mechanical engineering at SDSU and was named Industrial Engineer of the year by the local IEEE chapter. His father and two of his children are graduates of the SDSU College of Engineering.



Jim L. Mann is a 1949 SDSU BSCE graduate. With more than 40 years experience in heavy construction, he retired in 1989 to become a construction consultant in Plymouth, Minn. He

has served as arbitrator and expert witness for several construction disputes. He was president of Green Holdings, Inc. for three years and spent a large part of his career, from 1957 to 1986, serving in various capacities with S.J. Groves and Sons, a heavy and highway construction company. He began his construction career with the U.S. Army Corps of Engineers on the Fort Randall Dam. After four years with the Corps, he joined Western Contracting Corp. in Sioux City, Iowa, before joining S.J. Groves and Sons in their Ann Arbor, Mich., regional office.

Mann was named President of the Beavers in 1982 and SDSU Distinguished Engineer in 1986.



Jan Nicolay earned her bachelor's degree in education from Northern State University and her master's in education from SDSU. A teacher and administrator for 30 years, she has served five terms

with the South Dakota House of Representatives and is chairperson of the House Appropriations Committee.

Nicolay has received numerous honors, including BPW Woman of the Year, YW Leadership, Toastmaster's Leadership and Ernest Buckley Merit Service awards.



Jeffrey L. Nelson is a 1971 SDSU BSEE graduate. He served in the U.S. Army from 1971 to 1974 and has worked in various capacities for East River Electric Power Cooperative since 1974, serving as general manager since 1990.



Robert C. Olson, a 1960 SDSU BSEE graduate, served in the U.S. Army from 1953 to 1955. He began employment with Control Data in 1960, serving in a wide variety of positions until he retired in 1986 as

general manager of the Technology Development Division for Control Data's computers. He has taught at SDSU and served as a technical advisor for manufacturing for a medical start-up company and as a consultant to Gov. George Mickelson's South Dakota Industrial Development staff. He currently lives in Pequot Lakes, Minn., and is chairman of a five-county region commission in Minnesota to develop an economic blueprint for regional economic development. Olson was named SDSU Distinguished Engineer in 1989.



Wayne H. Peters, a 1947 Humboldt High School graduate, earned his BSCE from SDSU in 1951, then spent two years serving in the U.S. Air Force. He has been associated with Egger Steel Company for 32 years, eight

years as sales manager and the past 22 years as executive vice president and general manager. He is a past president of the SDSU Advisory Board and a recipient of the SDSU Distinguished Engineer Award in 1977.



Roland C. Potter is a 1959 SDSU BSEE graduate who studied statistics at the University of Tennessee. He started the Prime Process Management firm in 1987 to pursue his interest in organizational

transformation and development to help organizations achieve Total Quality Management. Prior to starting his firm, he had nearly 30 years management experience in the disciplines of quality, engineering, program management, accounting, marketing support, sales manufacturing and general management.



Warren E. Ramseyer, a Smithville, Ohio, native, owned and operated his 164-acre grain and livestock family farm until its sale in 1992. He was an operator at the Water Plant and assistant manager at the Water Pollution

Control Plant for the City of Wooster until his retirement in 1986. He currently does some consulting work for small systems in Ohio.



Fred J. Rittershaus, a Menno native, earned his BSCE from SDSU in 1958, his master's from SDSU in 1962 and studied at the Illinois Institute of Technology. He was instructor and assistant professor of

civil engineering at SDSU for seven years. He has been with Banner Associates, Inc. for 29 years, currently serving as senior vice president, corporate director, corporate treasurer and assistant corporate secretary. He served 36 years as an NCO and commissioned officer in the U.S. Air Force and the Air National Guard, retiring as brigadier general.



Duane W. Sudman earned his BSEE from SDSU in 1957 and his MSEE from Montana State University in 1959. He retired in 1989 as vice president of SCI Systems responsible for Rapid City Operations. From

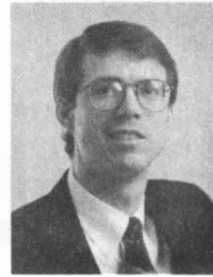
1960 to 1987 he worked in various positions for Control Data, beginning as design engineer and ending as general manager of a Manufacturing Division. From 1957 to 1960 he was an instructor at Montana State University. He served two years in the U.S. Navy and eight years in the Naval Reserves.



Joan S. Trygstad earned her BSCE from SDSU in 1976, her bachelor's in political science from SDSU in 1977 and her doctorate in law from the University of Nebraska in 1979. She has worked as a law clerk and

associate attorney in Des Moines, Iowa, a

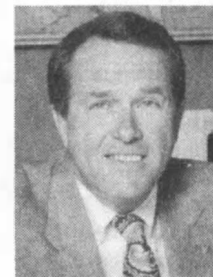
senior associate attorney in Minneapolis, a division counsel and senior patent attorney in Torrance, Calif. and a senior technology transfer officer in Los Angeles, Calif. She is currently a business consultant on intellectual property matters in Los Angeles.



Don Ufford, a Vermillion native, graduated from SDSU in 1987 with a BSAE. After he coordinated an industry task force for the South Dakota Governor's Office of Economic Development, he

attended Purdue University, where he earned a master's in engineering from the School of Mechanical Engineering. He is presently finishing an MBA concentrating in corporate strategy at the University of Michigan.

Ufford is currently a technical strategist for Ford Motor Company in Detroit, Mich., responsible for developing worldwide technical strategy for noise and vibration research and development. At Ford he has held engineering and administrative positions in vehicle test and analysis, advanced vehicle design engineering and advanced vehicle systems engineering.



Allen H. Watkins earned his bachelor's degree in engineering from Virginia Tech in 1961, when he became a reactor test engineer for Polaris Nuclear Submarines. From 1962 to 1973 he worked in

technical management for the NASA-Manned Spacecraft Center, for seven years in Gemini and Apollo flight systems development and for four years in advanced vehicle development, Skylab experiments and operations, Earth survey aircraft and operations and the NASA Earth Resources Program.

Watkins was director of the EROS Data Center, National Mapping Division, U.S. Geological Survey from 1973 to 1991, when he became director of the mapping division for USGS in Reston, Va. He has received numerous honors and awards, including the NASA Achievement Award for the Mercury Space Flight Program, the NASA Commendation Award and the Department of the Interior Meritorious Award.

Energy grant

benefits students, businesses

An energy grant received by the SDSU College of Engineering not only provides a great learning experience for SDSU engineering students, it also helps companies save money.

A year ago the South Dakota Governor's Office of Energy Policy helped to obtain \$50,000 for SDSU to develop a program through which students conduct energy audits and give energy and money saving suggestions to industrial clients in the manufacturing and processing areas.

"As a result of the state assistance, we were able to obtain U.S. Department of Energy funding for an energy analysis and diagnostic center program within the Mechanical Engineering Department," said Kurt Bassett, assistant professor of mechanical engineering and director of the energy program.

So far, SDSU has conducted energy audits in South Dakota. But with the federal funding, that area will increase to cover a broader radius of SDSU, including the Twin Cities and Sioux City. SDSU is one of 30 sites in the country which does the audits.

"Our goal is for student involvement," Bassett said. "The other goal is money savings by either conserving energy or shifting energy use to off-peak periods."

Nine engineering students, ranging from freshmen to graduate students, work in all aspects of the program. Mechanical engineering graduate student Mike Twedt of Mitchell coordinates the students.

"The undergraduates are responsible for getting the majority of the work for the program done," Twedt said. "I train them for auditing and make sure they understand the principles and procedures."

The program's assistant director, associate professor of mechanical engineering Charles Remund, said the project is a real asset to students.

"It keeps students involved in engineering so they can find out if that's what they like," Remund said. "Not many students get that kind of experience before they get out of school."

"I've learned to separate between the college book problems and the real-world, estimating-type problems," Twedt said. "In this line of work, they don't give you all the information. You have to do a lot of estimating. It bridges the gap between being a college student and the working world."

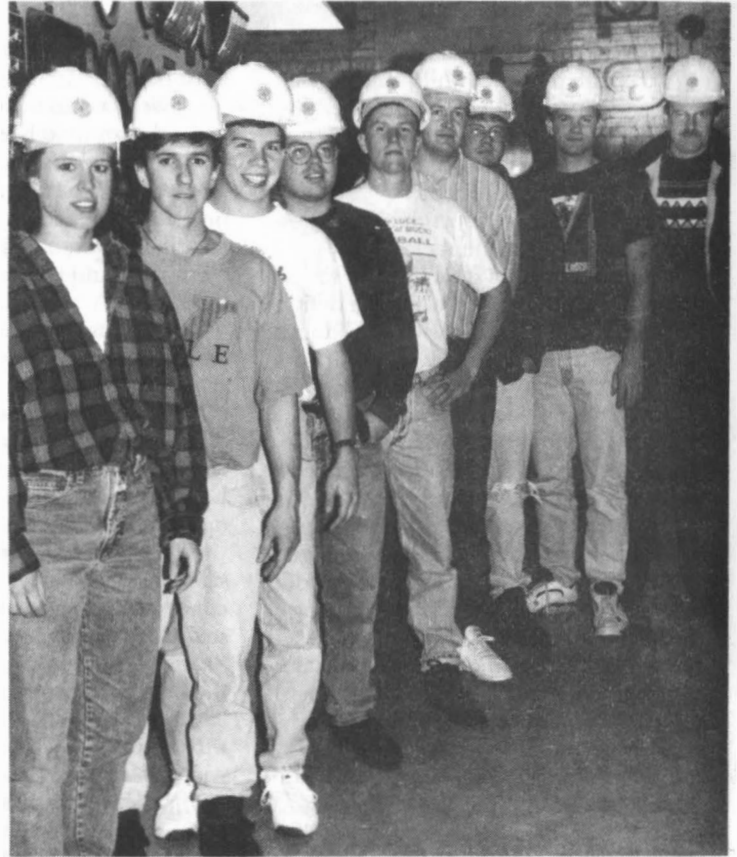
An audit of a smaller industry takes about a month, Twedt said. It takes longer for larger industries and during the school year when students have classes.

Industry officials are pleased with the results. Bob Hilger, plant engineer at Truss-Bilt in Huron, said the audit was helpful.

"When we do any maintenance, we will follow their suggestions instead of going on the way we're going now," he said. "For example, some of their suggestions were insulating pipes and changing lighting."

For qualified companies, audits are free of charge. All information the company supplies and any data SDSU collects is kept confidential. The information is added to a national data base to find common energy conservation opportunities for companies.

Interested company representatives can contact Bassett or Twedt in the SDSU Mechanical Engineering Department at (605) 688-4817.



Above: Standing in the SDSU Physical Plant are the students who conduct the energy audits: Kristi Podzimek, Dale Henning, Aaron Tonsager, Mike Teeman, Mike Twedt, Mike Hubbard, Quentin Flippin, Colin Gaalswyk and advisor Kurt Bassett.

"Our goal is for student involvement," Bassett said. "The other goal is money savings by either conserving energy or shifting energy use to off-peak periods."

Instructor teaches entrepreneurship class at SDSU

Imagine a class that teaches students to create products while building self confidence. You've just imagined the real-life class being taught at SDSU by engineering instructor Al Kurtenbach, president of Daktronics Inc.

In his Entrepreneurship: New Enterprise Development class, Kurtenbach teaches students how to become entrepreneurs, which he defines as people who come up with a product or service for people and get it to the people.

"I feel that young South Dakotans are in a position to generate business," Kurtenbach said. "Entrepreneurs need to have self confidence to be successful." "We had an idea already in mind toward a design, but we didn't know how to go about it as a business aspect," said Todd Rose, a junior mechanical engineering major. Rose, whose business partner is Mike Gunderson, a junior mechanical engineering major, said the class also brought inspirational speakers to the students.

The class is for anyone at SDSU and in the community and is open to all majors. It teaches students to have self confidence in their own ideas, to come up with an idea and to act on that idea. Lots of people have good ideas, Kurtenbach said, but to have an idea and

a commitment to that idea is not held by most people.

"We got into the class because we had a design we'd been working on and we wanted to know how to go about marketing it," Gunderson said. "We also needed general knowledge and information on being an entrepreneur, on owning and running your own business."

Kurtenbach believes students with no exposure to entrepreneurship are simply being prepared to go to work for others. The conservative nature of most schools naturally lessens the interest of most university graduates. Kurtenbach hopes his class opens the door of opportunity toward entrepreneurship.

The business world, Kurtenbach said, revolves around three main concepts: to spawn, to strengthen or to steal. To spawn is to create a business, but he said young people today don't have the proper environment in which to learn how to do this. To strengthen is what universities do today; they train young people to work for existing companies. To steal is to entice businesses from one state into another.

"I am pleased with this course opportunity for our students," vice president Carol J. Peterson said. "Entrepreneurship can be taught and Dr.

Kurtenbach is a good one to convey this critical information to university students."

Kurtenbach's class uses books, outside lectures and hands-on experience to create the final project: a business plan of the student's own design.



Al Kurtenbach, center, talks with junior mechanical engineering majors Mike Gunderson, left, and Todd Rose during the Entrepreneurship: New Enterprise Development class Kurtenbach is teaching at SDSU.

Knabach named Engineer of the Year for Siouxland area



Wayne Knabach, professor of electrical engineering and coordinator of the Center for Power Systems Studies at SDSU, was named 1993 Engineer of the Year for the Siouxland Section

by the Institute of Electrical and Electronics Engineering.

"I consider it an honor to receive the award," Knabach said. "It's always special to be recognized by your peers." Engineering has been part of Knabach's life since he graduated from Harrisburg

High School and went to work for the Northwestern Public Service Company in Yankton. He left the company to serve in the military, returning after a two-year stint.

"I was on campus for a meeting one day and Professor Gamble, head of the department, approached me with the idea that I should come and get my master's degree," Knabach said. "He put me on staff teaching immediately, which is kind of unusual. The idea of getting a master's degree this way interested me, so I decided that I would do that. I liked teaching here so much, I stayed."

During his 36 years at SDSU, Knabach has taught about 1,500 students. "God has been good to me," he said. "I was privileged to get to know a lot of

talented and personable students in my career. I felt that it's part of the job to help students find opportunities. The satisfaction of the job is seeing that they are using what they learned on campus."

Virgil Ellerbruch, head of the SDSU Electrical Engineering Department, said Knabach's student alumni hold influential positions across the United States. "Over the years many of his students have earned credit towards graduation by working on special projects for the utilities industry," Ellerbruch said. "Through his direct coordination of the Center for Power System Studies, his present students benefit from the varied programs and the direct contact with practicing engineers in the region. This activity brings together the students and

Center for Power Systems Studies celebrates 25 years

The Center for Power Systems Studies, an entity within the Electrical Engineering Department in the College of Engineering at South Dakota State University, celebrated its 25th anniversary this year.

"It's a good feeling, seeing CPSS turn 25. It was a successful move," said Junis Storry, the first coordinator of CPSS. "I foresee it staying for a long time unless the industry is drastically changed."

CPSS was formally established by the South Dakota Board of Regents in July 1968. It was established because of a shortage of young engineers in the electrical field, a shortage of financial support for undergraduate students and an existing interest among electrical utilities and manufacturers to provide opportunities for graduating students.

"The original thrust was to support graduate students in graduate and research work, but the thrust changed to supporting undergraduate students because the companies became more interested in undergraduates," said professor Wayne Knabach, coordinator of CPSS for the past 21 years.

CPSS has improved the image of power engineering on campus,

developed a strong weekly seminar series and developed a mutual support of technical education and industry needs.

"It is gratifying to me to see what our electric power students have done when they've graduated," Storry said. "We can name chairmen, presidents, CEO's, COO's and chief engineers."

CPSS has developed the following supporting activities for students: a student seminar course covering topics not discussed in the classroom, industry conferences/workshops/short courses that are held on various topics featuring industry personnel, field trips, undergraduate and graduate financial support, laboratory equipment and support, teaching aids, professional publications and books to help instructors, professional meetings for faculty and students, a CPSS reading room for industry newsletters and magazines, nationally-recognized guest speakers, education-industry interface, support of future goals and research activities.

CPSS supports a special undergraduate project in electric and magnetic fields studies; two students receive financial support and the project satisfies the students' design requirement in the Electrical Engineering curriculum.

Three people were involved in the development of CPSS, the late Dean John Lagerstrom, Frank Fitchen and Dean Emeritus Storry, who was coordinator for four years. They met with the top executives of six power companies: Northern States Power, Northwestern Public Service, East River Electric, Ottertail Power, Iowa Public Service (now Midwest Power) and Interstate Power, which is no long in the group. CPSS has expanded to nine full members and several associate members.

Storry, an SDSU alumnus, said there are former SDSU students who benefited from CPSS in Greece, Nigeria, Cameroon and Norway. He said that CPSS was developed to accomplish two main goals: financial assistance for students and a favorable attitude for students entering the electrical industry.

"It is gratifying to me to see what our electric power students have done when they've graduated," Storry said. "We can name chairmen, presidents, CEO's, COO's and chief engineers."

practicing engineers which enhances learning for the students and keeps the engineers abreast of current student thinking."

SDSU graduate Rod Scheel, electrical engineer at Ottertail Power in Minnesota, vouched for Knabach's concern for students and their personal development. "He has conducted field trips, helped find funding and brought speakers to SDSU," Scheel said. "A number of students' careers have benefited from him. He is very unselfish. He has never looked for gain or recognition and he loves SDSU."

Knabach helped Jim Wilcox get an East River Cooperative scholarship at SDSU. Wilcox is now an electrical engineer with Northern States Power Company in Sioux Falls. "He's a good

professor, committed to his students and involved with both the state government and his area communities," Wilcox said.

"He is a very dedicated teacher," said Duane Sander, dean of the SDSU College of Engineering. "He came to SDSU from the industry and has not only transferred his practical knowledge of the power industry to the students, but he has also continued his contact with the industry. If we were to visit any organization related to the power industry in the Midwest, they would know Knabach. He is very dedicated to the students' training and is highly respected in the industry."

Knabach served on the IEEE Siouland Section Board of Directors for six years and was the first president of the Power Engineering chapter of that section. He was nominated for four

Edison Electric Institute Power Engineering Educator of the Year awards and was named Outstanding Educator of the Year in 1991 by the Siouland section of IEEE. He received the IEEE Centennial Award in 1984.

He has consulted for Brookings Utilities and others companies and, for 16 years, has served on the South Dakota Electrical Commission, having been appointed by three different governors. He is a member of the South Dakota Electrical Council and has served as coordinator of the Center for Power Systems Studies for 22 of its 25 years.

"His professionalism and dedication to students and the power industry make him most deserving of the IEEE Engineer of the Year Award," Dean Sander said.

Tiltrum named chair of national society

Charles Tiltrum, professor of civil and environmental engineering and SDSU alumnus, was named national chairman of the American Society of Civil Engineers Committee on Student Services, which supervises the activities of ASCE's 225 student chapters and 20 clubs.

"I would like to continue to be involved on the national level, and I really enjoy staying active with the students," Tiltrum said. "The best thing about my job is working with these outstanding young leaders. The student leaders in the chapter are enthusiastic, with a great work ethic."

Dwayne Rollag, professor and head of the Civil and Environmental Engineering Department at SDSU, has been a staunch supporter of the local student chapter activities and national committee participation, Tiltrum said.

"It takes the interest of the administration to encourage students and staff to become involved," Tiltrum said.

Prior to the spring meeting, each committee member reviews about 20 of the annual reports submitted by the student chapters and clubs. The best reports are recommended for awards, certificates of commendation and honorable mentions.

ASCE gives four Vice President Awards for the top chapter from each zone and a Ridgeway Award for the best report from across the country. SDSU was one of the 11 finalists of the 1993 Ridgeway Award. ASCE Student Chapter members can also apply for many scholarships, fellowships, grants and contests.

Each spring national committee members attend as many student chapter regional conferences as possible, as well as contests, like the National Concrete Canoe Races sponsored by Masterbuilders, a manufacturer of concrete additives. SDSU will host the regional canoe contest April 23.

The ASCE Committee on Student Services sponsors workshops, one in each zone on four consecutive weekends early in the spring semester. Two or three new leaders from each chapter attend to learn about ASCE's background, to socialize and to brainstorm ideas for ASCE and the student chapters. Tiltrum said management conferences are held concurrently to allow students to

exchange ideas, ask questions and socialize with professionals.

Tiltrum and the other committee members are working with the ASCE's Committee on Younger Members to develop a plan to help students retain interest in the ASCE after graduation. They hope to develop the plan at the spring meeting to be held in mid-April.

Profs hooked on bridge



It may just be another card game to most of us, but to engineering professors Ali Selim and Bin Cong, bridge is a skill they continue to refine.

"It is the most sophisticated card game," Cong said.

"It's easy to learn, but hard to become good at. Communication is a very important part of the game. You have to have a feeling with your partner. You try to communicate to your partner what kind of hand you have so you can get the best contract hand."

Selim is often Cong's partner during matches in Brookings. Cong has been playing for 10 years, Selim for more than 25. During a trip to Boston, Selim was involved in a "super hand."

"I went to a bridge club and didn't have a partner, so I picked up someone," Selim said. "One hand came up and was really tough to play. We managed to make the bid, then I found out the gentleman I played with was the bridge editor for the Cleveland newspaper. He was very impressed with the way the hand was played, so he published it."

Like most games, Cong said, bridge involves some luck. But if you know some probabilities, you have a better chance at guessing correctly.

"If you have bridge as a habit, you can do it for a lifetime," he said. "It's a pretty good way to kill some time and train your brain, too."

Selim named ASCE Fellow

Dr. Ali A. Selim, professor of civil engineering and director of the South Dakota Transportation Technology Transfer Service at SDSU, has been elevated to the membership level of fellow within the American Society of Civil Engineers, one of the highest professional recognitions civil engineers can receive from their peers. Dr. Selim has been a member of

ASCE for 20 years and a very active member of the ASCE's Pavement Committee for seven years.

Swiden elected to NAMTAC

LaDell R. Swiden, director of the Engineering and Environmental Research Center at SDSU, has been elected to a two-year term on the National Association of Management and Technical Assistance Centers Board of Directors.

NAMTAC is an organization of university-affiliated agencies that puts the experience and knowledge of the academic community to work on behalf of business productivity and economic growth.

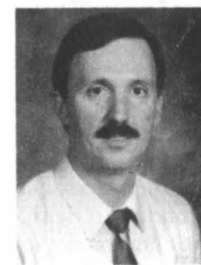
Swiden has served on the long-range planning committee and will continue to work with the publicity committee.

Heusinkveld wins ATEA award

Marion Heusinkveld, former professor of electronic engineering technology at SDSU, was presented a Distinguished Service Award from the American Technical Education Association during the 30th National Conference on Technical Education in San Diego, Calif.

Heusinkveld retired from his position at SDSU Dec. 31, 1993. He has served on the ATEA board of trustees for several consecutive terms and was a regional representative and co-chair of the Marketing and Research Committee. He was with SDSU since 1984 and a member of ATEA since 1964.

Brown attends IEEE, QNDE



Dr. Lewis F. Brown, assistant professor of electrical engineering at SDSU, attended the IEEE Technical Program Committee (TPC) meeting in Chicago, Ill., and the Quantitative Nondestructive

Evaluation (QNDE) Conference in Brunswick, Maine, last summer.

In Chicago Brown helped organize the 1993 IEEE International Ultrasonics Symposium.

In Maine he presented a paper and met with representatives of the aerospace industry interested in his ferroelectric

Rothermel to conduct research at Argonne



Not many students are chosen to intern or work at the Argonne National Laboratory based outside of Chicago. Scott Rothermel was one of the fortunate ones.

In a nationwide competition,

Rothermel became the first computer science major from SDSU in six years to win the honor. He will work at Argonne, world renowned for its atomic research and development on some of the most powerful and technologically advanced computers in the world, Jan. 17 through May 13. His project will explore infrared imaging/diffusivity measurement methods as a way to characterize features of continuous fiber ceramic matrix composites.

"There are students competing from about 3,200 schools nationwide. This includes schools that have better facilities and are just bigger in size," said Jerry Bergum, head of the SDSU Computer Science Department. "We only have six full-time faculty and three teaching assistants to handle about 1,000 students. But we think we have a very competitive program."

Rothermel's 3.99 GPA and Air Force ROTC membership made him the kind of student Argonne was looking for.

"He learns a lot on his own," Bergum said. "He's the kind of student that you only have to explain a problem to once and he will figure it out."

SDSU ag engineering students win national competition

A team of SDSU agricultural engineering students won a national competition sponsored by the American Society of Agricultural and Biological Engineers.

The team designed and created the "Skid-Mix," a multi-purpose mixer attachment for a skid-steer loader. The project was sponsored by Du-Al Manufacturing of Sioux Falls, which is currently evaluating the commercial potential of the design.

Team members presented to judges during the International ASAE meeting in Chicago Dec. 15 through 17.

"One of the judges told me he was impressed by the finished quality of the design and that it had commercial applications," said Ralph Alcock, head of the SDSU Department of Agricultural Engineering. "This is the first time SDSU has won the competition, so it's quite an accomplishment."

"Winning an award like this helps students realize their extra effort and attention to detail has paid off. They get an appreciation for what it takes to be competitive in design."

Team members are Darren Fehr, Tim Murray, Darin Schriever, Lance Minor and Mike Monnens.

Carlson wins Karnes Scholarship

Ryan Carlson of Brookings won the Guy O. Karnes Scholarship for 1992-93. In recognition of the many years Karnes devoted to education at Brookings High School, especially in the area of science, his annual award is presented to a high school senior who demonstrates a strong interest in the areas of science or engineering. Carlson enrolled at SDSU last fall as a freshman electrical engineering major.

Artz, Fletcher win Sigma Phi Delta Scholarships

Winners of 1992 Sigma Phi Delta Scholarships from SDSU were Kelly Artz and Chad Fletcher.

Artz, EE '94, was Phi Chapter's secretary and housing chairman. He attended the 1992 Joint Province Convention, is a member of the International Society for Hybrid Microelectronics and IEEE and participated in the SDSU Engineering Phonathon.

Fletcher, AgrE '92, was charter secretary, chapter guide, chapter greeter and a resident assistant. He supervised the budget committee, set up a welcome-back dance for Brown Hall and was part of the float committee and the Engineering Phonathon. He was vice president of the student branch of ASCE and a member of Alpha Epsilon honor society for agricultural engineers.

Tabor home to three Outstanding Civil Engineering Students

Maybe there's something in the Tabor water that explains the outstanding engineering abilities that keep showing up in the town's young. Whatever it is, it's working.

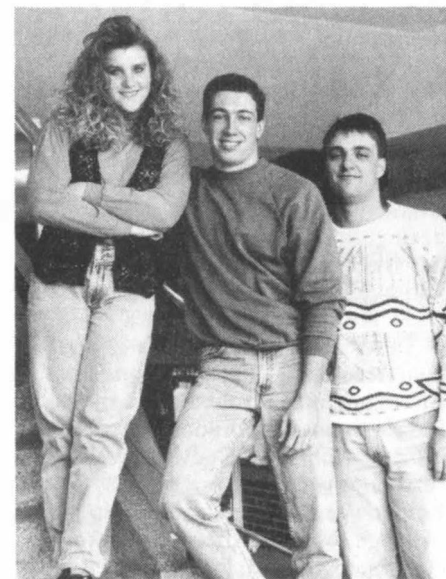
Three of the five Outstanding Civil Engineering Students of the Year at SDSU hail from Tabor and Bon Homme High School, which tallies a total enrollment of just 200 or so students.

Honored were freshman Alisa Prunty, junior Joe Honner and senior Jeff Kortan, who won this year for the third time. The award is based on GPA, campus involvement and participation in the American Society of Civil Engineering Student Chapter.

Prunty, Honner and Kortan say strong Bon Homme math and science departments and strong community values have helped them succeed. After graduation, all three hope to stay fairly close to their home state.

Other Tabor engineering students at SDSU are Anthony Becvar, Jim Flammig, Todd Frank, Jeff Hauck, Greg Kniffen, Eric Prunty, Greg Rothschald and Jerry Schmoll. Kniffen received the outstanding sophomore award in 1992.

Winning the outstanding awards at the sophomore and senior levels were Ann Quenzer from Mitchell and Donald "Joe" Duncan from Ivanhoe.



Civil engineering students Alisa Prunty, Jeff Kortan and Joe Honner continue to make their hometown of Tabor proud.

ENGINEERING EXPLORATION DAYS

YOUR FOUNDATION FOR SUCCESS

EED recruits manufacturers, employers, inventors

Manufacturers, engineering employers and ingenious inventors are requested for the annual Engineering Exploration Days (EED) and the South Dakota Inventors Congress April 28 through 30 at the SDSU HPER Center.

"We need manufacturers and companies who hire engineers so inventors and college students have someone to talk to about their ideas and their future," said Marty Christensen, a

senior mechanical engineering major from Sioux Falls and chair of EED.

Companies who take part in EED would share the floor space of the HPER Center with college student design and demonstration projects, as well as high school and regional inventors.

The Inventors Congress begins Thursday evening, April 28 with a workshop about patenting and protecting inventions and creative financing for businesses based on inventions.

EED begins on Friday morning, April 29 with a variety of contests for both high school and college students. The Distinguished Engineer banquet will be held that evening.

This year the Inventors Congress and college displays will be open to the public on Saturday, April 30, as well. Some of the events that high school and college students can compete in are bridge building, pentathlon, knowledge

tests and a paper airplane contest. SDSU seniors also have projects which are designed, built and tested as part of their coursework. Some of those submitted in the past vary from a baja/dune buggy vehicle to a clothes dryer home heating system.

The public is invited to attend the Inventors Congress and EED. Displays will be open from 10 a.m. to 5 p.m. April 29 and from 1 p.m. to 5 p.m. April 30.

"It's a good chance to see what students are capable of doing in their design projects and it's always interesting to see what practical things the inventors create to make life a little easier," SDSU Engineering Dean Duane Sander said.

If you or your business would like to participate in the South Dakota Inventors Congress and Engineering Exploration Days, call 605-688-4161 or write the Dean of Engineering, P.O. Box 2219, SDSU, Brookings S.D. 57007.

ASCE chapter recognized as 1993 Ridgeway finalist

SDSU's American Society of Civil Engineers Student Chapter was chosen one of the top 11 finalists for the Robert Ridgeway Award in 1993. Less than five percent of all ASCE student chapters across the country are distinguished as finalists. The award is based on outstanding chapter activities and special projects recorded in the 1992 annual report.

Project highlight of the year was the completion of a 20-acre topographic survey and map for the Estelline Development Corporation. Charles Tiltrum, SDSU ASCE advisor, said the reason for doing the project was Estelline's need to expand housing on the edges of town. After the map was completed, he said, Estelline hired a consultant who developed construction plans and specifications using the students' map.

The score sheet for selecting the Robert Ridgeway Award finalists includes points for special projects, attendance at student chapter meetings and professional meetings, holding social functions, writing newsletters, hosting regional conferences and other activities.

SDSU student chapter activities include the Engineers Week Phonathon, collecting canned goods, talking to grade school and high school students, helping with high school math contests, providing professional speakers at chapter meetings, attending national and regional conventions, concrete canoe races and steel bridge contests.

ASCE President Jeffrey Wessels, who wrote the 1992 annual report, said the award shows that on a national level, SDSU has one of the best Civil Engineering departments. "We are not sitting around. We are getting involved

and that's what the Ridgeway award is about," he said.

Tiltrum said working with the students is one of the highlights of his job. "It's fun working with these people because they are the cream of the crop," he said. "They're our best all-around students — not always the highest GPA, but they're the ones that appreciate and understand the advantage of this activity in their well-rounded education."

1993 special projects, which will be considered for the 1994 Ridgeway award, included a 10-acre map for a local Catholic church and a 15-acre map for the Dell Rapids ball parks.

Wessels said the chapter welcomes alumni involvement. Alumni suggestions or ideas for activities or special projects would help the chapter be more competitive, he said.

SDSU student works to help ADVANCE

Xiang Ding, a mechanical engineering student at SDSU, worked with two Brookings companies to help them streamline parts of their operations.

Ding worked with ADVANCE, a company that serves individuals with developmental disabilities, and 3M to improve ADVANCE's time management on their laundry contract with 3M.

Ding started the project as a design paper for her master's degree. She observed ADVANCE workers as they gathered soiled garments from 3M and transported them to ADVANCE to be cleaned. She watched the cleaning process, looking for ways to help workers become more efficient.

"Xiang visualizes things I never would have visualized," said Vicki Greene, Transitional Employment Program Instructor at ADVANCE. "Her background and experience has allowed her to tell us what we needed to do."

"I think the main problem is ADVANCE's time schedule and an increase in the number of soiled garments from 3M," Ding said.

Ding discovered a variance in the abilities of ADVANCE workers. She pinpointed areas in which they spent the most time and began speculating on ways to control and decrease that time.

"We knew we needed to make some improvements, but we didn't know where to begin," said Judy Irwin, Vocational Component Coordinator at ADVANCE. "Together, with Xiang, we came up with the changes, like rearranging the room and using different methods to accomplish tasks."

Ding discovered that the laundry work area could be rearranged to be more efficient and less strenuous for the workers, thus cutting down on occupational diseases like carpal tunnel syndrome. She noticed that time could be saved by gathering smocks in drawstring bags stretched in a cart

instead of throwing them, piece by piece, into the van. She



SDSU mechanical engineering student Xiang Ding, front, far right, poses with employees of ADVANCE. Ding completed a project for the Brookings company that improved time management on its laundry contract with 3M. One of her suggestions was to organize a designated area for coat hangers, enabling workers to gather them all at once instead of collecting them locker by locker.

concluded that a designated area for coat hangers would enable workers to gather them all at once instead of collecting them locker by locker.

"Xiang was very helpful in the sense of completing the job," Greene said. "She experienced it, too, not just standing back and taking notes. She helped hang smocks and take laundry out of the dryer. It helped her interact with folks in the laundry crew."

Learning that not all ADVANCE workers can do the same job because each job involves a varying level of difficulty, Ding tried to keep her designs simple. She designed a box to help

workers tell exactly how many smocks will fit in a washing machine without overloading. She wired highly-visible tags to the rack that holds the clean, numbered smocks to help workers get them into the right lockers quicker.

Ding concluded that she could save ADVANCE 40 to 70 minutes each day and lower the level of difficulty to allow more workers to be trained to do more jobs. She also feels she was able to lower the repetition that causes occupational disease.

And she benefitted, too.

"I got experience on how to start a project, collect data and talk with people," Ding said.

SDSU to host student ASME conference

SDSU mechanical engineering students will host the Northern Tier Region Seven Student Conference for the American Society of Mechanical Engineers April 28 and 29 at the Brookings Staurolite Inn.

Undergraduate students can participate in a poster display contest on a technical topic or in a design contest of a mechanized device that climbs three steps. Graduate students can listen to special sessions about topics like fluid mechanics and dynamic systems.

"The conference is a chance to get mechanical engineering students active and involved in the field," said SDSU ASME President Colin Gaalswyk. "They learn and refine their communication skills and combine that with technical studies."

Gaalswyk said 100 undergraduate and graduate students and advisors are expected to attend. States included in region seven are North Dakota, South Dakota, Iowa, Nebraska, Minnesota, Missouri and Oklahoma.

Meet the Engineering Alumni of the Foundation Board

The SDSU Foundation is advised by a board of directors made up of 46 distinguished alumni, 14 of whom graduated from the College of Engineering.

Larry Dailey, who served as Foundation executive director until December 1993, has been pleased with the leadership skills provided by the engineering graduates.

"The role of the Foundation has never been more important and the strength of the board's leadership has never been greater," Dailey said. "The future of the Foundation in serving SDSU through the years ahead is more promising than ever."

College of Engineering alumni who are members of the SDSU Foundation Board of Directors are:

Lori Bocklund, a technical specialist for AT&T Federal Systems in Washington, D.C. She is a consultant with Vanguard Communications Corp. and to various Fortune 500 companies on the applications of or marketing and development of advanced telecommunications technologies. Bocklund received her bachelor's degrees in computer science and mathematics from SDSU in 1983 and her master's degree in electrical engineering from George Washington University in 1986.

Richard Coddington, retired director of the water division of the Environmental Protection Agency in San Francisco. He now lives in Rapid City, where he works as a part-time environmental engineer. Coddington received his bachelor's degree in civil engineering from SDSU in 1957 and his master's in public health science from the University of Minnesota in 1959. He and his wife, Eleanor, have four children.

Arlo DeKraai, president and CEO of Midwest Industrial Contractors, a Tulsa, Okla., company specializing in repairs and overhauls of oil refinery units. The company also repairs and revamps heaters and works with fabrication of pipeline and heater retubing projects. DeKraai earned his bachelor's degree in civil engineering from SDSU in 1970. He and his wife, Barbara, have two daughters.

James Edwards, chairman of the board and manager of Banner and Associates, a Brookings consulting engineering firm. Edwards earned his bachelor's degree in civil engineering in 1955. He and his wife, Evelyn, have two daughters and a son.

Harold Hall, retired vice president of corporate research at Xerox in Palo Alto, Calif., now living in Fulton, S.D. Hall earned his bachelor's degree in physics from SDSU in 1948, his master's in physics from Oregon State University in 1949 and his doctorate in physics from the University of Wisconsin at Milwaukee in 1952. He and his wife, LaVon, have a daughter and four sons.

James Higgins, a cardiologist in Tulsa, Okla., a major in the U.S. Air Force and director of electrophysiology, electrocardiography and research at Wilford Hall Hospital at Lackland Air Force Base in San Antonio, Texas. He is recognized as a national expert in pacemaker technology. Higgins earned his bachelor's degree in electrical engineering from SDSU in 1972 and his medical degree from the University of Rochester School of Medicine in 1977. He was an intern, resident and selected chief resident in medicine at Barnes Hospital in St. Louis before obtaining subspecialty training in cardiology. He and his wife, Julia, have three sons.

Roland Jensen, retired chairman and CEO of NRG Energy, Inc. of Minneapolis, Minn. NRG was established in 1989 when its parent company, Northern States Power, formed the non-regulated subsidiary to expand into the independent power industry. Jensen received his bachelor's degree in mechanical engineering from SDSU in 1960 and his master's degree from the University of Minnesota. He and his wife, Deloris, have a daughter and a son.

Jerome Lohr, president of Lohr Winery and J. Lohr Properties of San Jose, Calif. He began building a business with Bernie Turgeon in 1965. In 1974 they founded Turgeon and Lohr Winery. In 1983 they formed Wine Trust to market their wines. Lohr earned his bachelor's degree in civil engineering from SDSU in 1958 and his master's in civil engineering from Stanford University in 1959. He and his wife, Carol, have a daughter and two sons.

Donald Maurer, CEO of Empi, Inc., an Arden Hills, Minn., based company that assembles state-of-the-art medical devices. Maurer earned his associate degree in general engineering from the Milwaukee School of Engineering, his bachelor's in electrical engineering from SDSU in 1966 and his master's from Iowa State University in 1971. He and his wife, Judy, have two sons.

Paul Moriarty, owner of Moriarty Construction of Brookings. A Foundation board member since 1967, he is the senior Foundation Board member. Moriarty earned his bachelor's degree in civil engineering from SDSU in 1953.

Steven Otterby, owner of Palace Builder, Inc., a Mitchell construction service that handles commercial and agricultural building projects. Otterby earned his bachelor's degree in agricultural engineering from SDSU in 1972. He and his wife, Kathleen, have a daughter and a son.

Guy Rhoades, general manager in General Electric's Commercial and Industrial Sales Department. After college he joined General Electric in the technical marketing program in Fort Wayne, Ind., where he currently lives. Rhoades earned his bachelor's degree in electrical engineering from SDSU in 1959. He and his wife, Sandy, have two sons.

Joan Trygstad, a consultant and patent attorney in the Los Angeles area. She earned a bachelor's degree in civil engineering in 1976 and a bachelor's degree in political science in 1977, both from SDSU, and her law degree from the University of Nebraska in Lincoln in 1979. Trygstad is married to Michael Carpenter.

James Vellenga, vice president of Aetrium, a North St. Paul, Minn., company that manufactures and markets SMT test Modular Automation for semiconductor manufacturers and users worldwide. Vellenga earned his bachelor's degree in electrical engineering from SDSU in 1957. He and his wife, Kathleen, have two daughters and a son.

Jerry Lohr

steers
\$50 million
campaign



"SDSU's undergraduate engineering program is comparable to the undergraduate engineering program at Stanford University. ... It's not only important for students to take advantage of SDSU's good education, but its environment, as well."

Chairman of the SDSU Foundation Jerry Lohr, BSCE, '58, said this year's kick-off of the Capital Campaign is a way for SDSU to communicate and bond with all 40,000 alumni and other close associates of SDSU.

The campaign theme is "Visions for the Future" and its goal is to raise \$50 million over the next five years. Foundation Director of Planned Giving Jeffrey Nelson said the money will help support teaching and research, student financial aid, building renovations and repairs, library improvements and more. "Every faculty, student and unit on campus will be reached by this campaign," he said.

Lohr has been heavily involved in the planning of this campaign, Nelson said, and, through a committee called the Campaign Cabinet, will help steer the Capital Campaign's future activities.

Chad Kono, Alumni Association Director and Campaign Cabinet member, said the first projects will involve expanding the art museum and the new

Wellness Center in the Health, Physical Education and Recreation building.

The goal of Campaign Cabinet is not to send the message that alumni are responsible for contributing money, Lohr said, but to encourage alumni to maintain ties with SDSU and be proud of where they received their education.

Lohr's success in his wine and building businesses has enabled him to be financially supportive of SDSU. When J. Lohr wine was first released in South Dakota, for every case sold, \$2 were given to the Foundation's unrestricted funds.

Kono said Lohr has not only been a financial contributor, but has been involved in a volunteer leadership capacity with the Foundation.

A few years ago, Lohr provided lectures on entrepreneurship for

students, faculty and the general public in conjunction with Engineering Exploration Days. Every three or four years, Lohr hosts SDSU alumni meetings in the San Francisco Bay area.

"Jerry has maintained an intense interest in the College of Engineering and has encouraged entrepreneurship, as well as been helpful with alumni organizations," College of Engineering Dean Duane Sander said.

Nelson said Lohr has contributed much to SDSU's success and has maintained close ties with both SDSU and South Dakota. "I think he is a fine example of someone who has gone on to be very successful in business as well as engineering," Nelson said.

SDSU's undergraduate engineering program is comparable to the undergraduate engineering program at Stanford University, where Lohr taught while a graduate student at Stanford immediately after leaving SDSU. It's not only important for students to take advantage of SDSU's good education, but its environment, as well, he said, and to get a broad-based understanding of other disciplines outside the technical part of an education.

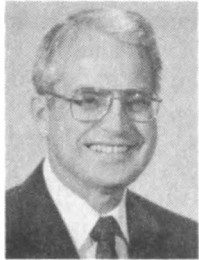
"I'm a civil engineer by education who has become a business man," Lohr said, adding that he combined his engineering education with business because he liked both fields. "I took every business course I could at SDSU," he said.

While attending SDSU, Lohr worked for the Brookings consultant engineering and architect business now known as Banner Associates, Inc. He was also the homecoming parade chairman his senior year and active in Board of Control and various other campus organizations

Management experience is important, Lohr said. By participating in organizations like Toastmaster's at SDSU, Lohr learned how to speak publicly and chair a meeting. He currently chairs the National Wine Coalition in Washington, D.C., and previously chaired several committees and was chair of the Wine Institute, the trade organization for all California wineries. In addition, he co-founded and chaired Monterey Wine Country Associates for four years.

Guy Rhoades

instrumental in GE donation



Guy Rhoades, general manager of Heating Ventilating and Air Conditioning (HVAC) Motors and Controls for the General Electric Company, helped SDSU obtain the new

ECM Programmable Motors patented and introduced by GE.

"The motors give SDSU students a chance to be exposed to the latest technology being used in the electric motor industry," Rhoades said.

The ECM Programmable Motor's efficiency and cost effectiveness could significantly impact national energy consumption. The motor, which has broken the variable-speed barrier, is the first commercially viable motor made in the U.S. to provide efficient operation over a wide speed range, a capability design engineers must have to meet higher government efficiency standards. Product standardization significantly reduces manufacturers' inventory and transactional costs. And, because it runs at slower speeds, the ECM Programmable Motor affords consumers near silent operation.

SDSU found out about the motors when electrical engineering professor Wayne Knabach called GE to ask if they would send a representative to speak at a seminar with other electrical power industry officials. One of the topics the representatives addressed was the Programmable ECM Motors. Knabach then asked if it would be possible for SDSU to obtain one of the motors for students to use in lab.

Rhoades studied electrical engineering at SDSU, earning his bachelor's degree in 1959. He then joined GE and had several assignments. But he especially enjoyed his work in the HVAC area and ended up staying there. As general manager, his job covers many different fields, such as marketing, sales, engineering, manufacturing and finances.

Rhoades has vivid memories of

SDSU and the educational experience he was part of at State.

"I have very strong feelings about being an SDSU alumnus," said Rhoades, an SDSU

Foundation member. "It was a great school and is even more so today. I think that my technological education enabled me to secure a job at GE and that provided a starting point for my career. There were opportunities to participate in a variety of things, such as sports, school and other

outside organizations, which helped me a lot.

"The school provided me the opportunity to get involved in more than just studies, thereby broadening my education."



Two electrical engineering students help Professor Wayne Knabach unpack the ECM Programmable Motors donated to SDSU by General Electric.

James and Catherine Grommersch Mechanical Engineering Scholarship Fund

The newly-formed James and Catherine Grommersch Mechanical Engineering Scholarship Fund will financially assist mechanical engineering students earn their degrees at South Dakota State University.

"If I had not had this opportunity for a degree, I certainly would not have been able to compete in industry," said James Grommersch, ME '47. "The reason for the scholarship is to financially help students earn a degree in engineering. In my opinion, SDSU students can compete with any university in the business world."

Interest from the \$10,000 endowment will fund the annual scholarships for worthy, needy freshmen through senior mechanical engineering majors. Although there is no grade point average requirement, applicants are expected to be in good standing with both SDSU and the Department of Mechanical Engineering. Preference will be given to applicants who demonstrate financial need, who show evidence of a promising career in mechanical engineering and who are committed to a mechanical engineering career path.

Jim Grommersch was born and raised in Brookings, graduating from Brookings High School in 1940. His college education was interrupted due to military service during World War II, but he returned to SDSU after the war to finish college and earn his degree.

Grommersch spent 34 years working for the Ford Motor Company, beginning as a product engineer in the Tractor Division right after graduation from SDSU. In 1951 he transferred to sales and marketing. He retired as assistant general manager of Sales and Marketing in 1981 and in 1989 moved back to Brookings where he is engaged in a farming operation. He also serves as a member of the SDSU Foundation Board of Directors, the SDSU Dean's Engineering Advisory Council and the South Dakota Art Museum Board of Trustees.

Contributions made to the Greater State Fund Jan. 1, 1993 - Dec. 31, 1993

Support from alumni has come to be essential to institutions of higher education. Contributions have made possible the development of activities that have won recognition for the SDSU College of Engineering as one of the nation's leaders in engineering education. We have benefited and those who have been generous in their gifts share with us the satisfaction that comes from achievement.

BENEFACTORS (Gifts of \$1,000 or more)

Gerald Bergum, BSMath '58, professor and head of the Computer Science Department, and his wife, Shirley, provided funds to assist and encourage students in their pursuit of undergraduate degrees in computer science.

K. Marvin Bue, BSCE '31, and his wife, Eleanor, have contributed to the Marvin Bue Scholarship in engineering at SDSU. Mr. Bue established this open scholarship for students majoring in any engineering curriculum. His career of 41 years in engineering has been one of public service, both for the military and the civilian side of the U.S. Government.

Dr. Shu Tung Chu, a professor of agricultural engineering at SDSU, and his wife, Alice, have increased their contribution to the Mr. and Mrs. Chin Chow Chu Endowment for Agricultural Engineering.

Dr. Errol P. EerNisse, BSEE '62, has established a fund that will support the Errol EerNisse Scholarship for junior or senior students who wish to major in any of the engineering disciplines. Dr. EerNisse's fund will also make support available to the dean of Engineering for faculty travel to technical meetings. The dean will utilize these discretionary funds for the improvement of faculty awareness of technology advances related to engineering programs of current interest to the employment marketplace in the Upper Midwest. Dr. EerNisse resides in Salt Lake City, Utah, and was named a Distinguished Engineer at SDSU in 1985.

Incoming freshmen at SDSU who intend to major in physics can benefit from the generosity of a 1929 general science State graduate, Robert S. Garthune. Mr. Garthune has established a scholarship to be awarded to incoming freshmen based on their ACT scores and class rank. In a 25-year government career, primarily with the Navy's Bureau of Ships, Mr. Garthune's work was directed at reducing the threat to U.S. and Allied shipping from enemy mines and torpedoes. He retired in 1966 and resides in Maryland.

James and Catherine Grommersch of rural Brookings have recently established an endowed scholarship for students majoring in mechanical engineering at SDSU. The scholarship will be based on financial need as well as commitment to the engineering profession. Mr. Grommersch earned a BSME in 1947. Prior to his retirement as assistant general manager of the Ford Tractor Division of the Ford Motor Company, Grommersch's responsibilities included world-wide sales of Ford tractors and equipment.

Nancy Wilz Haselhorst, wife of the late Donald D. Haselhorst, formerly president and chief executive officer of Nicolet Instrument Corporation in Madison, Wis., provided funds for engineering equipment.

Vera Johnson has again contributed to the Leslie W. "Brick" Johnson Scholarship in Agricultural Engineering. This fund was established in Mr. Johnson's memory. He graduated from SDSU in 1933 with a BSAE. He retired in 1971 after serving many years with John Deere and Company.

Barbara A. Murphy of Olympia, Wash., the granddaughter of H.C. Solberg, has given money to the H.C. Solberg Loan Fund.

Warren E. Ramseyer of Wooster, Ohio, and a friend of engineering at SDSU, has established the Warren and Dorothy Ramseyer Scholarship. This scholarship is to be awarded to an upperclass female student majoring in civil engineering whose intended career path promises to involve her in environmental and/or water industry services.

Dale C. Ryman, BSAE '35, BSCE '38, is a former member of the U.S. Navy Seabees and Chief Construction Engineer of the California Division of Highways, now retired. In 1984 he was recognized as the first benefactor of the College of Engineering and received the Distinguished Engineers Award in 1985.

Ruby Simpson, a 1924 SDSU Arts and Science graduate and the daughter of H.C. Solberg, has contributed to the H.C. Solberg Loan Fund for engineering students. Mrs. Simpson resides in Spokane, Wash.

Harry L. Solberg, BSME '20, retired head of Mechanical Engineering and associate dean of Engineering at Purdue University, has contributed to the H.C. Solberg Loan Fund. Mr. Solberg is also one of our Distinguished Engineers; he was given this honor in 1977.

Jacqueline Skill Thielen, wife of the late Lawrence R. Thielen, BSEE '50, founder, chairman of the board and chief executive officer of Avontek, Inc., Palo Alto, Calif., is a continuous donor.

Lori Bocklund, BSEE '83, contributed to the Dan Bocklund Memorial Scholarship established by Lori in memory of her father and in appreciation to SDSU, her alma mater. It is awarded annually to SDSU students planning to study in curriculum within the College of Engineering. Students shall also be participating in varsity sports at SDSU.

Joan Trygstad, who earned a civil engineering degree in 1976 and a political science degree in 1977, has increased the contribution to her Leaders for Tomorrow scholarship, which was established for the betterment of the College and particularly for programs that will benefit women in engineering. Ms. Trygstad is a patent attorney in Los Angeles, Calif.

Gordon and Dorothy Olson, Ph.D., AE '47, are members of the Campanile Society and the Engineering and Nursing Dean's Clubs. Dr. Olson is currently with the John Deere Company in Iowa. Their gift was given to the Henry DeLong Scholarship Endowment.

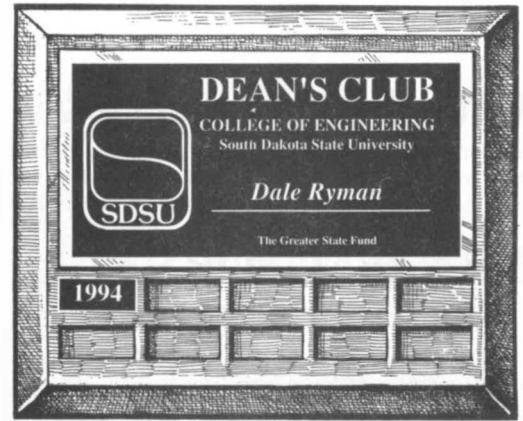
Harvey Owren, BSEE '41, and his wife, Doris, have been interested in improving instructional methods in engineering and have provided funds to conduct a course called the Harvey Owren Principles of College Teaching for Engineers Seminar.

Lansford Trapp, BSPhy '48, MSMath '50, is a retired professor of SDSU. He and his wife, Frances, have made gifts possible to the Mathematics, Engineering and Physics departments through continuous contributions to the Trapp Family Scholarship Endowment.

COLLEGE OF ENGINEERING DONORS

DEAN'S CLUB

As a Dean's Club member, you will receive a handsome walnut and brass desk plaque inscribed with your name, a listing in the SDSU Foundation Honor Roll publication, invitations to special College and University functions and updates from the College dean.



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The College of Engineering appreciates the generosity of alumni and friends who have made gifts to the College, and asks that you encourage others to contribute. All donations should be made payable to the Greater State Fund and designated for the College of Engineering. Mail to: **SDSU Foundation, Box 525, Brookings, SD 57007**

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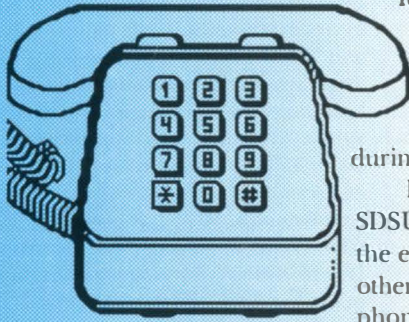
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Phonathon set for Feb. 21-25

South Dakota State University engineering students will host the 11th Annual Phonathon Feb. 21 through 25 during National Engineers' Week.

Last year slightly more than \$116,000 was raised during the Phonathon and through follow-up calls made with the help of the SDSU Foundation. Like last year, this year's goal is for students to raise \$100,000 in pledges during the week of the Phonathon.



Duane Sander, dean of the SDSU College of Engineering, said the engineering college leads other campus colleges in terms of phonathon fund raising because of the College's high number of alumni. Charles Tiltrum, associate professor of civil and environmental engineering, the faculty advisor for the Phonathon, said that of the 6,700 alumni, 90 percent are contacted and approximately one-third of them donate money. Barb Dyer, administrative assistant for the College of Engineering, said pledges range from \$5 to \$5,000 per alumnus. Alumni donations have tripled in recent years.

Dyer said that for the first time, international alumni will be contacted to contribute to the Phonathon. Since phone calls are so expensive, they will be contacted by letter.

The various engineering departments have

many needs, and the money goes to laboratory equipment, faculty development, student activities, student assistance and the expenses of the IMPULSE publication, the Phonathon and Engineering Exploration Days for high school and college students.

Tiltrum said the Phonathon is not only an effort to raise money, but enables students to contact alumni directly. The calls can net students job leads, information on internships and experience talking to professionals within their field.

A booklet on job openings and internships is compiled for each department each year from information received during the Phonathon.

"The Phonathon is one of the best ways we know to keep in contact and learn of alumni accomplishments," Sander said.

This year's Phonathon crew will work from 56 phones in the basement of Pierson Hall. Calls will be made each evening from 6 p.m. to 11 p.m. Central Time.

The Phonathon is organized by a committee of students and faculty from each of the eight departments in the College of Engineering.

Dyer said the SDSU Foundation provides the College with alumni phone numbers and other pertinent information. "Without the Foundation, we couldn't operate the Phonathon," she said.



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