# 

SDSM&T Joins Crazy Horse 50th Anniversary Celebration - Story on Page 12

A PUBLICATION OF SDSM&

### Perspectives



Dear Friends,

The South Dakota School of Mines and Technology is a place where students have the opportunity to establish the academic credentials necessary to become tomorrow's leaders in science and engineering. Students choose SDSM&T for a variety of reasons: the tradition of academic excellence established more than a century ago; personal attention provided by our distinguished faculty; outstanding job placement; affordable costs, student leadership programs and the outdoor opportunities provided by the Black Hills.

SDSM&T offers programs in all of the major disciplines of engineering and science. Our programs prepare graduates for positions as leaders in industry and government. As the region's technological university, we provide baccalaureate, masters, and doctoral degrees. These degrees in engineering and science also offer degree programs that offer excellent preparation for admission to medical, dental, law and business schools as well as technically oriented preparation to pursue a number of degrees in other health and business professions.

Graduates are experiencing outstanding job placement with essentially all graduates in computer science and engineering placed at graduation. Overall, 92% of the graduates received offers within six months of graduation. Last year starting salaries for new graduates in engineering averaged \$39,600, and graduates in science averaged \$33,600.

Our alumni are recognized for the leadership they bring to industries throughout the world. The recent growth of manufacturing and computer industries in South Dakota now provide opportunities for over 40 percent of our graduates to work as engineers or scientists while remaining near home. In addition to their many contributions as leaders in industry, our graduates are good members of their communities. They serve a wide range of community groups and activities. We are proud of the many accomplishments of our graduates and thankful that their success continues to build the reputation of the South Dakota School of Mines and Technology for excellence in education in engineering and science.

Please contact my staff at 605-394-2411 if you know of students who may be interested in continuing their education at the South Dakota School of Mines and Technology. We will be happy to forward them information regarding our programs and the benefits of receiving a degree from South Dakota Tech.

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 Darrell R. Sawyer

Advertising & Design Rachel A. Schofield

Administrative Support Tracy O'Sullivan Kristi 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

South Dakota School of Mines and Technology does not discriminate on the basis of race, color, national origin, military status, sex, religion, age, sexual preference, political preference or disability in employment or the provision of service.

### Features

2 Students Apply Educational Experiences to Solve Real World Challenges

SDSM&T Hosts National Concrete

3-day event generates \$250,000 economic impact



6

4

### Businesses Go to CAMP

Industry benefits from Center for Advanced Manufacturing & Production high-tech resources



Husband and wife team long-time supporters of SDSM&T



Prestigious honor granted to select members of America's legal profession

### 11 Paleo Passions for Skeletons in the Closet

Dedicated paraprofessionals volunteer countless hours toward museum curation efforts

12 SDSM&T Joins Crazy Horse Memorial 50th Anniversary Celebration



- 16 Vision 2000: SDSM&T Foundation Launches Capital Campaign
- 17 Job Offers Pour in for Recent Grads
- 18 Feigel House Home Sweet Home to Early Campus Pioneer & Civic Leader
- **19** Personnel Changes
- 20 Museum in Motion Provides Hands-On Science & Engineering Education
- 21 Spotlight on Student Achievement
- 22 Campus Briefings and Research Notes

## CAMPUS

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, government, health and education.

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 sciences.

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

### **BACHELOR OF SCIENCE DEGREES**

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

Profile

### MASTER OF SCIENCE DEGREES

Atmospheric Sciences Chemical Engineering Civil Engineering Computer Science Electrical Engineering Geology and Geological Engineering Materials Engineering and Sciences Mechanical Engineering Paleontology Technology Management

### DOCTORATE OF PHILOSOPHY DEGREES

Atmospheric, Environmental and Water Resources Geology and Geological Engineering Materials Engineering and Sciences

**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 graduated 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 than \$11,000 per year.

**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.







Mechanical Engineering majors Jeremy Morrison of Mitchell (center) and Ryan Miller of Rawlins, WY (right) explain their remote control lawn mower design to Academic Advisory Council Chair Gary Veurink (ChemE '72).



Melissa Gage (ChemE '98, Brandon) and Jed Smith (ChemE '98, Halliday, ND) demonstrate their project Prism Membrane Separator Unit.



Students Apply Educational Experiences to Solve Real World Challenges

For a remote control snow blower to a robotic tennis ball retriever, SDSM&T students demonstrated they can creatively use their engineering knowledge to design solutions to real-world problems. SDSM&T's 2nd Annual Senior Design Fair held this spring showcased over seventy senior capstone projects that applied the design method in various fields of engineering and computer science.

Hundreds of individuals from both the campus and community attended the campus-wide celebration of the design method. The event featured the senior design projects of over 170 students from the following departments: Chemical Engineering, Civil & Environmental Engineering, Computer Science, Electrical & Computer Engineering, Geological Engineering, Industrial Engineering, Mechanical Engineering, Materials and Metallurgical Engineering and Mining Engineering. Some of the projects were externally sponsored by private industry and government agencies.

Just as there are many types of art, so too are there many faces to the field of engineering. A sample of the projects exhibited at the Design Fair included: Robotic Tennis Ball Retriever; Fire Fighting Robot; Head-Tracking Computer Interfacing Device; Battery Powered Railgun; Concrete Canoe; Sanitary Garage Door Opener Design and

Derek Blow (ME, Sioux Falls) demonstrates his Remote Control Tennis Ball Retriever. Not pictured: Thomas Pederson (ME, Norway) and Krystal Shreve (ME, Rapid City) Construction of a Portable Wind Tunnel; Remote Control Snow Blower; Squeak: An Internet Game; SPG Tournament Scheduler; Hotel Reservation System; Extending the Life of a Surgical Knife; Recovery of Platinum from Spent Automotive Catalytic Converters; Inventory Control System at Perdue Woodworks; Methyl-Tert-Butyl Ether Plant; Automation of a Membrane Separator; Virtual Mine; and the Mini-Indy, Mini-Baja and Sunrayce Solar Racing Vehicles. A complete list of projects is available on the Design Fair web page (address: http://silver.sdsmt.edu/~fmatejci/designf. html.)

What is the design method and why is it important? "The design method is an essential part of

technology in which the creative process is used to develop a product or process to address an identified need," says Dr. Christopher Jenkins,

SDSM&T Professor of Mechanical Engineering and Coordinator of the Senior Design Fair. "Our Senior Design Fair provided an excellent opportunity for the general public, particularly junior high and senior high school students, to see the results when SDSM&T students apply the creative process in engineering and science projects."

Understanding and utilizing the design method are important components of engineering and computer science education. University of Maryland Professor Dr. George E. Dieter, who spoke at the 25th Midwestern Mechanics Conference that SDSM&T hosted last fall, states "it is frequently said that design is the essence of engineering. To design is to pull together something new or arrange existing things in a new way to satisfy a recognized need of society."

Dr. Dieter describes the design process as consisting of the following steps: recognition of a need, definition of a problem, gathering of information, conceptualization/synthesis, evaluation/feasibility analysis, detailed design and analysis, and communication of the design/production of a model. ("The Design Process," *Engineering Design: A Materials and Processing Approach*, McGraw-Hill Publishing Company, p.1)

Interactive opportunities also were available at the Design Fair for attendees to learn about the senior projects, the role of design in technology, and careers in

"Our Senior Design Fair provided an excellent opportunity for the general public, particularly junior high and senior high school students, to see the results when SDSM&T students apply the creative process in engineering and science projects."

-Dr. Christopher Jenkins, SDSM&T Professor of Mechanical Engineering

engineering and computer science. In addition to their design and engineering abilities, SDSM&T students also demonstrated their communication capabilities by explaining the purpose and results of their projects to individuals attending the event.

The Design Fair provides tangible proof that an engineering education at SDSM&T is not simply a series of esoteric textbook exercises. South Dakota Tech students take what they learn in the classroom, put that knowledge to work, and apply it to tangible problems. By the time they graduate, SDSM&T students have firsthand, hands-on experience under their belt to take with them in solving the real world problems of the 21st century.

Jason Langer (Ceng '98, Spearfish) exhibits his sensor controlled Sanitary Garbage Door Opener.



Mechanical Engineering majors Zachary Spencer (Lincoln, NE) Nick Graff (Nunda), and Chris Stanley (Monahans, TX) display their Acculite Composite Gun Barrel project sponsored by  $A \Leftrightarrow A$  Engraving.



Steve Holty (Aberdeen) and Tami Heilman (Clark) are two of the Chemical Engineering students who designed the Methyl-Tert-Butyl Ether Plant Project. Not pictured: Brook Burckhartzmeyer (Peoria, IL), Sigbjorn Birkenes (Norway) and Tonje Soraas (Norway).





emonstrating Hardrocker hospitality to hundreds of top civil engineering students from across the nation, SDSM&T hosted the 1998 ASCE/MBT National Concrete Canoe Competition this past June. Often referred to as the "America's Cup of College Civil Engineering," the national event is held annually by the American Society of Civil Engineers (ASCE) and is sponsored by Master Builders, Inc.

Twenty-one university teams from all regions of the United States from Rhode Island to Florida and Texas to Washington - traveled to the Black Hills to compete in the three-day event. Both of South Dakota's engineering schools, SDSM&T and South Dakota State University (SDSU), qualified for nationals after winning their respective Rocky Mountain and Midwest ASCE Regional Competitions. Over 200 university teams competed in regional run-offs this spring to earn a berth in the national competition. This was SDSM&T's ninth year in

## SDSM&T HOSTS NATIONAL CONCRETE CANOE COMPETITION 3-DAY EVENT GENERATES \$250,000 ECONOMIC IMPACT

(Photos from top to bottom) SDSM&T women's team paddles quickly after hearing the starting gun. Dr. Richard J. Gowen, SDSM&T President, paddles with Kevin Creagh of Virginia Tech in the celebrity canoe race. SDSM&T men's team competes in the distance canoe race.

(Photo next page) Teams that competed at the National Concrete Canoe Competition posed for a large group photo.

Story Photos by Darrell Sanyer

qualifying for the national contest.

The smallest university to ever host the ASCE/MBT National Concrete Canoe Competition, SDSM&T is also one of only two universities in the nation that has been both a host and a previous winner of the national competition. SDSM&T won the national concrete canoe title three years ago when George Washington University hosted the competition in Washington, DC. Michigan State University hosted the first national competition in 1988 and subsequently won the title two years later.

As hosts of the 11th Annual ASCE/MBT National Concrete Canoe Competition, SDSM&T showcased the beauty of the Black Hills and the hard-to-beat Hardrocker hospitality to some of the nation's best and brightest civil engineering students. SDSM&T's hosting of the three-day event generated a significant economic impact to Rapid City and the Black Hills. Rapid City Convention and Visitors Bureau (CVB) officials estimate that each visitor to the Black Hills spends an average of \$140 per day on lodging, food, entertainment, shopping and other expenses. The approximately 450 individuals who participated in the National Concrete Canoe Competition, most of whom stayed at least four days and some longer, represent a total of 1,800 visitor days. Based on the CVB's spending estimates, this translates into an economic impact of over \$250,000 to the local economy!

Of the twenty-one universities competing in the 1998 ASCE/MBT National Concrete Canoe Competition, SDSM&T was the smallest and the University of Wisconsin-Madison the largest in terms of enrollment. The competing universities and their respective enrollments are as follows: University of Akron (24,252); University of Alabama-Huntsville (6,713); California State University-Sacramento (23,420); California Polytechnic State University-San Luis Obispo (17,000); Catholic University (5,974); Clemson University (16,526); Drexel University (9,590); Florida Institute of Technology (4,185); Louisiana Tech University (9,160); Michigan Technological University (6,195); University of New Mexico (23,617); Oklahoma State University (19,201); Rochester Institute of Technology (12,933); University of Rhode Island (13,261); South Dakota School of Mines & Technology (2,218); South Dakota State University (8,350); University of Texas-San Antonio (17,547); Virginia Tech University (26,645); University of Washington (38,881); Western Kentucky University (14,613); and University of Wisconsin-Madison (39,826). (Source of enrollment statistics: 1998 Higher Education Directory)

The student teams competed for \$9,000 in scholarship prizes during the competition. In addition to men's, women's and coed sprint canoe races, and men's and women's distance races, the teams were judged in

Quarterly 4 SDSM&T

oral presentation, design paper, final product, and display categories. The academic portion comprised 60% of the total scoring points. Each canoe also had to pass a flotation or "swamp test" to prove it would float after being submerged in water.

The first day of the competition featured display and canoe judging on the South Dakota Tech campus. The next day flotation tests were conducted at Memorial Park near downtown Rapid City, with the academic presentations running throughout the day in the nearby Rushmore Plaza Holiday Inn. On Friday evening the students were provided the opportunity to experience the lighting ceremony at Mount Rushmore National Memorial. Throughout the three-day competition, the teams experienced South Dakota's quickly changing weather conditions firsthand - from windstorms to rain to sunshine.

Clear blue skies and warm sunshine greeted the students on Saturday, which was race day, at Canyon Lake. A crowd estimated at approximately two thousand spectators turned out to watch the concrete canoe races and cheer on their favorite teams. Men's, women's and coed teams competed in distance and sprint canoe races. Clemson University dominated the canoe races, winning first-place finishes in every event.

A celebrity canoe race featured SDSM&T President Dr. Richard J. Gowen, Rapid City Area Chamber of Commerce President Jim McKeon, and KEVN-Fox 7 Sports Director Jack Caudill. Paddling in Western Kentucky University's canoe, McKeon and his canoe partner, SDSM&T's Jeff Thomason, won the celebrity canoe race, narrowly edging out Jack Caudill and a Drexel University canoeist. Dr. Gowen and Kevin Creagh of Virginia Tech successfully managed to say afloat and dry while paddling Virginia Tech's canoe across the finish line! The event raised \$500 for United Way of the Black Hills, compliments of a donation from Master Builders, Inc.

The University of Alabama-Huntsville won the overall competition, with California State University-Sacramento taking 2nd and Clemson University finishing in 3rd place. Capturing 7th place overall, SDSM&T won 2nd in final product, 6th in paper, 8th in oral presentation, 10th in display, and tied for 7th in overall before-tipping performance in the men's sprint race! SDSU won the Spirit of Competition Award for providing a student from Virginia Tech's team lodging and a ride to Rapid City after he encountered travel difficulties in Sioux Falls.

During the awards banquet, Master Builders officials praised SDSM&T for the hospitality and good work in hosting the1998 national competition. An added special feature at this year's awards banquet was a multimedia retrospective of the three-day competition put together by SDSM&T that was a big hit with the students and event sponsors.

The kudos SDSM&T received for successfully hosting the 1998 ASCE/MBT National Concrete Canoe Competition resulted from thousands of hours and preparation work over the past year. "We deeply appreciate the many campus and community volunteers who generously gave their time and resources. They contributed immeasurably to the overall success of the event," said Charlie Baker, president of SDSM&T's ASCE Student Chapter that successfully bid to host this year's national competition.

SDSM&T's hosting caught the attention of the national media from Paul Harvey to USA Today.

Although this year's canoe races have ended, South Dakota's scenic beauty continues to be promoted by some of the university teams on their web pages. For example, Clemson University's concrete canoe team features eleven scenic photos of Crazy Horse Memorial, Sylvan Lake, the Needles and buffalo in Custer State Park on the team's web site (*address:www.eng.clemson.edu*/~*canoe/canoe98*).

The national competition experience of these future leaders of the civil engineering profession not only contributed to their professional and educational growth, but also provided some firsthand knowledge of South Dakota hospitality and the beauty of the Black Hills. As the canoe teams headed for home, they bid good-bye to their newly made friends at SDSM&T with a determined vow to "see you next year at the 1999 nationals!"

canoe race points.

With a time of 5:04.97 minutes, Crissy Shear of Belle Fourche and Emily Shaffer of Aberdeen won 6th for SDSM&T in the women's distance canoe race. Jim Cokely of Scotland and Josh Warren of Sheridan, WY captured 6th in the men's sprint race with a time of 1:19.18 and completed the men's distance race in 4:33.61 minutes, earning an 8th place finish for SDSM&T. In the coed sprint canoe race, Rhaub Walker of Rapid City and Ryan Koontz of Sturgis finished 8th with a time of 1:25.76 minutes.

SDSM&T's Peacemaker canoe team members received a special "Dive for the Finish" Award for their cross-the-finish line-



Quarterly 5 SDSM&T

# **Businesses Go to CAMP**

### Industry benefits from Center for Advanced Manufacturing & Production high-tech resources

ids usually go to camp in the summer, but businesses can go to CAMP at SDSM&T year round. CAMP, or the Center for Advanced Manufacturing and Production, is an exciting new program at SDSM&T that emphasizes interdisciplinary research and enterprise teams to help companies solve design and manufacturing problems. In addition, CAMP will provide SDSM&T students with a top-quality design and manufacturing education that is on the cutting edge of today's engineering curriculum.

"Industry wants this," says Dr. Dan Dolan, Professor of Mechanical Engineering and Director of Academic Programs of CAMP. "The National Science Foundation recognizes the necessity of training and education of this type, where students learn to integrate engineering with communication skills and business knowledge."

"CAMP has a meta-focus, not a focus on solving minor details of a problem," explains Dr. Dolan. "The emphasis is on developing more holistic engineering and product development." To reinforce his point, Dr. Dolan references a statement in a book entitled, *The Education of Mechanical Engineering in the 21st Century*, in which the engineer of the future is described as "the one who deals in multi-disciplinary teams."

Integrating SDSM&T students and faculty with industry partners, CAMP is designed to develop a unique approach to manufacturing education that also addresses specific industry needs at the same time. Formally kicked off last fall during the South Dakota Board of Regents meeting on campus, the Center for Advanced Manufacturing and Production will create an electronic community using advanced telecommunications technology to facilitate interaction between higher education and industry. CAMP also will provide a focus for manufacturing technology assistance to private industry.

Some businesses wasted little time in taking advantage of the engineering development opportunities offered by CAMP's interdisciplinary team approach. The Center has already been working on three private industry projects and recently committed to undertaking a project with Ramvac Corporation in Spearfish involving the collection of particulate matter.

"For relatively little money, businesses can get a team to look at their problem," explains Dr. Dolan. "This is like going to the Mayo Clinic - where you don't see just one doctor but several doctors. This is a systemic approach."

A current CAMP project has a humanitarian emphasis that puts some real-world meaning into how SDSM&T's design and manufacturing technologies can assist mankind and make a difference in an individual's life. A few years ago a spinal injury from a rodeo accident left high school student Randy Routier of Buffalo a quadriplegic, paralyzed from the neck down. Last year the family contacted SDSM&T officials for assistance in developing a type of voice-activated system that would provide Randy with some voice control of his home environment.

Directed by Dr. Michael Batchelder, Professor of Electrical & Computer Engineering and Executive Director of CAMP, this project has been undertaken by two CAMP students, Vinaya Bondada and Mahbubur Reza. They started working last January on developing and testing a voice-activated system for both wireless transmitters and infrared signals that would allow Randy to turn on and off the lights, television, and home appliances.

Members of the Rapid City Economic Development Partnership's New Business Attraction Committee tour the CAMP facilities getting a firsthand look at the high-tech laboratory equipment and the Mini-Indy vehicle.



Photos by Darrell Sawyer



Quarterly 6 SDSM&1

#### Photo by Mike Wolforth

They also are working on modifying a program that will enable Randy to operate a keyboard for a personal computer, including Windows software, through voice commands. Once the system is fully developed, Vinaya Bondada states that Randy will even be able to operate his VCR through voice controls - an appealing concept to those of us who face the challenges of re-setting digital clocks and programming our VCRS!

The CAMP students hope to have the development of the voice-activated system completed in the near future and bring Randy into the CAMP lab to test it. This assistive technology aspect of CAMP provides a dramatic example of SDSM&T's



Kent Reimann (ME '98, Rapid City) and Dr. Srinivasa Iyer, Professor of Civil and Environmental Engineering, operate the filament winder equipment

willingness to reach out to the community in a service mode and help whenever possible.

The Center also provides important benefits to the SDSM&T vehicle teams, such as the solar car, Mini-Indy and Mini-Baja. For example, a current CAMP project involves developing a data acquisition model for SDSM&T's solar car for Sunrayce '99 that will incorporate Global Positioning System (GPS) and certain satellite data.

Twenty-one students to date have been accepted into the

CAMP core courses. Upon completion of the CAMP program requirements, the students will receive a special designation on their transcript. To be selected for the program, students must be first semester juniors upon entering CAMP and must maintain a 3.0 grade

"For relatively little money, businesses can get a team to look at their problem," explains Dr. Dolan, Professor of Mechanical Engineering and CAMP faculty member. "This is like going to the Mayo Clinic - where you don't see just one doctor but several doctors. This is a systemic approach."

and must maintain a 3.0 grade point average. Jeremy Morrison, a mechanical engineering major from Mitchell, will be the first CAMP student to graduate this December.

"This program is fairly unique and is probably the only program that can be said to be an honors program for design and multi-disciplinary product development," says Dr. Dolan.

Developing leadership and teamwork skills is an important focus of the program for CAMP students. While serving as team leaders and working on teams, student members of CAMP learn to use a systemic approach in utilizing manufacturing technologies, develop their communication skills, and obtain experience in the budgeting and management of projects.

"CAMP offers many exciting opportunities for both South Dakota Tech and the state of South Dakota," said SDSM&T President Richard Gowen. "This Center will utilize and build on Tech's traditions of excellence to strengthen our educational programs, our industrial technical assistance, our research programs, and our many economic development activities."

SDSM&T recently hosted the Rapid City Area Economic

Development Partnership's New Business Attraction Committee on campus. Following a presentation by Dr. Gowen of the High Priority Connection Network (HPCNet) capabilities, the New Business Attraction Committee toured the CAMP facilities and received a firsthand look at SDSM&T's Mini-Indy vehicle and the high-tech laboratory equipment used in CAMP projects.

South Dakota will benefit from CAMP specifically from: 1) expanded industry collaborations to assist South Dakota manufacturers with being competitive in today's global marketplace; 2) an Executive Graduate Program that includes industry professionals through distance conferencing

technology; and 3) cooperative university/industry projects that foster economic development through the enhancement of manufacturing and production capability.

Four of SDSM&T's laboratories - Electrical and Computer Engineering, Advanced Composites, Advanced Manufacturing, and Injection Molding -- are active components of CAMP. Special, state-of-the-art equipment in these four labs includes the Compression Test Frame, MTS Dynamic Test Frame (100,000 lb. capacity), MTS Dynamic Test Frame (50,000 lb. capacity), Filament

Winder, Computer Numerical Control Lathe, Coordinate Measurement Machine, Vertical Machining Center, Printed Circuit Prototyping Machine, Injection Molding Machine, and Sun Workstations/Mentor Graphics Software. The latest acquisition is a Computer Fluid

Dynamics (CFD) modeling program.

Higher education in South Dakota has a long history of working together with manufacturing industries in South Dakota to provide technical assistance. SDSM&T receives several requests for assistance with manufacturing and production problems each month. The Center will enhance responsiveness to these demonstrated industry needs, will tap the resources of Tech's most talented students, and will enable rapid communication and information flow through the electronic community.

The establishment of CAMP is a direct outgrowth of Tech's implementation of Reinvestments Through Efficiencies in the higher education budget process. In addition to Drs. Batchelder and Dolan mentioned previously, other faculty and staff members of CAMP include Dr. Srinivasa L. Iyer, Professor of Civil & Environmental Engineering; Casey Allen, Integrated Manufacturing Specialist; and Rita Sabe, Secretary. Additional information can be obtained by calling the CAMP Office at 605-394-2506, via email: CAMP@msmailgw.sdsmt.edu, or by accessing the CAMP web site at: *www.sdsmt.edu/syseng/me/camp/*.

Quarterly 7 SDSM&



Jim Bauer watches Bradley Richardson (next page, (EE Jr., Vermillion) as he leads the pack in the Bauer Invitational Track and Field Meet.

s bona fide boosters of SDSM&T, Jim and the late Jean Bauer of Yankton are in a league of their own. Over the past three decades, this husband and wife team sent three sons to South Dakota Tech, held recruitment meetings in their home for hundreds of prospective SDSM&T students, hosted the university's track and cross country teams in their home on several occasions, and provided generous financial support for SDSM&T track and other programs.

On top of all that, the Bauers' Hardrocker hospitality for SDSM&T students has a kitchen connectionchocolate chip cookies! Over the past quarter of a century, Jean Bauer baked an estimated 10,000 chocolate chip cookies for South Dakota Tech students. That much requires a lot of ingredients-468 cups of flour, 312 cups of sugar, 104 pounds butter, 34 dozen eggs and 137,280 chocolate chips!

Jean's cookie-baking endeavors for SDSM&T began in 1973

when she and Jim were making plans to attend their first cross country meet to watch their son, Jeff, compete. When Jean asked her son if there was anything he needed them to bring out to Rapid City, Jeff requested a batch of his mother's homemade chocolate chip cookies. The

cookies were a hit with Jeff's team members. Thus began a chocolate chip cookie tradition that endeared Jean Bauer to hundreds of SDSM&T students.

# **BAUERS PROVIDE**

"Over the years Jean filled many ice cream buckets with her chocolate chip cookies for the cross country and track teams," recalls Jim fondly of his late wife to whom he was married for 45<sup>1</sup>/<sub>2</sub> years. Jean passed away in November, 1997 after a long illness.

If the 10,000 cookies Jean baked for SDSM&T students were laid end to end, they would form a line of cookies that would stretch for ½ mile-equivalent to two laps around the O'Harra track that the Bauer sons used to run.

The Bauers' success in recruiting students for SDSM&T over the years is phenomenal. An estimated 180-200 students came to South Dakota Tech because of the Bauers. "That number might even be higher," says Jim Bauer, citing eight students from a one-block residential area in Yankton who attended SDSM&T. Of those eight students, three were Bauer boys.

Dr. Howard Peterson, SDSM&T Dean of Students Emeritus states, "Jim and Jean Bauer have been long-time special friends of mine personally as well as outstanding friends and supporters of SDSM&T."

Every January for many years Dean "Pete", as Dr. Peterson is affectionately known, would send the Bauers a list of prospective southeastern South Dakota students. Inviting both students and parents into their home, the Bauers described college life at SDSM&T based on their sons' experiences. Remembering what it was like when their oldest child went away to college, they answered questions from parents about linen, laundry and other aspects of dorm life. Forty to fifty people often attended these living room gatherings. should not be considered the exclusive domain of only high school valedictorians or straight-A students. For example, he states that all three of his sons bucked the advice of their high school counselors who told them they would never make it at South Dakota Tech. Bauer emphasizes that students who have good study habits and are focused can successfully handle the challenges of SDSM&T's academic programs.

All three Bauer brothers graduated from SDSM&T. Jeff (GeolE '77) was an honor student, Student Association Vice President, and president of Theta Tau fraternity. He also was one of the first students in South Dakota to pursue a Masters degree in Engineering Management. This relatively new program in the early 1980's combined business management courses from the University of South Dakota with the engineering curriculum at SDSM&T.

Steve (MinE '79) was Student Association President and won six varsity athletic awards during his years at South Dakota Tech. "He was a good athlete and the first SDSM&T student to really accomplish anything in the steeplechase," recalls SDSM&T Director of Career Planning and Cooperative Education Jack Hunter, who coached all three Bauer boys in track and cross country. Steve currently works as a supervisor of US Steel Corporation's largest taconite plant in Mountain Iron, MN. He was named an SDSM&T Outstanding Recent Graduate in 1989 and also has returned to campus to interview SDSM&T students for positions with US Steel.

Chris (EE '85) is an electrical contractor and runs Bauer Electric in Yankton. His

"This is a great place to go to school," stated Jim affirmatively when he was recently back on campus. "Jean was especially proud of the fact that we had encouraged so many students to come here. The South Dakota School of Mines & Technology is the best kept secret in South Dakota."

-Jim Bauer

Drawing on the experiences and achievements of his three sons, Jim Bauer is passionate in his belief that SDSM&T wife, Julie Peterson (MetE '80), is also an alumnus of SDSM&T and taught courses at SDSM&T while Chris was completing his degree. "If you work

hard and budget

your time, you can succeed here," says Jim. "But you can't sit in the lounge and watch cartoons or you will get behind."

# COOKIE POWER TO TECH ATHLETES

"The School of Mines is the best investment in education in South Dakota," says Jim Bauer reflecting his fervent belief in the quality of education offered at SDSM&T. Unlike some larger universities, the professors at SDSM&T are not removed from the students. The availability of close interaction between faculty and students is a valuable asset to SDSM&T's academic program.

After attending an energy symposium out of state, Steve and Jeff came back to campus motivated to start a similar program at SDSM&T. They approached Dr. Richard Gowen, who was serving as SDSM&T Vice President for Academic Affairs, with their idea and received his enthusiastic support. Finding funds to pay for speaker expenses was the only issue remaining before the symposium could become a reality. Like many college students in need of money, Jeff and Steve called their mother. Jean turned the boys over to their father, who agreed to underwrite the speaker expenses after his sons convinced him of the symposium's merits.

The Bauers have strong ties to the Hardrocker cross country and track teams.

All three of their sons made the SDSM&T varsity track and crosscountry teams as freshmen and competed in track events during their years at SDSM&T. Together they earned a combined total of 18 varsity athletic awards at SDSM&T.

For more than twenty-two years, the Bauers attended cross-country and track meets, both at SDSM&T and east river competitions. Even after their sons had hung up their college track cleats, Jim and Jean continued to faithfully attend meets and cheer on the Hardrockers. When Jean was terminally ill the last couple of years and unable to sit in the stands, the SDSM&T team members made a point of coming over to the car and visiting with her.

"The main reason to go to college is to get an education, and this is what college athletics is all about at Tech," states Jim Bauer convincingly. "College students at Tech participate in athletics when not in class, rather than the other way around like at some institutions. Tech athletes may not always play on a conference championship team, but when

they graduate, they very likely will have a goodpaying job before the team members they competed against finish school."

SDSM&T's award for Most Valuable Track & Field Athlete is named in honor of Jeff Bauer. Jeff unexpectedly passed away in his sleep at SDSM&T on February 16, 1981, a few months before he was scheduled to graduate with an M.S. degree in Engineering Management. Mark Huber (CE '81), a fellow track team member and Theta Tau fraternity brother with Jeff, proposed the idea of naming SDSM&T's prestigious track and field award in Jeff's honor. The plaque with his photo that is



displayed in the lobby of the New Gym describes Jeff Bauer as "a person of imagination and vision who understood that the path to success required a willingness to make a commitment and the willingness to do the work essential to ensure success."

A South Dakota Intercollegiate Conference track standout, Mark Huber was a national qualifier and also a top performer at the two-day Tech Meet of Champions held in the 1980's in which approximately twenty colleges and eighty high schools competed. Huber, who attended Lake Andes High School, was one of the Yankton area students who would have been invited to the Bauers' home and encouraged to consider attending SDSM&T.

"The Bauers have been our chief resource for recruiting students from the Yankton," says Jack Hunter, who served as SDSM&T Director of Admissions in the 1980's. "Of the 55 students on the track team one year, 19 were from Yankton and 10 were Theta Taus. Half of the cross country team members one year were from Yankton," recalls Hunter.

In recognition of the Bauer family's support for the Hardrocker track program, SDSM&T officials this spring renamed the annual Tech Invitational meet as the Bauer

(CONTINUED ON PAGE 24)



Quarterly 9 SDSM&T

# Professor Receives U.S. Supreme Court Distinction

r. Lee Luckhart, SDSM&T Professor of Political Science, can now argue cases before the U.S. Supreme Court-a prestigious honor granted to select members of America's legal profession. Dr. Luckhart was one of twenty-three attorneys sworn in recently by Chief Justice William Rehnquist in a special admission ceremony held in the U.S. Supreme Court Chambers.

Following the swearing-in ceremony, Justice Ruth Bader Ginsburg attended a breakfast in the Lawyer's Lounge of the Supreme Court building. Justice Ginsburg answered questions and congratulated the new admittees on their achievement.

Environmental law is Dr. Luckhart's legal specialty. A member of the SDSM&T faculty since 1970, he has taught courses in U.S. Environmental Law and International Environmental Law & Policy.

"My interest in environmental law began with a summer law school course I

took at the University of Akron School of Law in 1972," said Dr. Luckhart. "This was during the time when the Cuyahoga River caught on fire several times and our national

interest in environmental protection was becoming more than a passing concern."

After completing a Juris Doctorate at the University of South Dakota, Dr. Luckhart was admitted to practice law in South Dakota in 1976. He previously completed two Bachelors Degrees and a Masters Degree in Political History at the University of Wyoming. In 1994, Dr. Luckhart was granted a sabbatical leave from SDSM&T to pursue a degree in environmental law at the University of Washington School of Law, where he earned two post-graduate law degrees-an L.L.M. in International Environmental Law



Dr. Lee Luckhart stands in front of the U.S. Supreme Court building following his swearing-in ceremony admitting him to practice before the U.S. Supreme Court.

and an L.L.M. in Law and Marine Affairs.

As a law student, Dr. Luckhart held a research appointment with the National Oceanic and Atmospheric Administration (NOAA) Northwest Regional Office. While at NOAA he was involved in one of the largest successful environmental damages

Dr. Luckhart continues to pursue his research interest in the Law of the Sea, one of the longest negotiated international environmental agreements (12 years), and the Public Trust Doctrine, a common law principle focused on protecting the public's interest in coastal and inland water resources. He recently submitted a paper for the Homes/Cardoza Award, a national competition that judges papers on the quality of legal research and writing. In addition, Dr. Luckhart recently wrote a paper on the Public Trust Doctrine for publication by the Academy of Legal Studies, Environmental Law Section.

SDSM&T President Dr. Richard Gowen recently nominated Dr. Luckhart for the Charles M. Hewitt Master Teacher

Award, sponsored by the Academy of Legal Studies, a professional organization that supports undergraduate legal education.

"Dr. Luckhart's achievements demonstrate that the caliber of our faculty

"Dr. Luckhart's achievements demonstrate that the caliber of our faculty cuts across all the disciplines at this university," said Dr. Richard Gowen, SDSM&T President. "Lee has been a valued and dedicated member of the SDSM&T faculty for nearly three decades."

cuts across all the disciplines at this university," said Dr. Gowen. "Lee has been a valued and dedicated member of the SDSM&T faculty

suit brought by a federal agency, in which NOAA recovered \$40 million in damages from the Cities of Seattle and Tacoma for pollution of Puget Sound under the Superfund statute.

"When I returned to classes as a student at the University of Washington, I was not certain whether I could keep up with the bright, younger law students, but I managed and was grateful for the opportunity," said Dr. Luckhart. "Perhaps the greatest benefit for me was appreciating what it is like to be a student again after some thirty years of teaching-my only regret was not starting sooner."

Quarterly 10 SDSM&T

for nearly three decades." 🛠



Supreme Court Justice Ruth Bader Ginsburg visits with the new admittees during a breakfast held in their honor. (Dr. Luckhart is 2nd from the right.)

Story Photos by Darrell Sawyer



The unsung heroes of the SDSM&T Museum of Geology are a group of volunteers with a passion for paleontology. These dedicated people donate thousands of hours every year working behind the scenes to help SDSM&T's paleontologists acquire, catalog, and curate fossil specimens for display and teaching.

The Museum's volunteers are the backbone of support for many of SDSM&T's paleontological programs. Over the past five years Museum volunteers have donated 15,911 hours at the Museum of Geology. That's equivalent to nearly 663 days, 22 months or 1.8 years! Meet three of these individuals who like to spend their free time digging around with old bones on the SDSM&T campus.

Wayne Brewster has been volunteering at the Museum for the past twelve years. After retiring from the Federal Highway Administration in New Jersey, this Woonsocket native moved to Rapid City. Because his highway work in New Jersey involved archaeology and paleontology programs, Wayne became acquainted with David Parris (MS Paleo '68), who was science curator at the New Jersey State Museum. Parris suggested he contact Dr. Jim Martin when he moved to Rapid City and explore the opportunities for doing volunteer work at SDSM&T.

Wayne focuses on the documentation and cataloging aspects of paleontology. After a box of specimens from a field dig arrives at the Museum, Wayne goes to work. Using Dr. Martin's extensive and thorough field notes, Brewster assigns a number and location to each specimen after matching them to the descriptions in the field notes. He then completes a card that contains the pertinent identification information, with some cards containing up to thirty specimens.

Some of the specimens, especially those from the Fossil Lake, Oregon, field digs are tiny fish and bird bones. A drawer of specimens can contain as many as 300 specimens. Since Wayne started volunteering at SDSM&T, he estimates that approximately 36,000 specimens have been curated. Brewster hasn't done all of those himself, but he has done a large amount. He also helped to design the card that the Museum currently uses and also put together an introductory manual of basic information to assist new volunteers who undertake curation activities.

"The big stuff is more interesting than thousands and thousands of parts of fish," admits the 78-year-old volunteer and grandfather. "The bigger specimens like mammoth tusks or big bears are easier to relate to."

Bill Schurmann (GeolE '65), a Watertown native and a retired petroleum geologist, has been volunteering at the SDSM&T Museum of Geology since he retired in 1993 and moved back to South Dakota. For ten or eleven years before he retired, Bill would spend two weeks each summer on field digs and also took a paleontology class three or four times.

"Fossils are what got me interested in geology in the first place," says Schurmann, as he recalls field trips to the Badlands while a student at SDSM&T.

After moving back to the Black Hills, Bill wasted little time getting involved with volunteering at the Museum of Geology. Since starting in 1993, Bill has volunteered a total of 5,204 hours through the end of 1997. He faithfully comes to the paleo lab five days a week, five hours a day!

Bill has a special affinity for mosasaurs. Preparing a fossil specimen such as a mosasaur is no easy or overnight task. He spent the better part of four years working on a mosasaur skull that was found along the banks of the Missouri River. Mosasaurs are ancient marine reptiles that are distant relatives to modern-day lizards.

After the fossil specimens are found in the field, they are enclosed in a large, protective plaster jacket for transport back to the paleo lab on the SDSM&T campus. The fossil bones are encased in a matrix that can be

### (continued to page 24)

Museum volunteers Wayne Brewster (top), Bill Schurmann (middle), and Walt Dennison (bottom) have volunteered a total of 7,906.5 hours in the last five years.



Lt. Commander John B. Herrington visits with children of the Two Bulls family. Ashley, Michelle, Korczak and Todd danced at the Crazy Horse 50th Anniversary Celebration.

hen Crazy Horse Memorial celebrated the 50th anniversary of its dedication this summer, SDSM&T officials joined in commemorating this impressive milestone. SDSM&T's support for the Ziolkowski family's Crazy Horse project is as solid as the mountain granite out of which the monumental sculpture is being carved.

As part of the Crazy Horse Memorial 50th anniversary celebration, SDSM&T hosted Lt. Commander John B. Herrington. He is the first official Native American to be selected as an astronaut by the National Space and Aeronautics Administration

(NASA). Ruth Ziolkowski, Chairman of the Board of Directors and CEO of the Crazy Horse Memorial Foundation.

"The Ziolkowski family provides tremendous service to the people of this region," said Dr. Gowen, SDSM&T President. "They are great ambassadors for South Dakota. This multi-talented family team works closely with their dynamic and gracious mother in meeting the many daily challenges and responsibilities of continuing the Crazy Horse dream."

of education.

them to follow them to follow their dreams. With his sincerity and unpretentious confidence, the poised and the Crazy Horse dream." With a sincerity and unpretentious confidence, the poised and focused astronaut is an effective ambassador for NASA's programs and an articulate advocate for the importance

invited Lt. Cmdr. Herrington to participate in the ceremony that celebrated the Memorial's 50th anniversary with the dedication of the completed face of Crazy Horse.

Lt. Cmdr. John Herrington was one of a select group of special dignitaries who addressed the estimated crowd of 7,000 people who braved cold temperatures and rainy weather to attend the ceremony. In addition to the Native American astronaut, the program speakers included Olympic gold medalist Billy Mills, actor James Whitmore, *USA Today* founder Al Neuharth, Dennis Compos, grandson of Chief Standing Bear, and Ruth Ziolkowski.

During his remarks, Lt. Cmdr. Herrington called Crazy Horse an inspiring model of leadership for today's Native American youth. The astronaut cited Crazy Horse's commitment to his culture and people.

"Without heroes children cannot be inspired," stated Lt. Cmdr. Herrington. "Crazy Horse is an example of what a hero is

# SDSM&T Joins

and we must make sure that young people today know his story."

SDSM&T's support for the 50th anniversary celebration also was demonstrated by the SDSM&T Master Chorale's participation. Under the direction of Dr. James Feiszli, SDSM&T Professor and Director of Music, the SDSM&T Master Chorale sang the national anthem for the special program.

An announcement by Rapid City Mayor Jim Shaw during the 50th anniversary program further reflected the bonds between SDSM&T and the Crazy Horse Memorial.

After Lt. Cmdr. Herrington concluded his remarks, Mayor Shaw announced that the Crazy Horse Memorial Foundation was establishing a \$1,000 annual scholarship at SDSM&T in honor of the Native American astronaut and the role model he provides to American Indian students.

Visiting the SDSM&T campus preceding the Crazy Horse anniversary program, Lt. Cmdr. Herrington spoke to area young people and high school students. He described his life journey and educational experiences that eventually resulted in being selected as an astronaut at the Johnson Space Center in Houston, TX. Throughout his visit to both the SDSM&T campus and the Crazy Horse Memorial, Lt. Cmdr. Herrington made a special point of talking to young people and encouraging

In addition to the scholarship announced during the 50th

previously been established by the Ziolkowski family and others

associated with the Crazy Horse Memorial. Established in 1985,

scholarship at SDSM&T supported by Crazy Horse for Native

American students. The Paul Muehl Crazy Horse Scholarship

established in 1996 to provide financial assistance to Native

American students attending SDSM&T. The Crazy Horse-

majoring in geology, geological engineering or metallurgical

Society of Explosive Engineers Scholarship, established in 1993,

is earmarked for Native American students at SDSM&T who are

engineering. Twenty-five Crazy Horse-related scholarship awards

totaling approximately \$15,000 have been made to twenty-one

anniversary celebration, other scholarships at SDSM&T have

the Charles Morss Crazy Horse Scholarship is the oldest

and the Walt Pailing Crazy Horse Scholarship were both

Quarterly 12 SDSM&T

# CRAZY HORSE MEMORIAL 50th Anniversary Celebration

SDSM&T students through the 1997-1998 academic year.

Over the years, Ruth Ziolkowski and her family have graciously hosted countless campus visitors and many special SDSM&T guests. When SDSM&T hosted the American Indian Science & Engineering Society (AISES) National Science Fair this past spring, the opening ceremony held at the Crazy Horse Memorial provided an inspiring cultural experience for the young students. Approximately 400 American Indian elementary through high school students from ten states and two Canadian provinces participated in the national science fair.

During SDSM&T's 123rd commencement ceremony in May, 1991, SDSM&T officials conferred an Honorary Doctorate of Humane Letters on Ruth Ziolkowski. The Ziolkowski family also was honored this spring during SDSM&T's Annual Honors Convocation. Ruth Ziolkowski and her family were presented with the 1998 SDSM&T Award for Outstanding Public Service in recognition of their work in continuing Korczak Ziolkowski's dream to create the Crazy Horse Memorial as a tribute to the region's Native American heroes and culture.

"The Ziolkowski family provides tremendous service to the people of this region," stated Dr. Gowen during the award presentation. "They are great ambassadors for South Dakota. This multi-talented family team works closely with their dynamic and gracious mother in meeting the many daily challenges and responsibilities of continuing the Crazy Horse dream."

This year is an especially fitting time to honor the Ziolkowski family. When the Crazy Horse Memorial was first dedicated fifty years ago on June 3, 1948, Chief Standing Bear, Korczak Ziolkowski and Governor George T. Mickelson (with the help of his seven-year-old son, George S. Mickelson) set off the first blast on the mountain carving.



<image>

Korzcak and Ruth Ziolkowski, 1981

That same summer Dr. Warren E. Wilson assumed the duties as president of SDSM&T. Dr. Wilson established the Honors Day program at SDSM&T three years later and established SDSM&T's Outstanding Public Service Award. Fifty years after the Crazy Horse Memorial was dedicated, Dr. Richard Gowen, SDSM&T President, presented SDSM&T's 1998 Outstanding Public Service Award to Ruth Ziolkowski and her family.

When Korczak Ziolkowski died on October 20, 1982, the torch was passed to Ruth and the children to carry on the work on the mountain. For the past 15<sup>1</sup>/<sub>2</sub> years, Ruth Ziolkowski and several family members have steadfastly worked to keep Korczak's dream alive. Now, fifty years later,

the finished face of Crazy Horse provides a moving tribute to the vision of Korczak Ziolkowski and the perseverance of Ruth and the family in turning Korczak's dream into reality. Long range plans for Crazy Horse Memorial include the establishment of the University and Medical Training Center for the North American Indian.

The journey now begins to guide the Crazy Horse Memorial during the next fifty years of progress. As the Ziolkowskis proceed with their special pilgrimage, the South Dakota Tech family will continue to walk the path of friendship together with the Crazy Horse Memorial family.

Ziolkowski family in November, 1997. (l to r) Casimir, Monique, Jadwiga, Ruth, Anne and Adam

Photo by Robb DeWall



During SDSM&T Weekend at the Mall, Dr. Alvis Lisenbee, Professor of Geology, shows Dominic Smith (Rapid City) a view of the geologic world as seen through a microscope. Dominic's cousin, Wendell Van Cleave, and his mom, Deb Smith also from Rapid City, look on.

## SDSM&T REACHING OUT

SDSM&T's active outreach activities connect the campus to many communities and constituencies.



Dr. Richard Gowen, SDSM&T President, visits with third graders from Rapid City and Philip schools during the unveiling of the life-size Camptosaurus cast that SDSM&T placed on display at The Journey Museum.



Photo by Darrell Sawyer



Photo by Julie Smoragiewicz



Quarterly 14 SDSM&T



Valerie Haeder of Rapid City and Auburn University student, Brian Hollenberger of Montgomery, Alabama, join participants from around the country in summer field paleo digs.

### Teachers from twelve South Dakota communities participated in the 12th Annual "Mining Experience on the Great Plains" Teacher Workshop sponsored by SDSM&T and the South Dakota Mining Association. (See Campus Briefings and Research for a list of participants)

Photo by Duff Erickson

Photo by Darrell Sawyer



Judy Gobert, Salish Kootenai College, presents an overview of the All Nations Alliance for Minority Participation during the Engineering Articulation Summit hosted by SDSM&T this spring.



Twelve English teachers from nine South Dakota Communities participated in the Advanced Placement Institute of English Literature and Composition hosted by SDSM&T in June. (See Campus Briefings and Research for a list of participants)



Sigma Phi Fraternity helped raise funds for Special Olympics in



Shane Matt (MS/CE '98) from Philip, SD, demonstrates the power of water channeling at the 1998 Water Festival. The event drew more than 1,000 4th grade students.

Quarterly 15 SDSM&T

# VISION 2000: SDSM&T Foundation Launches Capital Campaign

Photo by Darrell Sawyer

he sounds of Boogie Woogie Bugle Boy drifted through the air as hundreds of SDSM&T alumni and friends recently gathered to formally launch the school's \$16 million Capital Campaign -Vision 2000: Leadership for the Next Century. Over 250 people attending the National Launching Event were entertained by a multimedia program depicting an SDSM&T historical journey since its establishment in 1885.

Treated to high-tech video and live theatrical performances, the audience traveled through time from the Black Hills gold rush to last year's M-Day. The sentimental journey also depicted the

technological advancements from the slide rule to the calculator to the personal computer. The Divas, a local singing group, performed such songs as *Sentimental Journey* and *Sincerely*, while four Tech students belted out Beatles tunes.

The \$16 million program has been implemented to help provide much needed support to the institution. The focus of the campaign includes \$4 million in cash gifts to address immediate areas of need and \$12 million in endowment gifts to provide continued annual support.

"Tonight we take another giant step as we launch VISION 2000 - a step that will keep this university on the cutting edge as a premier institution of science and technology," said Dr. Howard C. Peterson



Howard Peterson (GeolE '50) and Grove Rathbun (MinE '52) donned SDSM&T memorabilia including a slide rule, senior cap, freshman beanie and letter sweater during the SDSM&T Foundation Capital Campaign launch.

(GeolE '50), Chair of the SDSM&T Foundation Board of Directors and SDSM&T Dean of Students Emeritus.

The announcement of the campaign represented the culmination of over three years of planning and implementation efforts. These efforts began with the prioritization of campus needs-namely support for student scholarships, faculty, program, laboratory and equipment. "Additional support of these areas is critical if South Dakota Tech is to continue providing the best educational opportunities to students and faculty," stated Dr. Richard Gowen, President of SDSM&T.

To measure the willingness of alumni, friends and corporations to support a potential capital campaign, a market

feasibility study was conducted. Sixty meetings were held throughout the region and across the nation. Over 600 people attended these meetings and provided input that formed the basis for the final campaign goals. The responses from those attending were overwhelmingly positive. In fact, 91% of those responding indicated a willingness to financially support the proposed campaign.

To date 132 individuals have been recognized as National Leaders because of their commitment to the campaign. Included in this national leadership are four Honorary Chairs and twelve Endorsement Chairs. In addition, 34 National Co-Chairs (gifting \$100,000 or more), 28 National Cabinet (gifting

\$25,000 or more), and 54 National Council (gifting \$10,000 or more) have agreed to support the campaign. These National Leaders represent many committed local alumni and friends of SDSM&T, as well as individuals from over 25 other states, who are willing to financially support the institution's efforts.

This first-ever Capital Campaign already has raised over \$10 million toward the total goal. The Foundation hopes to achieve the ultimate goal of \$16 million to coincide with the All Alumni Reunion scheduled for July, 2000. For additional information about the campaign, contact the SDSM&T Foundation at (605) 394-2436.

# Job Offers Pour in for Recent Grads

**L** ong before the opening strains of *Pomp and Circumstance* started playing at their commencement ceremony, many SDSM&T graduating students already had job offers. Most December 1997 graduates and many May 1998 graduates had been offered and accepted jobs before Christmas!

The skills and educational experience of SDSM&T's science and engineering students were in high demand this year by many major companies, both within South Dakota and in the corporate world of Fortune 500 companies. Within six months of graduation, 70-72% of SDSM&T diploma recipients will be working in their career fields. An additional 20% of the new graduates will be attending graduate or professional school.

A total of 123 companies and agencies interviewed SDSM&T students on campus this year-a 12% increase from the previous year. In addition, 51% of this past year's graduates accepted job offers from companies that did not interview on campus.

Company recruiters interviewing students this spring found less than full interview schedules because many SDSM&T students had already committed to jobs by that time. For example, Brian Butterfield (CEng '98, Mitchell) was offered a job in South Dakota with Martin & Associates before he had even taken his final exams! A job offer in Huron with Midcom, Inc. has enabled Franklin Sullivant (IE '98) of Rapid City to stay in South Dakota and raise his family upon completion of his Masters degree in Technology Management this summer. Native American student Randy LaRoche (ME '98) of Rapid City also accepted a position in Watertown with Midcom, Inc. By the start of the computer engineering



major John Redmond's senior year last fall, Rockwell International in Cedar Rapids had offered him a full-time job and also paid for his last two semester of college!

The demand for SDSM&T's science and engineering graduates paralleled the competitive recruiting season elsewhere in the nation. The *Salary Survey July 1998* published by the National Association of Colleges and Employers states that recruiters of science and technology students "found themselves fighting off other recruiters in a veritable feeding frenzy of offers, counter-offers, signing B.S. degree in chemical engineering generated the highest average salary offer - \$45,591. The starting salaries of graduating SDSM&T students average \$39,600 (engineering) and \$33,600 (science.)

The 1997-98 graduates of SDSM&T accepted jobs with a wide variety of companies. Some of the South Dakota employers hiring SDSM&T graduates this year include 3M, Gateway 2000, Homestake Mining Company, Hughes STX (EROS Data Center), Hutchinson Technology, Martin & Associates, Midcom, City of Rapid City, Rapid City Regional Hospital, South Dakota Department of Transportation, and Vishay/Dale Electronics.

Out-of-state companies hiring SDSM&T graduates illustrate the fact that many Fortune 500 companies and large corporations are aggressively recruiting South Dakota Tech students. These employers include Amoco, Archer Daniels Midland, Boeing, Cargill, Caterpillar, Dow Chemical, Dow Corning, Goodyear, Halliburton, Hewlett Packard, Honeywell, IBP, Kiewit Mining, Microsoft, Michelin, Navistar, Raytheon, Rockwell, Shell, United Nations, U.S. Army Corps of



Caterpillar executive James E. Despain delivers the graduation address at SDSM&T's 137th commencement.

bonuses and perks." (Salary Survey July 1998, Vol. 37, Issue 3, p. 1)

Nearly fifty exhibitors attended the 1997 Career Fair held last September, the largest recruiting event in campus history. This represented an increase of 34% over the previous year. Students, faculty and community members attending the 1997 Career Fair totaled 1,750. Eighty-five SDSM&T alumni represented companies on campus this past year as interviewers or exhibitors.

In addition to an increased number of job offers and the earlier date by which many of them were made, the starting salaries for science and engineering majors increased an average of 7-10%. A

Quarterly 17 SDSM&T

Engineers, and US Steel. The SDSM&T alumni who have advanced their careers in many of these large corporations have become an increasingly important resource in generating corporate support for scholarships and contributions for laboratory upgrades at SDSM&T.

Eighty percent of SDSM&Ts engineering and science graduates have relevant work experience when they graduate. "Undergraduate cooperative education and summer internships reached an all-

time high last year," states Jack Hunter, SDSM&T

Director of Career Planning and Cooperative Education.

The plans for the 1998 SDSM&T Career Fair, scheduled for September 17, 1998, are well underway. By mid-July, forty-three companies and agencies already have committed to participate, almost double the number registered at that time last year. The names of the companies, as well as information on the career planning services offered to SDSM&T students and alumni, can be obtained electronically at the following web site address: www.sdsmt.edu/services/careerplan. For additional information, contact Jack Hunter at (605) 394-2667.



# Feigel House Home Sweet Home to Carly Campus Pionger & Civic Leader

Graduating Class of 1890 l to r: Benjamin Poznansky, Caroline Feigel, Eva Robinson

he ties between Rapid City's historic Feigel House and SDSM&T are older than South Dakota as a state. In 1887, two years after the School of Mines was founded and two years before South Dakota became a state, Rapid City pioneer Frederick C. Feigel built the large, Victorian-style home on a hill that overlooks what is now Roosevelt Park.

The house was home to Caroline "Carrie" Feigel, a member of the first South Dakota School of Mines graduating class. Located at 328 E. New York Street in northeast Rapid City, the house still provides a good view of the SDSM&T campus today as one looks south out of the upstairs windows across Roosevelt Park.

Born in Council Bluffs, Iowa, in 1871, Carrie was the third of four children in the Frederick and Mary Feigel family. Her father served in the Union Army during the Civil War and was imprisoned at Andersonville, the notorious Confederate prison camp where thousands of soldiers died. Feigel managed to escape by pretending to be dead so he would be taken outside the camp for burial in a huge open grave and then ran away when nightfall came.

Attracted by the prospects for prosperity offered by the mining industry in the Black Hills, Feigel came to Rapid City in 1883 and achieved economic success. Assuring his wife in Chicago that he could provide proper housing accommodations for her in the young frontier community, Feigel built the grand, Victorian-style home in northeast Rapid City. Traveling by train with her mother in the spring of 1886, Carrie Feigel met up with her father in Buffalo Gap, which at that time was as far as the railroad line extended toward Rapid City.

After graduating from the School of Mines with a Bachelor of Science Degree in 1890, Carrie Feigel worked in Chicago for several years. Like many of her contemporaries, Feigel returned to work in South Dakota in the abstract office of Charlie Hunt after working in the big city. She subsequently served for eleven years as Pennington County Deputy Clerk of Courts. Carrie then went

into business as a partner in the Gantz- Photo by Darrell Samyer Feigel Abstracting Company and eventually became sole owner of the company. Her abstract company office was located in the Pennington County Courthouse, a building in which she worked for 36 years-from when the courthouse was built in 1920 until her retirement in 1956.

An active civic leader, Carrie Feigel was a strong supporter of the Roosevelt Commercial Club and many other



Quarterly 18 SDSM&T

community organizations. In 1932, she donated the largest portion of the land that now comprises Roosevelt Park. Although the story may be apocryphal, some have suggested that Miss Feigel so dearly loved her view of the SDSM&T campus that could be seen from her front porch or upstairs windows that she donated the land across the street for Roosevelt Park so she could preserve the campus view. Her philanthropy also extended to a very generous contribution toward the construction of Roosevelt Pool, which was the largest swimming pool in Rapid City at that time.

She resided in the Feigel House with her parents until they passed away. Living to be nearly 101 years old, Carrie passed away in 1972. Two of her nieces, Ada and Dorothy, are still living and recently celebrated their 94th and 90th birthdays respectively.

After suffering from years of neglect, the Feigel House was in terrible condition in the early 1990's and was scheduled for demolition. To prevent the loss of this historic structure, a group of civic-minded citizens banded together to form The Feigel House Preservation Foundation. The non-profit organization undertook a \$200,000 fund-raising drive to save the local landmark dating back to Rapid City's frontier days. The renovation proposal also included plans to utilize the historic building as a business center where non-profit organizations could share office space and resources.

Remarkable progress has been made over the past several years. Extensive structural support and repair work has already been completed. Upon securing an estimated additional \$40,000 of funds, Foundation members anticipate that they will be able to complete the rehabilitation work on the historic structure.

"The Feigel family's personal history parallels much of 19th century American history and early Black Hills history," says Paul Swedlund, Foundation Board President. Former state senator Lyndell Petersen serves as chairman. Other board members include Holly Brenneise, Karen Bulman, Sylvia Conrad, Nancy Gowen, Dean Heintz, Kevin Jacobson, Doris Martin, Dell Peterson, Fred Thurston, and Phil Weger. To obtain additional information or provide support for the Feigel House preservation efforts, individuals or businesses should call (605) 341-5820 or write to: The Feigel House Preservation Foundation, P.O. Box

3712, Rapid City, SD 57709-3172.

The restoration of the Feigel House is saving a valuable historical and architectural resource for future generations. The Feigel family and the house in which they lived provide many historic links to both Rapid City and the SDSM&T campus that are important to preserve. 🛠

# PERSONNEL Changes

#### WELCOME:

Patricia Amburn, Allyn Glover, Abigail Pease, and Olivia Peck, Child Care Workers, as well as Marsha Johanson and Yvonne Paulson, Teacher Aides, all of the Child Care Center.

Michael Greenwald, Research Scientist II, Museum of Geology

Shane Stephen, Intercollegiate Athletics, Asst. Football Coach/Defensive Coordinator/Asst. Intramural Dir./Weight Room Supervisor

George Towner, Custodial Crew Leader, Physical Plant

Kristi Wishard, Sr. Secretary, University & Public Relations

#### DEPARTMENT/CLASSIFICATION **CHANGES:**

Pat Kung, from Secretary, Math & Computer Science to Computer Support Supervisor Dale Marshall, Physical Plant, named Grounds Supervisor

Dr. Wayne Krause, named Interim Dean for the College of Systems Engineering for the 1998-99 year. Dr. Michael Batchelder, who is stepping down as Interim Dean of CSE, will continue as Executive Director of CAMP.

Colin Paterson, Faculty, Geology & GeolE, returned from leave

Tim Vottero, Alumni Assoc. Dir. (50%), SDSM&T Foundation Development Officer (50%)

### **DEPARTMENT CHAIR CHANGES:**

Dr. Sue Shirley, Assoc. Prof. of English & History, replaces Dr. James Feiszli, Prof. & Dir. of Music as Chair of Humanities in the College of Interdisciplinary Studies.

Dr. M. Steven McDowell, Assoc. Prof. of Chemistry, replaces Dr. James Munro, Prof. of Chemical Engineering, as Chair of Chemistry and Chemical Engineering in the College of Materials Science and Engineering.

Dr. Mikhail Foygel, Assoc. Prof. of Physics, replaces Dr. Larry Meiners, Prof. of Electrical Engineering, as Chair of Physics in the College of Materials Science and Engineering.

Dr. Larry Simonson, Prof. of Electrical Engineering, replaces Dr. Michael Batchelder, Prof. of Electrical & Computer Engineering as Chair of Electrical and Computer Engineering in the College of Systems Engineering.

### **RETIREMENT:**

Wanda Clemmons, Residence Life (10 yrs) John "Duff" Erickson (MinE55), Dir. of Alumni Services (20 yrs) Dr. A.L. Riemenschneider, Prof. of Electrical and

Computer Engineering (25 yrs)

### EXEMPT EMPLOYEES RECOGNITION:

(Years of service to SDSM&T) Francine Campone (5 yrs), Wanda Clemmons (10 yrs), Barb Dolan (10 yrs), Rand Feind (5 yrs), Sandy Fischer (25 yrs), Gary Johnson (25 yrs), Marlin Kinzer (5 yrs), Marvin Lorenz (5 yrs), Marjorie Marken (30 yrs), and Ruth Stoddard (5 yrs).



Margaret Puszynski Broker Associate



### Service With a Smile!

302 Main Street Rapid City, SD 57701 Business: (605) 342-7272 Fax: (605) 343-8900 Residence: (605) 342-2262

For Relocation Package call: 1-800-888-1619 Please ask for Margaret



Museum in Motion Provides Hands-On Science and Engineering Education



Story Photos by Darrell Sawyer



Tori Afdahl (Faith) concentrates on enlarging the bubble surrounding her.

**P** rom a Vandergraph generator to a giant xylophone, SDSM&T's Museum in Motion provides many hands-on science and engineering exhibits for children of all ages. The museum is focused on making learning fun. Many adults also enjoy the exhibits that provide real-world examples to better understand the laws of physics, including the basic principle underlying aviation that makes it possible for airplanes to stay in the air!

Museum visitors can learn while they play. They can experience optical illusions and also stand inside a giant bubble machine. Blowing six-foot flat bubbles provides a hands-on introduction to the surface tension properties of liquids, as well as concepts of chemistry and geometry.

A Vandergraph generator demonstrates the properties of static electricity, while Jacob's Ladders show that electricity generates heat. The spin table and the spinning chair exhibits offer children hands-on experiences with the conservation of momentum.

A giant xylophone provides opportunities for both the young in age and young at heart to understand the connection between the length of a tube and the frequency, or pitch, of sound. The Bernouli's Law cone demonstrates what happens when faster moving air travels over an object. This exhibit portrays the basic law of physics on which aviation is based that results in airplanes being able to fly.

Children also can operate a large sand pendulum that dramatizes the physical laws of motion. By looking through the museum's giant kaleidoscope, visitors can learn more about reflection and patterns of light. Other exhibits allow visitors to take apart old computers, telephones, toasters, answering machines and other devices to explore what is inside them.

Located in the Old Gym on the SDSM&T campus (directly east of the Museum of Geology), the Museum in Motion is open 9:00 a.m. to 4:00 p.m. Monday through Saturday throughout the summer until Labor Day. Admission is \$2 per person or \$10 maximum for a family. Special rates for non-profit organizations and child care providers are available.

This summer the Museum in Motion Quarterly 20 SDSM&T



Kristin Colleen Weston, Porcupine resident and 4th grade student at Red Cloud School, experiences hands-on the laws of physics.

has offered Magic School Bus and other special activities each week on dinosaurs, paper-making, construction geometry, weather and noisemakers. These sessions are offered at a cost of \$5 on Tuesday and Thursdays from 10:00-11:00 a.m. For additional information or to register for the special programs being offered by the Museum in Motion this summer, call (605) 394-6996.

The future may hold some exciting new developments for the Museum in Motion. SDSM&T officials have submitted a proposal to the City of Rapid City to use the former Sioux Indian/Minneluzahan Pioneer Museum building for a children's museum or science center that would promote interest in science and technology. Negotiations are currently under way with city officials and the Board of Regents.

If this proposal is approved by all involved parties and contingent on funding resources, children of the Black Hills region, as well as tourists, could have access year round to the many hands-on science exhibits in the Museum in Motion that currently are available only during the summer months. Individuals or organizations interested in supporting SDSM&T's proposal to establish a children's science center in the former Sioux Indian/Minneluzahan Pioneer Museum building are encouraged to contact the SDSM&T University and Public Relations Office at (605) 394-2554.

### **SPOTLIGHT ON STUDENT ACHIEVEMENT**

SDSMT faculty and students presented several papers at the 83rd Annual meeting of the **South Dakota Academy of Sciences** held at BHSU April 17. Student presenters were **Martha Tremblay**, (ChE), Rapid City; **Derek Thirstrup**, (Chem), Rapid City; and **James Niggemann**, (Phys), Box Elder.

SDSM&T's Kappa Mu Chapter of the Alpha Sigma Lambda society for non-traditional students recently inducted, Roger Kurtenbach, (Met), Rapid City; Matthew Meland, (ChE), Rapid City; John Paulson, (Phys), Rapid City; Todd Plochocki, (CE) Rapid City; and Kory Wyatt, (IS), Black Hawk, as new members.

SDSM&T's Mini-Baja team won the sales presentation event and finished 9th overall out of 55 teams in this year's Mini-Baja West Competition. Kent Jacobs, senior Mechanical Engineering major, Rapid City, was SDSM&T's Mini-Baja team leader. Drivers were Cam Seger, Oelrichs; Jaaron Johnson, Rapid City; Jerry Peterson, Sundance, WY; and Charles Asp, McHenry, IL. Other team members included Tim Naumann, Mobridge; Dan Mertens, Milbank; Arlin Sandbulte, Sherman; and Mark Fauske, Wall. Graduate student Brian Herbst of Rapid City served as team advisor. They are all Mechanical Engineering majors.

Brenda Flottmeyer, Black Hawk, and Michelle Nielsen, Rapid City, Civil & Environmental Engineering graduate students, presented papers entitled "Field Performance of Concrete Admixtures" and "Using Recycled Glass as Aggregate in Concrete" respectively at the American Concrete Institute (ACI) International Spring Convention in Houston, TX.

A team of SDSM&T Chemical Engineering students won first place in the **AICHE Chemical Reaction Engineering Team Competition** with their entry, "Aqua Switch." Team members were **Jill Munro**, Rapid City, **Aaron Podraza**, Hitchcock, **Melissa Gage**, Altamont, **Michelle While**, Rapid City, **David Sheffield**, Rapid City, **Travis Nelson**, Lake Norden, **Bob Cunningham**, Mitchell, and **Ryan Caldwell**, Sioux Falls. SDSM&T will host the AICHE Rocky Mountain Regional Conference next year.

Eta Kappa Nu (HKN), the international Electrical Engineering Honor Society, recently initiated Richard Dahl, Norway, Kelli Hoback, Box Elder, Jan Roger Stenstadvolden, Norway, and William Walters, La Crescent, MN. Jade Kizer, Rapid City, will be initiated later. Bradley Richardson, Vermillion, was recognized as the Outstanding Electrical Engineering Sophomore.

David Guhin, (CE) Camp Hill, PA, received the 4th-Year Graduating Resident Assistant Award during the RA Recognition Banquet. The Graduate Education and Research Council selected the recipients of the Ivanhoe Fellowship, Ivanhoe Excellence Awards, Kate Simmons-Teskey Fellowships, and the William Griffith Award. Ivanhoe Fellowships: **Rusheng Hu**, (CEE), China, \$1,820; **Shujing Jia**, (CEE), China, \$1,820; **Fanguang Meng**, (Atmos), \$1,820; **Lei Wang**, (CEE), China, \$1,820; **Mei Wang**, (CEE), China, \$1,820; **Changyou Xu**, (ECE), China, \$1,820; and **Wenfeng Zhao**, (CEE), China, \$910. Ivanhoe Excellence Awards: **Sirin** 

Gattaleeradapan, (Atmos), Thailand, \$1,100; Monica Prapti, (CEE), India, \$1,100; Brad Terhune, (Geol), Rapid City, \$1,100; and Srinivas Yenamandra, (CEE), India, \$1,100. Kate Simmons Teskey Fellowship: Farrah Johnson, (MES/MS), Rapid City, \$5,400; James Niggemann, (MES/MS), Box Elder, \$5,400; William Griffith Award: Cheryl Naus, (GeolE), Rapid City, \$2,800.

Praxis Students Give 494 Community Service Hours: Students who participated in the program are Jennifer Carter, (CE), Custer; Roberta Fivecoate, (ME), Rapid City; Destiny Geiger, (IS), Ellsworth AFB; Charlotte Gonzales; Deb Hammond-Thompson, (Sci), Rapid City; Nichol Hammrich, (IS), Sioux Falls; Karmen Hepper, (ChE), Isabel; Joni Hericks, (IS), Rapid City; Steven Holty, (ChE), Aberdeen; Amy Landreth, (CE), Chadron, NE; Jim Lang, (ChE), Weston, FL; Garrett Long, (EE), Gillette, WY; Kimberly Lutz, (IS), Rapid City; Nichole Meyers, (IS), Ellsworth AFB; Mark Miller, (IS), Rapid City; Gabrielle Mills, (Sci), Rapid City; Tricia Mohrauser, (CSc), Hartford; Scott Mudlin, (EE), Spearfish; Alexis Muehlhauer, (IS), Rapid City; Travis Nelson, (CSc), Lake Nordon; Raeann Rex, (Met), Douglas, WY; Stacy Sorenson, (ChE), Sioux Falls; Kimberly Svalstad, (Met), Rapid City; Nisha Tanejo, (ChE), Woodbury, MN; and Bruce Zavesky, (Ceng), Rapid City. Donna Hughes-Hargraves serves as the campus coordinator of the Praxis program.

Stian Lysne, (EE), Norway, has been awarded a \$10,000 Tau Beta Pi Graduate Fellowship. Of 300 Tau Beta Pi applicants from 9000 graduates nationwide, Stian is one of only 30 to be selected for this fellowship.

Patrick Kozak, Colorado Springs, CO, a senior Geology major, won the overall award at the SDSM&T 1998 Undergraduate Research Symposium for his project entitled "A Preliminary Assessment of the Use of Multispectral and Hyperspectral Remote Sensing Data for Geologic Interpretation in the Black Hills, South Dakota." Other award winners were: Social Science: Jennifer Allen, (IS), Piedmont, tie 1st; Jay Muneke, tie 1st; Linda Alexander, (Math), Rapid City, 3rd; Engineering: Siau-Way Liew, 1st; and Nicholas Peeke, (ChE), Olathe, KS, 3rd; Science: Patrick Kozak, (Geol), Colorado Springs, CO, 1st; Rita

Quarterly 21 SDSM&T

Krebs, (Geol), Rapid City, 2nd; and Troy Jaqua, (Phys), Sioux Falls, 3rd.

Travis Ernst, (ME), Rapid City; Scott VanderPol, (ME), Rapid City, Pat Moen, (ME), Roslyn; Julie Clapero (ME), Wabasha, MN; and Jessica Zulauf (ME), Loveland, CO, won 3rd place in the design competition at the ASME Regional Student Conference in St. Louis.



SDSM&T's ROTC cadets from the Mount Rushmore Battalion who received awards include: Garland Krabbenhoft, (ME), Rapid City; George C. Marshall Leadership Excellence Award, Superior Cadet Award, Society of Military Engineers Award, American Legion Award and Ivan Landstrom Memorial Award; LeAnn Gunn, (Chem), Shadehill, Superior Cadet Award; Kris Keller, (ME) Dixonson ND, Superior Cadet Award; Matt Fechter, (Geol), Clarinda, IA; National Sojourners Award; Shawn Steele, American Legion Award, Retired Officers Assoc. Award; Tom Hopkins, (Spcl), Chadron, NE, American Legion Award, Daughters of American Revolution Award; Eric Hall, (CSc), Rapid City, USAA Spirit Award; and Chris Ehlers, (ME), Gordon, NE, Sons of American Revolution Award.

SDSM&T students won the hardware design and student paper contests at the recent IEEE Region 5 Conference in Fort Worth, TX. Ed Fetzer (EE) and Toby Foss (CENG) of Rapid City took first place in the Hardware Design Contest. Angie Monheim (EE), Rapid City, won the Student Paper Contest with her paper entitled "Holographic Data Storage." SDSM&T was one of only six universities whose robotics team qualified in IEEE's new Robotics Contest. SDSM&T team members are Karl Hiramoto (CENG), Arlington; Angie Monheim (EE), Rapid City and Marijane White (CENG), Fort Wayne, IN. Rich Ivey (CSc), Sioux Falls, helped program the robot. Dr. Neil Chamberlain, Assoc. Professor of EE, serves as IEEE faculty advisor.

### **CAMPUS BRIEFINGS AND RESEARCH**

SDSM&T hosted the 2nd Great Plains Alliance for Computers and Writing Conference (GPACW) April 18-19. About twenty writing teachers attended presentations on topics ranging from word processing and grammar checkers to distance learning and using the new Governor's Electronic Classroom. The Dakota Writing Project helped to sponsor the conference. Next year the GPACW will host the 15th International Computers and Writing Conference in Rapid City, May 27-30, 1999. Between 300 and 500 teachers and professionals in the field of communications will attend.

Dr. Roger Johnson, Assoc. Prof. of Mathematics, presented "Hands-on Learning Activities and Data Collection Projects in Probability and Statistics" at the Rocky Mountain Section Meeting of the Mathematical Association of America.



Dr. Jan Puszynski, Prof. of Chemical Engineering, presented an invited seminar at 3M - Ceramic Technology Center in Minneapolis, MN on April 21 and also presented a

paper at the 100th Annual Ceramic Society meeting in Cincinnati, OH in May. He recently attended NASA's Microgravity Research review panel meeting in Washington, DC. Dr. Puszynski was invited to give the seminar at West Virginia University, Chemical Engineering Dept., March 30-April 1, 1998.

SDSM&T faculty and students presented several papers at the 83rd Annual meeting of the South Dakota Academy of Sciences held at BHSU April 17. Faculty presenters were **Dr. Perry** Rahn, Prof. Emeritus of Geological Engineering; Dr. Andrew Detwiler, Prof. of Atmospheric Sciences; Dr. James Miller, Assoc. Prof. Emeritus of Atmospheric Sciences.

Recipients of the 1998 Nelson Research Grants and the Neil Simpson and Graduate Education & Sponsored Programs Research Grant offered to SDSM&T faculty are intended to provide seed money for the development of new research proposals. The recipients, departments and the amounts are as follows: Nelson Research Grants (\$25,500): William Capehart, Assist. Prof. for Institute of Atmospheric Sciences, \$3,500; Rand Feind, Research Scientist for Institute of Atmospheric Sciences, \$3,500; Maribeth Price, Assist. Prof. of Geology, \$3,500; John Helsdon, Prof. of Atmospheric Sciences, \$5,000; Kata McCarville, Dir. of Instructional Technology Services, \$5,000; Larry Stetler, Assist. Prof. of Geological Engineering,

\$5,000. Neil Simpson and GE&SP Research Grant: Nohpill Park, Assist. Prof. of Electrical and Computer Engineering, \$5,000.

Dr. Michael Langerman, Chair and Prof. of Mechanical Engineering, chaired three technical sessions at the 7th International Conference on Nuclear Engineering. He attended the Advanced Reactors and the Nuclear Engineering Division Committee meetings of the American Society of Mechanical Engineers (ASME) and was elected secretary of the Advanced Reactors Committee.

CeCe Sharum, Assist. Dir. for Residence Life for Physical Environment, is the new Chair of the Exempt Employees Council replacing outgoing chair Mike Mueller, Assist. Dir. of the Physical Plant.

New Career Service Council officers are Kathy Fischbach--Pres., Secretary for Civil and Environmental Engineering; Diane Fraser--VPres., Bookstore Buyer; and Rebecca Cronin--Secretary, Personnel Assistant, Human Resources

Toni Hauff, Registration Officer, EMS, and Karen Henrichsen, Bookstore Buyer, recently received the 1998 Outstanding Student Service Awards.

Marlene Nelson (CE 74) and Peter Chikos (CE 79) of Boeing recently presented donations to SDSM&T's Society of Women Engineers (SWE) and the American Indian Science & Engineering Society (AISES).

Teachers from twelve South Dakota communities participated in the 12th Annual "Mining Experience on the Great Plains" Teacher Workshop sponsored by SDSM&T and the South Dakota Mining Association. In addition to providing information and resource materials for teaching units related to the minerals industry, the workshop included field trips to the SD Cement Plant, Butler Caterpillar Machinery, Black Hills Mining Museum, Wharf Resources Mine, Wyodak Mine, Cyprus Amax Belle Ayre Mine, Homestake Mine, Rockerville Placer Gold, Big Thunder Gold Mine, and Wade's Gold Mill. Teachers attending the workshop were: Alma Dyane, Barbara Scherr, Black Hawk; Linda DeJong, Brandon; Connie Mickelson, Enning; Don Ortman, Hartford; Tricia Kritzberger, Mitchell; Ronda Price, Mud Butte; Elaine Loeschke, Robert Sisk, Newell; Bill Casper, Cynthia Edwards, Evan Gallentine, Gail Giffin, Alissa Messinger, Wayne Mooney, Gary Oakley, Janet Sanders, Melissa Sipe, Susan Skovran, Rapid City; Kim Beck, Shannon Henderson, Sioux Falls; Cheryl Lind, Spearfish; Myrna Hill, Sturgis; and Kathy Seymour, Whitewood.

Quarterly 22 SDSM&T

Dr. Chris Jenkins, Assoc. Prof. of Mechanical Engineering, and Dr. Sanjeev Khanna, Asst. Prof. of Mechanical Engineering, recently attended the 1998 Society of Experimental Mechanics Spring Conference in Houston, TX. **Dr. Jenkins** presented a paper and chaired three sessions on Mechanics and Materials Science Linkage through Experiments I, II, and III. Dr. Khanna presented a paper and chaired a session on "Optical Methods and Hole Drilling Techniques" in the symposium on recent progress in "Residual Stress Research and Applications."

Twelve English teachers from nine South Dakota communities participated in the Advanced Placement Institute on English Literature and Composition hosted by SDSM&T June 22-26. The weeklong institute was one of four AP institutes being offered by the South Dakota Board of Regents in response to requests from high school teachers. Dr. Leonard Kupersmith, an AP consultant from Joplin, MO, and Dr. Kathy Antonen, SDSM&T Assoc. Prof. of English, taught the institute. Participating teachers included Ann Sittig, Baltic; Debra Harrison, Bonesteel; Ruth Sarar, Garretson; Paulette White, Huron; Donna Fisher, Mitchell; Kathleen Batchelder, Sabrina Nettles, Marian Reed, Rapid City; Renee Rebnord, Sioux Falls; Bernice Krambeck, Spearfish; and Myrna Hill, Barbara Mundt, Sturgis.

Traditions of Excellence Awards: Kathy Crawford, Registration Officer, EMS (April); John Morgan, Technician, Civil and Environmental Engineering Dept, (May); Lisa DeVries, Personnel



Assistant, Human Resources (June).

Dr. Jon J. Kellar, Assist. Prof. Metallurgical Engineering, has been invited to serve on a National Science Foundation-Division of Materials Research, Major Research Instrumentation, Review Panel.

Dr. Sherry Farwell, Dean of Graduate Education and Sponsored Programs, was selected as a panel member to review proposals submitted for the National Science Foundation's Science and Technology Centers.

Dr. M.R. Hansen, Assoc. Prof. of Civil Engineering, moderated the Educational Session on "ABET 2000: Engineering Program Accreditation" at the American Concrete Institute (ACI) International Spring **Convention** in Houston, TX.

Sharon Colombe, Dir. of Financial Aid, received the Marvin Kemp Award for Outstanding Service to Counseling Profession during the South Dakota Counseling Association's



recent annual convention in Aberdeen.

**Drs. Sanjeev Khanna**, Assist. Prof. of Mechanical Engineering, **Gregory Buck**, Assist. Prof. of Mechanical Engineering, **Daniel Dolan**, Prof. of Mechanical Engineering, and **Chris Jenkins**, Prof. of Mechanical Engineering; received a National Science Foundation award in the amount of \$24,693.00 for Introduction of Optics and Fiber Optics into the Undergraduate Engineering Experimentation Experience.

Dr. Karen Whitehead, Vice President for Academic Affairs, received Governor Janklow's Faculty Award for Teaching with Technology in the amount of \$179,513.04. The award amount was given to eight faculty members as follows: Dr. Robert Corey, Assist. Prof. of Physics, \$17,225.95; Dr. Sid Goss, Prof. of Sociology, \$22,650.85; Dr. Zbigniew Hladysz, Chair and Prof. of Mining Engineering, \$24,658.64; Dr. Stanley Howard, Chair and Prof. of Metallurgical Engineering, \$27,422.96; Dr. Roger Johnson, Assoc. Prof. of Math, \$20,879.83; Dr. Brad Morgan, Prof. of English, \$20,379.31; Dr. William Roggenthen, Prof. of Geological Engineering, \$25,024.30; and Dr. Larry Stetler, Assoc. Prof. of Geological Engineering, \$21,271.20.

**Dr. Paul Smith**, Prof. Emeritus for Atmospheric Sciences; received a National Science Foundation award in the amount of \$64,700-additional funds for Armored T-28 Aircraft Facility for Research Requiring Storm Penetrations.

**Drs. William Cross**, Research Assoc. Prof. for Metallurgical Engineering, **Edward Duke**, Assoc. Prof. of Geology, and **Jon Kellar**, Assoc. Prof. for Metallurgical Engineering; received a South Dakota Department of Transportation award in the amount of \$45,000 for Investigation of Low Compressive Strengths of Concrete in Paving, Precast and Structural Concrete. **Dr. V. Ramakrishnan**, Distinguished Prof. for Civil & Environmental Engineering; received a National Science Foundation award in the amount of \$29,000 for US-Mongolia Joint Workshop: High Performance Concrete for Construction and/or Rehabilitation of Transportation Structures.

**Dr. John Helsdon**, Prof. for the Institute of Atmospheric Sciences; received a National Science Foundation award in the amount of \$145,000-additional funds for Numerical Studies of Thunderstorms Electricity and Lightning-A Look at the Paradigm.

Drs. Sherry Farwell, Dean of Graduate Education and Sponsored Programs, and Douglas MacTaggart, Research Scientist II, Graduate Education and Sponsored Programs, received a National Science Foundation award in the amount of \$126,684-additional funds for A Mobile Gas Generation Facility for the Atmospheric Chemistry Community. Dr. Farwell also received a NASA South Dakota Space Grant Consortium award in the amount of \$212,500-additional funds.

**Dr. Carter Kerk**, Assist. Prof. of Industrial Engineering; received a National Science Foundation award in the amount of \$331,659 for Development of a New 3D Biomechanical Model for Use in Ergonomics & Rehabilitation.

**Carrie Herbel**, Instructor and Collection Manager/Preparator for Museum of Geology; received a National Park Service award in the amount of \$35,944.40 for Support Field Work, Lab Preparation and Curation of Paleontological Material Collected from the Pig Wallow Site. **Drs. Cathleen Webb**, Assoc. Prof. of Chemistry, and **Arden Davis**, Prof. of Geological Engineering; Chemistry/Chemical Engineering; received a Bureau of Land Management award in the amount of \$30,304 to study the Belle Eldridge Abandoned Mine Site.

**Dr. Tom Fontaine**; Assist. Prof. of Civil and Environmental Engineering, received a National Park Service award in the amount of \$6,000 for Development of Water Supply for Wildlife in the Badlands Wilderness Area of Badlands National Park.

**Dr. James Martin**; Prof. of Geology, Curator of Vertebrae Paleontology, Museum of Geology; received a National Park Service award in the amount of \$4,522 for Field Documentation of a Fossiliferous Bone Bed in the Badlands Wilderness Area.

**Dr. Gorden Bell**, Haslem Post-Doctoral Fellow in Paleontology, Museum of Geology, received a US Dept. of Interior - Bureau of Reclamation award in the amount of \$37,720 (Draper-\$4,126; Wanblee-\$8,466; Manderson-\$10,808; Cuny Table-\$14,320) for MNI WICONI Water Project (Draper Split Sector, Wanblee North Sector, Manderson Loop Sector, and Cuny Table Sector) Paleontology Remediation.



## Emerald Pines Refuge Bed & Breakfast

"Our Home is Your Home!" Marilyn and Al (ME'64) Sommer

Located in the heart of the Black Hills, *Emerald Pines Refuge* is truly a place where you can relax, enjoy fresh air and the wildlife!

Contemporary and Antique Furnishings • Adults Only • Harney Peak View

Take Hwy 385/16 3 miles east of Hill City. Directly across from Dakota Stone, take red gravel road uphill. Log home is located 1/2 mile off Hwy 385/16.
Toll Free: 877-574-4462 • (605) 574-4462 • Email: mmsommer@juno.com • http://w5.iw.net/emeraldpines

# BAUERS

Invitational Track & Field Meet. Jim Bauer attended the April 4, 1998, meet with his daughter, Kathy Sanders, a teacher of Native American students in Winnebago, NE who is pursuing her Ph.D. in elementary curriculum development. Another daughter, Paula Bauer-Lewis, is an attorney in San Francisco and also a Hardrocker fan.

Although over a dozen years have passed since his youngest son ran track at SDSM&T, Jim still keeps close tabs on how the Hardrocker athletes are doing, both individually and as a team. His knowledge of individual team members was quite evident as Jim and his daughter cheered on the team during this spring's Bauer Invitational Track & Field Meet.

Jim Bauer established one of the first licensed electrical companies in South Dakota and has been heavily involved in long range planning for SDSM&T. In addition to three children graduating from SDSM&T, Jim also has business ties to the campus. Bauer Electric wired the Electrical Engineering/Physics (EE/P) building built in the early 1970's. His company was working on the EE/P building when the devastating 1972 flood hit Rapid City. Jim kept paying his employees after the flood even though they couldn't continue their wiring work for quite some time. During that period, Jim had the Bauer Electric crew pitch in and help repair the flood damage to the Devereaux Library.

In addition to their many types of assistance to SDSM&T over the years, the Bauers have also provided scholarship support. The Jeff L. Bauer Memorial Scholarship is earmarked for sophomores, juniors or seniors who are majoring in geology or geological engineering and who are active in campus activities.

"This is a great place to go to school," stated Jim affirmatively when he was recently back on campus. "Jean was especially proud of the fact that we had encouraged so many students to come here. The South Dakota School of Mines & Technology is the best kept secret in South Dakota."

## **Museum Volunteers**

### (continued from page 11)

comprised of soft sand ranging to hard, gray limestone. After the specimens have been thoroughly documented and properly catalogued, volunteers like Bill Schurmann go to work.

After opening the plaster jacket that was made to protect the fossil, the work begins in removing the surrounding matrix. The tools used for this tedious and slow task include a dental pick, a wedge, a toothbrush, and a paint brush. Hardened matrix often requires use of an air scribe, which has a vibrating point and sounds akin to a dental drill going to work on a root canal! Once matrix is removed and bones are exposed, they map the bones and number each fragment before taking them out of the plaster jacket. A 1m x 1m grid is set over the specimen to make the mapping easier and more accurate.

In addition to removing the matrix

from the fossilized bones, the matrix also is run through a washing cycle. A high sodium

Over the past five years Museum volunteers have donated 15,911 hours at the Museum of Geology. That's equivalent to nearly 663 days, 22 months or 1.8 years!

phosphate liquid solution is applied to the sand, shale and other matrix items through a screened basket. The mud is washed away and any remaining tiny bone fragments or small fossils such as shark's teeth are recovered.

Like his fellow volunteer Bill Schurmann, Walt Dennison also moved back to South Dakota upon his retirement. His interest in paleontology extends nearly two decades. In the early 1980's he participated in some summer field digs sponsored by Montana State University in Bozeman.

After moving to the Black Hills, Walt wanted to get involved with paleontology programs in the area. He enrolled in several classes at the Museum of Geology. After visiting with Museum Director Dr. Phil Bjork and Dr. Jim Martin, Professor of Geology and Curator of Vertebrate Paleontology, Walt started volunteering in the paleo lab and continues to go on some of the SDSM&T summer field digs, including this summer's Missouri River excavations for marine turtles, mosasaurs and plesiosaurs.

As a successful owner of an importexport business in the fast-paced world of international trade, Dennison managed far-flung business interests from Hong Kong to Europe where "time was money." Yet, Walt has adjusted well to the much slower pace involved with preparing a fossil specimen.

"You have to be extremely patient," admits Dennison. "It really is quite relaxing, and I want to do it right. The first year I worried about ruining something. I read a lot and went slow for quite some time."

What keeps Walt coming back to volunteer for the SDSM&T Museum of Geology? "The pay is really good!" jokes Dennison. "The feeling of discovery here is kind of fun," he adds.

"One of the nice things from a novice's standpoint is that the paleontologists will spend the time to work with you," continues Dennison. "People like Jim Martin who are very well known on a national and international level are so busy, and yet he will spend a ½ hour with you going over something. Carrie Herbel is a good conservator and has a great background in preparation work."

When asked what type of volunteer

does, Walt describes himself as "kind of a body and fender e bones and gets

work he

primarily

man" who cleans up the bones and gets them ready for assembly or display. He did a lot of work on the gomphothere exhibit on display in the Museum of Geology.

For the past two months Dennison has been working on preparing a mammoth foot. Over a period of time he has worked on the mammoth's skull, lower jaw, two tusks and some ribs. Dennison has become well acquainted with the use of a consolidant called Butvar, which is used as a type of glue inside the fossilized bones to help keep them together. Walt compares figuring out where all the bone pieces go as similar to working on a crossword puzzle.

Dennison is a strong proponent of a proposed Paleontological Repository on the SDSM&T campus that would greatly expand the space and capabilities for acquisition, curation, research and education. "It is definitely needed," says Dennison.

Bill, Walt and Wayne are three of the many volunteers who provide tremendous help to the Museum of Geology. Through their passion for paleontology, pre-historic bones are being restored and made available to the public for the education and enjoyment of future generations.

### You Are Invited . . . Calendar of Events

AUGUST WEDNESDAY, AUGUST 26 8am-12pm New Faculty Orientation THURSDAY, AUGUST 27 10am-4pm Faculty Development Seminar FRIDAY, AUGUST 28 Volleyball Tournament at Bellevue University

### SEPTEMBER

**TUESDAY, SEPTEMBER 1** Fall Semester Classes Start FRIDAY, SEPTEMBER 4 United Campus Ministry Kick-off SATURDAY, SEPTEMBER 5 Home Football Game; 1pm Colorado School of Mines MONDAY, SEPTEMBER 7 Labor Day Holiday **TUESDAY, SEPTEMBER 8** 7:00pm Home Volleyball Game; Chadron State WEDNESDAY, SEPTEMBER 9 Community Service Fair FRIDAY, SEPTEMBER 11 FRIDAY, OEF TEMDER 11 EPSCOR Conference in Vermillion FRIDAY - SATURDAY, SEPTEMBER 11 -12 Volleyball Tournament at Black Hills State University SATURDAY, SEPTEMBER 12 Football Game at University of Noon Wisconsin Cross Country Meet THURSDAY, SEPTEMBER 17 Career Fair SATURDAY, SEPTEMBER 18 -19 FRIDAY -Volleyball Invitational at Concordia SATURDAY, SEPTEMBER 19 1pm Home Football Game; Dickinson State University SUNDAY, SEPTEMBER 20 Senior-Frosh Picnic - SATURDAY, SEPTEMBER 21 - 26 MONDAY M-Week **TUESDAY, SEPTEMBER 22** 7pm Home Volleyball Game; National American College WEDNESDAY, SEPTEMBER 23 Quad Games THURSDAY, SEPTEMBER 24 Volleyball Game at Dakota Weslyan University FRIDAY - SATURDAY, SEPTEMBER 25 - 26 Volleyball Invitational at Bethel FRIDAY, SEPTEMBER 25 M-Day Picnic and M-Hill Climb Noon SATURDAY, SEPTEMBER 26 M-Day Parade M-Week Football Game; Dakota State University 1pm WEDNESDAY, SEPTEMBER 30 Volleyball Game at Black Hills State 7pm University

#### OCTOBER

TUESDAY, OCTOBER 6 Volleyball Game at Chadron State FRIDAY - SATURDAY, OCTOBER 9 - 10 Volleyball Invitational at Jamestown College SATURDAY, OCTOBER 10 Football Game at Black Hills State 1pm University MONDAY, OCTOBER 12 Native American Day Holiday **TUESDAY, OCTOBER 13** Volleyball Game at National American College SATURDAY, OCTOBER 17 Football Game at Huron University 1pm Home Volleyball Game; Briar Cliff TUESDAY - SATURDAY, OCTOBER 19 - 23 Alcohol Awareness Week, Red Ribbon FRIDAY - SATURDAY, OCTOBER 23 - 24 SD Tech Volleyball Invitational SATURDAY, OCTOBER 24 Home Football Game; 1pm Northwestern of Iowa FRIDAY - SUNDAY, OCTOBER 30 - NOVEMBER 1 Tech Family Weekend

NOVEMBER TUESDAY, NOVEMBER 3 12:30pm-4:30pm CAAP Testing Election Day WEDNESDAY, NOVEMBER 4 8am-12pm CAAP Testing THURSDAY, NOVEMBER 5 8am-12pm CAAP Testing Jane Elliot Lecture FRIDAY, NOVEMBER 6 Home Volleyball Game; Dakota State University SATURDAY, NOVEMBER 7 Home Volleyball Game; Huron University Football Game at Dakota Wesleyan 1pm University MONDAY - MONDAY, OCTOBER 9 - 16 Early Registration Week WEDNESDAY, NOVEMBER 6 Veteran's Day Holiday FRIDAY, NOVEMBER 13 7:30pm Home Men's Basketball Game; Chadron State

### TUESDAY, NOVEMBER 17

Men's & Women's Basketball Games at Dickinson State University

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

#### Special thanks to:

Dakota Telecommunications Group, Elks Country Estates, Emerald Pines Refuge Bed and Breakfast, Norwest Bank, and Margaret Puszynski - Raben Real Estate.

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 cost of \$1.50 each (printing costs only).



Rapid City s New Standard of Living

A variety of lots are available at the Elks Country Estates Phase II with golf course views.

Elks Country Estates is designed to appeal to today's active families offering leisure time and activities close to home and work.



Summertime and the Picking is Fine!



### 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 PIERRE, SD PERMIT #123