

Taking on the Mighty Mo - Story page 6

Photo Courtesy of the South Dakota Department of Tourism

A PUBLICATION OF SDSM&T

Perspectives



Dear Friends,

It is difficult to believe that yet another academic year is coming to a close. Over the next few weeks our students not only will be looking forward to completing exams and commencement, but many of our students also are busily preparing for national competitions.

The industries that employ our graduates have encouraged South Dakota Tech to create new ways to prepare our graduates to lead teams in the real-world work place. Through SDSM&T's new Center of Excellence in Advanced Manufacturing and Production (CAMP), our student teams have spent countless hours eagerly awaiting the opportunity to demonstrate their knowledge and skills in national competitions. These contests include Sunrayce '99, National Concrete Canoe, Mini Indy, Mini Baja and a Human-Powered Vehicle race—a new event for SDSM&T.

As we finish another year, we also look to the future and how best to prepare students for Tech in the new millennium. You may recall that SDSM&T took a bold step in 1995 by establishing the Little Miner's Clubhouse child care center on campus. We made this commitment to our students, faculty and staff so that they as parents could feel confident that their children were well cared for and nearby. Most importantly, we made a commitment to the next generation of South Dakota Tech students to provide quality child care in an environment that combines a focus on the family with the Tech traditions of excellence in science and engineering.

Currently openings exist for children of our alumni and other Rapid City area residents. I encourage you to contact the staff of the Little Miner's Clubhouse at 394-2586 to learn how our child care facility can make a difference in the lives of your children today and in their futures.

Sincerely.

Richard J. Gowen, President



President Dr. Richard J. Gowen

Assistant to the President Gail Boddicker

Academic Affairs Dr. Karen L. Whitehead, Vice President

Business & Administration Timothy G. Henderson, Director

Student Affairs Dr. Douglas K. Lange, Dean

University & Public Relations Julie A. Smoragiewicz, Director

> SDSM & T Foundation L. Rod Pappel, President

College of Earth Systems Dr. Sangchul Bang, Dean

College of Interdisciplinary Studies Dr. Dean A. Bryson, Dean

College of Materials Science & Engineering Dr. Kenneth Han, Dean

College of Systems Engineering Dr. Wayne B. Krause, Interim Dean

Graduate Education & Research Dr. Sherry O. Farwell, Dean

Faculty Advisory Council Dr. M. Steven McDowell, Chairperson

SDSM&T Quarterly is published by the Office of University & Public Relations.

Editor Julie A. Smoragiewicz

Assistant Editor, Writer, & Photographer Darrell R. Sawyer

> Advertising & Design Rachel A. Schofield

Administrative Support Tracy L. O'Sullivan Kristi L. Wishard

For additional information contact: South Dakota School of Mines & Technology Office of University & Public Relations 501 E. St. Joseph Street Rapid City, SD 57701-3995 (605) 394-2554 • (800) 544-8162 e-mail: jsmoragi@silver.sdsmt.edu



- **19** Publications
- 21 SDSMer Field Dig Opportunities
- 22 Campus Briefings & Spotlight on Students
- 24 You Are Invited...Calendar of Events

Quarterly K SDSM&T

The South Dakota School of Mines and Technology, founded in 1885, has been a national leader in preparing world-class engineers and scientists. Our graduates design, construct, and operate modern technology to meet complex challenges such as global warming, health care delivery, energy resource development, mineral extraction and processing, environment quality, futuristic transportation, and national defense. Our alumni are held in the highest regard by their fellow leaders in industry, consulting,

Tech has diversified to meet the needs of engineering and science throughout the world. South Dakota Tech's intellectual environment was shaped a century ago by the ingenuity and rugged individualism of pioneers in science and technology. Tech's present day pioneers provide inspiration and remain on the cutting edge in the fields of engineering and the

ACADEMIC PROGRAM: SDSM&T is a state-assisted university providing graduate and undergraduate degrees in science, engineering, and interdisciplinary studies.

BACHELOR OF SCIENCE DEGREES

Industrial Engineering Interdisciplinary Science Mathematics Mechanical Engineering Metallurgical Engineering Mining Engineering

MASTER OF SCIENCE DEGREES

Materials Engineering and Sciences Mechanical Engineering Paleontology Technology Management

DOCTORATE OF PHILOSOPHY DEGREES

Atmospheric, Environmental and Water Resources

ENROLLMENT: The University has a diverse enrollment of approximately 2,200 students from nearly 30 states and 20 countries. Our 13 departments offer 30 degree programs in engineering and science disciplines at the baccalaureate, masters, and doctoral levels. Students enter the university with the highest ACT composite in the state and more than half graduating within the top 25 % of their high school.

COSTS AND FEES: Annual undergraduate costs for tuition, fees, room and board total less than \$8,000 per year for residents of South Dakota, Alaska, Colorado, Hawaii, Idaho, Minnesota, Montana, Nevada, New Mexico, North Dakota, Oregon, Utah, and Wyoming. Annual total costs for all other undergraduates is less

RESEARCH: High quality research is conducted in departments and in our research institutes.

FACULTY: There are approximately 100 faculty with degrees from more than 150 institutions, eighty five percent of which have earned doctoral degrees.



ne year ago all that remained of the town of Creston along the banks of the Cheyenne River was a dilapidated concrete dinosaur and area residents' memories of days long past. Today, thanks to SDSM&T's civil engineering students, the Creston dinosaur is completely refurbished. After volunteering hundreds of hours of work over the past year, members of SDSM&T's American Society of Civil Engineers (ASCE) Student Chapter have restored the Creston dinosaur to its former glory.

The crumbling concrete shell had become a target for vandals and drew quizzical looks from passing motorists who wondered why an old green dinosaur was standing in a field along Highway 44 several miles east of Rapid City. Rather than stand idly by and watch the dinosaur deteriorate further until it soon would no longer be the Milwaukee Railroad that was a pump station for the engine and also the home of the section foreman. An estimated 30-40 people lived in Creston during the 1930's when the dinosaur was built.

Former Crestonite Herman Bloom states that a resident named Old Ike Murphy built the Creston dinosaur. "He could build anything and was a real good cement man," said Bloom in a 1998 interview with the *Pennington County Courant*. "He always wore those Oshkosh bib overalls and had a big batch of whiskers, and my goodness, what a character he was."

The late Maggie Lemley Warren, who lived near the Cheyenne River on the ranch of her late father Pete Lemley, also remembered Ike Murphy. "Old Ike, he had a lot of things going," said Warren. "There was always something going on at that store in Creston." has written several newspaper articles about the project.

According to Bloom, Old Ike built the dinosaur over a little shack. "You sort of walked in the door right between the dinosaur's front legs and it was just big enough inside for a bed. You could barely turn around in there," adds Bloom.

SDSM&T's involvement with this community service project began when area resident Benita White of New Underwood called the university for help in rehabilitating the 60-year-old dinosaur that had fallen into a state of disrepair. Dr. M.R. Hansen, Associate Professor of Civil Engineering, thought the project would be a good community service effort for the ASCE chapter and also a good way for SDSM&T

> Photo by Julie Smoragiewicz Shane Boyle, Rich Anderson, and Terry Collins (pictured 1 to r) put the finishing touches on the refurbished dinosaur.

0

students to gain real-world work experience.

"The internal structure of the concrete dinosaur is very similar to a short-span bridge," explains Dr. Hansen. "This project offered our students the opportunity to gain some practical experience in

addressing a real-world engineering situation."

At Dr. Hansen's suggestion, Terry Collins (CEE '98, Rapid City), who was a senior civil engineering student at the time and is now a graduate student at SDSM&T, took on the structural rehabilitation work as his

standing, area residents decided to try and save the last remnant from the town of Creston.

Built in the 1930's during the Great Depression, the Creston dinosaur is a smaller scale version of the Wall-Drug

dinosaur that beckons visitors along Interstate 90 and the giant Dinosaur Park sauropod that stands atop Skyline Drive in Rapid City. Creston's concrete creature stands approximately twenty feet high and is about sixty feet long.

The town of Creston was a stop along

"The internal structure of the concrete dinosaur is very similar to a short-span bridge," explains Dr. M.R. Hansen, Associate Professor of Civil Engineering. "This project offered our students the opportunity to gain some practical experience in addressing a real-world engineering situation."

51

"I bet that Old Ike didn't have \$75 in that dinosaur. It was just packing crates and ropes really. He built a little model first, out of glycerine and gumbo and had it sitting on the counter at the store," recalled Warren in a *Pennington County Courant* interview with Jonny Creighton Winn, who *Quarterly 2 SDSM&T* senior design project.

South Dakota Tech's engineering curriculum requires that every student do a project during their senior year that provides them with experience in addressing real-world problems in their respective engineering fields.

Under the leadership of president Charles Baker (CEE '98, Sturgis), SDSM&T's ASCE Student Chapter decided to undertake the outer shell restoration of the Creston dinosaur as a community service project. For the next several months, a

dedicated group of SDSM&T civil engineering students, spent whatever precious free time they could find on weekends and evenings out at the Creston site working on the project.

The students donated hundreds of hours of intense physical labor in stabilizing and reconstructing the concrete creature. Instead of being at

"Our student civil engineering chapter has a strong tradition of community service," says Charles Baker. "In addition to giving something back to the community, this project gave us an opportunity to take what we learned in the classroom and the lab and apply that knowledge to the real world."

> concluded that a new neck and backbone would need to be built. Area resident John Vliem, who manages the property for the owners of the land on which the Creston dinosaur stands, brought his front-end loader to the site to remove the old

dinosaur's heavy "the memory of Creston, South Dakota."

In addition to Collins and Baker, other civil engineering students who worked on the project include Brian Anderson, Richard Anderson, Shane Boyle, Jessica Gould, Nathaniel Marcoe, Mark

Nelson, James Perry, Kent Reimann, Jeff Thomason, Mike Towey, and Rhaub Walker, Rapid City; Gerry Baker, Sturgis;

James Cokeley, Scotland; Brenda Flottmeyer,

> Black Hawk; Bruce Potter,

the beach or on the golf

course when the weather was nice, these students were pouring concrete or building a new skeleton for the dinosaur.

"Our student civil engineering chapter has a strong tradition of community service," says Charles Baker. "In addition to giving something back to the community, this project gave us an opportunity to take what we learned in the classroom and the lab and apply that knowledge to the real world."

Work on the project was done in two phases. First, a structural analysis was conducted of the dinosaur's design to determine the weight load on the statue's neck, backbone and other areas of the internal framework. After the comprehensive restoration plan was developed, the physical work began. This included rebuilding the statue's framework, stabilizing the legs, pouring a new foundation, and applying a new skin of concrete for the dinosaur's body.

After completing his assessment of the dinosaur's condition, Terry Collins

head and neck. Construction of the dinosaur's new neck was the most challenging

part of the project. This required prestressing the concrete and stringing a new steel cable inside the hollow of the neck. A new backbone was built out of reinforced concrete beams.

A new base was poured under each of the dinosaur's legs to give the creature a solid foundation for generations to come. After building the dinosaur's skeleton of steel and wood, the students applied a coating of concrete skin about 1" thick. SDSM&T students' expertise in building concrete canoes came in handy when giving the dinosaur a concrete shell.

The final step was applying a fresh coat of green and white paint to the dinosaur's concrete epidermis. By the time the work was finished, the ASCE chapter had spent approximately \$1,000 on the project. The SDSM&T students placed a bronze plaque near one of the dinosaur's legs stating that their reconstruction effort was dedicated to

Quarterly 3 SDSM&T

eing at Incary I

Photos by Darrell Sawyer

Photo at Left: Terry Collins directs the pouring of concrete to give the dinosaur a solid foundation. ASCE Student Chapter members assist in the project.

Photo at Right: Dr. M.R. Hansen, Associate Professor of Civil Engineering, and Terry Collins analyze the dinosaur's dilapidated condition to determine what

> Warner; Anthony Shearer, Hot Springs; Jed Brich, Ogallalla NE; and Josh Warren, Sheridan WY. Dr. Wendell Hovey, Chair and Professor of Civil & Environmental Engineering, also helped with the project.

> Thanks to the efforts of South Dakota Tech students, the newly refurbished sauropod now stands as a silent sentinel over the spirit and memories of the people who once lived in a town called Creston. Combining their civil engineering expertise with their civic responsibility for community service, SDSM&T's students have provided another concrete example of the university's value to the region.

DSM&T chemistry students have developed the right ingredients for a successful K-12 outreach formula to excite students about the wonders of science. Their "Miracles of Chemistry" demonstrations are such a big hit that the students could take their show on the road!

Over the past few months these budding chemists have presented their action-packed program to more than 1400 elementary through senior high school students. Students from twenty-six schools from nineteen communities in a three-state region-South Dakota (Belle Fourche, Douglas, Faith, Hill City, Isabel, Kadoka, Kyle, Mission, Nemo, Philip, Rapid City, Ridgeview, Spearfish, Sturgis, and Takini); Nebraska (Alliance, Cody and Chadron); and Wyoming (Newcastle)have visited the South Dakota Tech campus to

Top - Jeremy Day dips a banana in liquid nitrogen during his "Super Cold Liquid" presentation.

Bottom - Amber Cain's "Bottomless Beaker" experiment kept the students guessing on the secret ingredient in the beaker. experience the "Miracles of Chemistry" demonstrations.

During the university's recent Engineers Week activities, the South Dakota Tech chemistry majors immersed approximately 1300 students in the amazing wonders of

Photos by Darrell Samyes

modern chemistry. Exploding hydrogen balloons and cotton that burst into flames kept the students on the edge of their seats and sparked their interest in science.

> Jeremy Day (junior, Clark) kicked off his "Super Cold Liquid" presentation by demonstrating what happens when a carnation flower, a banana, and a racquetball are dipped in liquid nitrogen. The carnation turned very brittle and shattered, while the banana became hard enough to pound a

nail into a board.

The racquetball exploded with a loud cracking noise when thrown against the floor.

Amber Cain (sophomore, Rapid City), Celeste Mercado (sophomore, Box Elder), and Jessica Schultze (sophomore, Belle Fourche) teamed together to present two demonstrations—"Genie in a Bottle" and "Mad Foaming Elephant's Toothpaste."

The "GunCotton" demonstration by Jennifer Dirks (junior, Martin) fired up the

"This has been a wonderful exposure to science for our students," said Sheila Johnson, teacher at Robbinsdale Elementary School in Rapid City. "We've all learned a lot."

students' interest in chemistry. She drew gasps from the audience as the students saw how quickly the chemically-treated cotton would ignite and burst into flames when touched by a hot glass rod.

As the lights were turned off encasing the room in total darkness, the "Glowing Bug Juice" presentation by Connie Giroux (sophomore, Rapid City) and Keri Bachmeier (junior, Hermosa) drew "oohs", "aahs", and "cool" comments from the audience. A maze of tubes glowed in the dark as a special luminescent blue liquid slowly traveled down the apparatus. Brian Picard (junior, Fargo, ND) and Amy Williams (senior, Rapid City) garnered the crowd's immediate and full attention when they demonstrated the "Big Bang" properties of hydrogen gas. Their "Pringlet" presentation used a potato chip can to simulate what happens during lift-off of a rocket.

In addition to the programs presented during Engineers Week, these chemistry students also were a big hit recently with 4th and 5th graders from Robbinsdale Elementary School in Rapid City. The South Dakota Tech students put on a chemical magic show that immersed the grade schoolers in the wonders of chemistry and had them clamoring to assist with the projects.

Along with the previously mentioned





students who gave demonstrations during Engineers Week, other student presenters to the Robbinsdale classes and their respective projects included Danielle Englert (senior, Vienna), "Pendulum Reaction"; Elaine Foy (senior, Rapid City), "Mini-Grain Elevator Explosions"; and Erica Randall (sophomore, Rapid City), "Secret Wand."

"This has been a wonderful exposure to science for our students," said Sheila Johnson, teacher at Robbinsdale Elementary School in Rapid City. "We've all learned a lot."

Jacque Cranston, Chemical Materials

Above - Chem Outreach 292 students and faculty pause for a group photo following their successful presentations. Pictured l to r: (back row) Dr. Steven McDowell, Chair of Chemistry & Chemical Engineering and Associate Professor of Chemistry; Danielle Englert, Jeremy Day, Amy Williams, Brian Picard, Dr. David Boyles, Associate Professor of Chemistry; and Connie Giroux; (front row) Erica Randall, Elaine Foy, Jennifer Dirks, Jessica Schultze, Amber Cain, Celeste Mercado, and Keri Bachmeier.

Left - Celeste Mercado, Amber Cain, and Jessica Schultze (pictured l to r) present "Genie in a Bottle" and "Mad Foaming Elephant's Toothpaste."

Below - Jennifer Dirks demonstrates how quickly chemically-treated cotton will burst into flames when touched with a hot glass rod.

Manager, assisted by Richard Wold,

Laboratory Store Keeper, played an important role in helping the students get prepared for their presentations.

SDSM&T students developed their presentations as part of the new Chem 292 Outreach class. The new course was developed by Dr. David Boyles and is an integrated class of freshmen, sophomores, juniors and seniors working independently and collectively. Coordinators for the Fall 1998 offering of the course were Dr. David Boyles, Associate Professor of Chemistry, and Dr. Steven McDowell, Chair of Chemistry & Chemical Engineering and Associate Professor of Chemistry.

Through innovative and entertaining programs of this nature, SDSM&T is reaching out to area students and exposing them at an early age to the wondrous world of science.





Chemistry Students Succeed in K-12 Outreach

Quarterly 5 SDSM&T

Taking on the

ith a spirit for adventure akin to the early explorers of the American West, a retired SDSM&T geology professor recently retraced the final leg of Lewis and Clark's return voyage to St. Louis. His journey was no leisurely Tom Sawyer-Huck Finn raft trip down the Mississippi River. Instead, this solitary man and his boat took on the challenges of maneuvering the mighty currents of the Missouri River.

Exactly 191 years after Lewis and Clark had made a similar trip, Dr. Perry Rahn, Professor Emeritus of Geology and Geological Engineering, traveled by boat from Yankton to St. Louis. Dr. Rahn's

journey paralleled the last portion of the Lewis and Clark Expeditionalbeit with a different type of boat and with Missouri River conditions that are dramatically different than those of the early 1800's.

The impetus for the boat trip stemmed from a promise Dr. Rahn made to his good friend, the late Floyd Matthew (CE '60). Rahn had gone canoeing all over the upper Missouri River region with Matthew, an SDSM&T alumnus who had served as South Dakota Secretary of Environment and Natural Resources in the 1980's. The two environmentally-conscious friends had talked frequently about going all the way down the Missouri River to St. Louis, but never made the trip before Matthew passed away in 1990.

Having taught courses in engineering geology for over thirty years, Dr. Rahn had a deep professional interest in studying the environmental impacts caused by man to fluvial systems. The Engineering Geology textbook that he authored in 1996 focuses on fluvial processes and the impacts that levees and dams can have on the flooding process.

On September 28, 1997, Dr. Rahn pushed off at Yankton in his 16-foot boat named "Lone Star" below Gavins Point Dam, which is the lowermost dam on the Missouri River. Armed with U.S. Army Corps of Engineers river maps, Rahn began his voyage at Mile #785, a point 785 miles above the mouth of the Missouri River at St. Louis.

Propelled by his boat's 65-hp Mercury motor, the adventurous professor proceeded cautiously down the river at about ten to twenty miles per hour. With his boat bumping the river's sandy bottom several times, he alertly kept watch for drifting logs and trees so he wouldn't break perpendicular to the shore and are spaced about every 200 yards. He continued the physically exhausting battle against the eddies that form behind the dikes, paddling out into the main river current before quickly getting caught in another log jam. The geology professor estimated the Missouri River as 600 feet wide with a meander length of about three miles at this point.

After hailing another motorboat (one of only three seen on the entire trip), Dr. Rahn was towed into the marina at Sioux City, where he was able to purchase another prop. With the motor running once more, the professor continued down river and

> camped on the Nebraska side of the river at Mile 704.

His dinner of bacon and Dinty Moore stew that evening was likely somewhat different from that of Lewis and Clark nearly two

his propeller. Because the river channel is braided at places, Dr. Rahn cut back and forth across the river in order to keep his boat in the thalweg, or deepest part of the Only thirty miles into his journey, Rahn

hit a submerged Corps of Engineers rock dike, causing serious damage to the propellers. With the motor no longer providing much power, the professor camped for the night near Mile 754. His journal entry that evening noted the "nice sunset...very little mosquitoes...and the big fish (probably carp) jumping."

channel.

"From here to St. Louis the river is free-flowing," wrote Rahn in his journal. "The Missouri River is big and has a powerful current...rather scary."

Unable to keep his boat's motor going the next morning, he started drifting downstream. Strong winds blew him against the logjams that collect behind the Corps of Engineers dikes that stick out

centuries earlier. Seeing a barge carrying liquefied gas go slowly upstream that night, Dr. Rahn described the barge as "all lit up like something in Star Wars", a sight which Lewis and Clark undoubtedly did not see in their journey!

On the third day of his voyage, he went past Omaha and traveled a total 126 miles that day. A marina owner who sold him gas warned him to stay away from barges because the current would carry a boat twice his size right under them.

After nearly being thrown from his boat, Rahn learned to be vigilant for "boils" in the water. They occur when water suddenly comes up and spreads out in front of the boat, causing the boat to swerve unexpectedly.

"The water boils are scary," said Rahn. "Sometimes the boil sounds like a whale surfacing in an otherwise peaceful flow."

"I'm not sure what causes them but they may shoot up from a transient sand

"I thought this trip might be 90% exhilaration and 10% exhaustion, but it's the other way around," said Dr. Perry Rahn, retired SDSM&T geology professor.

dune on the river bed which forms and then washes out. I was standing to watch for floating logs when one blew out in front of the boat and almost threw me out," he continued.

His journal entry for September 30, 1997, noted there is "beautiful vegetation along both banks, but it's hard to see out beyond these rows of trees...The Corps has channelized the river into a monotonous channel...Saw two flocks of Sand Hill cranes at sunset...funny that I haven't seen a duck the entire trip so far."

The next day Dr. Rahn had his first close encounter with a barge on the river.

beautiful warm evening with shooting stars."

"I tried to read but again my eyes were too tired," continued Rahn. "Had bad dreams about barges."

On Thursday Dr. Rahn, who had become quite sunburned by that point, went past Kansas City. The professor was struck by the disparity between seeing the skyscrapers of metropolitan Kansas City in the distance but not seeing any people along the river.

"I never saw a human being from Parkville (Mile 376) to my campsite (Mile 307)...not another motorboat or even a feet above the water. If a small motorboat floated into one, the boat would go right under the barge instead of being pushed out of the way.

The meanders in the river below Kansas City are about six miles in wavelength, nearly twice as long as meanders farther north by Sioux City. The larger meanders gave Rahn more time to spot barges approaching up the river.

Pulling into a secluded spot on a shady part of the river, Rahn camped at Mile 307 that evening. His journal noted, "no sign of human occupation...must look like about the same as Lewis and Clark saw it. Again



At Mile 459 the motor ran out of gas and suddenly stopped dead. He saw a big barge headed upstream about a mile away right in his direction. After several moments of panic in trying to pour in some gas and restart the motor, the professor finally managed to get the motor started again and quickly swung the boat to the side of the river out of the way of the passing barge.

By the end of Day 4, Rahn had passed St. Joseph, Missouri and camped at a "beautiful site on a bluff in some trees." His journal described the night as "a person fishing along the river," wrote Rahn. "I remembered the Parkville marina guy said that no one around here goes on the river. He said they're afraid of it. It belongs to the barges."

Rahn saw several big barges around Kansas City tied up at many loading facilities for grain, rock, coal, and other products. He steered clear of them. An empty barge actually is more threatening than a fully loaded barge. Riding high in the water, its front edge protrudes at about a 20-degree angle with the top sticking eight

Quarterly 7 SDSM&T

hard to believe I'm just downstream from a city of 1 million."

On Day 6 of his trek, the professor traveled 147 miles and kept a sharp lookout for submerged buoys, rock dikes and barges. The intense sun reflection on the water made spotting drifting logs and other potential hazards very difficult even with sunglasses. He finally found a solution to his squinting-into-sun problem—he held an aluminum frying pan with his left hand and steered with his other hand.

continued on page 21





DSM&T's Museum of Geology draws on a rich heritage of paleontological field expeditions that began 100 years ago. Participants in this summer's field digs will be continuing this strong tradition of paleo field work for which the Museum is well known.

In the summer of 1899, officials of the School of Mines, as the institution was then called, conducted the first organized field expedition into the Badlands. Led by school president Dr. Robert L. Slagle, the expedition included Dr. C.C. O'Harra, professor of geology who later served as School of Mines president; Dr. H.L. McLaury, professor of mathematics; and a student named H.M. Bowles. Traveling to the Badlands by horse-drawn wagon, the group camped at the base of Sheep Mountain, and spent five weeks searching for and collecting specimens from the fossil-rich region. This expedition resulted in the discovery of *Alligator prenasalis*, which became the first specimen added to the Museum's collections. (Source: *Centennial: An Illustrated History 1885-1985*, Ruth Anne Stymiest, p. 23)

The expeditions continued two years later when Dr. O'Harra led fourteen students and mining professor Mark Ehle on the first class trip to the Badlands. This scientific journey resulted in the discovery of a geological site in the southwestern corner of Sheep Mountain Table that became known as School of Mines Canyon.

The field expeditions that began in the Badlands a century ago continue today at an important paleontological site called the "Big Pig Dig". Through a partnership with the National Park Service and with funding support from Canon Corporation's "Expedition into the Parks" program, Museum of Geology faculty and students have been recovering 33-million year old mammal fossils. Over 5,000 fossil bones from more than 26 individual animals have been removed from this unique site, which researchers have concluded was a prehistoric watering hole for early pig-like mammals, rhinos, horses and deer-like mammals.

Over the years the focus of the Museum's field excavation work has expanded beyond the Badlands to many additional important paleontological sites in the northern Black Hills, western South Dakota, eastern Wyoming, the banks of the Missouri River, and the Pacific Northwest. These fossil collection activities have resulted in the recovery of many important paleontological

Museum of Geology celebrates 100th anniversary of first field dig



Left: Sixth only Tyrannosaurus rex unearthed by the Museum.

Middle: Mammoth Butcher site identified near Oglala.

Right: 1500 pound skull of Triceratops, a 3-horned dinosaur, discovered.

specimens—*Tyrannosaurus rex*, a duck-billed dinosaur, a *Triceratops* skull, a long-necked plesiosaur, saber-toothed cats, ferocious, meateating sea lizards called mosasaurs, a mother oreodont, an allosaur, *Camptosaurus*, a three-toed horse, and tiny vertebrate fossils found in the Northern Black Hills, to name just a few.

The expertise gained by Museum paleontologists in this region has led to discoveries on a worldwide basis, including marine reptiles in the Southern Hemisphere. The Museum's highly respected faculty members are part of international expeditions to Antarctica, New Zealand and Argentina.

Each summer the Museum's field dig programs draw students and others with a passion for paleontology from all over the United States. Working in small groups closely with Museum experts, participants obtain authentic field experience in the scientific excavation of important paleontological sites. The sessions may be taken for academic credit and are offered in two-week segments. (See p. 21 for a description of the field dig opportunities available this summer.) For additional information about joining in the summer field digs, call (605) 394-2467 or toll-free, 800-544-8162, ext. 2467.

In celebrating the centennial of the initial

Badlands expedition, the Museum of Geology paleontologists carry forward the legacy of scientific exploration begun by their predecessors. Continuing that quest for scientific knowledge, they discover and study clues to prehistoric life that can provide a better understanding of nature at the present.



1998 The "Big Pig Dig"

Quarterly 9 SDSM&T



1993 The Museum has been been a favorite stop for many visitors throughout the years.



1995 Field digs offered by the Museum provide great hands-on experience for all ages. This dig was near Sundance, WY.



1996 Geology Days helped to introduce students to the various rocks and minerals on display at the Museum.





Pictured l to r: Lee and Vern Anthony, Orville Dawkins, Amanda Williamson and Joy Dawkins all of Rapid City.

Newlyweds mine golden year couples for marital advice

hen they walked down the aisle and said "I do" fifty years ago, couples now celebrating their golden wedding anniversary embarked on a successful matrimonial journey. For newlywed couples, their journeys have only just begun.

What are the keys to success in marriage relationships? What factors have contributed to the strength, durability and happiness of these golden anniversary marriages? What advice do they have for newlyweds or those couples contemplating marriage?

Students in SDSM&T's Social Sciences Department focused on these and other issues in a special undergraduate research project that they recently conducted. Dr. Stephen R. Pratt, Chair of Department of Social Sciences and Associate Professor of Sociology, and Dr. Robin Lipke, Assistant Professor of Psychology, directed the undergraduate research project to investigate "success in marriage relationships" and the factors that contribute to the long-term success of marriage.

The research was prompted in part by the relative dearth of information in either the sociological or psychological literature regarding success in relationships that have endured for decades. "There are many studies on the causes of divorce but few that focus on marriages that succeed," said Dr. Lipke.

The professors selected six SDSM&T students who started the research process last fall. After searching the relevant literature, they developed interview questions and conducted a random sampling of 50-year and first-year married couples in the Rapid City community.

Couples were interviewed in their homes on two occasions. One interview was conducted with the couple together, with the second interview held with each spouse individually. The SDSM&T students arranged and conducted over twenty face-to-face interviews with new and veteran couples in the community.

The two groups differed somewhat in their responses to questions about significant events in their lives. The 50-year couples cited children and grandchildren as significant positive events and listed negative events as financial hardships and World War II or the Korean War. Children and purchasing a home were positive events for first-year couples, while job changes and the loss of parents were the primary negative events in their lives. The two most common memorable events for both age groups were children and the loss of parents.

The veteran couples were asked to list major changes in society

that they have observed over the past fifty years. Their comments included technology, economy, day care, lack of religion, lack of respect for elders, working parents, television and less time being spent together as a family.

Kelli Keegan, a sophomore science major from Rapid City, analyzed the areas of agreement and disagreement between the couples. Areas of agreement included living in Rapid City, a strong family, political views and the need to give each other personal space. Areas where the couples disagreed included religion, money, raising kids, smoking and stepchildren (first-year marriages).

The 50-year couples have developed various coping skills over the years to address areas of disagreement. "Let the little stuff slide," they said. "Learn to forgive and forget."

They also emphasized the importance of compromise and talking to each other. "After 51 years of marriage, we know each other like a book," stated one couple. "We can almost read each other's mind."

Keegan concluded that the areas of agreement are important because they are the values and ideas that the couples have in common. "Every couple does not necessarily have to agree on everything," stated Keegan in her analysis. "This would not lead to a very interesting relationship, but the important thing is that they may agree to disagree."

W. Bryce Gammeter, a junior Interdisciplinary Sciences (IS) major from Rapid City, studied the couples' dating habits, such as their first encounter, length of courting period, and the role of family approval. He concluded that the initial encounters and dating activities were as varied as the couples themselves.

The majority of first encounters for 50-year couples occurred immediately after their return from World War II. Some said that marriage represented a return to normalcy and a reclamation of innocence lost during the war. One veteran stated, "After seeing the horrors of war, marriage didn't look so bad anymore!"

The average time spent dating by 50-year couples was about five months followed by engagements lasting an average of seven months. The newlyweds experienced a considerably longer courting period. Dating for them lasted between 7-24 months, with engagements spanning anywhere from 6 months to 3¹/₂ years. In addition to having a longer average courtship period than the couples married after WWII, the newlyweds' experiences sometimes also included one year of cohabitation or one year of premarital counseling.

Quarterly 10 SDSM&T

Getting to know each other ...

Couples and students who participated in the project gathered together at a reception held in their honor.



Pictured l to r: Rose Namanny, Deb and Greg Krueger, Jane and Bill Lofgren, Edwin Namanny all of Rapid City.



Pictured l to r: William and Fern Engel, Kelli Keegan, Marsha and Gene Pluff all of Rapid City.

Another difference between the two groups was age at the time of marriage. The 50-year couples married younger, with the men averaging 23 years in age and the women 18 years. For all of the 50-year couples, this was their first marriage and all but one came from families that had never experienced divorce. For the newlyweds, the husbands and wives averaged 30 and 24 years of age respectively. For about half of the couples, this was a second or third marriage for at least one partner.

Family approval remains as important to young couples as it was to couples fifty years ago. Many couples stated that support of family is crucial to the success of a marriage. "They just loved me from the first time I met them," stated one wife in describing the welcome by her in-laws. "If I can say any one thing helped out our marriage, it was his folks." decisions ahead of them and their spouses," concluded Gammeter. "As long as the family remains the central structure of society, the answer to the question of whether marriage is necessary will remain a resounding yes!"

Sophomore IS major Freddie Magnavito III of Rapid City researched the "give and take" in a marriage, as well as the spousal responsibilities. The 50-year couples emphasized letting spouses pursue their own activities and also the importance of talking things over. First-year couples cited religion, housework and visiting relatives as issues that required some give and take.

Magnavito concluded that some 50-year couples place a large value on religion, while most of the younger couples did not mention religion as a big factor. He also stated that 50-year couples

Some 50-year couples also cited the example set by their

cited the example set by their parents as a big influence on them. "His folks showed him how a wife should be treated and how a family should be," said one wife.

Both young and old couples cited the support of family and time spent together with family members as providing valuable breaks and shelter from the harsher realities of life. Hunting and fishing trips were commonly mentioned activities that the couples shared with their parents and in-laws.

"Like young adults did fifty years ago, couples today still turn to their families for help with these tough



Pictured I to r: Dr. Richard Gowen, SDSM&T President; Kelli Keegan, Freddie Magnavito III, Crystal Wood, Dr. Robin Lipke, Asst. Professor of Psychology; W. Bryce Gammeter, Adrian Benham, Amanda Williamson, and Dr. Stephen Pratt, Chair of Social Sciences and Assoc. Professor of Sociology.

tried not to be jealous of their spouse and that younger couples try to do almost everything together.

The two groups demonstrated a difference in the traditional spousal roles in marriage. All of the 50-year couples tended to reflect traditional husband and wife roles, whereas the one-year couples shared the housework evenly and tried not to stick to traditional spousal roles. For most of the veteran couples, the husband provided the household income. For firstyear couples, half of the wives earned outside income.

Sophomore IS major Crystal Wood of Pringle



The free massages were a popular attraction at the recent "Matters of the Heart: A Health & Wellness Expo" held on the SDSM&T campus in February. Above, a student receives a massage from Sandy Feist (IS '95), Scientific Massage School.

SDSM&T REACHING OUT

Linking the university with many off-campus constituencies, South Dakota Tech students, faculty and staff are actively engaged in a wide variety of outreach activities that provide valuable educational, cultural and community service benefits to the region.

<image><image>

State Representative Tom Hennies answers a question during a legislative crackerbarrel session sponsored by the Rapid City Area Chamber of Commerce and hosted by SDSM&T.





During SDSM&T Engineers Week, 8th grader Justin Hill of Black Hawk digs deep into "oobleck," a corn starch paste that changes consistency with motion or pressure.

Quarterly 12 SDSM&T







Photos by Darrell Sawy

Photo by Darrell Sawyer



Toni Erickson of the Career Service Council recently presented Sarah Gentry of Youth & Family Services with a check for \$425.60 from the 1998 Career Service Jeans Days, bringing the total amount to \$583.60 that was donated to Youth and Family Services from the 1998 Jeans Days.

Quarterly 13 SDSM&T

DSM&T's engineering expertise was put to good use recently testing an area entrepreneur's invention to improve school bus safety. Ben Kalina of Bowman, ND, has patented a rear door for school buses that would allow easy exit in the event of a rollover accident.

The potential significance of Kalina's invention on school bus safety is dramatic. Over 23 million school children, or 54% of all K-12 students, ride school buses daily to and from school. Extracurricular activities such as field trips and athletic events result in an additional 5 million student bus rides daily.

According to the National Safety

research and enterprise teams available through CAMP provide industrial technical assistance to help companies solve design and manufacturing problems, thereby promoting economic development opportunities in South Dakota.

To test his invention, Kalina modified a regular school bus with his patented rear door. He also strengthened the roof of the bus with additional steel sections to transfer the load from the roof to the sides of the bus.

Assisted by CAMP graduate students, Dr. Iver conducted load tests on the bus based on NHTSA guidelines, which govern the construction standards of school buses.

As children cheerfully sing "the wheels on the bus go round and round" on the ride home from school in the future, their parents can perhaps rest easier knowing school bus safety has advanced to the next level.



KEEPING OUR CHILDREN SAFE

Council, school buses travel approximately 4.3 billion miles in school service each year. With about 10 billion student rides annually, school transportation is the single largest system of public transportation in the United States.

Despite the high number of children riding a school bus every day throughout the nation, the National Safety Council reports that school buses, with a fatality rate of 0.02 per 100,000 passengers, are the safest form of ground transportation in the U.S. According to the National Highway Traffic Safety Administration (NHTSA), between 25-30 students are fatally injured in school bus accidents annually, with most fatalities occurring outside the bus often from children being struck by passing motorists.

In school bus accidents that involve rollovers, sometimes the rear door won't open because of the weight placed on it from the overturned bus, thus preventing children from using the rear exit. Kalina's invention addresses this problem.

Kalina turned to South Dakota Tech for technical assistance in testing his invention to see whether his specially designed school bus door would withstand the loads that would be placed on it if the bus rolled over. Dr. Srinivasa Iyer, Professor of Civil and Environmental Engineering, spearheaded the load testing on the SDSM&T campus.

Dr. Iver also serves as Director of Industry Programs for SDSM&T's Center for Advanced Manufacturing and Production (CAMP). The interdisciplinary NHTSA regulations stipulate specific safety standards for the allowable deflection of the bus roof and body when certain loads are applied.

SDSM&T's load tests were used to determine whether the rear exit door would open after certain load levels were applied. The load tests were conducted in Kalina's presence last winter in the parking lot adjacent to SDSM&T's Civil

which exceeded the 15,000-pound test requirement.

After the full load was applied to the roof of the bus, Ben Kalina went inside the bus and opened the rear exit door without any problem! After release of the load and removal of the three steel girders comprising the frame, the bus was inspected for damage. Neither the body nor the door of the bus showed any damage at this load level, thus reinforcing the feasibility of Kalina's invention.

The load tests done on the South Dakota Tech campus will be useful to Kalina in the further development of his product that could lead to an increased level of school bus safety. The tests also gave the Tech students an opportunity to work on real world problems to enhance their understanding of practical application of their studies.

Quarterly 14 SDSM&T



Engineering Laboratory. An hydraulic jack Dr. Srinivasa Iyer, SDSM&T Professor of Civil and applied a load of 15,500 pounds to the bus, Environmental Engineering; Rich Anderson (CEE, Rapid City); Paul Oien (ME, Kadoka); and Ben Kalina, president of Falcon Industries, (pictured l to r) examine the specially designed rear school bus door patented by Kalina.



Alums Form Local Software Company That Benefits Educators

hen two SDSM&T alumni teamed up with two local educators, they started a software development company that applied their computer science skills to the technology needs of today's teachers. Their entrepreneurial spirit spawned the development of exciting new technology tools that let teachers spend less time on paperwork and more time interacting with their students.

Aptus Technologies has garnered the attention and support of communications giant US WEST. The small business recently was selected as one of only ten winners of the US WEST New Ventures Seed Money Competition. The program is intended to provide financial support for promising young companies to get off the ground and going.

The first and only company in South Dakota to receive this award, Aptus Technologies was selected from more than 2,700 other applications. US WEST awarded \$10,000 as seed money to each winner. The genesis of Aptus (Latin term meaning "useful") Technologies stems from the real-classroom experience of high school teacher Wayne Lang of Rapid City.

A few years ago Lang needed some new technology tools to manage the number of . grades and tasks associated with a new curriculum project he had implemented in his classroom. He wanted something that would allow him to collect and record the



data while he was interacting with the students, thereby reducing the amount of paperwork and increasing the amount of quality time spent with his students.

For assistance, Lang turned to SDSM&T's Department of Mathematics and Computer Science, where Chris Konvalin (BS CSc '94, MS CSc '97) and Bennett Clark (MS CSc '97) were pursuing graduate degrees in computer science at the time. Konvalin and Clark combined their computer science expertise with the educational backgrounds of Wayne and his wife, Kay, who together have over thirty years of teaching experience.

The group first developed software for the Newton Message Pad, a larger version of the Palm Pilot handheld computer. Called Pocket Grade, the software program simplifies the evaluation of student learning in both the classroom and the laboratory. The teacher can record scores and observations while working with the students, as well as print student or class level reports at any time. The trend toward modular teaching and grading, an educational policy that some states are adopting, fits well with the functions ·offered by the Pocket Grade software.

Another software program developed by Aptus Technologies provides an advanced technological tool that offers tremendous potential for collecting basketball

game

any point during the game could immediately access such data.

In addition to handheld computer software for teachers, Aptus Technologies also has developed a powerful and easyto-use grading program that runs on Windows 95, 98 or NT. Cleverly entitled "Grade Expectations", the software provides teachers with a wide range of grading features. This program was designed by

growth and success of a company. With constant changes in technology, companies cannot stand still. Finding the time to devote to the company on top of the demands of regular full-time jobs, as well as securing the necessary finances to do a good job, are additional challenges for small, start-up companies.

Aptus Technologies already has experienced an international demand for its products



SDSM&T Math and Science faculty congratulate their former students on receiving the US WEST New Ventures Seed Money Competition award. Pictured 1 to r: Wayne and Kay Lang; Bennett and Amy Clark; Dr. Karen Whitehead, Vice President for Academic Affairs; Dr. Edward Corwin, Professor of Mathematics, Computer Science, and Computer Engineering; Chris Konvalin; and Dr. Antonette Logar, Associate Professor of Mathematics, Computer Science, and Computer Engineering.

teachers for teachers, coupling the Langs' many years of classroom experience with the educational perspectives that Konvalin and Clark gained as graduate teaching assistants at SDSM&T.

"By combining experience as educators and computer technology, we can develop

resulting from the company's web site. Customers in Kuwait and Australia, as well as in the United States, have purchased the firm's software.

possible to do business anywhere," said Konvalin. "If you're not on the Internet, you're not considered a

"We came out with a top-notch education," says Chris Konvalin. company, and soccer "Our skills as software engineers put us on par to compete with statistics. StatsPro anybody coming out of institutions elsewhere." can be used

to calculate game statistics as points are being scored on the soccer field or the basketball court. The player stats can be recorded on the fly during the game. Coaches who want to know specific statistics about the team or individual players at

things with good quality and high performance," says Wayne Lang.

The company is using the seed money provided by US WEST to develop a marketing plan. Small business owners face many challenges with the

"The Internet makes it

legitimate

especially in the technology world."

Konvalin and Clark have high praise for the education they received at SDSM&T. "We were always encouraged to try new things and to look at new technology," stated the alums. "A smaller department allows

hanks to a partnership between the City of Rapid City and SDSM&T, a new Children's Science Center will soon be opening in Rapid City that will focus on learning by doing and making learning fun. The Center will provide area children with handson, interactive exhibits in science and technology.

> The Center also plans to provide interactive educational programs for children, school groups and the general public that promote the learning of science and technology. The exhibits will promote learning in earth science, physical science, technology literacy, space science, biology and other fields. The

Children's Science Center also will serve as a resource for area teachers. Scheduled to open later this fall, the Center will be located near downtown Rapid City in the Halley Park facility at 515 West Boulevard. The historic stone building that was built as a Works Progress Administration project in the 1930's formerly housed the Sioux Indian Museum and the Minnelusa Pioneer Museum before they moved to the Journey Museum.

SDSM&T will operate the Center as an educational and community outreach project to help foster children's interest at an early age in science and technology careers. Another goal is to increase the preparedness of students for universitylevel study in engineering and sciences.

For the past several years on campus, SDSM&T has operated the Museum in Motion, which provided children with a variety of hands-on exhibits that focused on scientific principles and the laws of nature. Blowing six-foot flat bubbles demonstrated the surface tension properties of liquids, while a giant sand pendulum depicted the physical laws of motion. A simulated fossil dig introduced children to the world of paleontology and gave them a hands-on glimpse into discovering the prehistoric past as they searched for fossil casts of extinct animals that once roamed the Badlands and the Black Hills.

Because of space constraints on campus, the Museum in Motion was open

Photos by Darrell Sawyer



The Halley Park facility at 515 West Boulevard in Rapid City will be the new home for the SDSM&T Children's Science Center.

Quarterly 16 SDSM&T



LeRoy Draine (BS GeoE '69) adds a fresh coat of paint to the walls of the Children's Science Center.

only during the summer months. The Halley Park facility offers the opportunity for students, teachers, day care centers and other groups to utilize the Center throughout the year.

SDSM&T officials are seeking partnerships and support from individuals, businesses and organizations to help develop hands-on exhibits as well as provide support for programming activities.

Members of the 1998 Leadership Rapid City class help paint. Pictured: (on ladder) Rachel Schofield, SDSM&T Publications Manager; (back) Colleen Ronning, Black Hills Workshop; and (middle) Dr. Antonette Logar, SDSM&T Associate Professor of Mathematics, Computer Science, and Computer Engineering. Tony Smoragiewicz (front) lends a band.

Many opportunities exist for involvement in developing, operating and supporting this new addition to the community.

A sample of the ways in which individuals, companies or groups can become involved include the following:

- Sponsor permanent or rotating exhibits
- Construct exhibits
- Donate funds or materials to build exhibits
- Loan exhibits or items for display
 Volunteer to help with operations (gift shop, admission tickets, special programs, tour guide)
- Purchase individual, family, corporate or educator memberships (special charter membership opportunities exist)
- Assist with presentations to community organizations and prospective sponsors
- Identify external funding sources and support for grant applications

For the past several weeks a dedicated group of SDSM&T staff, faculty, Foundation and Alumni Association members have worked on the initial clean-



addition, the class has made a commitment to sponsor an exhibit at the Center.

With the planned opening of the Children's Science Center, the future offers many exciting educational opportunities that will promote science and technology learning for children of all ages. For additional information, call the SDSM&T Office of University & Public Relations at (605) 394-2554.

Partnership Establishes Year Round Children's Science Center



up of the Halley Park facility. They also have given the interior of the building a fresh coat of paint.

One community organization that is already helping the Children's Science Center is the Leadership Rapid City Class of 1998. As part of their focus on community service, the LRC '98 class members have adopted the Children's Science Center as a special project. Several class members have already pitched in to help paint and clean the building. In

Fizz Kids children try their hand at two of the exhibits that will be located at the Science Center.



Quarterly 17 SDSM&T

Cuttin' the Rug

to learn the rock step, kick step, spin, flip and other smooth moves on the dance floor.

Jerry and Wanda Machetta, who own and operate Music Is the Master Dance Studio in Rapid City, taught the foursession course on campus. The couple has been teaching dance lessons in their studio

> other community locations for three years. "This was the biggest class we have taught to date, but it was a lot of fun," says Jerry Machetta. "The first night was tough on everybody. By the second lesson, the students could start to focus on working on the rhythm."

and

According to Machetta, muscle memory prompts the body to automatically move to the rhythm. This then frees the mind to work on the dance moves.

Swing dance has many variations. There are at least 17 or 18 types—the Carolina shag, cha-cha, jive, push, and jitterbug—to name just a few. Originating in the 1930's, the familiar swing step called the Lindy Hop was an energized variation of the Charleston and named after Charles Lindbergh's

"hop" across the ocean because dancers felt like they were flying.

"Dancing is a contact sport," says Machetta. "People need to learn the technical moves to make it work right."

Freshman student Sean Fulton from Rapid City is often called "the swing kid" by SDSM&T students who remember him from the dance lessons on campus and recall how much he enjoys dancing. Sean has been taking lessons for 3¹/₂ - 4 years and knows the Machettas well. "I keep taking lessons whenever I can to keep myself motivated," says Fulton, who has been taking general courses at SDSM&T and plans to pursue a degree in outdoor recreation with a minor in earth science.

Jerry and Wanda Machetta have taught over 400 people in the community since last August. The swing dance lessons draw individuals from a wide range of ages. For senior citizens, the resurgence of swing brings back memories of times spent at dance clubs in the Big Band era of the 1930's and 1940's. High school and college age students are responding to the retroswing craze in large numbers across the nation.

They dance to popular bands such as the Mighty Mighty Bosstones, Big Bad Voodoo Daddy, Squirrel Nut Zippers, and Cherry Poppin' Daddies that play a combination of ska and swing music. Ska music, which was popularized in Jamaica during the 1960's, has lent a brassy influence to today's retro-swing music.

Today's SDSM&T students may not be wearing zoot suits and saddle shoes, but many have learned to jump and jive like the Hardrockers before them from the 1930's and 1940's. Thanks to the dance instruction provided by the Machettas, many SDSM&T students are now "swinging scientists" who can engineer their way around the dance floor!

"This was the biggest class we have taught to date, but it was a lot of fun," says Jerry Machetta. "The first night was tough on everybody. By the second lesson, the students could start to focus on working on the rhythm."

Above: Stephanie Rhoades (IS '97 - MS MES, Rapid City) and Sean Fulton practice a swing dance flip.

Right: Jerry and Wanda Machetta demonstrate a swing dance move in their Music is the Master Dance Studio.

Below: Bands such as Strictly G-Ive were a great reason for students to swing it up at Tech.



Z oot suit riots have not broken out on campus, but swing is king again. The tremendous response to the swing dance lessons that were recently offered had South Dakota Tech students jumpin' and jivin' like khaki-clad dancers in a Gap commercial!

TONITE, the university's student programming council, arranged for the retro swing dance lessons to be offered on campus. The student response was tremendous. Over 125 students showed up

Research Notes

Dr. John Bendler, Assoc. Professor of Chemistry, and **Dr. David Boyles**, Assoc. Professor of Chemistry, were awarded a \$320,000 grant from the National Science Foundation for a three-year research project entitled "Molecular Design and Synthesis of Novel, High-Performance Polycarbonates."

Dr. James Martin, Professor of Geology and Curator of Vertebrate Paleontology, has been awarded \$41,602 by the National Science Foundation for his project entitled "Fossil Reptiles from the Late Cretaceous (Campanian-Maestrichtian) of Vega Island, Antarctic Peninsula."

Dr. Srinivasa Iyer, Professor of Civil & Environmental Engineering and Director of Industry Programs - CAMP, was recently awarded \$41,052 through South Dakota State University (prime contractor: Federal Highway Administration) for his project entitled "Transportation Technology Transfer Services T3s."

Dr. Edward Duke, Assoc. Professor of Geology and Manager of Analytical Services, Engineering & Mining Experiment Station, was awarded \$29,000 by the SDSM&T Agenda for Excellence Committee for his proposal entitled "Purchase of a New X-Ray Microanalysis and Image Analysis System for the Scanning Electron Microscope (SEM)."

Dr. Michael Langerman, Chair and Professor of Mechanical Engineering, and **Dr. Larry Simonson**, Chair of Electrical & Computer Engineering and Professor of Electrical Engineering, were awarded \$20,000 by the SDSM&T Agenda for Excellence Committee for their proposal entitled "Mechatronics and Measurement Systems Laboratory."

Dr. Sherry Farwell,

Dean of Graduate Education & Sponsored Programs, recently received \$20,000 in additional funds through the University of North Dakota (prime



contractor: National Aeronautics and Space Administration) for "Public Access Resource Center (PARC) Empowering the General Public to use EOSDIS-Implementation Phase III."



Dr. Bruce Berdanier, Assistant Professor of Civil & Environmental Engineering, received \$13,600 for his research project entitled "GPS/GIS for On-Site Treatment Systems,

which was jointly funded by the City of Rapid City and the West Dakota Water Development District. The American Society of Civil Engineers awarded **Dr. Berdanier** \$4,000 for the enhancement of the 1999 Summer Tribal Institute Program in Environmental Science.

Dr. Henry Mott, Assoc. Professor of Civil & Environmental Engineering, was awarded \$10,000 from the City of Rapid City for "Leachate Treatment with Compost and Review of Surface Water Discharge Permit Conditions."

Dr. Colin Paterson, Professor of Geology, received \$6,471 from Phelps Dodge Morenci, Inc. for his project entitled "Characterization, zoning, and paragenesis of alteration types at the Coronado porphyry copper deposit, Morenci Mining District, Greenlee County, Southeast Arizona."

Ford Motor Company awarded \$42,500 to Dr. Sanjeev Khanna, Asst. Professor of Mechanical Engineering, Dr. Chris Jenkins, Professor of Mechanical Engineering, and Dr. David Dixon, Assoc. Professor of Chemical Engineering, for their project entitled "Improving Stiffness and Crash Resistance of Automobile Body by Selective Use of Reinforced Structural Foams."

Dr. Paul Smith, Professor Emeritus of Atmospheric Sciences, received \$25,700 from Aeromet, Inc. for "Continuation of Kwajalein Radar Evaluation and Calibration Work."

PERSONNEL

WELCOME:

Tiffany Burrer, Child Care Worker, Little Miner's Clubhouse (1/4/99) Timothy Kursave, Building Maintenance Specialist, Physical Plant (3/1/99) Annmarie Merager, SD Space Grant Consortium Outreach Coordinator, Grad. Ed. & Spon. Prog. (1/5/99) Valerie Simpson, Faculty, Asst. Professor, Industrial Engineering (1/1/99) Donnalyn H. Snider, Secretary, SKILL (2/16/99) Halona Weaver, Child Care Worker, Little Miner's Clubhouse (2/18/99)

Changes

FAREWELL:

Robert Reznicek, Director, Physical Plant, retired 12/31/98 (32 yrs) Ralph Silcott, Bldg. Maint. Worker III, Physical Plant, retired 12/31/98 (32 yrs)

CHANGE IN POSITION:

Darrell Sawyer, previously Public Information Manager, University & Public Relations Office, was named Director of Career Planning, Placement & Cooperative Education. (3/8/99)

PUBLICATIONS

Dr. James Martin, Professor of Geology and Curator of Vertebrate Paleontology, edited a book entitled *Contributions to the Paleontology and Geology of the West Coast: In Honor of V. Standish Mallory*



recently published by University of Washington Press. Research conducted by **Dr. Martin** on Miocene faunas from eastern Oregon is featured in a recent book entitled *Oregon Fossils* written by Elizabeth L. and William N. Orr, University of Oregon.

Dr. Michael Day, Assoc. Professor of English, recently published a chapter called "Writing in the Matrix: Students Tapping the Living Database on the Computer Network" in *The Dialogic Classroom: Teachers Integrating Computer Technology, Pedagogy, and Research.*

An article by **Dr. Larry Stetler**, Asst. Professor of Geological Engineering, entitled "Enhancing Environmental Research Using Wind Tunnels" was published in the December 1998 issue of *Emiro-News*. soccer is alive and kicking at sDSM&T as the campus heads into the 21st century! The goal of the Tech Soccer Club is to promote participation on campus in the fastest growing sport in the country.

Officially chartered as a student organization in 1996, the Tech Soccer Club is open to all students who share a common interest in the sport of soccer. Forty-five students, including ten females, comprise the current membership roster. International students attending SDSM&T from Zambia, Norway, Germany, Spain and Bangladesh also have played on soccer teams at Tech the past few years.

The Tech Soccer Club team currently plays in a men's league season in the fall, with the students paying the individual \$40 registration fees out of their own pockets. In addition to the South Dakota Tech students, the league includes National American University (Junior Varsity), Black Hills State University and other teams with local players. The club teams play each other twice for a total of twelve games in the season.

Hardrocker soccer enthusiasts face special challenges of travel costs and distances in playing other college teams. Tech has played the club teams fielded by South Dakota State University (SDSU) and Colorado State University. Sometimes the teams meet midway to reduce travel time and costs. Last fall, for example, the Tech Soccer Club played the SDSU team in Pierre.

After the fall season is over, soccer continues to be played on campus. During the winter months, indoor soccer is played Thursdays over the noon hour and also during afternoons on the weekends. The club also competes in indoor tournaments during the off-season to hone their soccer skills.

Cory Jensen of Rapid City, a junior chemical engineering major, serves as president of the Tech Soccer Club. Jensen's soccer expertise stems back to several years of playing in the Rapid City Youth Soccer League and the Rushmore Club, including the Olympic Development program.

Dr. John Helsdon, Professor of Atmospheric Sciences, has coached the Tech Soccer Club for the past three years. Now in his 20th year of coaching youth soccer teams in Rapid City, Helsdon has achieved his "C" coaching license and is now working on qualifying for a "B" license from the U.S. Soccer Federation, which issues licenses ranging from G to A levels.

Soccer's development as a sport at SDSM&T is demonstrated by the club's participation in the 4th Annual National Intramural and Recreational Sports Association Open Club Soccer Championship held in Statesboro, Georgia, in late 1997. The team drove 27 hours straight through from Rapid City to Georgia and handled a vehicle break down as well during the trip to the 16-team tournament. They competed in their tournament bracket against universities with student enrollments that were 7, 10, and even 25 times higher than SDSM&T!

After losing their first two games, the team members played Georgia Southern University in a battle where only team pride was on the line. The Tech players rallied to the challenge and defeated a good Georgia Southern team 4-3. Aaron Asquith (CEE

'98, Rapid City), who is now an

SDSM&T civil & environmental engineering graduate student, and Patrick Ng'ambi (MINE, Zambia) each scored a Hardrocker goal. Ernest Mwape (MINE, Zambia) put two additional goals into the net to give Tech the victory.

Despite having the smallest enrollment of any university in the tournament, SDSM&T finished 10th out of 16 teams. "Finishing so well in such a high level tournament is a testament to the desire and enthusiasm of these athletes," says coach John Helsdon.

Players on the Tech Soccer Club have set their sights on a goal that would take their love of the sport to the next level of athletic competition. They seek to expand the current campus soccer experiences to include the playing of additional games against other universities and participating in more intercollegiate soccer tournaments.

The players maintain that such activities would help the Tech Soccer Club grow to a level that could result in the recruitment of more women players and students in general. The Club has a long-term goal of establishing soccer as a varsity-level sport at SDSM&T for both men and women.

The Tech Soccer Club players use their heads for more than scoring team goals on the field. Off the field they pursue challenging academic goals in the classrooms and laboratories. After the game-ending whistle blows, these students take off their shin guards, put on their lab coats and hard hats, and turn their attention to solving real-world problems in their respective engineering and science fields.





Cory Jensen, Tech Soccer Club president (right), practices his ball handling skills and (above) scrimmages indoors with Robert Coombs (IS, Thornton, CO - far left).

Photos by Darrell Sawyer



Mighty Mo continued from page 7

He began the seventh day of his weeklong trip at Mile 160 and decided to try and make it to St. Louis that night. Again traveling directly into the sun, he used his frying pan technique to help see where he was going. Observing Monarch butterflies as they flitted across the river on their journey to Texas for the winter, he marveled at their ability to complete such a trip.

"I thought this trip might be 90% exhilaration and 10% exhaustion, but it's the other way around," he said.

As he continued down the river seeing little visible signs of human civilization, Rahn felt completely alone until an Amtrak train beeped as it passed by. "This was a great uplifting moment for me as I suddenly felt like I was not alone."

Reaching St. Louis that afternoon, Rahn finally entered the Mississippi River after navigating nearly 800 miles of the Missouri River that Lewis and Clark had traveled near two centuries before him.

Dr. Rahn is an active member of American Rivers, an organization that has proposed to the Corps of Engineers that a higher priority be placed on the recreational assets of the Missouri River. "I plan to continue making professional contributions from both an environmental and engineering point of view about this magnificent river," says the retired geology professor.

"This was not a leisurely trip," states Dr. Rahn in reflecting on his journey. "I was always busy being alert for logs, rock walls, buoys and barges. Lewis and Clark didn't have to worry about barges or dikes. It was a beautiful peaceful river then."

Aptus Technologies continued from page 15

you to mix ideas on an informal basis. It was a fun atmosphere."

"I have the highest regard for the faculty, both professionally and as friends," said Clark. Dr. Antonette Logar, Associate Professor of Mathematics, Computer Science and Computer Engineering, was

NO BONES ABOUT IT





Learn by doing. Participate in the scientific excavation of important paleontological sites in the Black Hills region and Pacific Northwest. Choose a project for at least one week, preferably two. Participants will be in small groups working closely with the scientists involved. May be taken for academic credit.

MAY 10-21: Fossil Lake, Oregon - Fossil mammals, fish, and birds from the late Pleistocene on the historic trail of Professors Condon and Cope.

JUNE 14-25: Late Cretaceous dinosaurs and other vertebrates from Northwestern South Dakota.

JULY 5-16: Jurassic Dinosaurs and Mammals I or **JULY 19-30:** Jurassic Dinosaurs and Mammals II - The "found" world of *Camarasaurus* and *Allosaurus* and tiny primitive mammals.

JULY 12-23: Monster Marine Reptile - Go "Cretaceous sea fishing" and excavate and document skeletons of fierce sea serpents and their prey. Camp on the prairie south of the Black Hills.

JULY 19-30: Giant Pigs and Rhinos - Excavate a tangle of Archaeotherium and Subhyracodon in the classic White River Badlands of Badlands National Park.

JULY 26-AUG. 6: The Unwily Coyote Site - A series of fissure and cave deposits in the northern Black Hills that is producing camels, coyotes, and a diverse assemblage of tiny vertebrates.

AUG. 2-16 or **AUG. 16-27:** Marine turtles, mosasaurs, and plesiosaurs from the Late Cretaceous - Excavations along the Missouri River near Chamberlain, South Dakota.

FOR MORE INFORMATION

South Dakota School of Mines and Technology Museum of Geology 501 E. St. Joseph Street • Rapid City, SD 57701 605-394-2467 • 1-800-544-8162 ext. 2467 • pbjork@msmailgw.sdsmt.edu

the major professor for both students and also was Konvalin's advisor. Dr. Manuel Penaloza, Associate Professor of Computer Science and Computer Engineering, served as Clark's professor for special topics.

"We came out with a top-notch education," says Konvalin. "Our skills as software engineers put us on par to compete with anybody coming out of institutions elsewhere."

Additional information about the company's software products can be *Quarterly 21 SDSM&T* obtained by calling 1-888-840-4700 or visiting the web site at *www.aptustechnologies.com*.

In addition to its current products, the budding entrepreneurs have several exciting new projects in the works for desktop and handheld platforms. Designed to make teachers' work more productive, Aptus Technologies is developing powerful, dependable technology tools for a new era in teaching and learning!

CAMPUS BRIEFINGS

Dr. Sherry Farwell, Dean of Graduation Education & Sponsored Programs, was selected to serve as a panel member for the review and selective funding of the final proposals submitted to the National Science Foundation program entitled "Integrative Graduate Education and Research Training (IGERT)".

Traditions of Excellence Awardees include Vi Stoltz, senior secretary, Vice President's Office (December); Carol Stork, Debit Card/Cashier Office (January); and Jeanette Nilson, secretary, Physics Department (February).

Dr. Larry Stetler, Asst. Professor of Geological Engineering, presented a talk on "Use of Wind Tunnels in Environmental Research" at the annual meeting of the South Dakota Association of



Environmental Professionals. He also presented "Wind Tunnels and Their Use in Wind Erosion" at the International Workshop for Wind Erosion of Soil held at Kansas State University.

Dr. John Paul Gries, Professor Emeritus of Geology & Geological Engineering and author of *A Roadside Geology of South Dakota*, spoke on "N.H. Darton and Black Hills Geology" and **Dr. Roger Dendinger**, Asst. Professor of Social Sciences, presented "Under the Volcano: Daily Life on the Western Highlands of Guatemala" at recent Darton Geological Society meetings.

A paper entitled "Coupled atmospherichydrologic numerical simulation of a flash flood event: Part I. Atmospheric numerical simulation" was presented at the American Meteorological Society's 13th Conference On Hydrology. Co-authors are **Jianzhong Wang**, (PhD, ATMR); **Dr. Mark Hjelmfelt**, Chair & Professor of Atmos. Sci.; **Dr. William Capehart**, Asst. Professor of Atmos. Sci.; **Dr. Scott Kenner**, Assoc. Professor of Civil & Environmental Engineering; and **Dr. Arden Davis**, Professor & Program Director of Geological Engineering.

Dr. Karen Whitehead, Vice President for Academic Affairs, was recently appointed as Consultant-Evaluator for the Commission on Institutions of Higher Education of the North Central Association of Colleges and Schools (NCA).

Dr. James Cote, Asst. Professor of Electrical Engineering, and **Laura Geary**, Instructor of Mathematics, were recently selected for inclusion in the 1998 edition of *Who's Who Among America's Teachers*.

During the annual meeting of the Transportation Research Board of the National Research Council, Dr. V. Ramakrishnan, Distinguished Professor of Civil Engineering, presided over a technical session entitled "Concrete with Supplementary Cementing Materials and chaired the meeting of a technical committee A2E05, Concrete Materials and Placement Techniques. He also presented a paper entitled "Performance Evaluation of Basalt-Fiber Reinforced Concrete" co-authored by Neeraj S. Tolmare (MS CEE) and Dr.Vladimir Brik, President, Research & Technology Corporation, Madison, WI. Dr. Ramakrishnan also presented papers entitled "Further Research - Bacteria for Repair of Cracks in Concrete" co-authored by Dr. Sookie Bang, Associate Professor of Biology, and another entitled "Basalt Fibers for Concrete Reinforcement." He was selected to serve on the review and funding selection panel for individual investigator award proposals submitted to the National Science Foundation's Mechanics and Materials Program.

Dr. Jon Kellar, Assoc. Professor of Metallurgical Engineering, presented a paper entitled "Internal Reflection Spectroscopy for Carboxylate Adsorption by Semi-Soluble Salt Minerals" at the 1999 SME Annual Meeting in Denver, CO.

Mike McNeil, SDSU West River Graduate Center counseling graduate student, is interning with Jolie McCoy, Director of Counseling Services Office, this semester.

Dr. S.K. Dash of Edina, MN was the featured speaker during the **SDSM&T India Club's** 50th anniversary celebration of India's Republic Day and also presented a \$2,500 check to establish a scholarship for India students at SDSM&T for at least the next five years.

Dr. Jan Puszynski, Professor of Chemical Engineering, recently participated in a two-day workshop organized by the Engineering Software Company in Olympia, WA on the Flow-Series software. He also recently visited the Naval Surface Warfare Center in Indian Head, MD to discuss current and future sponsored research on reactive materials.

Rajesh Namile (MS CSc '98) and **Sudhir Muthyalapati** (MS EE) have established annual fellowships in their names to provide annual support to SDSM&T graduate students from India with the highest academic achievement in computer science and electrical engineering.

Dr. Vojislav Kalanovic, Associate Professor of Mechanical Engineering, was recently invited to the University of Belfort - France to take part in a robotics related Ph.D. dissertation defense as a part of the committee.



SDSM&T alumni honored as Outstanding Recent Graduates during Engineers Week were (l to r) **Boyd Eisenbraun** (MetE '88); **Renita Mollman** (CE '88); **Karen Nelson Swindler** (ChE '88); **Scott Bracken** (EE '88); and **Ralph** "**Randy**" **Taylor** (GeoE '88).

At the SME Annual Meeting in Denver, **Dr. Cathleen Webb**, Assoc. Professor of Chemistry, and **Dr. Arden Davis**, Professor and Program Director of Geological Engineering, presented the results of water quality research and abandoned mine work "Bio-Indicator Evaluation of Water Quality Impacts in the Bear Butte Creek Watershed" (co-authored with Jenifer Sorensen), and "Column-Test Determinations of Arsenic Adsorption." **Dr. Davis**, who also served as a panel member at the SME Education Forum, was recently appointed SME Alternate to the ABET Board of Directors and also participated in the SME Accreditation and Curricular Affairs Committee.

Individuals honored at the Career Service Banquet for their years of SDSM&T service or as Traditions of Excellence Awardees include Dean Awe, Tech Print Center (10 yrs); Lawrence Beagle, Physical Plant (10 yrs); Kathy Crawford, Ed. & Enrollment Mgmt. Services (TEA-April 1998); Lisa DeVries, Human Resources (TEA-June 1998); Deanna Edwards, Dean of Students Office (10 yrs/ TEA-Nov. 1998); Toni Erickson, Physical Plant (5 yrs); Pam Fenner, Geology & GeolE (10 vrs); V.J. Hedrick, Instructional Technology Services (5 yrs); Randy Lemme, Physical Plant (5 vrs); Sheila Lien, Grad. Ed & Sponsored Programs (TEA-July 1998); Sandra Meier, Debit Card Office (TEA-Aug. 1998); John Morgan, Civil & Envir. Engr. (TEA- May 1998); Donna Neal, Devereaux Library (20 yrs); Dale Nickels, Mining Engineering(15 yrs); Jeanette Nilson, Physics (TEA-Feb. 1999); Rosemary Robertson, Physical Plant (TEA-Sept. 1998); Sherrill Selwyn, Physical Plant (TEA-Oct. 1998); Vi Stoltz, Vice President's Office (TEA-Dec. 1998); Carol Stork, Debit Card Office (TEA-Jan. 1999); Floyd Straw, Physical Plant (TEA-Oct. 1998); and Richard Wold, Chem. & ChemE (5 yrs).

Quarterly 22 SDSM&T

Dr. Bruce Berdanier, Asst. Professor of Civil & Environmental Engineering, presented "Environmental and Water Resources Planning and Analysis in a Developing Country" recently to Rotary Clubs in Shelby OH, Rapid City and Spearfish. He also presented "Surface Water Quality Analysis and Feasibility Study for a Remote Region in Deschapelles, Haiti" at the International Center for Water Resource Management at Central State University.

SDSM&T recently hosted the Masonry Design & Construction Seminar and the 35th Annual Concrete Conference, which were organized by **Dr. M.R. Hansen**, Assoc. Professor of Civil Engineering.

Papers presented at recent American Meteorological Society conferences include: Conference on Cloud Physics-Dr. Paul Smith, Professor Emeritus of Atmos. Sci., "Raindrop size distribution: Exponential or gamma-does it make a difference?"; Rand Feind, Research Scientist II, and Dr. Andrew Detwiler, Professor of Meteorology, "Intercomparison of T-28 J-W and King Probe cloud liquid water measurements: VORTEX/MIGHT, May and June 1995"; Cooper, K.A., Mark Hjelmfelt, Chair & Professor of Atmos. Sci., D.A.R. Kristovich, R.G. Derickson, and N.F. Laird, "Numerical simulations of an observed lake effects snow storm with transitions between linear and cellular convective structures," 14th Conference on Planned & Inadvertent Weather Modification-Dr. Harold Orville, Distinguished Professor Emeritus of Atmos. Sci., Chengshu Wang, Graduate Research Assistant, and Fred Kopp, Research Scientist III, "A simplified concept of hygroscopic seeding"; Richard Farley, Research Scientist IV, D.L. Hjermstad, and Dr. Harold Orville, Distinguished Professor Emeritus of Atmos. Sci., "A four-day early spring storm period in the Black Hills: Numerical simulations including cloud seeding effects."

Mica, the service dog for **Cindy Davies**, Associate Librarian Cataloger, is the featured dog for the month of October in the "1999 For the Love of Schnauzers" calendar published by Browntrout Press.



Spotlight on Students

CEE graduate student **Terry Collins** (BS CEE '98) has been awarded a research fellowship by Master Builders, Inc. in support of his experimental thesis and research on using recycled glass in concrete and developing flowable fill for utility lines.

Christopher Johnson (GeoE, Dickinson ND) recently tied for first place for his presentation entitled "Aquifer Protection Program for Rapid City, South Dakota" during the Annual Student Night held by the Association of Engineering Geologists in Denver.

Ben Simpson (ME, Buffalo Gap) and **Nathan Sorben** (CEE, Wessington Springs) recently were elected president and vice president respectively of TONITE.

The 1999 Orientation Chairs are **Amy Landreth** (CEE, Chadron), leader recruitment, selection & training coordinator; **Brianna Griffith** (Geol, Escondido CA), publication and programming coordinator; and **Chris Ahlers** (CENG, Pierre), logistics/registration coordinator.

New members of the Leadership Development Team include **Travis Deweese** (ME, Spearfish); Jenn Flores (ChE, Colorado Springs CO); Hank Hollenbeck (CENG, Trail City); Shirleine Kleppe (CEE Hot Springs); Colleen Manning (ChE, Burbank); Anna Miller (CEE, Bloomfield NE); Anthony Raaphorst (IS, Rapid City); Jason Thuringer (ME, Parkston); and Jason Lamont, (CSc, Aberdeen), Chair.

Paul Chilson (CEE, Sisseton) and Charles (Chuck) Cox (ME, Yankton) were recently elected Student Association Vice President and President respectively.



TONITE President **Ben Simpson**, announced the following Committee chairs: **Abe Kean** (CSc, Pierre) - Major Events; **Jenn Flores** (ChE, Colorado Springs) - Lecture; **Brianna Griffith** (Geol, Escondido CA) - Coffee House; **Vivian Rohrback** (GeoE, Reliance) -Recreation; **Darcy Mettler** (ChE, Yankton) and **Annie Rezac** (ChE, Yankton) - Publicity Co-Chairs; **Christy Rebel** (Met, Rapid City) - M-Week; and **Jennie Wilson** (IS, Hastings MN) - Public Relations.



Theta Tau Fraternity pledges who won first place in the Rube Goldberg Contest held during Engineers Week include **Thomas Dietz** (ME, Owatonna MN); **Nicholas Giorno** (Met, Kasson MN); **Gary Jongewaard** (ME, Wagner); **Luke Jordan** (EE, Wagner); **Jeremy Malloy** (GeoE, Isabel); **Josh Mann** (Engr, Huron); **Michael Pridgeon** (EE, Gillette WY); **Kevin Schuh** (Engr, Isabel); **Robert Strong** (ME, Gering NE); **William Thomas** (CSc, Deering ND); and **Troy Travnicek** (ChE, Dallas).

SDSM&T's Master Chorale, under the direction of Dr. Susan L. Reid, Asst. Professor of Music and Director of Choral Activities, recently conducted a two-week concert tour of Israel. Students participating in the concert tour included Steven Acheson (EE, Madison); Robert Anderson (Phys, Pierpont); Isaac Conway (IE, Black Hawk); Tad DeVries (CENG, Crooks); Angela Giffin (IS, Rapid City); Jeff Hartman (Chem, Sioux Falls); Jenny Hartung (IE, Hoven); Angela Holeton (IS, Rapid City); Paula Holmes (IE '98, Hot Springs); Philip Jauch (CENG '98, Gillette WY); Jaaron Johnson (ME, Rapid City); Tonya Pavek (Chem, Rapid City); Scott Talsma (MS CSc, Norfolk NE); Steven Trefz (Math, Onaka); and Christina Zellmer (IE, Pierre). Shelly Jauch and Diane Baird Giffin also accompanied the group to Israel. Following the concerts, they joined a group of SDSM&T United Campus Ministry students and community members who spent their spring break touring Israel, learning about the region's religious and cultural heritage, and doing service work. UCM students who participated in the trip included Lori Glover (Chem, Sturgis); Nicole Grove (IS, Rapid City); Bob Lacey (EE, Trent); Matt Minnick (GeoE, Westville IN); Tiffany Pavek (SCI, Rapid City); and Brad Schleeter (CEE, Ham Lake MN). Community members traveling with the group included Jennifer Allen, Fran Kovarik, Kathlene Pavek, and Donna Hughes-Hargraves, UCM Director and Coordinator of the tour.

You Are Invited . . . Calendar of Events

For information on these events contact University and Public Relations at (605) 394-2554.

	A. D. D. Y.
FRIDAY A	APRIL PRIL 2 - MONDAY APRIL 5
i mb/iii, ii	Easter Holiday
TUESDAY,	April 6
Noon	United Campus Ministry Forum
	"Chief, Here's an Unlimited Budget"
FRIDAY, A	pril 9 & Saturday, April 10
	American Society of Civil Engineers
0	Regional Concrete Canoe Conference
SATURDAY	, APRIL IU Bayor Invitational Track & Field most
TUESDAY	April 13
Noon	United Campus Ministry Forum
	"The Trust Factor: Regents vs. Faculty"
THURSDAY	, April 15 - Saturday, April 17
Mini Baja West Competition	
FRIDAY, A	pril 16
	Bluehawk Invitational Track & Field
Entro en P	meet at Dickinson, ND
FRIDAY &	Multicultural Exposition
TUESDAY.	April 20
Noon	United Campus Ministry Forum
	"It's Not the Oil - It's Water"
	SDSM&T Senior Design Fair
TUESDAY,	April 20 - Wednesday, April 21
	Academic Industrial Advisory Board
W	Surbeck Student Center Ballroom
WEDNESD	AY, APRIL 21 Socreterv's Dev
THURSDAY	APRIL 22
7:30am-	SDSM&T Water Resources Forum
5pm	
	Earth Day
	"Take Your Daughter to Work" Day
FRIDAY, A	PRIL 23
	South Dakota Space Day, Black Hills
	SDSM&T Alumni Weekend
11am	Shot-gun start golf scramble
6pm	Men's pick-up basketball game
7:30pm	Women's pick-up basketball game
1	followed by post game social
SATURDAY, APRIL 24	
	CSU Invitational Track & Field
	meet at Ft. Collins, CO
10	SDSM&T Alumni Weekend
10am 12:30pm	Tailgate party for woman athlates and
12.50pm	their families
1pm	Football game
5pm	Post game social
7:30pm	Spring Choir Concert, First
	Congregational Church
TUESDAY,	April 27
Noon	United Campus Ministry Forum
EDIDAY A	"Challenges in a Pluralistic Society"
FRIDAY, A	Howard Wood Relays Track & Field
	meet at Sioux Falls
FRIDAY, A	pril 30 & Sunday, May 2
*	Human Powered Vehicle Competition
Мау	
SATURDAY	, MAY 1
	SDSM&T Dinosaur Dash

Monday, May 3 - Friday, May 7 Finals Week

THURSDAY, MAY 6 & FRIDAY, MAY 7 Board of Regents meeting in Brookings FRIDAY, MAY 7 SDSM&T President's Reception SATURDAY, MAY 8 SDSM&T Commencement 10am SDIC Championship Track & Field meet at Madison SUNDAY, MAY 9 Mother's Day MONDAY, MAY 10 West River Math Contest SDSM&T Summer Sessions begin MONDAY, MAY 10 - FRIDAY, MAY 21 Fossil Lake, Oregon Field Dig TUESDAY, MAY 11 Water Festival MONDAY, MAY 17 - FRIDAY, MAY 21 Mount Rushmore Institute TUESDAY, MAY 18 - MONDAY, MAY 24 Formula SAE Competition THURSDAY, MAY 27 - SATURDAY, MAY 29 15th Computers & Writing Conference MONDAY, MAY 31 Memorial Day Holiday JUNE MONDAY, JUNE 14 - FRIDAY, JUNE 25 Late Cretaceous Dinosaurs Field Dig THURSDAY, JUNE 17 - SATURDAY, JUNE 19 American Society of Civil Engineers National Concrete Canoe Conference SUNDAY, JUNE 20 - TUESDAY, JUNE 29 Sunrayce 99 JULY MONDAY, JULY 5 - FRIDAY, JULY 16 Jurassic Dinosaurs & Mammals I Field Dig MONDAY, JULY 12 - FRIDAY, JULY 23 Monster Marine Reptile Field Dig MONDAY, JULY 19 - FRIDAY, JULY 30 Jurassic Dinosaurs & Mammals II Field Dig Giant Pigs & Rhinos Field Dig MONDAY, JULY 26 - FRIDAY, AUGUST 6 The Unwily Coyote Site Field Dig AUGUST Monday, August 2 - Monday, August 16 Marine Turtles. Mosasuars and Plesiosaurs from the Late Cretaceous Field Dig

MONDAY, AUGUST 16 - FRIDAY, AUGUST 27 Marine Turtles, Mosasaurs and Plesiosaurs from the Late Cretaceous Field Dig

Special thanks to: Elks Country Estates, Rapid City Area Economic Development Partnership, and Rapid City Federal Credit Union. For more information on providing financial support for future issues of SDSM&T Quarterly, please call (605) 394-2554.

3,000 copies of this publication were printed (a a cost of \$1.50 each (printing costs only).

I Do continued from page 11

found a recurring comment to be "don't sweat the small stuff." Wood states that she is now reminded of that comment whenever she and her boyfriend argue.

"Another thing that really struck me was just how little the older couples had to start out with and all the changes they have seen," said Wood. "It really hits home when they start telling you that they lived on \$250 a month and were living the good life."

Adrian Benham and Amanda Williamson, who are senior and junior IS majors respectively from Rapid City, also actively participated in the research project. Each of the students prepared a written report after analyzing various segments of the interview data. They each received three credit hours of independent study.

The faculty and students involved with the project consider it a success. The couples who participated also responded well to the project. One couple even invited their student interviewer over to their home for dinner, stating that the experience reminded them when they had Tech students in their house years ago.

"The project demonstrates that South Dakota Tech students are capable of conducting all types of research," said Dr. Pratt. "This was a great opportunity for a few IS students to undertake independent undergraduate interdisciplinary research."

"We were pleased to provide our students the opportunity to be involved in the community, to learn outside the classroom and to tap the wonderful resources available locally," said Dr. Lipke. "This project also lets members of the community realize the quality and abilities of our Interdisciplinary Studies students at SDSM&T."

These South Dakota Tech students learned valuable research lessons through this project. In addition, they drew on the different set of life experiences between 50-year and first-year couples to provide a window into the world of strong and happy marriages.



Did you know...

• The Drill and Crucible Club was founded in 1919 and is now the oldest student organization. The photo pictured here is of the 1920 club.



 In 1943, the campus was used for the Army Specialized Training Program. The Prep Building became the



barracks and the students found being a student could be backbreaking work!

- The Engineering Building was renamed the McLaury Building in 1951.
- In 1984, SDSM&T's centennial year events began.
- SDSM&T claimed the "SDIC ALL SPORTS CHAMPION" title for the 1984-1985 academic year.





Gateway 2000, Citibank, Spiegel, Green Tree Financial, and General Electric are some of the successful companies working and playing in South Dakota.

> We Encourage Quality Growth!



in the Black Hills of South Dakota

RAPID CITY AREA ECONOMIC DEVELOPMENT PARTNERSHIP

For More Information: 444 Mt. Rushmore Rd N, PO Box 747 Rapid City, SD 57709-0747 (605) 343-1880 • FAX (605) 343-1916 E-mail: info@rapiddevelopment.com http://www.rapiddevelopment.com



We Belong Together YOUR FULL SERVICE FINANCIAL INSTITUTION

No minimum balance on checking accounts • No monthly service charge No charge for transfers between accounts • ATM and Debit Cards 24 Hour Teller • Credit Cards • Low Rates on Loans Friendly, Courteous Staff

AS A SDSM&T STUDENT OR STAFF MEMBER YOU ARE ELIGIBLE TO JOIN!

RAPID CITY FEDERAL CREDIT UNION Conveniently Located At: 725 Fifth Street 2120 W. Main Street (605) 343-4776 • rcfcu@rapidnet.com • 1-800-672-6365

Membership Eligibility Required

NCUA



Here is PHASE II, Rapid City's most exciting development. You choose your lot, you choose your home design, and you even choose your builder. Purchase your lot now and build within a year.

The perfect combination of country living and city services.



Rapid City's New Standard of Living





Amenities

Within city limits. Water, sewer, gas, garbage pick-up and cable TV. Extensive landscaping with sprinkler system. No yard work! The outdoors is maintenance free by your Home Owners Association.

Sales Office • (605) 393-0845 • Open 10-4 Daily • Saturday by Appointment & Sunday Noon-4 Main Office • (605) 348-9300

SOUTH DAKOTA SCHOOL OF MINES AND TECHNOLOGY A tradition of excellence in engineering and science education since 1885. 501 E. St. Joseph St. • Rapid City, SD 57701 • 1 (605) 394-2554 • 1 (800) 544-8162 http://www.sdsmt.edu

BULK RATE POSTAGE PAID ABERDEEN, SD **PERMIT #61**