NAGAGAZINE Spring 2004



A Publication of South Dakota School of Mines and Technology

Perspectives



Dear Friends,

Since my arrival last summer, I have frequently been asked about my vision for Tech in the arena of economic development. Our state is poised for a dramatic economic renaissance. Agriculture and tourism, while important, will not sustain a 21st century economy. Knowledge-based products and services are necessary to build a third economic leg, and that is where Tech can play a major role. Signs of South Dakota's

commitment to building this sector abound. Governor Rounds' 2010 initiative, the Regents plans to build university research capacity, and the plans for a national laboratory at Homestake are a few examples.

Economic development is not the responsibility of any one office or agency. I consider it a "team sport" that requires coordinated efforts of the public and private sectors. I have been pleased to become acquainted with the economic development entities across the Black Hills and their inclusion of Tech in their activities and plans.

Tech contributes to the economic welfare and development of our community and state in two important ways. First, it is estimated that our current \$39 million budget has a direct impact of \$23 million, with an additional indirect impact of \$37 million. As we grow, that impact grows.

Second, Tech's plans include strategies directly targeted at economic development. Examples include drawing on the resources of Black Hills State University to include courses in business and entrepreneurship; enhancing research activities with a growing number of partners; creating intellectual property and transferring it to commercial ventures; and responding to local needs with new R&D efforts. Of significance is the placement of a business incubator on campus. Such close proximity will ease the transfer of research ideas to commercial ventures.

A technological university's future is tied directly to the economic future of its community. We at Tech look forward to this exciting future.

I welcome your thoughts and comments. I can be reached at charles.ruch@sdsmt.edu.

Very truly yours,

Kurd

Charles Ruch

SOUTH DAKOTA TECH SPRING 2004

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Campus Profile

South Dakota Tech has been a national leader in preparing worldclass engineers and scientists since 1885. Our graduates design, construct, and operate the most modern technology to meet complex challenges such as global warming, health care delivery, energy resource development, mineral extraction and processing, environmental quality, futuristic transportation, and national defense. Our alumni are held in the highest regard by their fellow leaders in industry, consulting, government, health, and education.

Tech continuously adapts to meet the needs of engineering and science. Rugged individuals and pioneers in engineering and science founded Tech's intellectual environment more than a century ago. Our faculty and students carry on that tradition today.

South Dakota Tech is a state-assisted university that provides graduate and undergraduate degrees in science and engineering, as well as an associate of arts degree in general studies.

Master of Science Degrees

Geology and Geological Engineering

Materials Engineering and Science

Atmospheric Sciences

Chemical Engineering

Mechanical Engineering

Technology Management

Doctor of Philosophy Degrees

Geology and Geological Engineering

Materials Engineering and Science

Atmospheric, Environmental,

and Water Resources

Civil Engineering

Computer Science Electrical Engineering

Paleontology

Bachelor of Science Degrees

Chemical Engineering Chemistry Civil Engineering Computer Engineering Computer Science Electrical Engineering Environmental Engineering Geology Geological Engineering Industrial Engineering Interdisciplinary Sciences Mathematics Mechanical Engineering Metallurgical Engineering Mining Engineering and Management Physics

Fall 2003 Enrollment

• 2,477 students from 39 states and 27 countries

• Students enter the university with the highest ACT composite in the state and more than half graduating within the top 30% of their high school

Costs and Fees:

• Annual undergraduate costs for tuition, fees, room, and board total less than \$8,000 per year for South Dakota residents, less than \$8,600 for Minnesota residents, and less than \$9,000 for residents of Alaska, Arizona, California, Colorado, Hawaii, Idaho, Iowa, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oregon, Utah, Washington, and Wyoming. Annual total costs for all other undergraduates is less than \$12,600 per year.

Research:

• Researchers conduct high-quality research that benefits the state, the region, and the nation through advances in technology and economic development

• In FY 2003, 52 researchers received \$12,744,117 in funding for 117 projects. Twenty-five agencies awarded research grants, including the Air Force Research Laboratory, Army Research Laboratory, NASA, National Science Foundation, the State of South Dakota, and many others.

Faculty:

South Dakota Tech employs 115 faculty members
More than 87 percent hold the doctorate or other appropriate terminal degree

Honors and Awards:

• One of America's 100 Best College Buys for the sixth consecutive year

- Dr. Stuart Kellogg selected as the 2003 Carnegie Foundation for the
- Advancement of Teaching South Dakota Professor of the Year • Recruiting CD-ROM awarded Bronze Medal in a national awards program
- American Chemical Society student chapter received a national Honorable Mention award

Placement:

Average starting salary offer to Tech grads: More than \$47,000
More than 91 percent of 2002-2003 graduates placed in jobs in their career fields or graduate professional programs within six months.

A cancer patient drinks a fluid that contains robots too small to see. As programmed, the robots travel through the body, attacking and reconstructing the molecular structure of the deadly cancer cells, prolonging the patient's life.

Nanotechnology

A nanomachine builds a computer drive the size of a sugar cube that can hold trillions of bytes of information.

Scientists predict these things and many others will be possible through the use of nanotechnology. Researchers at South Dakota Tech are part of this branch of science that some predict will result in a new Industrial Revolution. As televisions, airplanes, and computers revolutionized the world in the past century, scientists predict that nanotechnology will have an even more profound effect on the next century.

"Researchers are always looking for something to "said solve. Dr. Jan Puszynski, dean of South Dakota Tech's College of Materials Science and Engineering and professor in the Department of Chemistry and Chemical Engineering. "Give researchers a problem, and they want to solve it. Nanotechnology is an area that we are focusing on right now to find solutions to problems."

Nanotechnology is an umbrella term that covers

many areas of research dealing with objects measured in nanometers. A nanometer (nm) is a billionth of a meter, or a millionth of a millimeter. A human hair's diameter measures about 200,000 nanometers.

During the next 50 years, tools and the materials used to build those machines, will become increasingly smaller - so small, that thousands of these tiny machines may fit into the period at the end of this sentence. Within a few decades, we may use these nanomachines to manufacture consumer goods at the molecular level, piecing together one atom or molecule at a time to make baseballs, telephones, and cars.

The ultimate value of nanotechnology is quality. By building products at the molecular level, they will last longer, work better, and push their potential to new levels.

At South Dakota Tech, researchers across campus are investigating nanotechnology with funding support from industry, the National Science Foundation, Department of Agriculture, Department of Energy, Army Research Laboratory, Naval Surface Warfare Center, and private foundations. The potential that nanotechnology research holds pushes the interest in the work.

"We've known about nanomaterials for ages, but we're just starting to pull resources together to look at it closely," said Dr. Jon Kellar, chair and professor, Department of Materials and Metallurgical



Dr. Jan Puszynski, dean, College of Materials Science and Engineering, inspects nanopowder samples prepared for analyses by laser induced breakdown spectroscopy (LIBS). This technique allows Puszynski to instantly find and identify all elements in an unknown sample. Puszynski's research is funded by the Army Research Laboratory.

Engineering. "Like DNA, we knew it existed, but we didn't know how to isolate it and utilize it. There's significant promise in the nanoscience research, so the agencies are going to invest a lot of money in it." Kellar has been working with other South Dakota Tech researchers, as well as those from South Dakota Universitv State and states. surrounding to develop collaborative groups to conduct nanotechnology research. "We are fortunate to have

many talented campus researchers who are developing research in the area of nanotechnology," Kellar said.

That research funding finances work in many areas on campus. Puszynski helped the Naval Surface Warfare Center build a facility that can produce nanosized aluminum powder for use in percussion primers for ammunition. The aluminum will replace the lead currently in use, creating a more environmentally friendly shell that works better. Kellar investigates ways to use nanomaterials to build new materials that will be stronger, more stable, more heat resistant, and current nanotechnology research areas in the region, exhibit other beneficial characteristics.

"These materials show some very unique properties," Kellar said.

Tech researchers from departments on campus also are:

- Using carbon nanotubes to improve the performance of motor oil, heat transfer fluids, and lubricants.
- Understanding the electronic properties of nanomaterials.
- Investigating the use of nanocoatings for materials.
- Using natural mineral products for nanotechnology.
- Developing agricultural nanotechnology derivatives.

There definitely is an emphasis on this research in the materials area at South Dakota Tech," Puszynski said.

Under the leadership of dean of Graduate Education and Sponsored Programs and senior advisor to the president for research and development, Dr. Sherry Farwell, Tech organized the Rushmore

and to identify potential for new cooperative research areas and opportunities related to the National Nanotechnology Initiative. Scientists also worked toward the development of large-scale nanoscience and engineering proposals.

Small Things Considered

More than 100 scientists and researchers from South Dakota State University, University of South Dakota, University of Nebraska, Montana State University, North Dakota State University, University of North Dakota, University of Wyoming, University of Idaho, Sandia National Laboratory, National Science Foundation, and other universities and agencies attended the conference.

"The conference was a great opportunity to being together the people involved in this research to talk about where we are and where we can go," said Dr. Sherry Farwell. Farwell and Kellar organized the by EPSCoR Centers conference, sponsored Development Initiative and South Dakota EPSCoR. "We accomplished a lot, and it will have an important impact on where the research goes from here." Since

Conference on Nanoscience and Engineering, held August in in Rapid City, to describe those efforts and to discuss what others are doing. Nationally recognized experts, including Dr. Mihail Roco of the National Science Foundation and chair of the

Regional



Looking almost like lunar topographical images, these figures are atomic force microscope (AFM) images of a polymer next to a glass fiber. Fibers in polymers make up a class of advanced materials called composites. South Dakota Tech's Dr. Jon Kellar, along with his colleagues, Dr. Lidvin Kierengtroen and Dr. William Cross, are using the AFM to analyze composites at nanometer scales to improve the understanding of how to improve the adhesion between fiber and plastic, and ultimately to make stronger composites.

National Nanotechnology Initiative, Dr. William Mullins of the Department of Defense, and Dr. Neal Shinn of the Department of Energy, spoke about nanotechnology research opportunities and the current status of research efforts in the region.

The purpose of the conference was to summarize

recently submitted a proposal in response to Governor Rounds' 2010 Initiative, a component of which is to develop research and development in South Dakota.



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It seems natural for people to examine their lives after a traumatic event. Many even make decisions about their future, but how many follow through with those pledges to change their lives?

Nick Newell (CEng, Havre, MT) did.

The South Dakota Tech senior changed his life during his freshman year when he was diagnosed with Crohn's Disease and had to endure two surgeries and the painful symptoms.

"I thought about my life and where I was, and where I was going," Newell said. "It forced me to

step back and look at the kind of life I was leading and look at what I could change." Newell dealt with those

Newell dealt with those complicated issues by writing a play. "I've been moved by the way plays have affected me, and I thought writing a play would be a good way to deal with what I felt."

He called the play "Snooze." He wanted to stage it for the Drama Club's Fall 2003 production, but renovations in the Surbeck Student Center made that

impossible. Newell huddled with director of Drama Activities Bob Faubert, and they hatched a new planturn the play into a movie. During the next three months, the two rewrote, reorganized, deleted, and added until they had a script ready for shooting.

Drama Club members comprised the crew, with Faubert as director. They planned and shot the film during an eight-week period, putting in six- and eighthour days each weekend. Locations include dorm rooms, classrooms, the student health center, other campus locations, and a local golf course.

"Watching movies, I always wondered what it would be like to make one," Newell said. "The whole process was awesome."

The filming and acting turned out to be the easy part. Post-production chores required dozens of hours of work, complicated when the audio on the first edited version didn't match the actor's mouths.

"That was a lot of work," Newell said. "The editing took five times longer than the acting. I'll

never skip over the credits at the end of a movie again."

"Snooze" tells the story of a college student dealing with life's struggles as he copes with a terminal illness. Newell stars as Max Nathens, whose Crohn's Disease grows into cancer. Tech students Sam Tlustos (ChE, Sioux Falls), Jennie Christensen (EE, Math, Bloomington, MN), Matt Frederickson (ChE, Rapid City), Justin Betz (CEng, Worthington, MN), and Brittany Douglas (IEng, Sturgis) also starred. Dr. Pat Mahon, Tech's Vice President for

Student Affairs and Dean of Students, and Faubert also played roles.

The movie takes the audience in and out of Max's "snooze dreams," the dreams he has in the nine minutes his alarm clock allows when he hits the snooze button, and the struggles he faces in dealing with his possible death.

The crew premiered the movie to an enthusiastic campus crowd.

"It was pretty nervewracking and terrifying,"

Newell said. "I wasn't too worried if people would like it, I was more worried if people would be affected by it. I hoped they would see it, then look at their lives, and be changed by it. It took cancer to change this guy's life and it took me getting Crohn's. I wanted to affect people that way without them having that kind of experience."

"Snooze," is available in DVD format for \$10 per copy. The full-length feature tells the story of a college student who battles Crohn's disease and cancer. Proceeds of the sale will benefit the Crohn's and Colitis Foundation of America (CCFA). The CCFA is a non-profit, volunteer-driven organization dedicated to finding the cure for Crohn's disease and ulcerative colitis. To purchase a copy of "Snooze," contact Bob Faubert, director of Drama Activities, at (605) 394-6052 or robert.faubert@sdsmt.edu.

The Drama Club will submit the movie to film festivals across the country, including the national, but locally produced, ReWind Film Festival, and the Sundance Film Festival.





South Dakota Tech students (from left) Matt Frederickson

(ChE, Rapid City), Justin Betz (CEng, Worthington, MN), Sean Donnelly (EE, Spearfish), and Nick Newell (CEng,

Havre, MT) shoot a scene for "Snooze." Dr. Pat Mahon, vice

president for Student Affairs and dean of students (right), helps

with the production. She also played a role in the movie.

Air Force Research Lab

Professors research new generaton of satellites for National Defense

TECH'S

NASA has been known to use the phrase "faster, better, cheaper," when describing the advances it wants to make in its fleet of vehicles and projects. All agencies that launch vehicles of any kind into space share that sentiment, and two separate but related research projects at South Dakota Tech are assisting one agency meet that goal.

Dr. Jon Kellar (Met '84/MS Met '86), professor and chair, Department of Materials and Metallurgical Engineering, and Dr. Chris Jenkins, professor and chair, Department of Mechanical Engineering, are investigating ways that the Air Force Research

Laboratory (AFRL) can build better, cheaper, and faster satellites for defense and surveillance applications. Kellar and Jenkins are using an \$800,000 research grant for the work, an award made possible with the support of South Dakota's Congressional delegation.

Kellar's research focuses on finding a material for satellites that exhibits dimensional stability in orbit. AFRL wants satellite materials that don't expand or contract during the continuous heating and cooling cycles a satellite experiences as it circles the Earth. Most materials expand when heated and contract when cooled. That constant shifting can affect the performance of the mirrors a satellite uses to perform its mission.

To solve the problem, Kellar, along with Dr. William Cross, instructor and research scientist III, Department of Materials and Metallurgical Engineering, and Dr. Lidvin Kjerengtroen, chair and professor, Department of Mechanical Engineering, are experimenting with zirconium tungstate mixed with polymers, a mixture that "over a wide temperature range like satellites experience, could remain of constant size," Kellar said. Zirconium tungstate was invented by Oregon State University chemist Dr. Arthur W. Sleight.

Kellar's team wants to incorporate zirconium tungstate into polymers that could be used to build satellites. The first challenge is discovering the best method for mixing the 20-micron zirconium tungstate particles and the polymer.

"We treat the surface of the particles so they are readily able to mix," Kellar said. "We've made some progress, but that is the technical challenge right now."

Across campus, Dr. Chris Jenkins is researching methods and materials for producing mirrors much larger than are currently used in space. The reason? The larger the mirror, the better its resolving power. In other words, a bigger mirror can identify, track, and detail smaller objects on the Earth's surface - all important and critical properties of military satellites. Larger mirrors aren't just more difficult to

produce, but producing a larger mirror that fits into the five-meter wide maximum payload size is а considerable additional challenge. Jenkins and his team are using a twopronged approach to solve the problem. • The team is investigating gossamermembrane mirrors that are ultralightweight because they are made from polymeric film, beryllium, silicon carbide, or a new family of materials called nano-laminates. Some of these mirrors also can be folded inside a spacecraft and expanded when released into orbit.

Because these ultra-lightweight mirrors are ultra-thin, they need to be attached to a backing structure that also must be strong, lightweight, and able to fit into a spacecraft payload

Jenkins is investigating the use of South space. laser-additive manufacturing Dakota Tech's capabilities to build the backing structure from several different kinds of materials, including metals and polymers. The backing could incorporate shapememory alloys that would return the structure to its operational form after being deployed from the craft.

"The key is the face sheet because that is the essence of the mirror," Jenkins said. "Everything else is secondary, but still important, since the mirror itself needs to be locally and globally accurate."

Making all of this happen would improve national defense and create important technology that could be used in other space exploration technologies, such as finding distant planets far outside our solar system. Stay tuned.





Lee Gunderson (MS ME, Watertown) uses a Michelson Interferometer to test a membrane that is a candidate for the face of a lightweight mirror Tech is researching for the U.S. Air Force. The space-based mirror could be used for surveillance, target tracking, or other uses.

Development Lab

extremely successful in research grant proposals. but have a relatively high cost. Tech researchers Dr. Faculty, staff, and administration efforts have resulted in externally funded research quadrupling from \$3.2 million in FY1996 to \$12.7 million in FY2003. This incredible increase has resulted in a shortage of quality workspace to conduct the research. To address this concern, the South Dakota School of and Technology Foundation recently Mines purchased a building near campus that will house several cutting-edge research projects.

Tech

The building, situated adjacent to the campus' southern border, is located on East Saint Patrick composite structures. A sensor mat, for example, Street. The 14,600 square feet of space is currently undergoing a transformation from its former commercial printing use to a state-of-the-art research could allow the outer skin of a combat vehicle to laboratory. The South Dakota Tech Development Laboratory, will contain office, classroom, laboratory, and processing areas for several funded projects.

The renovation has become an institutionalalumni collaboration. Local alumnus and consulting engineer Steve Malone (ME '83) is currently working with faculty to complete construction plans. Doug Birkeland (MinE '83) is serving as general contractor to convert design plans to reality. Work is underway and should be completed for a fall startup. The project is only possible through the strong support and assistance from South Dakota's Congressional delegation.

Initially, three research projects involving Tech faculty will have a spot in the new South Dakota Tech Development Lab.

The first project relates to Future Affordable Multi-Utility Materials for the Army Future Combat Systems. Unmanned vehicles will play a significant role within the Future Combat Systems fleet. Unmanned ground vehicles will be capable of autonomously gathering intelligence and carrying out tactical missions while unmanned aerial vehicles will be used for surveillance, reconnaissance, and point-topoint communications.

Unmanned vehicles must be constructed with strong but lightweight materials. The higher the strength-to-weight ratio of the vehicle, the less fuel it consumes and the more available payload space for sensors and other mission-critical electronics and equipment.

Polymer composite materials offer many

South Dakota Tech faculty have continued to be advantages in terms of their mechanical properties, Dan Dolan, professor, Department of Mechanical Engineering and co-director of the Center of Excellence for Advanced Manufacturing and Production, and Dr. Robb Winter, professor and chair, Department of Chemistry and Chemical Engineering, are working to develop multi-utility composite materials that would have lower production costs. They are researching the feasibility of embedding advanced sensors, such as electro-optic, radio frequency, and chemical sensing devices within could be constructed that would integrate sensors and structural materials. The technology advance also contain smart sensor technology.

> To control manufacturing costs and maximize performance for these systems, advanced process models can ensure that the manufacturing process is correct the first time and every time. Low cost process technology will be a major element to reduce the expenses from the traditional high cost of creating aerospace structures. Finally, intelligent sensors and processing technology will be developed, validated, and used to monitor quality control during the manufacturing process.

> The second project, being researched by Dr. David Boyles (Chem '78/MS Chem '80), professor, Department of Chemistry and Chemical Engineering, involves developing a stronger and lighter polycarbonate for military uses.

> Developed commercially in 1957, polycarbonate is a high-strength, naturally transparent plastic that is popular in industry. It is 40 times lighter and 200 times more shatterproof than glass. Polycarbonates are used to make compact disks, DVDs, bulletproof windows, large water bottles, signage, and eyeglass lenses, among other things.

> Because of its popularity, polycarbonate sales are very profitable to their producers. Private industry, therefore, hasn't given much attention to improving it. This opens the door to academic researchers like Boyles.

> Boyles is currently researching the structure and properties of polycarbonates with funding from the Army Research Laboratory. Boyles' research involves attempting to change the molecular structure of a

SD Tech Spring 2004

Research Growth Requires Additional Space

polymer and then observing how the properties of the material are impacted. He hopes to create a stronger and lighter material that demonstrates better heat resistance than polycarbonates currently available. Boyles also wants a material that can be injected with Direct Write Laboratory that will be located in the

wideband antennas, meaning they can send and receive signals over a wide range of frequencies. This is being achieved through the Maskless Mesoscale Materials Deposition (M³D) machine in Tech's new

South

laser-absorbing dye to protect military personnel from laser-based weapons and tracking systems.

"Without new materials. society doesn't go anywhere," Boyles said. "That makes science this а problem, not an engineering problem."



The South Dakota Tech Development Laboratory, located on East Saint Patrick Street, will contain office, classroom, laboratory, and processing areas for several funded projects.

Stronger and

lighter polycarbonate would benefit the military and could be used for helmet face shields, goggles, jet canopies, and other uses. The end goal is to better protect soldiers, pilots, and other military personnel and equipment.

Another research project that will be housed in the South Dakota Tech Development Lab will be headed up by Dr. Keith W. Whites (EE '86), professor and Steven P. Miller Chair, Department of Electrical and Computer Engineering.

Whites is using funding from the Army Research Laboratory to develop state-of-the-art antennas. The antennas could be attached to an individual soldier's uniform and then transmit critical information from commanders to soldier, from soldier to commanders, from soldier to soldier, and from soldier to artillery and other weapons.

The U.S. Army envisions the future soldier's ensemble as a lightweight, fully integrated individual combat system, including weapons, head-to-toe individual protection, netted communications, solider-worn power sources, and enhanced human performance aids. Antennas would be a critical part of making future soldiers operate efficiently and to their fullest potential while better protecting soldiers and making them more effective in battle.

The antennas being developed, while small, are

Development Laboratory. The M^3D machine allows Whites and Dr. Jim Sears, research scientist IV in Tech's Advanced Materials Processing Center. place to electronics on materials that are 25 microns, or one-thousandth of an inch, wide. Whites and Sears used \$400,000 in ARL funding to set up the Direct Write Laboratory and will continue their

Dakota

Tech

work in the Tech Development Lab.

All of the project that will be located in the South Dakota Tech Development Laboratory are important for the national defense, and could result in the opportunity to create economic development, spin-off businesses, and other methods of benefiting the local, state, and regional economy. The effort to use campus research initiatives to benefit the community has become a priority for South Dakota Tech and its President, Dr. Charles Ruch.

"Funded research is the lifeblood, both financially and intellectually, for this institution," Ruch said. "The South Dakota Tech Development Laboratory will provide much needed space to allow our faculty to pursue, grow, and compete in the latest technological advances. It also will help us fulfill our mission of making Rapid City, the Black Hills, and South Dakota even better places to live."

Material from the South Dakota Tech Foundation was used in this story.

5

Passage Back In Time

Wes Roth (CSc, Laramie, WY) took advantage of an opportunity of a lifetime. The South Dakota Tech senior traveled to Israel in January 2004 to learn firsthand about the conflict that plagues the Middle East.

"It's so amazing just that I was able to apply," Roth said. "To go to Israel at this time, when it's right on the world stage, was incredible. I was able to see for myself what's going on there without events being filtered through anything. I actually could see it, and talk to the people who experience it every day."

Roth's trip was part of Project Interchange. The

program invited Roth to apply after he was elected Student Association president at Tech in 2003. He filled out the paperwork, several answered essay questions, wrote a resume and collected letters of recommendation and references. He accompanied 11 other student leaders from American universities on the eight-day trip.

"It was incredible," Roth said. "We were just dumped in the middle of Israel, and there wasn't anything else we could have seen or done in eight days."

Roth was responsible

Wes Roth poses under the Statue of Faith in Israel. During his trip to Israel, Roth and his companions visited many important historic, religious, and political sites.

understanding of Israel, the Middle East, and the importance of the U.S.-Israel relationship.

The Project Interchange educational experience does not end when delegations return to the United States. Alumni receive briefing papers and updates on current events in Israel, and they are invited to attend briefings and Israel-related programs in their home communities. Alumni often share their experiences in their communities through speaking engagements, editorial writing, and other activities.

During the trip, Roth and the other student leaders

stayed in three places. They bunked in Tel Aviv for two nights, in a kibbutz on the shore of the Sea of Galilee for one night, and in Jerusalem for three nights. Each day. they met with political, military, and religious leaders who spoke about the Israeli-Palestinian conflict and other important topics.

"It was a good array of speakers who represented both sides of the conflict." Roth said. "They presented as fair and balanced of a view as possible."

Roth's only connection

only for the cost of a plane ticket from Rapid City to New York City, and Tech's Student Association picked up that cost. Project Interchange is a nonprofit, non-partisan organization funded bv foundation and private individuals, including state Rep. Stan Adelstein of Rapid City.

Since Project Interchange started in 1982, more than 3,500 American leaders have participated in its intensive seminars in Israel. Project Interchange prides itself on giving seminar participants a balanced, firsthand perspective on current issues facing the Middle East. During each seminar, participants receive a comprehensive overview of Israeli society and politics. Through personal experience, participants build their own greater

to the Middle East is through his interest in keeping up with world events. His interest in the Israeli-Palestinian conflict started earlier, but grew after taking Dr. Roger Dendinger's "Politics of Terrorism" class at Tech.

"We spent probably a third of the class talking about the Israelis and Palestinians," Roth said. "Things got pretty heated at times, but it opened my eyes about how complicated it all is."

Visiting Israel didn't simplify the situation for Roth. "I think most of us left more confused than we were when we got there," he said. "Everything - the politics, the religion - is so intertwined, you can't just put a agreement on a piece of paper and have everyone sign it. It's not that simple."

8

The opportunity of a lifetime

That doesn't mean there isn't reason for hope, Roth said. "With the leaders that are in place right now on both sides, I'm not sure there is a lot of hope for something better," Roth said. "But we met with college students and we all thought that is where the hope is. They look at things differently, and they are hopeful that they can change things."

Besides meeting with leaders in each city, the students toured famous sites. They also visited with Israeli soldiers at the Golan Heights and saw the security barrier Israel is now building. The barrier, a concrete wall in some places and wire fence in others, was a constant reminder of the conflict, Roth said.

Roth was concerned with his safety while traveling, but said the program made the safety of everyone on the trip the first priority. An armed security guard traveled with the group, and Israeli Defense Force members - in uniform and undercover - always were visible on the streets. Private security guards checked bags and used a wand to search Roth and his companions every time they went into a business.

"I always felt safe, but it's always at the back of your mind that something can happen," Roth said.

The trip also held a deeper, and more personal, spiritual angle for Roth. Roth had never been baptized, and left for Israel considering accepting the sacrament during the trip. He did, in the Jordan River



Wes Roth traveled to Israel with a group of other student leaders from across the country. He was invited to apply for Project Interchange after he was elected Student Association president in 2003. Project Interchange and South Dakota State Rep. Stan Adelstein of Rapid City funded most of the cost of Roth's trip.



Tech student Wes Roth (CSc, Laramie, WY) poses on the rocky shore of the Mediterranean Sea during his Project Interchange trip to Israel. Roth spent eight days in Israel, learning about the country and the Israeli-Palestinian conflict.

at the place where many believe Jesus was baptized by John the Baptist.

"I was raised in a Christian home, but since I've been in college, my faith has strengthened even more," Roth said. "To be baptized where Jesus was, that was incredible. I was blessed to have a Christian pastor from Nazareth. We read the Scripture, and then he baptized me. I'll never forget it."

Roth visited other important religious sites such as Mount of Beatitudes, where Jesus delivered the Sermon on the Mount, Capernaum, where Jesus made his home during his ministry, the Western Wall, the most holy place in the world to Jewish people, the Church of the Holy Sepulcher, which commemorates the site where Jesus was crucified and buried, and many others.

"It meant a lot to me to see those places," Roth said. "It made the Bible come alive. You read about all these places, but it's difficult to picture them. It gave me a different understanding to actually be at those places.

"I'm really glad I went," Roth said. "It was one of the most amazing experiences of my life. I think other students should do it to expand their world view. American students have such a limited view of the world, and a trip like this proves that there's a lot going on in the world."

Antarctic Adventure

Thoughts of Ernest Shackleton must course through the minds of anyone who encounters ice conditions that block a ship's travel during any trip near Antarctica.

Those thoughts certainly entered the mind of South Dakota Tech's Dr. Jim Martin, curator of vertebrate paleontology, Museum of Geology, and professor, Department of Geology and Geological Engineering, during his recent expedition to the world's southernmost continent. Martin's ship, and the expedition team he co-led, aimed to stop at an island Martin visited before. Massive and thick sheets of ice blocked the route, and forced the team to change its plans.

Shackleton also had to change his plans, but he

didn't have a ship to do it in. Ice locked his ship, the "Endurance," in a frozen cocoon during its 1914 Antarctica expedition, forcing Shackleton's incredible heroics that saved his entire crew.

Martin needed no such heroics, but the detour proved to be fortuitous. The team discovered the remains of what may be an entirely new species of meat-eating dinosaur. At a separate Antarctic site, at nearly the same time. another researcher found what is believed to be another dinosaur that has never been

known to science before (see sidebar).

The meat-eating beast found by Martin's team may be related to the enormous meat-eating Tyrannosaurs and the equally carnivorous, but smaller and swifter velociraptors that terrified moviegoers in the film "Jurassic Park."

"This discovery may aid in understanding the biogeography of the Late Cretaceous, the environment of Antarctica at the time, including climate, the history of dinosaurs, and even perhaps some ideas about global warming," Martin said.

The remains found on James Ross Island on the eastern side of the Antarctic Peninsula include fragments of an upper jaw with teeth, isolated individual teeth and most of the bones from both of the animal's lower legs and feet. The creature would have lived millions of years ago when the climate and terrain would have been similar to conditions in today's Pacific Northwest.

Dr. Judd Case, a professor of biology at Saint Mary's College of California who discovered the bones, said the shape of the teeth and features of the feet are characteristic of theropods, a group that includes the Tyrannosaurs and all other meat-eating dinosaurs.

Therapods, or "beast-footed" dinosaurs, make up a large and diverse group of now-extinct animals with the common characteristic of walking on two legs like birds. Recent research has shown that birds are direct descendents of therapods.

The size and shape of the ends of the bones of the lower legs and those of the feet indicate that in life the animal was a running dinosaur roughly 6 to 8 feet tall.

Case was the co-leader of a research team supported the by National Science Foundation (NSF), the agency that manages the U.S. Antarctic Program, coordinator the of almost all research on the southernmost continent and in the surrounding oceans. Tech's Martin served as



A National Science Foundation artist created this image of what the carnivorous dinosaur found by a research team that included South Dakota Tech's Dr. Jim Martin may have looked like. Martin believes the dinosaur may have died on a beach and was washed out to sea before settling at the bottom of the sea.

the team's other co-leader. The field party also included representatives of Argentina's Museo de La Plata, Minot State University, the University of Oklahoma, the South Dakota Geological Survey, and graduate students from the University of California, Riverside, and South Dakota Tech

The find was unusual and fortuitous for several reasons. First, relatively few dinosaur fossils from the end of the Cretaceous period, 144 million to 65 million years ago, have been found in Antarctica. Secondly, the specimen is one of only six that have been discovered in the James Ross region on the eastern side of the Antarctic Peninsula, the landmass that juts north toward South America. Also, to have been preserved at all, the animal likely floated out

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Tech Paleontologist discovers new dinosaur



Dr. Jim Martin and his research team found more than dinosaur bones during the Antarctica trip. They had the chance to view the local wildlife, including these penguins congregated on an ice flow.

from shore after it died roughly 70 million years ago and settled to the bottom of what was then a very shallow area of the Weddell Sea.

Finally, the ice conditions that forced the team to change its plans and make the find possible, can be chalked up, in large part, to luck. The expedition originally planned to continue excavations on Vega Island, where Case and Martin had previously found a specimen of the duck-billed dinosaur hadrosaur in 1998.

Once on James Ross Island, the team concentrated its investigations on the Naze, a northerly projecting peninsula, where exposed materials represent a period when the area was covered by the waters of the continental shelf, roughly 300 to 650 feet deep.

"The weather was horrible," Martin said. "We had snow about every three days, and we had to wait until the ground was clear before we could work again. We had to screen an area about 50 yards square to find all the pieces and had to hike four miles one way every day to get to the site."

The new species, if confirmed as such by analysis, is only the second theropod from the Late Cretaceous of Antarctica.

The first meat-eating dinosaur known from this part of Antarctica is a large theropod represented by only a single thighbone, or femur, roughly 85 million years old, found near Brandy Bay on James Ross Island.

Other dinosaur remains from the Antarctic Peninsula are of plant-eating dinosaurs from James

Ross Island, plus a hysilophodontid, or herding dinosaur, and the hadrosaur discovered by Case and Martin on Vega Island.

All the finds are important. They're also impressive because of the conditions Martin and other paleontologists encounter.

"The effort to organize such an expedition is hard to describe," Martin said. "It's important to understand the many parameters such as ice conditions, weather, and other obstacles that affect work in such a harsh environment."



While South Dakota Tech's Dr. Jim Martin and other paleontologists found what may be a new species of meateating dinosaur in Antarctica, a researcher from Illinois found what is believed to be the pelvis of a primitive sauropod in another part of the continent.

The team was led by Dr. William Hammer, an NSFfunded researcher at Augustana College in Rock Island, IL. The team found the fossils of a four-legged, planteating dinosaur embedded in solid rock. Hammer's team was working in the Antarctic interior on a mountaintop at 13,000 feet near the Beardmore Glacier.

Lending a striking 21st century touch to the two, almost simultaneous finds, the two research teams used satellite-based Iridium telephones at their field camps to notify each other of their respective discoveries. The Iridium System, a satellite-based, wireless personal communications network that provides voice communication service to virtually any destination on Earth, was created by Ray Leopold of Motorola. Leopold was Commencement speaker at Tech in December 1997, and received an honorary doctorate from the university.

Based on field analysis of the bones, Hammer and his fellow researchers believe the pelvis -roughly 3 feet across is from a primitive sauropod dinosaur that represents one of the earliest forms of the emerging dinosaur lineage that eventually produced animals more than 100 feet long. Based on his estimates, Hammer estimates that the new creature was between 6 and 7 feet tall and up to 30 feet long.

Hammer believes that the creature lived roughly 190 million to 200 million years, millions of years before the creature that Case and Martin discovered on the Antarctic Peninsula in 1998.

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Growing Business

Incubator to bring ideas to reality

Two South Dakota Tech researchers are walking across campus, contemplating a current research project, when it strikes them that they have a multimillion-dollar idea that could make them rich and create jobs in Rapid City. Then, they realize they know little about technology transfer and starting a business.

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Starting in December 2004, every Tech researcher, inventor, and student entrepreneur, will have a resource on campus to answer all those questions and help start their businesses on the way to maturity. That place will be the Western South Dakota Business Development Center, an incubator designed to turn ideas into reality.

"The goal is to stimulate technology-based economic development," Bob DeMersseman, president of the Rapid City Economic Development Partnership, said. "We wanted to be on campus because we feel that the closer we are to Tech, the easier and more natural it will be to have discussions with researchers. We applaud President Ruch for his efforts on this project," DeMersseman said. "We are enjoying a great working relationship."

Tech President Dr. Charles Ruch has made economic development a focus on campus since he arrived in July 2003.

"I believe in using the talents of the people at Tech to help make Rapid City and South Dakota even better places to live and work," he said. "Research and development can drive job creation in high-tech industries and improve our economy and standard of living."

Economic development officials have been working toward creating an incubator since 1992, DeMersseman said. Since then, organizations and offices such as the Economic Development Partnership, Small Business Development Center, Service Corps of Retired Executives, and others, have offered many incubator-style services, but not in one, central location.

"This facility will give us the opportunity to move faster on business start-ups because the services needed to help make a start-up successful will be immediately available in one place," DeMersseman said.

The nearly \$2.5 million project will be financed with federal and state funding, and by the City of Rapid City and area economic development agencies. The incubator will be built southwest of the campus child care center just west of the gap that runs to Saint Patrick Street. Officials plan to begin construction in June or July, and move in by the end of the year. The 60,000-square-foot, two-story incubator will house all business development services now offered by Rapid City Area Economic Development Partnership and West River Business Service Center, and will have space where a manufacturing-style business could begin operations.

"We will let them stay as long as they need it, but the goal is to get them out of there to make an investment in the community and start creating jobs," DeMersseman said. "We want to build a high-tech economy based on businesses and products with intellectual and technical advantages that have been developed here to meet needs outside of the state and region."

Those are the kinds of businesses that can create sustainable economic development focused on new inventions and new ideas, instead of commoditybased manufacturing. Tech will be there every step of the way, making sure researchers and the incubator communicate and work toward a bright economic future.

"We are excited to have the incubator as a neighbor and as a partner," Ruch said. "The possibilities created by this cooperation will be important and far-reaching, and we look forward to exploring every opportunity out there."



Incubator timeline

1992: Local economic development officials begin plans to create business incubator in Rapid City.

1992-present: Many incubator-style services are offered, but not in one location.

June-July 2004: Construction scheduled to begin on incubator to be located on the South Dakota Tech campus. Incubator will centralize services and give fledgling businesses a place to get started.

December 2004: Incubator slated to open.

Unmanned Aerial Vehicle



Tech team flies into new competition

South Dakota Tech's newest student team has the



following task - launch an aerial vehicle that navigates a threekilometer course to a complex of buildings. There, the vehicle

searches the front of each building for a specified symbol. Then, the vehicle launches a second vehicle that enters the building, captures video or photos of some sort of data and transmits that data back the starting point.

Here's the clincher. The entire operation must be fully automated. In other words, once the initial

vehicle is launched, the team members sit back and watch while their robots do their work. Simple, right? Not at all.

"It's pretty complicated," team leader Jason Howe (ME, CEng, Spring, TX) said.

The 20-member team has been working for months to get ready for the July 2004 competition. Billed as "the ultimate collegiate challenge," the Association for Unmanned Vehicle



Tech's Unmanned Aerial Vehicle team is a truly interdisciplinary squad. Its members come from several different engineering and science disciplines. The team has found a way to come together as a highfunctioning team to complete their challenging task as well as possible.

Systems International's Aerial Robotics Competition forces teams to build truly interdisciplinary teams. Teams need mechanical, computer, electrical, and other engineers, as well as computer scientists to assemble the robots and get them operating properly.

The project also signifies another step in Tech's relationship with the U.S. Army Research Laboratory (ARL), the team's main sponsor. The Army is interested in unmanned aerial vehicle (UAV) research because the vehicles could protect soldiers in the field. UAVs could be sent into caves to search for terror suspects, into buildings to search for explosives, or ahead of a convoy to scout for an ambush. Once the UAV transmits its data, the soldiers can make better and safer decisions about the next step.

The Tech team used ARL and CAMP funding to purchase an off-the-shelf, remote-controlled helicopter that will serve as the primary vehicle, and a four-rotor vehicle called the Draganflyer as the secondary vehicle. Both will be modified to fly autonomously and to perform the other required tasks.

"It's an exciting project," Howe said. "I've been on the robotics team for four years, and I wanted a new challenge."

The 2004 competition will be held at the Dismounted Battlespace Battle Lab's McKenna Urban Operations Site at Fort Benning, GA. The site contains 15 European-style urban structures ranging from one to three stories. The Tech team's helicopter

will need to figure out what building is the target by locating a specified symbol, successfully launch the second vehicle, and have the second vehicle enter the building and send back the required information. If the team accomplishes that, it will reach the competition's Level III, the team's goal for this vear. The competition four has levels, and no team has reached Level IV. The first that does wins team \$10,000 for each year of

the competition. The grand prize is \$40,000 this year. Whatever level the team reaches, its members plan

to work toward advancing further in the future.

Tech student Adam Dickinson (CSc, Sioux Falls), the computer science team leader, believes the project is a step forward from current competition projects on campus because of its technical and team-building complexity.

There are so many different aspects to it," he said. "It takes a big multidisciplinary team effort to make this work. That's one thing that makes it different."

Dickinson also said the project presents some unique opportunities. "We receive quite a bit of funding so we get to work with neat equipment and learn about things that we otherwise wouldn't. That's pretty exciting."

A New Breed of Antenna

Research project to protect U.S. soldiers

Antennas being developed at South Dakota Tech could better protect U.S. soldiers and make them more effective in battle.

Dr. Keith Whites (EE '86), professor and Steven P. Miller Chair, Department of Electrical and Computer Engineering, is using funding from the Army Research Laboratory to develop state-of-the-art antennas. The antennas could be attached to an individual soldier's uniform and used to transmit critical information from commanders to soldier, from soldier to commanders, from soldier to soldier, and from soldier to artillery and other weapons.

"We've been able to develop these antennas for new applications," Whites said. "They will be very inexpensive and very easy to produce. That will be our contribution."

The U.S. Army envisions the future soldier's ensemble as a lightweight, fully integrated individual combat system, including weapons, head-to-toe individual protection, netted communications, soldier-worn power sources, and enhanced human performance aids. Antennas would be a critical part of making future soldiers operate efficiently and to their fullest potential.

"In the Future Combat System, the Army wants



to have very tight communication with soldiers," White said. "They also want the soldiers to send back video of what they're seeing. A soldier

in a foxhole could send back video to his commander, who can make better decisions."

Whites and his team also are developing antennas that could be conformed to any shape, so they could be attached to aircraft or other vehicles, better protecting them from potential damage.

The antennas being developed, while small, are wide-band antennas, meaning they can send and receive signals over a wide range of frequencies. A unique piece of equipment is making that possible. "Nature doesn't want to give you a wide frequency range with small antennas," Whites said. "You can do it, but the antennas aren't very effective."

The Maskless Mesoscale Materials Deposition



Tech graduate student Luke Albers (MS EE, Canton) uses specialized equipment Tech's Miller Laboratory to perform a test on a bowtie-shaped antenna developed by Dr. Keith Whites and his team of undergraduate and graduate student researchers. Whites has 11 students working for him on various research projects.

(M³D) machine in Tech's new Direct Write Laboratory will overcome that problem. The M3D machine will allow Whites and Dr. Jim Sears, research scientist IV, Advanced Materials Processing (AMP) Center, to place electronics on materials that are 25 microns, or one-thousandth of an inch, wide. The process is related to the laser additive deposition capability found in Tech's AMP Center. The capabilities of the M³D machine improves the abilities of the antennas. Whites and Sears will use \$400,000 in Army Research Laboratory funding to set up the Direct Write Laboratory. Funding for this and other ARL projects was made available with assistance from the South Dakota Congressional delegation.

"We're very excited about this capability," Whites said. "We are the first place outside of the company that makes the equipment to have it."

Besides assisting the U.S. Army, the antenna research holds the opportunity to create economic development in the Rapid City area. White has already talked with a company that wants to commercialize one of the antenna designs that could be used by the military and law enforcement to see through walls to search for suspects and dangers. Whites is excited about making that happen.

"Helping create local economic development, that's really important to me," the South Dakota native said. "I want to help the economy of South Dakota. I wanted to come back here (from the University of Kentucky) and help in any way I could. This university has a lot of experience and expertise that we can offer. It's here, and we can use it to make a big impact."



Tech, BHSU team up to serve community

South Dakota Tech and Black Hills State University have crafted a series of strategies that will ensure that all residents of West River have easy access to higher education with all the benefits and expertise universities offer.

Administration, faculty, and staff from both universities worked together between August and December 2003. Leadership from the Rapid City Area School District and the South Dakota Board of

Regents also were involved in the discussions.

"This is an exciting and important step," BHSU President Thomas Flickema and Tech President Dr. Charles Ruch said. "We believe this plan will help us meet the higher education needs of West River and make sure universities are helping make West River an even better place to live."

Included in the plan is a new storefront higher education center at Rapid City's Rushmore Mall. "We are excited to have a one-stop access point where Black Hills residents can get information about all the public higher education offerings available in this area," Regents President Harvey C. Jewett said. "Ideally, this storefront location will assist people in registering for classes, securing financial aid, and serve as a site for workshops, training programs, or course delivery.

"The new higher education center is just one of the more visible changes to come from the presidents' recommendations," Jewett said. "But overall, we can expect more coordination among all our institutions in what is offered West River. The consortium will also frequently assess the region's higher education needs, so that the university system can adjust accordingly."

The strategies created by Ruch and Flickema fall into several broad areas, including:

- Coordination of higher education offerings
- Identification of areas for realignment and collaboration

• Creation of strategies to enhance economic development

A Golden Opportunity

Specific strategies within the plan include:

• Creation of a consortium that will make sure higher education is meeting the region's needs

• Creation of a "one-stop" higher education center in Rapid City. The center's primary function will be to distribute information about all regental higher education offerings available to West River residents and to assist prospective students with the enrollment process

• Development of an entrepreneurship emphasis for all engineering and science programs

• Delivery of a business management degree in Rapid City

• Possible creation of an entrepreneurship center on Tech's campus

• Development of a joint program in manufacturing education and technology between BHSU, Tech, and WDTI

• Realignment of Tech's Interdisciplinary Sciences degree to potentially include tracks such as pre-Health Science, pre-Business, pre-Law, and others

• Creation of a system that will allow prompt and appropriate response to economic development opportunities. The system will include one access point for those who need assistance with economic development projects.

"Some of these strategies will be visible and some will not," Flickema and Ruch said. "Either way, they all will help higher education reach its full potential in helping people reach their goals and in helping create economic opportunities in South Dakota.

"We both believe that higher education has lots to offer everyone in western South Dakota, and efforts like this are what we need to guarantee access and opportunity. We look forward to making these plans come to life."







Celebrating the profession



South Dakota Tech's Dr. Lee Vierling, assistant professor, Institute of Atmospheric Sciences, presented a session for E-Week GIRLS (Girls Into Real Learning Succeed) participants about satellite imaging and how we use satellite images all the time.



South Dakota Tech chemistry students used the "Hot Chemistry, Cool Show" to show visiting students that science can be as fun as it is fascinating.



During E-Week GIRLS (Girls Into Real Learning Succeed), South Dakota Tech students guided the participants through a global positioning system exercise that led each team to various points in the South Dakota Tech Quad. The participants found a sweet surprise in the form of lollipops at each location.



South Dakota Tech honored five Outstanding Recent Graduates during an Engineers Week luncheon. They are, from left, Michael Binfet (ME, '93), Andrew Long (GeolE, '93/MS GeolE, '96), Tony Oehlerking (EE, '93), and Deborah Sloat (IS, '94). Not pictured is U.S. Army Capt. John Henderson (CEE, '94), who is serving in Iraq.



Dr. Ed Gibson spoke to schoolchildren about his experience as an astronaut and the future of the space program. For 21 years, Gibson was a co-holder of the American record of 84 days in space when he served as part of Skylab III in 1974. During that mission, he worked outside the space station for more than 15 hours during three spacewalks. He also served on the support crew of the Apollo 12 mission.



Visiting students participated in the annual Grubby Games, including designing cradles for eggs. The students tested their design by dropping the eggs approximately 15 feet to the floor.



Hundreds of children participated in the block-building contest sponsored by the National Association of Women in Construction (NAWIC), Black Hills Chapter.



More than 100 South Dakota Tech graduating seniors joined the Order of the Engineer during Engineers Week. All new members take an oath to uphold the highest standards of the profession during their careers.



South Dakota Tech's Dr. Jennifer Karlin, assistant professor, Industrial Engineering program, was one of two Tech professors who spoke during the Engineers Week luncheon, called "Oh the places engineers go." Karlin and Dr. M.R. Hansen, professor, Department of Civil and Environmental Engineering, spoke about their experiences here and abroad and how engineers influence the quality of life everywhere.



Santa Claus made his annual visit to South Dakota Tech just before Christmas 2003. He arrived after Travis Sieber, director of Tech's Student Activities and Leadership Center, read a story to the children and grandchildren of Tech faculty and staff. Santa then called each child by name and gave each one a present.



Members of South Dakota Tech's chapter of the American Chemical Society presented an \$825 check to the Cornerstone Rescue Mission in Rapid City to help the mission fulfill its goal of building a women's shelter. The ACS chapter held a raffle and bake sale to raise the money.



South Dakota Tech co-sponsored the fifth annual Black Hills Scholastic Chess Tournament, held in January 2004 in the newly renovated Surbeck Student Center ballroom. Trophies were awarded to the top five finishers in four grade divisions.

South Dakota Tech eaching

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Students took part in Nature's Elements at the Children's Science Center to learn about air quality. The curriculum looked at air quality problems associated with Rapid City and why they exist, the way air quality data is collected and what it means, cooperation in our community between various institutions to reduce dust or smoke during air quality alerts, and potential health effects from poor air quality.





More than 200 people attended this South Dakota legislative crackerbarrel, hosted by South Dakota Tech and sponsored by the Rapid City Area Chamber of Commerce. During each of the three events held during the 2004 legislative session, legislators spoke and answered questions from the audience.



Members of the Society of Economic Geologists (SEG) at South Dakota Tech spent a morning at Children's House Montessori giving presentations about fossils, minerals, water, and other topics. SEG members make regular trips to schools around Rapid City.



Several hundred people attended South Dakota Tech's sixth "Matters of the Heart: A Health and Wellness Expo" in February 2004. The fair was designed for Tech and area students, and focused on health issues for young people, such as sports injuries, nutrition, drug, alcohol, and tobacco use and abuse, stress management, sexually transmitted diseases, and other issues young people face.

Reaching Out



Dr. Sid Goss, a professor in Tech's Department of Social Sciences, is spending 2004 working with the Board of Regents to improve higher education in South Dakota.

Goss' first major project is to complete a comprehensive review of the system's general education requirements. Goss will examine the seven general education goals and the objectives each campus uses to determine if the goals are being met. The system review also includes a look at university requirements for information technology literacy and graduation from specific institutions.

"The board wants some consistency in those general education objectives, but they aren't looking for a cookie-cutter approach," Goss said. "We want

to respect the individual integrity of all faculty of members, but English on one campus should be comparable to the others." Once that review is

complete. and Goss discusses his findings with representatives from each campus, they will determine if the campuses are meeting the seven general education goals. Using the results of both studies, Goss and the Board of Regents office will look at what changes, if should be any, recommended.

A possible change

could be taking steps so professors and students understand how individual courses meet the general education goals. That could be done by explaining the importance of a course on its syllabus, Goss said.

"Often, that young, inexperienced student asks, "Why am I taking English if I want to be an electrical engineer?" Goss said. "If the goals are clearly stated in the course outline, that could be helpful to give the student perspective so they understand why they should take that course."

Goss plans to have the general education project completed in the Fall of 2004, with any changes taking affect for the Fall 2005 semester.

The general education work is important to the

entire higher education system, Dr. Tad Perry, executive director of the Board of Regents, said.

"General education is the foundation on which all our academic programs are built," Perry said. "We need to determine whether the system's general education offerings meet academic goals, and if all course objectives are sufficiently challenging for our students. Sid's extensive experience in the classroom will be a real asset in this system-wide effort."

Goss' other major project is taking a look at the course and professor evaluations completed by students.

"Each campus does them a little differently," Goss said. "We'll look at them and see if it's being done effectively and how we can do it better."

> During the 2004 legislative session, Goss followed legislation concerning alternative means of teacher certification.

> "The better teachers we have, the better students we'll have coming into the School of Mines and the entire regents system," Goss said. "If you have a banker who thinks he might be a good math teacher, an alternative certification program would allow him to be become a certified teacher without going back to

college and taking an entire education curriculum. The Board of Regents wants to make sure any system like that is done well, so we have qualified community members we can use in some of those shortage areas."

Since coming to Tech in 1974, Goss has held increasingly responsible positions, moving through the ranks to become a tenured full professor. His previous duties included dean of college relations, director of continuing education and summer school, interim library director, assistant vice president for academic affairs, and chair of the Department of Social Sciences.

Goss has bachelor's, master's, and doctorate



Dr. Sid Goss, a professor in South Dakota Tech's Department of Social Sciences, is spending a year working in Pierre as a South Dakota Board of Regents Fellow. He is undertaking several important projects that could have a profound impact on higher education in South Dakota.

Sid Goss named Regents Fellow

degrees in sociology, as well as a master's of education degree in guidance and counseling, all from South Dakota State University. He is also active in many Black Hills area organizations, serving on the boards of the Mount Rushmore Society, Crazy Horse Memorial, Northern Plains Eye Foundation, and chair of the governmental affairs committee of the Rapid City Area Chamber of Commerce. He is a past chair of the South Dakota Humanities Council and previously served as executive director for the Museum Alliance of Rapid City.

"Dr. Goss is an invaluable asset to South Dakota Tech," Tech President Dr. Charles Ruch said. "He truly cares about the university and about the future of higher education, and while we miss his presence on campus, he's making excellent and important contributions as a Regents Fellow."

Another important part of the Fellowship is the professional development Goss is experiencing. Goss is attending meetings of the Board of Regents, Council of Presidents and Superintendents, Academic Affairs Council, and others.

"I'm learning more about higher education from a statewide system perspective," Goss said. "I think that will benefit the School of Mines and Technology because we'll have people on campus more familiar with the overall process and who sees how the cogs fit into the bigger wheel. When it comes to aligning courses and objectives with overall system goals, the School of Mines will be in great shape because I'll know the system well, and that will make it really efficient."

The Fellowship also gives Goss a chance to stretch his professional wings and look at other possible career paths, not that he's considered altering from his teaching duties. Still, "the change has been refreshing," he said.

That's one reason why Goss recommends the experience to other senior faculty members. All tenure track faculty members and administrative staff professionals employed at one of the regental universities are eligible to apply for the program. Applications can be submitted at any time and will be reviewed first at the applicant's university. Once approved there, the application is forwarded to the Board of Regents office. Regents Fellows work in Pierre, where they undertake assignments at the direction of senior Board of Regents staff, and receive a small housing allowance in addition to their regular salary. Fellows return to their home institution when the fellowship ends. Goss will be back at Tech for the Spring 2005 semester. While he's looking forward to that, he's making sure he reaps all the benefits he can while working for the Board of Regents. Those benefits will improve his skills and improve the higher education system in South Dakota.

"It's been a great experience so far," Goss said. "I think others will experience the same thing, and I encourage anyone who wants a broader perspective of higher education to apply."

Dr. Sid Goss, a professor in South Dakota Tech's Department of Social Sciences, is serving as a Board of Regents Fellow in 2004. One of his major projects is to undertake a comprehensive review of the system's general education requirements. Those requirements have seven goals.

GOAL #1: Students will write effectively and responsibly and understand and interpret the written expression of others.

GOAL #2: Students will communicate effectively and responsibly through speaking and listening.

GOAL #3: Students will understand the structures and possibilities of the human community through study of the social sciences.

GOAL #4: Students will understand and appreciate the human experience through arts and humanities.

GOAL #5: *Students will understand and apply fundamental mathematical processes and reasoning.*

GOAL #6: Students will understand the fundamental principles of the natural sciences and apply scientific methods of inquiry to investigate the natural world.

GOAL #7: Students will understand and be sensitive to cultural diversity so that they are prepared to live and work in an international and multicultural environment.

Champions of Endowment

When Jim Smith (Chem '52) addressed the May 1995 South Dakota Tech graduating class, he talked about the years of hard work those gathered before him just completed successfully.

"I know the regimen you come from," Smith said. "I remember the 20 quarter hours of five and six labs when I came to school. Not always, but mostly, I came to school at eight in the morning and left at three or four in the afternoon. It was like a job." endowment will create a scholarship fund for Tech football players.

The '51 Football Spirit Award will be given to a varsity football player who demonstrates the qualities of the 1951 championship team. According to then-coach Barney Lewellyn, the 1951 team never gave up, never quit working, and they had real heart. Each scholarship award will total \$1,000.

The team needed those special qualities because the outlook for the 1951 season wasn't



The 1951 Hardrockers finished 8-0, and won the South Dakota Inter-Collegiate division championship. It was the first such championship in the university's history. Jim Smith (#27) quarterbacked the team to its perfect record. He is pictured in the first row, second from left.

What Smith left out is how hard he and his peers worked as part of South Dakota Tech's 1951 football team, a team expected to do little, but that rose above all expectations and came out on top. That team worked hard, finishing 8-0 and beating just about every opponent handily, pitching four shutouts in the process. Smith quarterbacked that team to the university's first-ever South Dakota Inter-Collegiate division championship in history.

Smith and his teammates gave their all that season, and the team is undertaking a fundraising effort to give back in a different way. The team is seeking to create, with the assistance of the South Dakota Tech Foundation and the Hardrock Club, the 1951 Football Champions Endowment. The very hopeful, according to the 1951 Football Brochure.

"The number one objective of the administration of the South Dakota School of Mines and Technology is to provide the prospective engineering student with the finest training possible for his future profession. With this in mind, it is obvious that any athletic program must receive only a secondary emphasis, but still must provide the future engineer with something that can benefit him later in life.

"The athletic department would like to feel that the existing program can do for the engineer what (sportswriter and author) John Tunis had in mind when he said, 'The deep objective of the games really is to train one's

'51 gridders create a new legacy

reflex of purpose to develop a habit of keeping steadily at something you want until it is done.'

"The 1951 Hardrocker grid machine will operate with only three full-fledged 1950 offensive starters," the brochure stated. "With these starters will be men who lettered as reserve performers or played strictly on the defense last year. There is not a single 'T' quarterback on hand with any game experience."

After detailing the lack of size and depth at several positions, the brochure states, "With freshman help sadly lacking, the Miners will have to hustle to improve on last year's three win and five defeat record."

They accomplished just that, and Smith hopes to rekindle that team spirit in the drive to build the 1951 Football Champions Endowment. Smith is sending letters to every living member of the 1951 team, asking them to participate in the effort.

In a letter to his former teammates, Smith wrote, "It's hard to believe that over 50 years have passed since our glory days of the 1951 football championship season at South Dakota Mines. From our first game against Huron College to the very last against our arch rival Black Hills Teachers College, we worked together to accomplish something that has never been repeated at the Mines - an undefeated season!

"I would like to take this opportunity to update you on a plan to work as a team again. The Hardrock Club is currently constructing the SDSM&T Hall of Fame as part of their Golden Anniversary Campaign. The purpose of the Hall is to recognize superior athletic accomplishments like our team effort in 1951. The plan is to create a 1951 Football Champions Endowment that will provide funds for the '51 Football Spirit Award that will be awarded annually to the most outstanding player exemplifying the spirit and character that served us so well. A picture of the award recipient will hang underneath our team picture commemorating the individual and our team in the Hall of Fame.

again...and make a contribution to the fund, regardless of size, to make this all happen. The name of each contributing member of the team will be listed with the picture in the Hall of Fame.

"The 1951 Football Champions Endowment will serve as a reminder for all future generations of the accomplishments we achieved. Please join with me to make this a reality."

Jim Smith grew up in Aberdeen. After graduating from Tech in 1952 with a bachelor's of science degree in Chemistry, he earned a law degree from George Washington University in 1961. He served the United States as comptroller of the U.S. Treasury Department, undersecretary of the Treasury Department, has served on congressional committees and staff, and has been involved with every major banking bill for the past 30 years. He now lives in Bethesda, MD, where he is chairman of The Smith-Free Group, in Washington, DC. Smith is a member of the Federal and South Dakota bars and the Association of Former Senate Aides.

Tom Rudebusch, sports information director, and executive director of the Hardrock Club, hopes the '51 Football Spirit Award injects excitement into the football program like the team's enthusiasm did in 1951.

"The '1951 Football Champions Endowment' provides additional scholarship support for the football program, and will give future Hardrocker football student athletes who display the same characteristics as the 1951 Football Team of hard work, dedication, and teamwork the financial assistance to help with their education," Rudebusch said. "This scholarship will complement the display in the Hall of Fame that will pay tribute to this undefeated team that holds a special place in Tech's athletic history."

"I am asking each of you to join the team

Fall Commencement

South Dakota Tech held its 148th Commencement on Saturday, Dec. 20, in the Rushmore Plaza Civic Center Theater. More than 120 graduates received associate's, bachelor's, master's, or doctoral degrees.

Marv Truhe (ME, '67) joined commencement speaker. Truhe, of Rapid City, was born in Winner, and g knew early on that he wanted to attend fa South Dakota Tech. He graduated with \mathbb{H} honors. He received a law degree in 1970 from Northwestern University Law School. After law school, he served four years in the United States Navy Judge Advocate General's Corps during the Vietnam War. After a brief stint in the South Dakota Attorney General's Office, he began practicing law in Rapid specializing in civil and City. construction litigation, and mining and environmental law. Truhe is a loyal supporter of South Dakota Tech, and has served the South Dakota Tech Foundation for more than 20 years. He has helped raise millions of dollars for scholarships and capital projects.

Naomi Fossen (CEE. (03) the graduating represented class. Fossen, of Pierre, received a bachelor's degree with honors. She served as a resident assistant, as a driver for g Students Against Drunk Driving, and as a member of the Society of Women^E Engineers, Tau Beta Pi Engineering Honor Society, and other organizations. In 2003, she was elected as one of Tech's two Homecoming queens. Naomi also regularly made the Dean's List. She is now pursuing a master's degree in Civil Engineering at Tech.

Tech also honored five alumni with "Distinguished Alumni" awards, given to graduates who have made outstanding contributions in their professions and to Tech.

Dr. Everett E. Bloom (Met, '63), from Doland, graduated from Tech and went on to earn master's and doctorate degrees, also in Metallurgical Engineering, from the University of Tennessee, Knoxville. He joined the staff of the Metals and Ceramics Division of Oak Ridge National Laboratory in 1964, and now serves as director of the division. The division has a staff of approximately 250, and conducts materials research and development for the Department of Energy and

> other government departments and agencies, in addition to participating in cooperative programs with U.S. industry, academia, and many foreign research laboratories. Bloom has written more than 200 papers.

Dr. Wayne F. Echelberger (CEE, '56), originally from Pierre, continued his education after graduating from Tech and earned master's and doctorate degrees from the University of Echelberger's teaching, Michigan. research, and administrative career spanned three decades at five universities, including the University of Michigan, University of Notre Dame, Indiana University, the University of Texas at El Paso, and the University of South Florida. Echelberger's research and teaching experience and interests include environmental engineering, environmental quality planning and management, water quality engineering, environmental health and sanitation, solid and hazardous waste and public management works administration. Echelberger also has consulted with government and industry.

Thomas J. Flakoll (EE, '68), of Forbes, N.D., began his career at Honeywell after graduating from Tech. He joined Bowmar Instrument Corporation in 1970, and progressed to the position of director of engineering in 1977. He held similar positions with Dynamics Corporation of America prior to joining Technitrol in 1980 as general manager of their Components Division. He excelled in the company to the positions of vice president,

Marv Truhe (ME '67) joined South Dakota Tech as Commencement Speaker. Truhe is a loyal supporter of Tech, and has given the university countless hours. He has served the South Dakota Tech Foundation for more than 20 years, and helped raise millions of dollars for scholarships and capital projects. He is a true friend of the university.

Tech as



Naomi Fossen (CEE '03) represented the senior class. During her time at Tech, Naomi excelled in the classroom and was very involved in student organizations. She is now pursuing a master's degree at Tech.

Class of '03 heads into the future

president and chief operating officer, and president and chief executive officer. He also served on Technitrol's board of directors. He expanded the Technitrol's focus internationally and aggressively pursued acquisitions in growth markets. Technitrol sales grew from \$73 million in 1993 to \$449 million in 1998, through a combination of acquisitions and internal growth. Flakoll helped propel Technitrol Dakota native, joined Shell as a petroleum engineer after graduating from Tech. In 1967, he became division petroleum engineer for the Houston Production Area, and in 1971 was named manager of Engineering for the Western Exploration and Production Region in Houston. The following year, he transferred to Los Angeles as a production manager for Shell's Western Exploration and

from a small gd o m e s t i cdd company to an gd international corporation with more than 2 1 , 0 0 0 employees in 15 countries.

Chao-Ning Liu (EE, '56), raised in Taiwan, earned master's and d o c t o r a t e degrees from the University of Illinois after g r a d u a t i n g from Tech.



South Dakota Tech's Distinguished Alumni Class of 2003, from left, Dr. Everett Bloom (Met '63), Dr. Wayne Echelberger (CEE '56), executive vice president of the Tech Alumni Association Paul Gnirk (MinE '59), Tech President Dr. Charles Ruch, Thomas Flakoll (EE '68), and C.N. Liu (EE '56).

Liu enjoyed a distinguished career with IBM Research beginning in 1961 in pattern recognition and expanded the methodology techniques. throughout the next decade to build the first multifont optical reader for the Social Security Agency. He continued research into the design and use of hardware and software systems for the field of image processing, automatic programming for small business applications, and on signature dynamics for He was co-inventor of a personal verification. signature verification system based on writing acceleration and pressure waveforms, and developed an experimental system based on this technique. In 1989, this technology became a component of the IBM Transaction Security System. Liu then focused his research on medical imaging, scientific and engineering visualization, and virtual reality. Evidence of Liu's creative endeavors includes his more than 40 publications and seven U.S. patents.

Frank H. Richardson (GeoE, '55), a Wood, South

1978, and in 1980, became Senior Vice President for Administration. In July 1982, he became Executive Vice President for Administration, and in 1983, Executive Vice President for Products. In 1984, he was elected a director of the company. In 1988, Richardson was elected as Shell's President and Chief Executive Officer, a position he held until his retirement in 1993. Richardson currently serves as vice chair of the Board of Trustees of Baylor College of Medicine, and chair of Baylor's Finance Committee. He is also a director of Sysco Corporation and chair of Sysco's Finance Committee.

Region. In 1974, he returned to Houston as division production manager, and then became g e n e r a l manager for production, Western Exploration and Production Region. He was elected Vice President for Corporate Planning in

Production

New program modernizes mining degree

South Dakota Tech is updating one of its traditional majors to meet the changing needs of the mining industry in South Dakota and the nation.

Back To Our Roots

Tech will begin offering the new major, Mining Engineering and Management, in the fall 2004 semester.

"The mining industry requires a special type of engineer, one who merges the principles of the mechanical, metallurgical, geological, electrical,

CATERPILLA

environmental, and civil engineering fields, with sound business judgment," Dr. Charles Kliche, professor and director, Mining Engineering and Management program, said. "Mining Engineering is a combination of these disciplines, and this new program provides the foundation not only in the various disciplines, but also in the business and management aspects of the industry."

Mining engineers apply engineering and scientific principles to discover, appraise and extract minerals from the Earth and sea. Mining engineers may work in underground mines or in surface mines overseeing the recovery of mineral resources. Α mining engineering graduate generally starts out in engineering, but progresses

quickly into supervision and then into management. This new program better prepares the graduate for that progression, Kliche said.

Mining Engineering and Management laboratory and research facilities exist for the study of mine surveying, rock mechanics, mine ventilation, mine health and safety, and for mine planning and design. Laboratory equipment available for student use includes equipment for rock specimen preparation, rock strength testing machine, triaxial apparatus, direct shear machine, computerized data acquisition system, ventilation network model, surveying equipment, and computerized mine modeling and design equipment.

The United States is more dependent on mineral reserves now than ever before in its history, and that dependency will continue to grow in the future. A vibrant system of mining education is fundamental to the health of the industry, Kliche said. The new program will help graduates leave Tech prepared for jobs in South Dakota and across the nation.

The program's coursework will include mining

engineering principles, management, financial analysis, human resources and contract negotiations. The new program has been designed to satisfy accreditation requirements for both Mining Engineering and Engineering Management disciplines.

"By establishing the program in this way, Tech graduates from this program will possess a unique, strong management emphasis along with a strong mining engineering education that will set them apart from their peers," Kliche said. "The broader educational program will enable the graduates to better serve the needs of the mining industry of today and the future."

Creating the program took time, but the hard work resulted in a major the campus is proud to offer.

"The approval of this new program by the South Dakota Board of Regents was the culmination of almost three years of effort by university administration, the Mining Engineering faculty, and the Mining Engineering Industrial Advisory Board," Kliche said.

Tech's Mining Engineering Industrial Advisory Board membership includes highly-placed Mining Engineering alumni from the coal mining and the hardrock mining industries, the explosives industry, mining equipment manufacturing and sales, and the quarry mining industry.

"Three years ago, it looked as though we were



Management, will combine the engineering principles and business skills students need to succeed in the Mining industry of tomorrow. Tech will begin offering the new degree program in the Fall 2004 semester.



going to lose the Mining Engineering degree program at Tech," Kilche said. "Declining enrollment in the program was the major culprit. Our Industrial Advisory Board presented a proposal that was accepted by then-President Dr. Richard Gowen, to raise funds needed to support the design, implementation, and maintenance of the new program."

Tech then hired a consultant with 10 years experience as chair and professor of a mining engineering program at a leading university in the United States. The new curriculum is the result of extensive consultation with the mining industry, including with Tech alums.

Tech will hire a new Program Director with significant mining and mine management experience, and a recruiter to market the new program to prospective students.

Those students are eligible for South Dakota Tech scholarships such as the Tech Challenge scholarship. Other scholarships are available from professional organizations such as the Society for Mining, Metallurgy and Exploration (SME), the International Society of Explosives Engineers (ISEE), the Copper Club, and the Rocky Mountain Coal Association. These scholarships are awarded to successful applicants based upon scholarship, need, and career objectives. Mining Engineering and Management faculty and staff can help prospective students apply.

For graduates of the program, there are more jobs available to graduates than there are graduates to fill them. Currently, there are 13 colleges or universities offering degrees in mining engineering in the United States. In 2003, there were only about 110 mining engineering graduates nationwide. Starting salaries nationwide for the graduates averaged more than \$44,000 per year. South Dakota Tech Mining Engineering graduates averaged starting salaries of \$48,600.

There are hundreds of companies, not all of which are mining firms, that hire mining engineering graduates. They include Barrick Goldstrike Mines, Placer Dome, Kennecott Energy, Granite Construction, Pete Lien and Sons, Hitachi, Ingersoll-Rand, Caterpillar, Re/Spec, and many, many others in South Dakota and around the world.

Mining Engineering and Management

Freshman Year First Semester CHEM 112/1121, General Chemistry I	
and General Chemistry Lab Math 123 Calculus I	4 4 2
<i>GE</i> 115 Frojessionalism in Engineering and Science Engl 101 Composition I Humanities/Social Sciences Course	2 3 3
PE Physical Education TOTAL 17	1
Second Semester Chem 114 General Chemistry II	3
Math 125 Calculus II Phys 211 University Physics I MFM 120 Introduction to Mining	4 3
PE Physical Education	2 1
Hum/SS Course (Language) TOTAL 17	4
Sophomore Year First Semester	
Math 225 Calculus III Phys 213 University Physics II 3	2
EM 216 Engineering Mechanics (Statics and Dynamics) MEM 201 Surveying for Mineral Engineers	4 2
MEM 203 Introduction to Mine Health and Safety	1
Econ Microeconomics	3
TOTAL 18 Second Semester	
Math 321 Differential Equations	3
Engl 289 Technical CommunicationsII	3 3
Humanities / Social Science Course MEM 202 Materials Handling and Transportation	3 2
MEM 204 Surface Mining Methods and Equipment for Coal Metal and Quarrying Operations	3
TOTAL 17	
Junior Year First Semester	
MEM 301 Computer Applications in Mining MEM 303 Underground Mining Methods and	2
Equipment for Coal, Metal and Stone Operations MEM 305 Mine Excavation and Explosives	3
EM 328 Applied Fluid Mechanics	3
BADM 360 Organization and Management MEM 307 Mineral Exploration and Geostatistics	3 3
IOIAL 17 Second Semester	
Mineralogy and Petrology	4
MEM 302 Mineral Economics and Finance MEM 304 Theoretical and Applied Rock Mechanics	3 4
MEM 306 Mine Power and Pumping Systems GeoE 322/322L Structural Geology	3 3
TOTAL 17	
Senior Year First Semester	
HRM 417 Human Resource Management MEM 401 Theoretical and Applied Ventilation Engineering	3 4
Met 220 Coal and Minerals Processing MEM 405 Mine Remaitting and Real-mation	3
Humanities/Social Science Course TOTAL 16	3
Second Semester	
MEM 404 Mine Design and Feasibility Study Free Elective	4 2
MEM XXX Managerial Economics and Finance MEM 466 Mine Management	3* 2
MEM 4XX Mining Technical Elective I	3* 3
TOTAL 17	5
Grand Total 136	



*Course numbers pending until Fall 2005.

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Student Spotlight

South Dakota Tech has named six students to its Leadership Development Team. The Leadership Development Team is comprised of students whose mission is to provide Tech students with opportunities to become confident and qualified leaders. The team's goal is to prepare students for leadership roles in their careers after graduation. Tech strongly believes in the importance of leadership in today's marketplace, and the university works hard to make sure students learn leadership skills. Tech does that through a variety of programs and activities that give students chances to improve and demonstrate their leadership abilities. The students are Team Chair Miaken Zeigler (EnvE, Sturgis), Chad Nienhueser (CEE, Sidney, NE), Amy Hensley (IS, New (CEE, Sidney, NE), Amy Hensley (IS, New Underwood), Mike Malone (ME, Rapid City), Matt Hoven (CEE, Aberdeen), and Kaycee Carson (CEE, Bountiful, UT)

Miaken Zeigler (EnvE, Sturgis) and Cori Leis (IE, Rapid City) have been selected as Orientation cochairs at South Dakota Tech. The co-chairs will lead a group of Orientation Leaders that meets regularly throughout the spring semester to prepare for the arrival of new students in fall semester. Orientation Leaders are the first students who have contact with incoming freshmen and transfer students. They guide, support, and provide information. In addition to helping students feel welcome, Orientation Leaders also are responsible for planning Orientation Week. This includes scheduling and planning events, programs and helping new students with placement testing and registration.

The following South Dakota Tech students have been elected to offices in the university's Interfraternity Council (IFC). The purpose of IFC is to promote cooperation between the fraternities, sororities, and administration, as well as to discuss topics of mutual interest. IFC coordinates the Greek calendar of events and sponsors service activities. The students, the Greek organization they represent, and their new offices, are Becky Trebil (IE, Mitchell), Alpha Delta Pi sorority, president; Lindsay Lipps (IE, Hay Springs, NE), Alpha Delta Pi sorority, vice president; Nathan Barnes (EE, Murdo), Theta Tau fraternity, treasurer; Kris Hallan (ME, Tabor), Theta Tau fraternity, secretary; and Angela Reder (IS, Prairie City), Alpha Delta Pi sorority, public relations chair.

The following South Dakota Tech students have been selected as the student chairs of South Dakota Tech's M-Week, the university's annual Homecoming Week. All three chairs are busy evaluating everything that happens during M-Week and possibly creating or adding new events or activities. M-Week has a long history at South Dakota Tech. Some traditions, such as whitewashing the "M" on M-Hill in Rapid City, date back nearly a century. The week also includes the coronation of M-Week royalty, the M-Week football game, senior-freshmen picnic and many other events. The students are **Brandy Pelton** (CEE, Killdeer, ND), **Nick Johnson** (CEng, Mitchell), and **Jen Pazour** (IE, Pukwana).



The following students received \$1,000 Broin Scholarships for the 2003-2004 academic year: Christopher Bieber (ChE, Alleman IA), Brandon Coyle (ChE, Pierre), Daniel Hammarsten (ChE, Ashley, ND), Sarah Thorson (Woodbury, MN), and Justin Vreugdenhil (ChE, Parkston). The scholarships were made possible with a \$10,000 donation from the Broin Companies, a leader in the ethanol industry. The donation from the Broin Companies, based in Sioux Falls, is providing five scholarships this year to Tech students pursuing the biochemical engineering curriculum. Five more students will receive the scholarships next year. Starting from a small, farm-scale plant on the Broin family farm near Kenyon, MN, the firm has developed into a design, construction, management, and marketing company offering turnkey ethanol facilities to investors. "I am proud that the Broin Companies have seen the value of supporting the growth of the biochemical engineering program at South Dakota Tech," Frank Blaine (ChE '87), senior process engineer for Broin and Associates, said. "An education in biochemical engineering could keep some of South Dakota's engineering graduates in state instead of exporting this talent to other regions of the country. Support and development of the

Student Spotlight

biochemical engineering program at South Dakota Tech has a potential ripple effect of promoting growth throughout rural America in value-added agriculture." Steve Lewis, director of research and process development for Broin & Associates, agreed. "South Dakota Tech is trying to provide the type of student we will need tomorrow. This, in our minds, is a very good thing for South Dakota and the Midwest. If Broin & Associates continues to grow and innovate in the fuel and value-added agricultural processing field, everyone will benefit from our investment at South Dakota Tech."

The following South Dakota Tech students selected for induction into South Dakota Tech's Leadership Hall of Fame. The students were officially inducted into the Hall of Fame during a ceremony in March.

- Chris Bartelt (IE, Watertown)
- Steve Bickett (ME, Upton, Wyo.)
- Naomi Fossen (CEE, Pierre)
- Kristin Heck (GeolE, Sioux Falls)
- Justin Reisenauer (Chem, Hettinger, N.D.)

Tech's Leadership Development Team created the Hall of Fame to raise awareness about the importance of student leadership and to recognize the valuable contributions student leaders make. The Hall of Fame recognizes students based on their contributions to the campus community. It's not about how many



Tech's Leadership Development Team from left, Miaken Zeigler, Miaken Zeigler (EnvE, Sturgis), Chad Nienhueser (CEE, Sidney, NE), Kaycee Carson (CEE, Bountiful, UT), Travis Sieber, director of the Student Activities and Leadership Center, Amy Hensley (IS, Rapid City), Mike Malone (ME, Rapid City), Matt Hoven (CEE, Aberdeen).

leadership positions the students list on their resumes. The award recognizes students who have made a difference.

Any full-time Tech student in good academic and disciplinary standing is eligible to apply for induction to the Leadership Hall of Fame. An anonymous committee of students, faculty and staff reviews applications. Up to six students are selected each year for this honor.



Campus Briefings

South Dakota Technology recently opened a new Fitness Center in the King Center on campus. "The new Fitness Center allows South Dakota Tech students to pursue their physical well-being in a modern facility with up-to-date equipment without having to leave campus," Tech President Dr. Charles Ruch said. "We all know that being physically healthy is an important part of overall health, and this center will help students accomplish that." The Fitness Center includes modern weightlifting and cardiovascular equipment, as well as television sets and a sound system. The project has been a priority for Tech students. Students voted to increase their activity fees to pay for the Fitness Center equipment.

The third annual Senior Expo was recently held on campus. The event tapped five local alumni who shared their experiences and skills outside of engineering and science with students during various roundtable discussions. The Expo, sponsored by the Student Alumni Connection (SAC), strived for an open forum between Tech students and alumni, discussing real life topics. Alumni who shared their time and talents, along with their respective topics, were **John Begeman** (MinE '76) - MBA and Business; **Hugh Boyle** (CEE '79) - 401Ks/Financial Planning; **Monte Dirks** (Met '74) - Medical School; **Jon Kellar** (Met '84) - Graduate School; and **Tim Vottero** (Chem '84) - Sales and Marketing. Also offering his expertise



was **Darrell Sawyer**, Tech's director of Career Planning and Placement, who provided tips on job search tools and skills.

Dr. Roger Johnson, associate professor, Department of

Campus

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Mathematics and Computer Science, has won the C. Oswald George Prize from the Editorial Board of "Teaching Statistics." This is the second time Johnson has won the award. Johnson won for his article on "Record values and surviving glacial moraines," and was additionally honored in the notification letter from the journal's editor. The letter stated that Roger's article was "overwhelmingly the best of the year" and "the best article I have ever had during the six years I have been Editor."

The Career Service Council at South Dakota Tech has given recent Traditions of Excellence Awards to the following Tech employees. The Career Service Council gives the award to someone who has performed their assigned duties at a high level or above and beyond expectations, who has taken the initiative to promote the concept of successful job completion and has promoted a positive working relationship with students, faculty, and staff.

November 2003: **Ruth Hynes**, a secretary in the Museum of Geology.

December 2003: **Deb Tompkins**, a secretary in the Mechanical Engineering Department.

January 2004: **Monica Beardt**, purchasing assistant in Business Services.

February 2004: **Chuck Schilling**, fabrication technician in the Mechanical Engineering Department.

March 2004: **Audrey Painter**, senior secretary in Business and Administration.

Dr. Perry Rahn, professor emeritus, Department of Geology and Geological Engineering, received the 2003 Distinguished Practice Award from the Engineering Geology Division of the Geological Society of America. The Society presented the award to Rahn during the Society's annual meeting held in November in Seattle, WA. In awarding Rahn, the Society said, "Perry H. Rahn has excelled in all aspects of engineering geology to qualify for the Distinguished Practice Award. Undergraduate studies at Lafayette College, Eastern Pennsylvania, preceded employment with the California Department of Water Resources, graduate studies at Pennsylvania State University to earn his Ph.D., and a career of university teaching, first at the University of Connecticut, then to retire as professor of engineering geology, South Dakota School of Mines and Technology. Holding degrees in civil engineering

and geology, his research involved hydrogeology, geomorphology and engineering geology. Sixtv students received advanced degrees (MS and Ph.D.) under his direction. Perry Rahn recorded his knowledge by authoring the text, 'Engineering Geology, An Environmental Approach,' which was selected for both prestigious awards of the profession, the E.B. Burwell Award, Engineering Geology Division, and the Claire P. Holdredge Award, Association of Engineering Geologists. Dr. Rahn's scientific achievements were noted by his selection for the Richard H. Jahns Distinguished Lecturer for 2001, sponsored by EGD and AEG. He served as Chair of the Division in 1991. Perry Rahn is both a professional engineer and a certified geologist, through the American Institute of Professional Geologists. He serves on the editorial boards of technical journals, authored numerous publications and is an active consultant. Dr. Rahn's career epitomizes great service to the profession, earning him the Distinguished Practice Award, which is presented with our appreciation."

South Dakota Tech professor Dr. Abul Hasan,



chair of the Department of Electrical and Computer Engineering, has collected and sent about 400 textbooks to a university in his home country. Hasan, who has taught at Tech since 1988, sent the books to Brac University in Dhaka,

Bangladesh. He collected the books from friends and colleagues at Tech and Black Hills State University. "I came from Bangladesh, and wanted to help as much as I can and in the way I can," he said. "I think educating the needy is a great cause. Being a very poor country, the universities in Bangladesh have very limited collections of books. The books I sent were mainly old editions that we are not using but are still very useful." Hasan's Tech and BHSU colleagues responded to the request by sending Hasan approximately 400 books from many different subject

areas. He boxed the books, and paid the shipping cost from his own pocket.

Dr. Stan Howard, professor, Department of Materials and Metallurgical Engineering, was selected for the 2003 American Institute of Mining, Metallurgical,



<u>Campus</u>

Briefings

and Petroleum Engineers Industry Education Award. Howard has been at Tech since 1971. He received the award during the Minerals, Metals, and Materials Society's 133rd Annual Banquet and Awards Ceremony, held in March in Charlotte, NC. Howard was given the award for being an inspiring teacher and accomplished scholar, implementer of innovation in learning, and instructor and counselor to many who have risen to leadership within the mining industry. "We are very proud of Dr. Howard's accomplishment," Tech President Dr. Charles Ruch said. "Dr. Howard is an excellent professor, and he deserves this recognition."

South Dakota Tech has added another item to the list of things that make the university unique. Tech has joined Campus Compact, a coalition of more than 900 colleges and universities committed to the civic purposes of higher education. Tech is the only South Dakota university enrolled in the effort. Campus Compact promotes community service that develops students' citizenship skills and values, encourages partnerships between campuses and communities, and assists faculty who seek to integrate public and community engagement into their teaching and research. Tech students already participate in many community service projects, and Ruch sees the Campus Compact expanding that effort so students have an even bigger impact. "I believe in this effort," Tech President Dr. Charles Ruch said. "By creating a campus that supports and encourages community service, South Dakota Tech can better prepare students to be active, committed, and informed citizens and leaders. In my commencement address to the December graduating class, I encouraged the students to contribute their skills and time to the communities they join. Participation in Campus Compact will give students a primer in giving back, and hopefully, help them gain an appreciation of it."

South Dakota Tech has dedicated the **Bill Coyle Student Center** in the Civil/Mechanical Building on campus. The Student Center will serve as a gathering



room for Civil Engineering students to hold meetings, plan student projects and congregate with fellow students. It is located in the department's Integrated Lab that Civil and Mechanical Engineering students use frequently. The Student Center was



made possible through the Bill and Myrna Coyle Endowment fund. Bill Coyle (CEE '44), was originally from Philip. After graduation, he joined the U.S. Navy and was employed by the National Advisory Committee for Aeronautics at Langley Field, VA, and at the David W. Taylor Model Basin in Washington. D.C. as a structural engineer. He also was associated with a consulting engineering firm in Washington, D.C. He returned to South Dakota Tech in 1947 as a member of the faculty. He served as a professor and department head of Civil Engineering. He dedicated many years of his life to not only teaching hundreds of civil engineering students, but also by being a friend. He was known by the students to be a kind and generous man, and always available when help was needed.



Campus Briefings

Research

Notes

William Arbegast, director, Advanced Materials Processing Center, and Dr. Anil Patnaik, assistant professor, Department of Civil and Environmental Engineering, received \$10,000 from the National Science Foundation for the project, "Collaborative Research Proposal for a Friction Stir Processing Industry/University Cooperative Research Center."

Dr. Gale Bishop, director, Museum of Geology,



\$9.600 received from Georgia Southern University (Prime: United States Department of Education) for the project, "2002-03 Sea Turtle Assistantship and Internship." Bishop also received \$5,588 in additional funds from Black Hills State

University (Prime: National Science Foundation) for the project, "A Black Hills Science Teaching Project to Prepare K-8 Teachers for the New Millennium." Bishop also received \$3,000 from the U.S. Department of Interior - Bureau of Reclamation for the project, "Paleontological Work on Angostura and Belle Fourche Reservoirs."

Dr. Jonathan Bloch, Haslem postdoctoral paleontology fellow and assistant professor, Department of Geology and Geological Engineering, received \$23,297 from Stony Brook University (Prime: National Science Foundation) for the project, "The Crazy Mountains Basin Project: Composition, Diversity, and Evolution of Paleocene Mammalian Faunas."

Dr. Arden Davis, professor, Department of



Geology and Geological Engineering, received \$5,000 in additional funding from the Packard Foundation for a "Scholarship Grant for James Sanovia."

> Barb Dolan. director of Information Systems,

Student received \$330,092 in additional funds from the U.S. Department of Education for the project. "Strengthening Student Success through Student Data System Enhancement and Equipment Upgrades."

Richard Farley, research scientist IV, Institute of Atmospheric Sciences, received \$50,500 in additional funds from the University Corporation for Atmospheric Research (Prime: United Arab Emirates), for the project, "Support to NCAR/RAP

for UAE Project."

Farley and Dr. Mark Hjelmfelt, professor, Institute of Atmospheric Sciences, received \$99,984 from the North Dakota Atmospheric Resource Board (Prime: United States Department of the Interior -Reclamation) for Bureau of the project. "Contributions to the Weather Damage Modification Program of the North Dakota Atmospheric Resource Board."

Dr. M.R. Hansen, professor, Department of Civil and Environmental Engineering, received \$24,049 from Black Hills Corporation for the project, "Use of Ben French Power Plant Fly Ash in Concrete."

Carrie Herbel, collections manager, instructor,



and preparator, Museum of Geology, received \$13,200 from the U.S. Department of Interior - National Park Service for the project, "Compilation of site maps and the preparation and curation of fossils from the Titanothere Bone Bed

Project, Badlands National Park."

Chris Jenkins. Dr. chair and professor,



Department of Mechanical Engineering, received \$80,000 from NASA for the project, "Optical Diagnostic System for Solar Sails."

Dr. Scott Kenner, chair and professor, Department of Civil and Environmental Engineering, received \$80,000 from the South Dakota

Department of Energy and Natural Resources (Prime: United States Environmental Protection Agency) for the project, "White River, Phase 1 Assessment Project." Kenner also received \$26,193 in additional funds from South Dakota Game, Fish and Parks (Prime: United States Department of Interior) for the project, "Development of a multi-agency systems approach to manage a wild brown trout fishery within an urbanized watershed, Rapid Creek, SD." Kenner also received \$11,144 in additional funds from South Dakota Game, Fish and Parks (Prime: United States Department of Interior) for the project, "Spring Creek/Sheridan Lake Watershed Assessment Project."

Melvin Klasi, associate professor, Department of Civil and Environmental Engineering, received \$48,347 from South Dakota State University (Prime:

Research

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Federal Highway Administration) for the project, "South Dakota Transportation Technology Services -LTAP CY2004."

Dr. Alvis Lisenbee, professor, Dr. Larry Stetler,



associate professor, and Dr. Arden Davis, professor, Department of Geology and Geological Engineering, received \$398.08 in additional funding from the West Dakota Water Development District for the project, "Aquifer Vulnerability Map (1:24,000

Scale) of the Southern Half of the Rapid City West Quadrangle, South Dakota."

Dr. James Martin, curator of Vertebrate Paleontology, Museum of Geology, and professor, Department of Geology and Geological Engineering, received \$24,000 from the United States Army Corps of Engineers (Prime: Department of Defense) for the project, "Retrieval of Paleontological Specimen."

Dr. Henry Mott, professor, Department of Civil

Environmental Engineering. and received \$9,000 in additional funds from the City of Rapid City for the project, "Extension to Co-Composting of Municipal Solid Waste (MSW) and Digested Residual Wastewater Biosolids (RDWB): Optimization of

Parent Material Proportions."

Dr. Anil Patnaik, assistant professor, Department of Civil and Environmental Engineering, received \$18,000 from the National Science Foundation for the project, "US-India Workshop: Use of High Volume Fly Ash Concrete and the Related Environmental Effects, Chennai, India, January 2004."

Dr. Colin Paterson, professor, Department of Geology and Geological Engineering, received \$21,804 in additional funds from Black Hills State University (Prime: National Science Foundation) for the project, "A Black Hills Science Teaching Project to Prepare K-8 Teachers for the New Millennium."

Dr. Jan Puszynski, dean, College of Materials



Engineering and Science. and professor, Department of Chemistry and Chemical Engineering, received \$250,000 in additional funds from the Army Research Laboratory (Prime: United States Department of Defense) for the project, "Advanced Materials and Processes for Future Combat Systems." Puszynski also received \$24,984 from the U.S. Department of Defense - Indian Head Division for the project, "Development of Iron Oxide and Silicon Ignition Delay Mixture."

Puszynski and Dr. Jacek Swiatkiewicz, instructor and research scientist II, Department of Chemistry and Chemical Engineering, received \$110,000 from the National Science Foundation for the project, "Combustion **Synthesis** of Nanocomposite Materials."

Dr. Rod Rice, associate professor, Department of



Humanities, published a refereed journal article, "Group Man Goes to War: Elements of Propaganda in John Steinbeck's 'Bombs Away,'" in "War, and the An Literature. Arts: Journal International of the Humanities." Rice also received an

acceptance for a refereed journal article, "Beyond Within: Paths to Moksha in John Steinbeck's 'The Pastures of Heaven." The article will be published in "The Steinbeck Review." Rice also published a proceedings paper, "Theme for an Imaginary Western: Wright Morris and 'The Works of Love'" in the proceedings of the "Wright Morris: American Dreamer" Symposium. He also presented a paper, "Theme for an Imaginary Western: Wright Morris and 'The Works of Love'" at the Wright Morris: American Dreamer symposium held at the University of Nebraska-Lincoln. Rice also received an acceptance for a book chapter, "Circles in the Forest: John Steinbeck and the Deep Ecology of 'To a God Unknown'" forthcoming in "Steinbeck's American Voice: A Centennial Retrospective." Rice, along with Dr. Al Boysen, professor, Department of Humanities, and Dr. Larry Stetler, associate professor, Department of Geology and Geologic Engineering, presented workshop, "Cross-Disciplinary а Assessment: Campus-Wide Rubrics" at the Collaboration for the Advancement of College Teaching and Learning in Bloomington, MN.

Dr. Paul Smith, professor emeritus, Institute of Atmospheric Sciences, received \$93,134 in additional funds from the National Science Foundation for the project, "Request for Facility Support: Nitrogen oxide, microphysical, and electrical measurements in Oklahoma thunderstorms." Smith also received

Research

Notes

\$62,566 in additional funds from the National Science Foundation for the project, "In Situ Microphysical and Chemical Measurements in Thunderstorms."

Julie Smoragiewicz, vice president for University Relations, received \$24,927 from the United States Environmental Protection Agency for the project, "The Air We Breathe: Black Hills Air Quality and its Impact on Health and the Environment."

Dr. Larry Stetler, associate professor, Department of Geology and Geological Engineering, received \$25,000 in additional funds from South Dakota Game, Fish, and Parks (Prime: United States Department of Interior) for the project, "Water Resource Development of Ephemeral Supply."

Dr. Lee Vierling, assistant professor, Institute of



Atmospheric Sciences, received \$45,000 from the University of Idaho (Prime: NASA) for the project, "SDSM&T UMAC/PARC Research Support." Vierling also received \$9,939 from the United States Department of Agriculture-Forest

Service for the project, "Lidar remote sensing for precision forest management."

Personnel

Changes

Welcome:

Dr. Haiping Hong, Exempt, Research Scientist I (Postdoctoral Fellow), Materials and Metallurgical Engineering (9/1/03)

Dr. Richard L. Pendleton, Professor Emeritus, Mechanical Engineering (9/1/03)

Liliane S. Wood, Exempt, Assistant Coordinator for Education, Children's Science Center (9/1/03)

Amy L. Bauer, Faculty, Instructor, Humanities (9/3/03)

Katherine A. Pavel, Exempt, Admissions Counselor, Academic and Enrollment Services (9/4/03)

Sara B. Freng, CSA, Library Technician, Devereaux Library (9/17/03)

Dr. Thaddeus J. Chase, Exempt, Research Scientist II, Mechanical Engineering (9/22/03)

Dr. Hirotaka Igawa, Visiting Research Scientist, Mechanical Engineering (9/22/03)

Jason M. Tschetter, Exempt, Admissions Counselor, Academic and Enrollment Services (9/22/03)

Karen Whitehead, vice president of



Dr.

Academic Affairs, received \$9,401 from the South Dakota Board of Regents (Prime: Department of Education) for the project, "South Dakota Teacher Quality Enhancement Grant - STEP."

Dr. Robb Winter, chair and professor, Department of Chemistry and Chemical Engineering, received \$19,997 in additional funds from the National Science Foundation for the project, "SDSM&T-MUS&T REU Site Collaboration." Winter also received \$25,000 from Pacer Corp. for the project, "Silane Treated Pacer Mica."

Winter and Dr. Jacek Swiatkiewicz received \$233,109 from the National Science Foundation -Major Research Instrumentation for the project, "MRI: Development of a Time Correlated Spectrometer for Simultaneous Bulk-Interfacial Dynamics Analysis."

Dr. Pat Zimmerman, director, Institute of Atmospheric Sciences, received \$24,000 in additional funds from NASA for the project, "Semi-Arid Grassland Ecosystem Forcing: Replacing Native, Free-Ranging Ungulate Grazing With Human-Managed Livestock Grazing/Timothy Bennett."



Scott R. Hall, CSA, Library Clerk, Devereaux Library (11/3/03)

Lois A. Zens, CSA, Library Clerk, Devereaux Library (11/3/03)

Dr. Dowell Caselli-Smith, Faculty, Associate Professor, Social Sciences (1/1/04)

Dr. James D. Castleberry, Faculty, Assistant Professor, Social Sciences (1/1/04)

Lori D. Coble, Faculty, Instructor, Chemistry and Chemical Engineering (1/1/04)

Timothy A. Jacobson, Faculty, Instructor, Mathematics and Computer Science (1/1/04)

Dr. Grant N. Merrill, Faculty, Assistant Professor, Chemistry and Chemical Engineering (1/1/04)

David H. Mitchell, Faculty, Instructor, Humanities (1/1/04)

Judith M. Chilstrom, CSA, Secretary, Academic Initiatives/Mathematics and Computer Science (1/5/04)

Dusti R. Swan, temporary CSA, Graphic Designer/Marketing Specialist/Volunteer Coordinator, Children's Science Center (1/27/04)

Farewell:

Dr. Changhui Peng, Faculty, Institute of Atmospheric Sciences (8/29/03)

Fred J. Kopp, Exempt, Institute of Atmospheric Sciences (9/30/03)

Neil F. Chamberlain, Faculty, Electrical and Computer Engineering (12/31/03)

Frederick L. Ellwein, Faculty, Humanities (12/31/03)

Donna L. Johnson, Faculty, Mathematics and Computer Science (12/31/03)

Memorials

William Neal Groves (1928-2004)

William Neal Groves. 75. Professor Emeritus of Mechanical Engineering, passed away on April 3, 2004. Bill Groves joined South Dakota Tech's Mechanical Engineering faculty in 1960, and served as department head from 1983 until his retirement in 1990. He was a much loved and respected mentor to many faculty members, and continued his involvement in professional activities for many years after retirement.

Bill was born in Alton, IL, and attended the University of Illinois, where he received a BS in Mechanical Engineering in 1949, and later received his MS in Mechanical Engineering from Washington University, St. Louis, MO, in 1959. He entered the U.S. Army in 1951 and was honorably discharged in October 1956. On April 8, 1954, Bill married Jean Schnetter in Devils Lake, ND. He also held the position of Research Engineer for Shell Oil Co., Research Laboratory from 1949-1959 and was visiting professor at Bergen Institute of Technology, Bergen, Norway 1975-1976.

Tyler J. Loeb (1984-2003)

Tyler Jake Loeb, 19, of Raleigh,

born

in

He

ND, passed away on Dec. 6, 2003. Tyler was Bismarck, ND, the son of Myron and Amy Loeb. grew up on the

Courtesy Photo

family farm in St. Gertrude, ND. He graduated from McIntosh High School in May 2002 before coming to South Dakota Tech to major in Electrical Engineering. He was an honor student and a member of Theta Tau Fraternity.

Tyler was a very social, outgoing young man who was willing to help out at a moment's notice. He loved the outdoors, and had a special skill in riding horses. Tyler was very talented and was able to do all the farming duties, plumbing, and other handiwork needed on the family farm. As the oldest child, Tyler took on much of the responsibilities of helping out at home and with his siblings.

Tyler had many friends at South Dakota Tech, and will be missed.

Kathryn O. Johnson, Faculty, Chemistry and Chemical Engineering (12/31/03)

Richard A. Talley, Faculty, Social Sciences (12/31/03) Change:

Connie E. VanBockern, CSA, accepted a position as Senior Secretary in the Dean's Office (10/20/03)

Elaine E. Baker, Exempt, Assistant Women's Basketball Coach, Intercollegiate Athletics (8/15/03)



Dr. John Chester Mickelson (1920-2004)

John Chester Mickelson, 83, Professor Emeritus of Geological Engineering, passed away on March 27, 2004. John was born in Winter, WI, and attended Augustana College in Rock Island, IL, graduating with a BA in Geology. From 1941-1943, he worked for Borg-Warner Corp., building amphibious vehicles for the war effort.

John served in the armed forces from 1943 to 1946, earning the Bronze Star Medal and Letter of Commendation. He married Grace Erdahl in 1947. In June 1948, he received his M.S. in Geology, and in 1949, he received his Ph.D. After graduation, he served as assistant professor at Washington State University, and he worked for Standard Oil of Ohio. In 1961, John accepted a position at South Dakota Tech. In 1968, he was appointed head of the Geology and Geological Engineering Department. He served in that position for 10 years. John retired from Tech in 1985. A scholarship and a professorship have been established in his name.

Calendar

of Events

May 2

IIE Spring Picnic May 3-7 Final Exams May 7 President's Graduation Reception - Surbeck Center - 3:00-4:30 PM May 8 Graduation - Rushmore Plaza Civic Center Arena - 10:00 AM Residence Halls close for summer - 12:00 PM May 9 Mother's Day **May 10** Summer Session One and Two Begins West River Math Contest **May 11** Friction Stir Welding Presentation - 7:00 PM CB 204 All Campus Strategic Planning Session - 8:30-4:00 PM May 20-21 Kaufman Foundation Angel Investor - Surbeck Center May 31 No Classes - Memorial Day June 7 Summer Session Three Begins June 17-18, 21-22 New Student Orientation Julv 4 Independence Day July 19-20, 22-23, 26-27 New Student Orientation August 16-17 New Student Orientation August 21 Volleyball @ Dickinson State Scrimmage August 27-28 Volleyball @ Northwestern College - Red Raider Classic August 30 Registration Day August 31 First Day of Classes August 31-Sept 3 Tuition/Fee Payment Days Bump Lounge-Surbeck Center 7:30 AM - 4:30 PM September 1 Volleyball vs. National American University - 7:00 PM September 2 Football @ Black Hills State - 7:00 PM September 3-4 Volleyball @ McPherson College Tournament September 6 Labor Day ~ No Classes September 8 Volleyball @ Minot State - 7:00 PM September 10 Last day to Drop/Add courses September 10-11 Volleyball @ Montana-Western University Tournament September 15

Volleyball @ Dickinson State - 7:00 PM September 11 Football vs. Si Tanka University-Huron - 1:00 PM September 18 Football @ Mayville State University - 1:30 PM September 21 Fall Career Fair September 22 Volleyball vs. University of Mary - 7:00 PM September 24 Volleyball @ Mt. Marty - 7:30 PM September 19-25 M-Week September 19 Senior/Frosh Picnic September 23 Coronation and Bonfire September 24 M-Day Picnic September 25 Parade Football vs. University of Mary - 1:00 PM Volleyball @ Dakota Wesleyan - 4:00 PM M-Day dance September 29 Volleyball @ Black Hills State - 7:00 PM September 30 YMCA Corporate Cup

October 2 Football @ Dakota State University - 1:30 PM October 6 Volleyball @ National American University - 7:00 PM October 9 Football vs. Black Hills State - 1:00 PM October 11 Native Americans Day ~ No Classes October 13 Volleyball vs. Minot State - 7:00 PM **October 15** Volleyball @ Valley City State - 7:00 PM October 16 Football vs. Valley City State - 1:00 PM Volleyball @ Mayville State October 20 Volleyball vs. Dickinson State - 7:00 PM October 23 Football @ Minot State - 1:30 PM Volleyball @ Jamestown October 27 Volleyball @ Mary - 7:00 PM October 29 Volleyball vs. Dakota State - 7:00 PM October 30 Football vs. Dickinson State University - 1:00 PM Volleyball vs. Huron - 7:00 PM

Visit the on line calendar for details www.hpcnet.org/sdsmtcalendar For details about K-12 events, visit the K-12 calendar: www.hpcnet.org/SDTechK-12

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Did you know that...

• Soldiers trained on the South Dakota Tech campus during World War I?



The training included a radio detachment class. Tech President Dr. Cleophas O'Harra, who served from 1911 to 1935, offered the campus' help with the war effort. U.S. Army barracks were built on campus near what was then the Metallurgy Building.

• The South Dakota Tech team, with its canoe "Predator", won the 1995 Concrete Canoe national championship.



South Dakota Tech has enjoyed a long run of excellent concrete canoe teams, capturing regional competition victories almost every year for the past 15 years.

• The M-Club was formed in 1922. This photo shows the small group in 1924.



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The photo of the snowboarder on the postcard is courtesy of SD Tourism.

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