

SOUTH DAKOTA SCHOOL OF MINES AND TECHNOLOGY QUARTERLY

WINTER/SPRING 2001



TM

We Did It!

-Story Page 10

A PUBLICATION OF SDSM&T

Perspectives



Dear Friends,

The phrase – We did it! – has come to summarize the efforts of so many who worked together to prove the feasibility of converting the Homestake Gold Mine into the Homestake National Underground Laboratory.

Discussions among scientists led to a call from NSF inquiring if it was possible to convert the mine into a laboratory. A quick call to Governor Janklow led to a meeting with key Homestake Mining Company staff. A visit with Ace Gallagher,

West River Director for Senator Daschle, initiated critical discussions with the Senator.

Senator Daschle and Governor Janklow deserve special recognition for their critical roles in the achievement of federal indemnification and funding for the project. Senator Johnson is a member of the Senate Appropriations Committee and will have a continuing role in providing funding to assure a seamless transition of Homestake employees from mining gold one day to constructing the laboratory the next. The support of Representative Thune in the House is deeply appreciated. I also want to thank Homestake and its great staff. The company has been extremely helpful throughout the project.

Consultants, many of whom are alumni, from Dunham Associates, TSP, RE/SPEC, and an international mine construction company, Dynatec, worked for weeks on the proposal. They proved we could construct large clean room facilities that met the specified requirements, including laboratories nine stories tall and longer than football fields at 7,400 to 8,000 feet deep in the mine.

The people of Lead, joined by people from Rapid City, throughout the Black Hills, and across South Dakota, expressed support for the project. A video helped capture the proposal. South Dakota's proposal included a joint resolution from the state legislature and countless letters of support from South Dakota leaders. We held a statewide press conference March 5 to announce – We did it! – after the national committee selected Homestake.

Hundreds of people worked on the proposal. Faculty and staff of the South Dakota School of Mines and Technology provided overall coordination for the proposal. A very special thanks to Dr. Farwell and the staff in the Research Office; Ms. Smoragiewicz and Steve Buchholz and the staff in University and Public Relations; Dr. Corey and Dr. Hladysz; the University Executive Council and the staff in the Office of the President, along with many others across the university and the community who shared the commitment to make Homestake the national winner.

There is much to be done to convert the – We did it! – into the reality of the Homestake National Underground Laboratory. I remain confident that the same South Dakota spirit that brought us this far will continue to make the opening of the national laboratory in January 2002 a reality.

Sincerely,

Richard J. Gowen, President

SOUTH DAKOTA SCHOOL OF MINES AND TECHNOLOGY QUARTERLY

WINTER/SPRING 2001

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Profile

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, as well as an associate of arts degree in general studies.

BACHELOR OF SCIENCE DEGREES

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

MASTER OF SCIENCE DEGREES

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

DOCTORATE OF PHILOSOPHY DEGREES

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

ENROLLMENT: The University has a diverse enrollment of approximately 2,275 students from 39 states and 27 countries. Our 13 departments offer 29 degree programs in engineering and science disciplines at the baccalaureate, masters, and doctoral levels. Students enter the university with the highest ACT composite in the state and more than half graduating within the top 25% of their high school.

COSTS AND FEES: Annual undergraduate costs for tuition, fees, room, and board total less than \$8,200 per year for South Dakota residents and less than \$10,900 for residents of Alaska, Arizona, California, Colorado, Hawaii, Idaho, Iowa, Minnesota, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oregon, Utah, Washington, and Wyoming. Annual total costs for all other undergraduates is less than \$12,400 per year.

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

FACULTY: There are approximately 125 faculty with degrees from more than 150 institutions, 85 percent of which have earned doctoral degrees.

Paleo Project Brings Tech Fellow Full Circle

A trip at age 16 changed Julia Sankey's life.

She weeded enough gardens to raise \$500 for the trip to Hawaii, where she tracked and studied rare and endangered birds for a scientific expedition led by Dr. Charles Van Riper and funded through the Earthwatch Institute. Sankey, a Haslem Fellow at the South Dakota School of Mines & Technology's Museum of Geology, followed the palila, an endangered Hawaiian bird, with a stopwatch. She kept track of the birds' movements, feeding habits, and preferred habitat. She netted and banded other birds that, like the palila, were being pressured by domesticated sheep that had been introduced onto the island and later became feral, eating the vegetation in the species' habitat.

"It was very inspiring. It was amazing," she said. "It was the first time I ever saw a scientist work. It's when I decided I wanted to be a scientist."

Last summer, 20 years after that first trip, Sankey repaid Earthwatch for the experience. She took a group of eight high school students to Big

Bend National Park in Texas where they searched for a paleontologist's dream – a new species.

The three-week trip was part of Earthwatch's Durfee Student Challenge Awards Program. The Durfee Foundation started the program in 1990 and pays for the students' involvement. The program allows gifted high school students – Sankey calls them "cream of the crop" – to travel with scientists to research sites around the country.

"Lessons learned through this research program go beyond textbook knowledge and the scientific method that students get in high school," program director Dee Robbins said. "Students learn the importance of creativity, imagination, and curiosity in science. We want students to see how their life experience, skills, and perspective can be useful to scientists and how scientific research and thinking can impact society and one's own life."

But students don't sit in the shade and sip iced tea while scientists do all the work. These are working vacations that test the students' mental and physical mettle. The letter Sankey sent to the chosen students warned the teens of the trip's difficulties.

"It will be very dry and hot, so you will need to be in good shape before you arrive," she wrote.

Sankey also sent the students a 30-plus-page booklet that included a packing list, explicit warnings about the heat and harsh desert conditions, a reading list of seven books and articles, and a briefing on research methods and objectives.

The booklet doesn't generate visions of sunbathing and hanging out. Read it and you can't help but realize the trip will be hard work.

"I really tried to emphasize how dangerous it could be," Sankey said. "I really worried about their ability to cope with the heat and the work."

The days started around 5 a.m. with a student-made breakfast in the dark. A one- or two-mile hike to the research site followed. The team worked hard until early afternoon when temperatures climbed into the high 90s. The group then retreated to their cabins, where most students crashed and slept shortly after returning.

Sankey didn't exaggerate about the conditions, 12th-grader Eleanor Baccay said. Baccay, of Acworth, Ga., said the work was hard but fun, despite all the bugs that managed to crawl inside the cabins and the same lunch every day – peanut butter and jelly sandwiches.

"I never realized how much hard manual labor I'd be doing and how much I'd be contributing to the group's success in the expedition," she said. "The labor was worth the reward of a successful trip."

Baccay and the other students proved themselves worthy of the work, Sankey said.

"These were kids who didn't even want to go into science," she said. "But they're interested in everything. We had class presidents, first cellists, and they were all very enthusiastic."

Big Bend National Park is big. It covers 1,251 square miles in the southwestern corner of Texas on the Rio Grande River. The Chihuahuan desert here is really more Mexico than the United States. Its dirt, sand, and rocky terrain creates a desolate and foreboding piece of earth.

"The feeling deep inside the park is of space, rock, and time," Sankey wrote to the students. "The landscape is amazing."

Sankey's main objective for the trip was to find and recover microvertebrate fossils from the Aguja Formation in the park. Microvertebrate fossils are small remains, mostly teeth. Sankey was looking for mammals, dinosaurs, ancient crocodiles, lizards, birds, and other animals. She discovered and named a new species based on her graduate work in Big Bend. She



Julia Sankey (left) with the Big Bend Team.

hoped to repeat that success last summer.

Besides collecting rocks for Sankey, the students chased and rounded up ants for Bill Clark, an Idaho state biologist. The students collected, curated, prepared, and studied the ants with Clark's help. He too was searching for new species while studying the ecology of ants in the park.

Sankey has worked with Clark since they met 19 years ago when Clark led Sankey's second Earthwatch trip, that one to Baja, Mexico. And it was Clark who recruited Sankey to study biology at Albertson College of Idaho in Caldwell, Idaho.

For Sankey's work last summer, the team searched for fossils around outcrops of a 75-million-year-old stream and floodplain deposits of the Aguja Formation. After a few days of fruitless searching, one of the high school students found a tooth of a large meat-eating dinosaur. The dinosaur is an older and lesser-known relative of *Tyrannosaurus rex*. The team began digging at that spot and removed approximately 5,000 pounds of rock. The team bundled the rocks in burlap bags and hired a wrangler and a team of horses to carry the load the two miles to the team's van.

The team took the load to the Rio Grande, where they screened the sediment in the river using wooden boxes with fine-mesh metal screens. With the silt and clay washed out, the remaining load of sand and small fossils made the trip back to Rapid City, where it awaits further screening and closer examination. Sankey is now working to find the teeth and other small bones she hopes are in this collection. The work is tedious. She breaks up the rocks with either water or acid, before using a microscope to search for treasure.

"The easy part was bringing the rocks back here," she said. "The hard part is getting everything picked out."

Sankey will most likely find teeth. They last longer and preserve better than bones because teeth are covered in enamel and are the body's hardest part. Teeth are important because Sankey can use them to identify species. If a tooth doesn't match any that scientists have already discovered, she may have found a new species, like she did during her graduate work. She named that small meat-eating dinosaur *Richardoestesia isosceles*. Sankey chose the species name, *isosceles*, because the dinosaur's teeth resemble an isosceles triangle. Someone else chose the genus

name, *Richardoestesia*, which comes from the famous but dead paleontologist Richard Estes.

Her findings about that dinosaur will soon be published in the *Journal of Paleontology*.

Besides searching for new species, Sankey will catalog the variety of animals she finds. The animals from the Aguja Formation lived 75 million years ago during the late Cretaceous period, about 10 million years before dinosaurs went extinct. Next summer, Sankey will travel to North Dakota to dig fossils from animals that lived closer to that extinction. Combining the two research projects will help Sankey determine whether species diversity dropped as the end of the dinosaur age approached.

This could shed light on the current debate about the causes of the dinosaur extinctions. The evidence is overwhelming that a meteor hit Earth approximately 65 million years ago and produced a worldwide dust cloud that collapsed ecosystems and drove animals to extinction, Sankey said. However, other factors may have contributed, such as Late Cretaceous climate change.

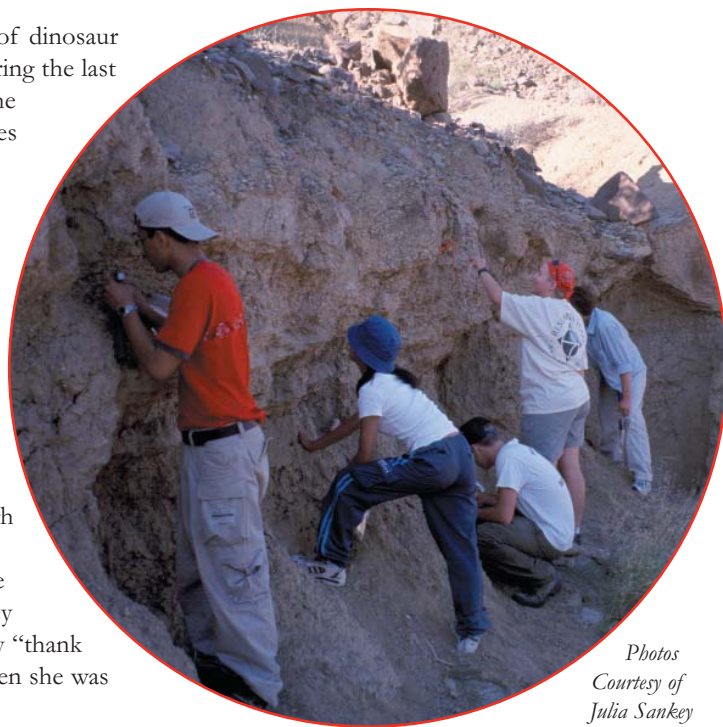
"If the number of dinosaur species decreased during the last 10 million years of the Cretaceous, it indicates other factors were involved in the extinctions besides the impact," Sankey said.

The North Dakota trip will have another purpose. Sankey has applied for grant money to take along another group of high school students. If Earthwatch funds the trip, it will give Sankey another chance to say "thank you" for that trip when she was 16 years old.



Four high school students from across the country screen sediment from chunks of rock in the Rio Grande River during the Big Bend project in Texas last summer.

High school students dig in an ancient streambed where the group found its first fossil of the trip. Eight students from across the country accompanied Tech Assistant Professor and Haslem Fellow Dr. Julia Sankey on the trip to Big Bend National Park in Texas.



*Photos
Courtesy of
Julia Sankey*

The Come

Alumni Return to R

Mike Sigman rides hard. His horse R.C. spins on its heels and gallops after the steer with the number five sign glued to its flank.

Sigman pushes the black steer along the fence at the Central States Fairgrounds in Rapid City. R.C. kicks up chunks of dirt and a cloud of dust follows horse and rider. Sigman whoops and hollers as he guides the steer toward an enclosure in the arena's middle where one of Sigman's team-penning partners makes sure the steer runs into the enclosure. An official raises a flag and stops the clock. Forty seconds. A good time for the penning team.

In a way, Sigman's run in the arena parallels his career ride back to Rapid City. He worked hard to come back and took more than a few turns along the way. But he is one of the lucky Tech alumni who move back to South Dakota after living and working elsewhere.

Tech alumni like Sigman (EE '89) come home for many reasons, but they often repeat two – family and lifestyle. “I wanted to be closer to my family and I like the outdoors,” the 35-year-old Sigman said. “I have relatives who own ranches here and the Black Hills offer all the fishing and hunting I want.”

Dave Litzen's trip back to South Dakota was more direct than Sigman's. Litzen (CHE '81) and his wife Lori (CE '81) moved to Houston, Texas, immediately after graduating from Tech. They worked for Shell for 16 years before deciding to move back to Rapid City.

“Lori was tired of living in the big city, and to be fair, I was too,” Litzen, 41, said. “It was mostly a way to get back to our roots and be closer to our kids’ grandparents.”

Dave and Lori are from small South Dakota towns. Dave grew up in Hoven while Lori is from Platte. Getting back to Rapid City put the couple closer to what they were accustomed to.

Lori found a job in University and Public Relations at Tech before the family

left Houston. She now works as an engineer for the South Dakota Department of Transportation. Dave opened a consulting firm and has worked often for his former employer.

“The move was a little risky for me,” he said. “But things have worked out great and I am more than happy with the amount of work I’ve had.”

Dave also helped start Innovative Concepts, a company that invents and develops new products. The company sold the “Lock and Load” to Rapid City Regional Hospital. The device lifts patients into airplanes so nurses and doctors don’t have to lift the person.

Outside of work, Dave sings in the Blessed Sacrament choir and with Top Hats and Roses. That group performs at fairs, private parties, retirement homes, and other events.

Sigman and the Litzens were lucky to come back. Most alumni who live and work elsewhere wish they could do the same.

A 1999 survey showed that many more alumni, including those living abroad, want to come back to the Mount Rushmore State. The university, along with the Tech Alumni Association, the Rapid City Economic Development Partnership, the Governor's Office of Economic Development, and Black Hills Corporation, sent a survey to 9,350 alumni, including 981 international alumni. The survey found that 78 percent of graduates would like to move to South Dakota, but the lack of viable job opportunities

keeps them from doing so.

Top engineering firms, software companies, and Fortune 500 businesses lure Tech graduates out-of-state. Those companies come to campus to recruit Tech grads and pay them an average of \$43,000 a year right out of school. It's tough to say no to those kinds of offers.

So, graduates pack their green beenies and senior hats and leave. But most leave their hearts in South Dakota. It's not difficult to see why. Wide-open spaces where you can see forever and let the wind



Photos by Steve Buchholz

Dave Litzen (CHE '81) sings at West Hills Village retirement home in Rapid City with the group Top Hats and Roses. Litzen and his wife Lori (CE '81) lived and worked in Houston, Texas, for 16 years before moving their family back to South Dakota.

Feedback Kids

Reap Quality of Life

carry your worries away. Millions of acres of public land that beg for hikers, hunter, bikers, and campers. The state's small-town attitude that puts as much pride in the index-finger wave as it does in having Mount Rushmore. Low crime rates that allow you to let your children out of your sight. And natural beauty that is as diverse and it is amazing. All those things tickle the desire to come home.

Tech Alumni Director Tim Vottero (CHEM '84) hears from alumni all the time who want to come back.

"At every event I attend, people will volunteer it or if I mention it, I see a lot of nodding heads," he said.

The survey results didn't surprise Vottero, but they do say a lot about the state and the pull it has in its natives.

"Seventy percent of our enrollment comes from South Dakota high schools and people want to come home," he said. "They recognize the natural beauty of South Dakota and the quality of life that we enjoy."

Dave Litzen, the alumnus who moved back to Rapid City from

Houston, recognizes the lack of engineering and high-tech jobs in South Dakota.

That's why he serves on the state's Economic Development Advisory Committee, a group that discusses and implements strategies to lure companies to the state.

Dr. Michael Elston (BS CHE '78, MS CHE '84) switched careers in part so he could move back to Rapid City.

After earning a bachelor's degree at Tech, Elston worked as a chemical engineer in Wisconsin and California.

"We lived in areas with bigger population centers and all the accompanying problems that come with living there," he said. "I think living in those places cemented in our minds that we wanted to come back here."

Elston and his wife Nancy moved back to Rapid City in the early 1980s and he started working toward a master's degree at Tech. He finished the program and

began studying medicine at the University of South Dakota. He worked as a doctor in Sioux City, Iowa, for five years before opening a practice in Rapid City. He now teaches in the Rapid City Regional Hospital Family Practice Residency Program.

"Wanting to come back was part of my decision to go into medicine. It wasn't my only reason, I enjoy medicine, but it was a consideration.

"I think the Black Hills is probably the single biggest thing that brought us back," he said.

Elston and his wife and three teenage children enjoy skiing, hiking, and driving off-road vehicles. Elston also hunts and fishes.

"I feel really fortunate that I was able to come back," he said. "It's just an awfully nice place to live."

Sigman, the team-penner, moved back to South Dakota in May 1998. In the nine years he was gone, he worked on an U.S. Navy missile system for Raytheon in Bristol, Tenn., and he designed electrical systems for Veteran's Administration hospitals in Marlin, Texas, and in Grand Island, Neb. During that time, he searched for work in the Black Hills area, but didn't find it until 1998 when West Plains Engineering in Rapid City offered him a job. Sigman designs electrical and others systems for commercial buildings. Tech alum Dave Berg (ME, '73) is company president.

He sacrificed money for the move, but said living in western South Dakota was worth the drop in salary. He and his wife Michelle, a surgical nurse at Rapid City Regional Hospital, built a home north of Rapid City, where they keep a stable of horses.

"I spent years trying to find a position here," he said. "A lot of people want to come back if they can find the positions." But for Sigman and others like him, the prize is worth the effort.



Mike Sigman (EE, '89), rides his horse R.C. during a team-penning event at the Central State Fairgrounds in Rapid City. Sigman moved back to South Dakota after living in working around the country.

Guarding the Black Hills

Tech students help douse Jasper Fire

The Jasper Fire spooked Jeremy Bryan when he saw a wall of flames tower 300 feet above the ground and swallow everything in its path.

"I didn't think flames could get that big," he said.

Bryan (IS, Rapid City) is a member of the South Dakota National Guard and a Tech ROTC cadet. His National Guard unit, the HHC 109th Group, was activated when the Jasper Fire exploded on its way to burning more than 80,000 acres in the Black Hills National Forest during the 2000 summer.

Bryan worked mostly in transport during the fire. He typically worked 16-hour shifts. In the morning, he took a fire crew to their assigned location, and while the crew fought the fire, Bryan and his partner stayed with the truck. The two Guardsmen needed to stay alert because they were the firefighters' tickets out. When the fire got hairy, Bryan and the other drivers shuttled crews to safety.

"If the fire got really big, we would pull them out of there," he said. "There were several days when it got out of hand."

Bryan worked on three other fires last summer, including the 8,000-acre Flagpole Fire that burned near Hot Springs. All those fires were smaller than Jasper, and proved to be good training. Jasper was by far the largest of the summer and it is the largest forest fire in recorded South Dakota history.

He spent two weeks at fire camp after being called back from vacation.

The Jasper Fire burned most of the land within an 83,508-acre perimeter between Custer, S.D., and Newcastle, Wyo. Fire investigators called the fire arson and have charged a Newcastle, Wyo., woman with using a cigarette to ignite the blaze.

The fire started Aug. 24 just off U.S. Highway 16 west of Jewel Cave National Monument. The fire spread quickly and soon burned out of control. Before

Hell Canyon earns its name as the Jasper Fire explodes during the first days of the blaze. The Jasper Fire spread quickly, fueled by dry and windy conditions.

firefighters could stop its progress, the Jasper Fire burned most of the timber in Jewel Cave National Monument, destroyed one summer cabin and three outbuildings, threatened the evacuation of Custer and Hill City, and required the Forest Service to call in hundreds of firefighters from across the country.

Firefighters stopped the fire Sept. 8 and officially declared it controlled Sept.

25. Timber companies have been clearing some of the blackened trees, but the area still looks like the set of a post-apocalypse fright flick.

The Forest Service assigned more than 3,000 firefighters and support personnel to the fire at its height. South Dakota Gov. Bill Janklow activated National Guard units that played an important role in battling the blaze.



Photos Courtesy of Rapid City Journal



A fire crew called in this tanker plane when the north flank of the Jasper Fire got too hot to handle with hand tools. The tanker used flame retardant to curb the spread of the flames and give the crew the chance to get on top of the blaze.



U.S. Forest Service fire commanders study maps while the fire blazes behind them. This photo was taken on the day the Jasper Fire blew up and burned more than 60 acres a minute. The same plume resembled a thunderstorm.

The South Dakota National Guard provided:

- Black Hawk helicopters that dumped buckets of water on the fire.
- Six-wheel-drive trucks that hauled crews to the fire line.
- Tents used for base camp.
- Bulldozers that built lines to contain the blaze.
- Generators for some base camp power.
- Assistance with food service.

"If the Forest Service needs it and we have it, we give it to them," Peterson said. "We were able to meet all the requirements and all support roles that were asked of us."

Tech ROTC students played an important role in the Guard's success, Peterson said.

"They absolutely did a great job," he said. "They fit really well into the overall scheme of things.

It was a heck of a training opportunity to them. Leadership positions were needed out there and they were able to fill some of those positions."

On their busiest day, 300 National Guardsmen were on duty. The Guard brought in the most people when the fire threatened Hill City and Custer. The Guard was able to fulfill its mission by using only volunteers, which saved the U.S. Forest Service from having to reimburse the Guard.

"When we need Guardsmen, we've been able to come up with enough people willing to take vacation time or take time off from their jobs to help," Peterson said. "That says a lot about people in the Guard because they are willing to do that."

Tech did not only furnish National Guard members for the firefighting effort. When the fire blew up, state and federal officials called in as many reinforcements as they could muster.

Tech student Angie Gering (IS, Lake Isabella, Calif.) was on a paleontology dig near Chamberlain when she received the call. She was needed right away at the State Division of Forestry dispatch center in Rapid City.

She hustled back to Rapid City and immediately saw the Jasper Fire was no ordinary wildfire.

"I could see that it was larger than any fire I've seen in the Hills," she said. "I had a feeling it was going to be a big one."

Gering and other dispatchers took and filled orders from fire commanders for fire trucks, engines, towels, food for state prisoners working the fire, and other needed equipment.

"Anything and everything that went to the fire came through us," she said. "It was very, very hectic."

Gering worked her 12-hours shifts from 6 p.m. to 6 a.m. The shifts were most hectic at the fire's beginning, before the U.S. Forest Service called in a Type One fire management team to oversee the firefighting effort. That team, one of the most experienced the Forest Service has, used its own dispatch and equipment ordering system.

Gering knew the dangers the fire posed to those on the front lines. She spent two years fighting fires for the state Division of Forestry before moving into the dispatch center.

"It's exciting," she said, "but Jasper was scary because you had no idea where it was going to go."



SURBECK GIFT BUILDS ON LEGACY

Philanthropist. Role model. Christian. Friend. Those are just a few words people have used to describe Homer Surbeck. He was a man of faith and virtue who believed that the power of a positive attitude when combined with hard work and a noble purpose would lead to ultimate success and happiness. His belief proved true. Homer's success in his education, career, and life shine as a beacon for all and have left a permanent impression on students, faculty, and staff at the South Dakota School of Mines and Technology.

A major gift will keep that impression from fading.

After Homer's death in 1997 and his wife Margaret's passing in Jan. 2000, a bequest from their wills created the Homer and Margaret Surbeck Endowment. The endowment established the Surbeck Scholars program, which will award four-year scholarships to incoming Tech freshmen with first preference going to South

Dakota high school graduates. Students will receive a minimum of \$7,000 per year. Recipients will be eligible to receive the award for four years by maintaining a required grade point average. Eventually, Tech will name 16 Surbeck Scholars annually. The awards will be presented for the first time this fall.

Homer's connection with the School of Mines started early in life. Leighton Homer Surbeck, the only child of a Presbyterian preacher, was born in Minnesota in 1902 and spent his childhood in Rapid City. He attended first grade in Lead, where his teacher sent home a note saying that Homer was "the class dunce and so slow that I can not teach him." Homer's father read the note and gave the boy the advice that would mold Homer into the person he became. "You will have to learn to teach yourself," the elder Surbeck said.

Homer's hard work and persistence earned him valedictorian honors in high school. He earned a metallurgical engineering degree at Tech and finished first in the Class of 1924. With engineering jobs difficult to come by, Homer followed the advice of Tech President Dr. Cleophas O'Harra and applied to Yale Law School. He received a scholarship, edited the Yale Law Journal, and graduated in 1927, again at the head of his class.

His law degree in hand, Homer earned the prestigious position of law secretary to Supreme Court Justice William Howard Taft. A year later, he joined the prominent firm of Hughes, Rounds, Schurman, and Dwight (now Hughes, Hubbard, and Reed), with an equally prominent address - 1 Wall Street, New York City. In Homer's 50-year legal career, he litigated some of the most complex corporate legal cases and negotiations of the day and was considered one of the country's leading experts on anti-trust law.

In 1947, Homer attended his 20th law school reunion at Yale and realized that his career was only possible because of the law school scholarship he received. This revelation began his long tradition of giving scholarships to young people. Homer once said that he received "endless satisfaction from my modest giving for scholarships and particularly in the endowment of scholarships in the names of people whom I have admired."

The scholarships he funded throughout the years total hundreds of thousands of dollars. He gave more than 1,000 scholarships to students seeking higher education at various colleges, including Tech, Yale, and Brigham Young University.

Homer began giving scholarships to Rapid City High School students in 1949. He also made substantial contributions to Tech to establish several endowed funds including the John McLearie Award for Excellence in Technical Communications, the Surbeck Physics Prize, the Joseph Peter Connolly Scholarship, and the Guy March Math Scholarship.

In addition to scholarship support, Homer also contributed generously to many Tech building projects, including the Student Center and the King Center. In 1963, the South Dakota Board of

Regents dedicated the Surbeck Student Center in his honor. At that dedication, the two principal speakers were Dr. Norman Vincent Peale, a well-known minister, and Dr. Ernest L. Wilkinson, president of Brigham Young University. Both men called themselves Homer's close personal friends.

"He is one of God's choicest spirits and by his deeds of Christian charity has made himself a worthy example for all young men at South Dakota School of Mines and Technology to follow," Wilkinson said of Homer.

After a lifetime of bachelorhood, Homer met Margaret Hart Packard, widow of Gordon Packard, at a religious retreat in Bermuda. Homer and Margaret struck up a conversation and discovered that they "had almost everything in common—each was an only child with no near relatives, similar personal habits, religious beliefs, likes and dislikes, and everything else," Homer said. When that brief conversation ended, Homer knew he would marry Margaret. The two married in Oct. 1976 on Homer's 74th birthday.

Margaret Surbeck, the only child of Fred and Eva Hart, was a true Californian. Her parents were California pioneers and possessed a genuine entrepreneurial spirit. Her father owned and operated numerous businesses, including the first radio station in California. Because of an agricultural background, Fred Hart also acquired some "productive dirt" outside of Salinas, Calif., that Margaret owned until her death.

Like Homer, Margaret was a generous philanthropist, Christian, and friend. Her generosity and kindness benefited Marble Collegiate Church, First Baptist Church, Yale University, Judson College, Northwestern College, Tech, and other institutions. Margaret was gifted with a beautiful soprano singing voice. She was known for her faith and often said she lived her life as testimony to the Lord.

"Marriage with Margaret has ever since been the most rewarding and unexpected payoff in happiness and satisfaction in life that anyone could possibly have," Homer said.

Homer received the prestigious "Horatio Alger Award" the year after Homer and Margaret were married for his "initiative and commitment to excellence—as exemplified by remarkable achievements accomplished through honesty, hard work, self-reliance, and perseverance."

Tech honored Homer with the Guy E. March Silver Medal for an Outstanding Alumnus during the 105th Commencement exercises in 1982. Margaret Surbeck also announced her gift to Homer during the ceremony, the establishment of the Leighton Homer Surbeck Student Assistance Fund, which gave assistance to Tech juniors and seniors.

Homer wrote "The Success Formula that Really Works" in 1986. The book provides a glimpse into Homer's life and encourages others to follow his path. Homer's formula is based on his faith and is in short: "Time X Honest Effort X Ability X Noble Purpose = Destiny."

Norman Vincent Peale wrote the book's foreword. "I've met a lot of people that I've come to admire," he wrote. "Some have been great achievers, others are great inspirers. But there is one man to whom I would ascribe the title 'the greatest Christian gentleman I've ever known.' That man is Homer Surbeck. . . he never once deviated from his self-imposed principles of honesty, hard work, and humility that set him apart from so many others."

The establishment of the Homer and Margaret Surbeck Endowment will forever link these special people to the School of Mines. Their generosity has benefited hundreds of former students, and beginning this fall, that generosity will continue its legacy when the university welcomes the first Surbeck Scholars.



Homer and Margaret Surbeck

We Did It!

National Underground Laboratory Committee Recommends Homestake as Laboratory Site

An altered inscription on the Stampmill Restaurant and Saloon's mantle reads "In NSF We Trust." The slight change proves where the residents of Lead, a 125-year-old mining town, have placed their hopes and dreams.

Thirty of those residents watched a big-screen television as South Dakota School of Mines and Technology President Dr. Richard Gowen made the announcement the town has been agonizing about for months.

"I know everyone has been waiting anxiously for this announcement, so I'll get right to the point," Gowen said during a March 5 press conference. "I have three words for you. We did it."

The crowd at the Stampmill was already standing, so they just whooped and hollered.

"I haven't cried in 25 years, but I was close to tears that day," Stampmill owner and former Homestake miner Jerry Aberle said.

The crowd of more than 150 at the press conference in the Surbeck Student Center gave the announcement a standing ovation, one of three during the 45-minute press briefing.

The "It" Gowen was talking about was the National Underground Laboratory Committee's recommendation of the Homestake gold mine as the site for a world-class science laboratory.

"This recommendation means that scientists want to unravel the mysteries of the universe right here in the Black Hills," Gowen said.

The National Underground Laboratory Committee made its recommendation March 5, after two days of meetings in Berkeley, Calif.

During those meetings, Gowen, along with Dean of Graduate Education and Sponsored Programs Dr. Sherry Farwell, and Dr. John Osnes, manager of geomechanics at RESPEC, presented South Dakota's proposal to create the Homestake National Underground Laboratory.

The team spoke and answered questions for a little more than an hour in a cramped conference room overlooking San Francisco Bay. The committee's questions covered many

issues, but centered on cost, how quickly the lab would be ready, and the capabilities it would offer.

Gowen often answered the queries with the acronym DTV.

- Depth. Homestake's 8,000 feet of depth would shield cosmic rays and other background interference better than any underground laboratory in the world.

- Time. Laboratory chambers could be ready next year.

- Volume. Mining crews could excavate five million cubic feet of laboratory space each year.

Those things, along with Homestake's lower price tag, steered the committee toward the South Dakota site. San Jacinto Mountain in California was Homestake's toughest competitor, but higher costs and five years of construction turned off the committee.

The idea of an underground laboratory has been around for a long time. Dr. Alfred Mann, a world-renowned physicist at the University of Pennsylvania, proposed creating a laboratory 20 years ago.



Dr. Richard Gowen is flanked by two members of the National Underground Laboratory Committee during the members' visit to Homestake in February. To Gowen's right is Dr. Stanley Wojcicki of Stanford University. To Gowen's left is Dr. Bernard Sadoulet of the University of California at Berkeley. Committee member Dr. John Wilkerson of the University of Washington is standing behind Gowen.

Photo by Steve Buchholz

Homestake's Sept. 2000 announcement that it would close its Lead operation by the end of 2001 ignited renewed interest in an underground lab.

American scientists now travel to other countries to work in deep laboratories, but they would rather make significant discoveries in this country. A U.S. lab also would help the country maintain leadership positions in many branches of science.

"The technique for measuring the mass of elementary particles known as neutrinos by observing a large tank of water was developed by American scientists in a mine near Cleveland, Ohio," Professor John Bahcall of the Institute for Advanced Studies in Princeton N.J., said. Bahcall also is the committee chairman. "But when the most significant experiment to date was finally done, American scientists needed to work with others in a mine in Japan."

Determining that the United States needs a world-class underground laboratory was the easy part of the decision, University of Washington Professor and committee member Wick Haxton said. The arguments for a U.S. lab were "absolutely compelling," he said. The hard part was choosing a site.

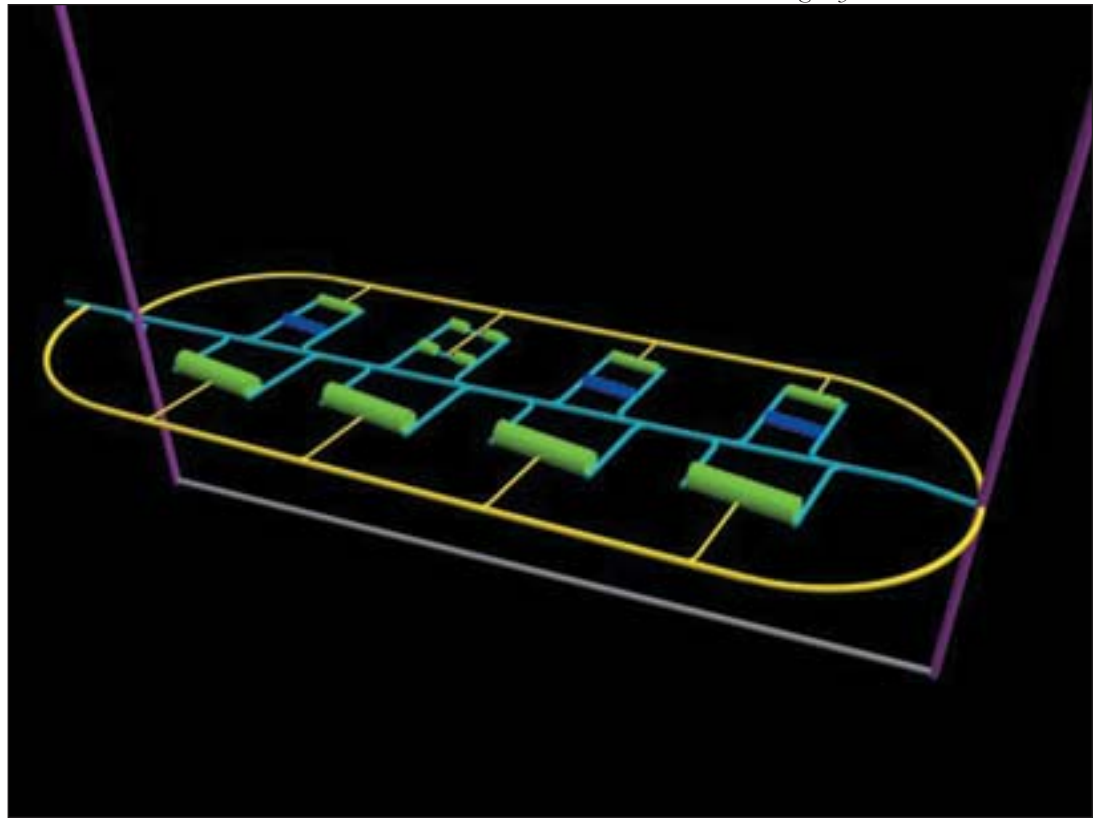
From the beginning, Tech's proposal looked like a David to the other site's Goliaths.

The University of Minnesota proposed creating the laboratory at the Soudan Mine in northern Minnesota.

The Department of Energy, Los Alamos National Laboratory, and the University of New Mexico teamed up to propose the Waste Isolation Pilot Plant (WIPP) as the laboratory site.

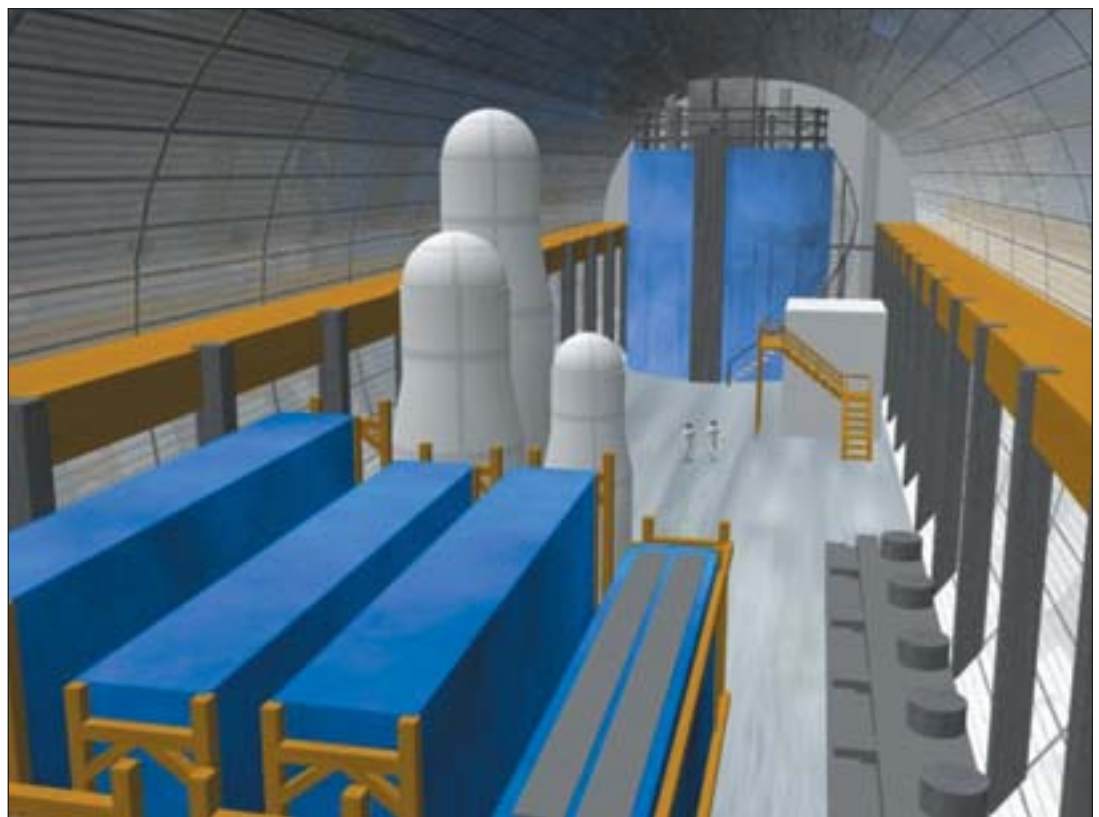
The University of California Irvine proposed creating the lab inside a mountain near Palm Springs, Calif.

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This illustration shows the proposed detector and support chambers at the 7,400-foot level of the proposed Homestake National Underground Laboratory. The vertical shaft at the left of the illustration is the No. 6 Winze elevator that already is in place. The shaft at the right is the proposed extension of the Yates Shaft to the 8,000-foot level.

This illustration shows an artist's conception of the inside of a detector chamber laboratory. The tank at the far end of the chamber is a neutrino detector.



Scholarship Opens Gates to the Future

Tony Fischer's brother often complains about farm equipment engineering when he tries to repair some problem.

Fischer often heard those complaints growing up on the family ranch south of Eagle Butte, S.D. He hears them more now that he's studying mechanical engineering at the South Dakota School of Mines and Technology. Fischer hopes to use his education to design equipment that is easier for farmers and ranchers to fix themselves. A scholarship courtesy of Microsoft mogul Bill Gates will help make that happen.

The 20-year-old Fischer received the scholarship from the Bill and Melinda Gates Foundation in the award program's inaugural year. The scholarship covers Fischer's tuition and other expenses.

The scholarship has freed Fischer, a Tech junior, from having to work and guarantees he can stay in school. Last year, he had to hustle for a number of minor scholarships that still left his wallet slim and his academic future uncertain.

"I don't have to think about applying for loans now or worry about paying them back after I finish," he said. "It's easier to keep my grades up since I don't have to work 40 hours a week."

The scholarship is renewable each year through graduate school as long as Fischer keeps up his grades. For the first time, he can seriously consider pursuing a master's degree, something he has always wanted.

The United Negro College Fund runs the Gates Millennium Scholars initiative. It is aimed at expanding access and opportunities to people who reflect America's diversity. The initiative awards

scholarships to minority students interested in programs where ethnic and racial groups are underrepresented.

The Gates Millennium Scholars awards will enable 20,000 young Americans to attend undergraduate and graduate institutions of their choice and be prepared to assume important roles as leaders in their professions and in their communities.

"The best and the brightest students shouldn't be denied access to higher education simply because they can't afford it," Bill Gates said. "Melinda and I hope that this gift will not only benefit thousands of students, but also benefit America by empowering a diverse generation of leaders who otherwise might not have a chance."

In its inaugural year, students were eligible for a scholarship if they:

- were African-American, American Indian, Alaska Native, Asian Pacific American, or Hispanic citizens and permanent residents of the United States.
- have attained a cumulative grade-point average 3.3 on a 4.0 scale.
- have applied to, have been accepted into or are enrolled full-time in an accredited college or university or have applied to, have been accepted into, or are enrolled in a graduate degree program in mathematics, science (including life sciences, physical sciences, and computer science), engineering, education, or library science.
- have significant financial need.
- have demonstrated leadership ability through participation in community service, extracurricular activities or other activities.



Photo by Steve Buchholz

Tony Fischer, left, works on a project during an electrical engineering lab. Fischer's future at the South Dakota School of Mines and Technology is more secure than ever now that he has won a Gates Millennium Scholars scholarship.

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ARMY STATIONS NEW TECHNOLOGY AT TECH

Two pieces of equipment will allow South Dakota School of Mines and Technology researchers to help design a new generation of weapons for the U.S. military and help industry create better and more reliable products. Tech professors and students will work with two emerging technologies - friction stir welding and direct laser deposition - that will help make the Army's and industry's goals come true.

"We are very excited about this," Dr. Michael Langerman, Chair and Professor, Department of Mechanical Engineering. "We see this as an important project for the university, the students, faculty, and the community."

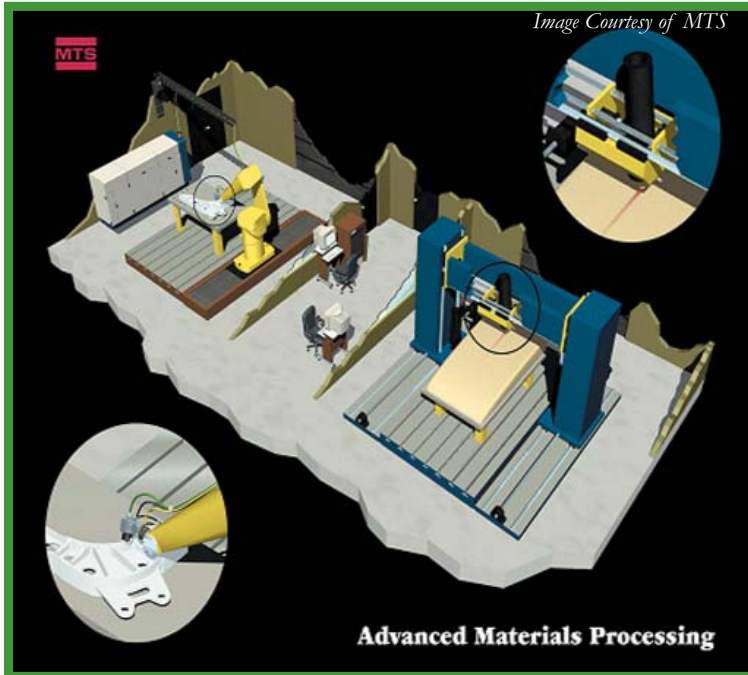
The technologies will be combined in a newly established Advanced Materials Processing Center. It will be housed in the Civil/Mechanical Engineering Building on Tech's campus. Both the friction stir welder and the direct laser deposition machine, which are being built by MTS Systems Corporation in Eden Prairie, Minn., should be delivered to campus during the next 12 to 18 months.

"These machines don't exist," Langerman said. "MTS knows they can build them, but machines like these have never been built before."

The machines will allow Tech professors to do research that no one else can. Military and businesses such as airplane manufacturers will watch closely because findings here could have wide uses.

The U.S. Army is interested because it needs new and more advanced materials processing technology to achieve its goals for future combat systems. Those goals include smaller and lighter, yet more deadly forces that can be deployed much faster than is currently possible. Future weapons systems will require the use of lighter materials that will still survive the rigors of battle.

Tech researchers believe the friction stir welder they will use could meet the Army's vision laid out recently by Army Chief of Staff General Eric K. Shinseki.



The Advanced Materials Processing Center will bring new opportunities to South Dakota Tech students and professors. The friction stir welding and direct laser deposition machines are cutting-edge technology that will allow tech researchers to help industry and the military keep up with the demands of tomorrow.

"The future Army describes a need for land forces that are deployable, agile, versatile, lethal, survivable, and sustainable," he said. "These new land forces must retain survivability comparable to or better than today's combat systems in spite of reduced weight, size, and sustainment requirements."

The Army is developing its next generation field artillery system, called the Crusader, to support its fast-moving maneuver forces. The Crusader consists of a self-propelled 155-millimeter howitzer and a resupply vehicle. An automated fuel and ammunition delivery system will let soldiers on future battlefields resupply self-propelled howitzers from the relative safety of an armored vehicle.

Tech's friction-stir welding research could make the cannon less susceptible to enemy fire and better protect soldiers in the resupply vehicle. Friction-stir welding creates stronger joints because it doesn't melt the two pieces of metal. The process joins two pieces of metal by heating them until they are plasticized. The weld microstructure is closer to that of the parent material than obtained from traditional welding during which metal melting occurs.

Friction-stir welding is being used now, but primarily to join flat metal pieces. Tech professors will advance the methods for joining curved pieces of metal.

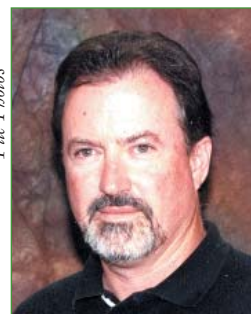
"That capability interests airplane manufactures and other industries," Dr. Jon Kellar, Chair and Professor, Department of Materials and Metallurgical Engineering, said. "Perfecting that process could result in the ability to build airplanes with no rivets. That would increase the aircraft's strength and durability."

"This is right on the cutting edge," he said.

The direct laser deposition process is no less exciting. It seems almost futuristic, something like the replicator on "Star Trek: The Next Generation." The machine can build or repair a part for a



Dr. Jon Kellar



Dr. Michael Langerman

We Did It!

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The committee eliminated Soudan and WIPP because both are too shallow. That left Homestake and San Jacinto and the “hard part” of the decision, Haxton said.

After hearing site proposals in Berkeley, the committee deliberated behind closed doors for more than 10 hours. They made their decision public March 5.

“Both Homestake and San Jacinto are stupendous,” Haxton said. “Homestake has a time advantage. If they can line things up, that’s great. Otherwise, the U.S. will be first in the world with Mount. San Jacinto.”

“The value of Homestake as a world-class laboratory site will diminish as the closing process proceeds,” Bahcall said. “The committee is suggesting continued work on Mount San Jacinto and possibly some other mountain sites in the California-Nevada region. The Homestake proponents need to address transfer of the site to the State of South Dakota and a few other issues rapidly, before the knowledgeable staff at Homestake leaves the area.”

Tech has a lot of work to do to make sure Homestake doesn’t lose its advantages.

“Our immediate prize is that we will write another proposal,” Gowen said. “We will refine the proposal we’ve already submitted so it will be the best it can. During this process, we will bring together the scientific community to help us develop a plan that matches exactly what the scientific community needs.”

Other immediate concerns are dealing with the indemnification of Homestake and beginning to identify long- and short-term sources of money. Indemnification will relieve Homestake and the State of South Dakota from environmental liability related to laboratory operations. Homestake requires federal indemnification before it would turn over the property to South Dakota.

U.S. Sens. Tom Daschle and Tim Johnson and U.S. Rep. John Thune have pledged their support and already are working to make sure necessary steps are taken in Washington.

Tech officials hope to begin transforming the underground mine into a laboratory the day after Homestake finishes its work.

Scientists would first place neutrino detectors in the underground laboratory. Neutrinos are elementary particles of matter that may be a key to understanding how the universe works. Scientists in Japan have postulated that neutrinos have mass, but no one has proven that. That theory is important because the Standard Model of the universe does not allow neutrinos to have mass. Proving that would force scientists to rewrite basic physical laws.

“We know that there are deficiencies in our current understanding,” committee member Professor John Wilkerson of the University of Washington said. “New experiments in the very quiet environments available very deep underground will likely reveal new information that will help us understand how to make the Standard Model a better description of the universe in which we live.”

Physicists would study neutrinos in chambers the size of football fields. Scientists would place detectors filled with chemical solutions in the chambers and measure neutrino reactions with other particles. But the laboratory wouldn’t be solely dedicated to physics.

Scientists also could study the interior of the sun, efforts to better understand supernovae, searches for dark matter, behavior and evolution of life in exotic environments, characteristics and stability of geologic structures, evaluation of groundwater resources, monitoring of nuclear weapons tests, and the vulnerability of microelectronics and other materials to cosmic rays.

“The lack of interference from cosmic rays, radio waves, and other disturbances that can be achieved at a Homestake Laboratory represents a new frontier of science,” Dr. Kevin Lesko of the University of California’s Lawrence Berkeley National Laboratory said.

Scientists wouldn’t do their work hidden from the eyes of the public. The laboratory would cherish educational outreach and visitor services.

Students and tourists could come to the laboratory. They would be able to experience the work of the scientists through interactive exhibits and they could watch as scientists prepare experiments in one of the lab’s staging and testing rooms. Visitors also could ride in an electric vehicle to the detector level 7,400 feet below the surface. There, visitors would view the work in the experiment chambers from an elevated observatory.

While a lot of work remains before the first experiment is placed underground, it’s clear that the laboratory would have a profound impact on the economic, social, and educational fabrics of South Dakota.

“The laboratory will create jobs, small businesses and other economic benefits,” Gowen said. “The laboratory will allow our children to dream big and encourage them to be tomorrow’s scientific leaders.

“South Dakota Tech has received dozens of letters of support from business, community leaders, and people interested in the project. Community support also was evident through attendance at community events held to spread the word about the project.”



Scholarship Opens Gates to the Future

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"What is so special about the Gates Millennium Scholars Program is that it benefits so many, not just the scholars, but in a much larger sense, our nation," Patty Stonesifer, program co-chair and president of the Foundation, said. "This initiative helps promote diversity in leadership and will help our country excel in the 21st century."

The Foundation places great importance on increasing the diversity of higher education students.

"The growing diversity of our society reminds us that all of the nation's citizens must have access to opportunity for higher education if America is to sustain and advance itself as a global, competitive democracy in the new millennium," the Foundation's Internet site indicated. "The future of our nation's economy, democracy, and quality of life is dependent upon the preparation of a diverse cadre of leaders who will help build a stronger society."

"These potential leaders, especially those from groups that have traditionally and historically been denied or discouraged, must receive the support needed to travel the pathway to the opportunity of attending and completing a college education," the Internet site said.

Fischer is an enrolled member of the Cheyenne River Sioux Tribe. He grew up 25 miles south of Eagle Butte, pretty much in the "middle of nowhere," he admits. He was always interested in math and science and that made Tech a logical choice for a bachelor's degree. At home, he was involved with 4-H and the National Honor Society. He won the Intertribal Science Bowl and was valedictorian of his high school class. At Tech, he has been president of the American Indian Science and Engineering Society and been active in other campus groups.

He has earned high grades at Tech despite his money worries during his first two years.

Before his freshman year on campus, Fischer called the university to inquire about taking classes through the Oglala Lakota College Tribal College Summer Institute. But Dr. Francine Campone, Tech's associate dean of students, told Fischer that he had already completed all the classes the college was offering.

"That when I said, 'Here's a young man worth watching,'" Campone said. "He is very modest and he is very low-key, but he is a very bright student."

Campone nominated Fischer for the award. She chose Fischer because, with the scholarship's help, he can achieve great things.

His brother will be happy.



ARMY STATIONS NEW TECHNOLOGY AT TECH

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tank, airplane, or factory machine in a fraction of the time current technology allows. The final product also will be stronger and more durable.

"It's a completely different way to form metals," Kellar said.

Direct laser deposition is a layer-by-layer approach to building a three-dimensional object. The machine sprays metal powder toward a surface while a laser, 1/10th of a millimeter wide, melts the powder, and forms it into the desired shape.

"It's incredible what you can make with it," Langerman said.

Congress appropriated \$5 million for the Advanced Materials Processing Center. Tech will use most of the money to buy the equipment. The university will use the rest of the money to fund the research involving faculty and students.

An Army Research Lab representative visited Tech before the deal was finalized. The representative met with professors and toured campus facilities to make sure the university was up to the challenge of experimenting with the new technology.

The Army Research Lab representatives were satisfied with what they found and gave the deal their blessing. Although the deal is the beginning of a new partnership between Tech and the Army Research Lab, the lab is a minor player in the research Tech professors will complete in the Advanced Materials Center. Companies interested in the technology and its potential benefits could direct research or industries could ask professors to research certain applications of either technology.

"We could envision an industry partner that comes to us and says, 'We're having a heck of a time with this, can you figure out a way to do it,'" Langerman said. "No one else out there will be able to test what we can."

Langerman described the ability of direct laser deposition as "incredible." What is equally incredible is what Tech's Advanced Materials Processing Center will do for Tech's reputation and place in the world of cutting-edge research.



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Make this a summer to remember! Join our Corps of Paleo Discovery!



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MAY 13 TO 26 Fossil Lake, Oregon - fossil mammals, fish, and birds from the late Pleistocene on the historic trail of Professors Condon and Cope. This Expedition is an excellent introduction to vertebrate paleontology with Dr. James Martin.

JUNE 17 TO 30 AND/OR JULY 1 TO 14 Two two-week sessions available to the **Hell Creek in North Dakota**. Dr. Julia Sankey will lead the expedition in tracking Theropod dinosaur diversity through the collection of microvertebrate sites in southwestern North Dakota.

JUNE 18 TO 22 Paleontology for Families - visit Rapid City and surrounding areas for a variety of fossil experiences. This is an opportunity to learn more about fossils for families with young children. Register for two to five days during this session. Field trips to nearby fossil sites, guided tours through local museums, and opportunities to dig and prepare fossils in the laboratory are planned. Parent(s) must attend with child(ren). Coordinated by Carrie Herbel.

JULY 1 TO 14 Jurassic Dinosaurs and Mammals - near Sundance, Wyoming. Excavation continues at this Morrison Formation locality. *Camarasaurus* and *Allosaurus* are the major dinosaurs at this quarry. Tiny primitive mammals have been found amongst these large beasts. Join a

team of graduate students as they expand the quarry. Coordinated by Dr. James Martin.

JULY 9 TO 20 Join the crew working at the famous **Pig Dig in Badlands National Park**. Excavate a unique tangle of fossil bones of animals such as rhinos, horses, deer, and pig-like animals in the classic White River Badlands. Coordinated by Carrie Herbel.



An area family participates in the Pig Dig.

JULY 16 TO 27 South Dakota Dinosaurs in the Hell Creek Formation - This expedition takes you back in time to the large beasts that roamed the area more than 65 million years ago. Late Cretaceous fossil expert, Mike Greenwald provides guidance in the identification and excavation of dinosaurs and other fossil creatures during this two-week session.

AUGUST 6 TO 17 AND/OR AUGUST 20 TO 31 Marine Turtles, Mosasaurs and Plesiosaurs from the Late Cretaceous Inland Seas - Join this expedition along the Missouri River near Chamberlain, South Dakota. Dr. James Martin and David Parris will lead prospecting and excavation of these fascinating creatures.

FOR MORE INFORMATION

South Dakota School of Mines and Technology
Museum of Geology
501 E. St. Joseph Street • Rapid City, SD 57701
(605) 394-2467 • (800) 544-8162 ext. 2467
e-mail: museum@sdsmt.edu
www.hpcnet.org/sdsmt/geologymuseum

South Dakota Tech students elected **Abe Kean** (CENG, Pierre) as Student Association president and **Matt Goeden** (CENG, Yankton) as Student Association vice president. The Student Association held its elections in February.

In April, Tech student voters selected new Student Association officers. They are: Senior Class President: **Jason Lamont** (CSC, Aberdeen); Senior Class Senators: **Jamie Gramm** (CHE, Gillette, Wyo.), **Hank Hollenbeck** (CENG, Rapid City), **Josh Sting** (CSC, CENG, North Mankato, Minn.), and **Scott Beck** (IENG, Aberdeen); Junior Class President: **Scott Fritz** (ME, Sioux Falls), Junior Class Senators: **Chris Bulian** (CHE, Yankton), **Nick Koch** (ME, EE, Plankinton), **Chris Hill** (CSC, Rapid City), and **Wes Roth** (CSC, Laramie, Wyo.); Sophomore Class President: **Matt Kafka** (IENG, Utica); Sophomore Class Senators: **Mike Schlabsz** (CSC, Ashley, N.D.), **Kris Hallan** (ENGR, Utica), **Robert Cook** (MET, Quinn), and **Peter Gasper** (CSC, Sidney, Mont.).

Four students were inducted into the South Dakota School of Mines and Technology's Leadership Hall of Fame on March 29. Tech's Leadership Development Team created the Hall of Fame to raise awareness about the importance of student leadership and to recognize the valuable contributions student leaders make. The Hall of Fame recognizes students based on their contributions to the campus community. It's not about how many leadership positions they list on their resume. The award recognizes students who have made a difference.

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

The inductees for the 2001 Leadership Hall of Fame are **Travis DeWeese**, **Jason Lamont**, **Colleen Manning**, and **Jason Thuringer**.

Travis DeWeese is a senior mechanical engineering student from Spearfish. He will graduate in Dec. 2001 and he plans to travel to Germany to be a ski and snowboard instructor before looking for an engineering position in the ski and snowboard industry.

As a student leader at Tech, DeWeese is very involved on campus. He is a member of Delta Sigma Phi Fraternity, where he has served as historian, editor, and summer housing manager. He is a former member of the Leadership Development Team. He also served as an orientation leader and went on to become one of the chairs of the Orientation Program during his senior year.

DeWeese has contributed his leadership in several other student organizations. He is a member of TONITE, the student programming board, where he recently finished a term as vice president. He has been an active member of the Tech Soccer Club, the Tech Ski and Snowboard Club, the American Society of Mechanical Engineers, and has recently taken on a leadership role with the Human Powered Vehicle. DeWeese's honors include membership in Phi Eta Sigma, the freshman honor society, and the Dean's List.

Jason Lamont is a junior Computer Science student from Aberdeen, S.D. After graduating, Lamont plans to look for a software development engineering position at a computer company. This summer, Lamont returns to Motorola for a second internship.

During Lamont's time at Tech, he has been very involved in a variety of campus Organizations. He is a member of Delta Sigma Phi fraternity, where is currently vice president. He is a former member of TONITE, the student programming board, where he served on the M Week Committee and was the chair of the Public Relations Committee. Lamont has served on Student Association as the Freshman Class President, was a member of the SOAP funding committee, and has participated in numerous intramural sports and community service activities.

Lamont has made a significant contribution to the leadership development of other Tech students. He served as both a member and then the chair of the Leadership Development Team. Lamont also was selected to be an orientation leader and he went on to become a chair of the Orientation Program. Lamont was also instrumental in developing our first summer orientation program.

Colleen Manning is a senior Chemical Engineering student from Burbank, S.D. Manning will graduate in December and plans to look for a chemical engineering position in the Kansas City area.

Since transferring to Tech in 1998, Manning has been very involved in campus life. She is a member of Alpha Delta Pi sorority, where she has served as the public relations chair and the Inter-Fraternity Council delegate. She has been a member of TONITE, the student programming board, the Society of Women Engineers, and has served as an orientation leader.

After serving as a member of the Leadership Development Team, Manning was selected as the chair of that organization. Manning is currently serving as president of the American Institute of Chemical Engineers.

Jason Thuringer is a senior Mechanical Engineering student from Parkston, S.D., and will graduate in May. After graduation, Thuringer will work for Honda in Columbus, Ohio, as a test engineer.

Thuringer is a true role model of the term "student leader" as his academic accomplishments are as impressive as his leadership contributions. Thuringer has been a member of the Dean's List every semester he has been at Tech. He is a member and former vice president of Phi Eta Sigma, the freshman honor society, member and former president of Pi Tau Sigma Mechanical Engineering Society, and is a member and current president of Tau Beta Pi National Engineering Society.

Thuringer is involved in a number of other campus organizations as well. He is a member of the Society of Automotive

Engineers, American Society of Mechanical Engineers, and Delta Sigma Phi fraternity, where he recently finished his term as treasurer. Thuringer is a former orientation leader and was a member of the Leadership Development Team for two years. Thuringer recently chartered a new student organization, the SDSM&T AeroDesign Team and successfully obtained funding for the team's competition in Palm Dale, Calif.



Twenty-Five South Dakota School of Mines and Technology students have been selected as Orientation Leaders at the South Dakota School of Mines and Technology. The group has been meeting regularly throughout the spring semester to prepare for the arrival of new students in the upcoming summer and fall semesters. Orientation Leaders are the first students who have contact with incoming freshmen and transfer students. They guide, support, and provide information.

In addition to helping students feel welcome, Orientation Leaders also are responsible for planning Orientation Week. This includes scheduling and planning events, programs, and helping new students with placement testing and registration. The Orientation Chairs are **Erin Dimock** (CHEM, Inver Grove Heights, Minn.) and **Jessica Kienow** (CHE, Warner). The Orientation Leaders are **Dan Alsop** (EE, Spearfish), **Nick Bottolfsen** (ME, Yankton), **Jen Buxton** (IE, Brandon), **Brooke Dinger** (MATH, Aberdeen), **Michael Dorman** (ME, Kennebec), **Scott Fritz** (ME, Met, Sioux Falls), **Connie Giroux** (CHEM, Rapid City), **Aaron Gough** (ME, Met, Salem), **Mindy Haerer** (MATH, Wall), **Heidi Heinen** (CHE, Watford City, N.D.), **Angela Holetson** (IS, Rapid City), **Micah Keller** (GEOLE,

Dickinson, N.D.), **Espen Kvernstuen** (EE, Norway), **Lindsay Lipps** (IE, Hay Springs, Neb.), **Cassady Marshall** (CEE, Laramie, Wyo.), **John McCanna** (GEOL, Eden Prairie, Minn.), **Nick Newell** (CENG, Havre, Mont.), **Clint Richards** (EE, Spearfish), **DeeAndra Sandgren** (IS, Lemmon), **Andrew Shepherd** (CENG, Gillette, Wyo.), **Jesse Suek** (CENG, Havre, Mont.), **Tony Tegels** (CHE, Windom, Minn.), **John Ullman** (ME, McLaughlin), **Tiffany Walz** (IE, Huron), and **Stacy Watters** (PHYS, Minneapolis, Minn.).

Twenty-four South Dakota School of Mines and Technology freshmen were inducted into the Phi Eta Sigma National Honors Society on Thursday, April 19.

The Phi Eta Sigma Honor Society is a national organization that recognizes freshmen with high grade-point averages. Phi Eta Sigma is the largest freshman honor society with more than 300 chapters throughout the United States and more than 600,000 members.

The students are **Brett Bares** (CHE, Fort Meade), **Jeremy Beckman** (MATH, Rapid City), **John Beserra** (ENGR, Rapid City), **Jessica Boehrs** (IS, Eagle Butte), **Christine Carlson** (IS, Rapid City), **Adam Dickinson** (CSC, Sioux Falls), **Bryce Engle** (ME, Sioux City, Iowa), **Sarah Farber** (CHE, Glendive, Mont.), **Andrew Fisher** (ME, Bowman), **Aaron Goehring** (CENG, Pierre), **Benjamin Good** (ME, Parker), **Julie Gradoville** (IS, Rapid City), **Keri Hansen** (MET, Philip), **Dawn Huston** (CEE, Pierre), **Samantha Jamieson** (IS, Sturgis), **Bradley Jorgenson** (ME, Menoken, N.D.), **Andrew Kannenberg** (CENG, Luverne, Minn.), **Amanda Kost** (CEE, Mitchell), **Lindsay Lipps** (IE, Hay Springs, Neb.), **Laura Minton** (IS, Rapid City), **Jason Neitzert** (CENG, Garretson), **George Ouais** (CENG, Syria), **Stephanie Randall** (CENG, Gillette, Wyo.), and **Justin Reisenauer** (ME, Hettinger, N.D.).

Twenty-eight Tech students have been selected to serve as resident assistants for the 2001-2002 school year.

South Dakota Tech's Department of Residence Life provides on-campus dormitories for almost 500 students. Resident assistants are the foundation of the residence life system. Their job is to promote a spirit of unity and an atmosphere conducive to study. They will do that by helping create an environment that allows all students to succeed in and out of the classroom. Being a resident assistant provides students with opportunities to challenge themselves while helping others do the same.

Maureen "Reeny" Wilson, Director of Residence Life, said serving as a resident assistant is good training for life. "Being a leader in today's business world means more than just having authority," she said. "A leader must also possess the ability to work together in a team and solve problems through a group effort. The Department of Residence Life gives resident assistants the opportunity to experience leadership from many facets – with fellow RAs, with the students on their floors, and with university staff and administration."

The 2001-2002 resident assistants are **Clint Bohnet** (ME, Hazel), **Chris Deaver** (CHE, Winner), **Erin Dimock** (CHEM, Inter Grove Heights, Minn.), **Zachary Doorenbos** (CHE, Owatonna, Minn.), **Chris Fischer** (IS, Sidney, Neb.), **Naomi Fossen** (CEE, Pierre), **Matt Husman** (ME, Sheridan, Wyo.), **Micah Kellar** (GEOLE, Dickinson, N.D.), **Cory Lillesve** (EE, Kasson, Minn.), **Steven Lipetzsky** (ENGR, Sioux Falls), **Brian Literski** (CENG, Helena, Mont.), **Cassady Marshall** (CEE, Laramie, Wyo.), **Austin McNall** (ME, Newcastle, Wyo.), **Justin Mitchell** (CEE, Loveland, Colo.), **Dan Mueller** (IE, Baker, Mont.), **Dan Nebelsick** (CEE, Mount Vernon), **Andrew Nelson** (CEE, Boulder, Colo.), **Katie Norman** (IS, Aberdeen), **Jed Padilla** (CSC, Cheyenne, Wyo.), **Mike Phenicie** (ME, Westminster, Colo.), **Dickson Pongrekun** (MET, Indonesia), **Wes Roth** (CSC, Laramie, Wyo.), **Austin Salonen** (CSC, De Smet), **Nick Smith** (MET, Buffalo, Wyo.), **Sarah Weidner** (CEE, Anoka, Minn.), **Dan Wolf** (CEE, Canton), **Tristan Woster** (CEE, Reliance), and **Miaken Zeigler** (SCI, Sturgis).

CAMPUS BRIEFINGS

Dr. William Cross, Research Scientist, Department of Materials and Metallurgical Engineering, **Dr. Jon Kellar**, Chair and Professor, Department of Materials and Metallurgical Engineering, and **Dr. Lidvin Kjerengtroen**, Professor, Department of Materials and Metallurgical Engineering, were part of a team of professors and scientists that made a presentation entitled "Interphase Chemistry and Its Relevance to Interphase Formation" in October in Cleveland, Ohio, during the International Conference on Composite Interfaces. Dr. Kellar, Dr. Cross, and Dr. Lidvin Kjerengtroen, also made a presentation entitled "A Fiber-Optic Sensor System for Total Lifetime Monitoring of Polymer Matrix Composites" in October in Columbus, Ohio, during the AFOSR Grantees Meeting.

Dr. Stuart Kellogg, Pietz Professor and Program Coordinator, Industrial Engineering, **Dr. Michael Langerman**, Chair and Professor, Department of Mechanical Engineering, **Dr. Stanley Howard**, Professor, Department of Materials and Metallurgical Engineering, **Dr. Larry Stetler**, Assistant Professor, Department of Geology and Geological Engineering, **Lois Arneson-Meyer**, Instructor, Department of Civil and Environmental Engineering, and **Dr. Jon Kellar**, Chair and Professor, Department of Materials and Metallurgical Engineering, were part of a team of professors and scientists that made a presentation entitled "A Problem Based Learning Approach for Freshman Engineering" in October in Kansas City, Missouri, during Frontiers in Education 2000.

Assistant Professor of Paleontology and Haslem Fellow **Dr. Julia Sankey** participated in an Earthwatch Institute Principal Investigator Conference, "The Role of Volunteers in Science, Education, and Conservation," from Nov. 15 to Nov. 19 in Maynard and Cambridge, Massachusetts. During this conference, she presented posters at the Harvard Science Center on her research in Big Bend, Texas, and her proposed research in North Dakota. The posters were entitled 2000 Student Challenge Awards Project: "Dinosaurs and other Cretaceous Wildlife

of Big Bend National Park, Texas, and Ants of Big Bend" and 2001 Earthwatch Project: "The End of the Dinosaurs: Tracking Theropod Dinosaur Diversity in the Hell Creek Formation, Southwestern North Dakota." Dr. Sankey, and **Merrilee Guenther** (MS Pale, Itasca Ill.) attended the Society of Vertebrate Paleontology annual meeting in Mexico City in October. They presented a poster with Dr. Donald Brinkman (Royal Tyrrell Museum of Paleontology), "New Theropod and Bird Teeth from the Late Cretaceous (Campanian) Judith River Group."

The article "An Introduction to the Bootstrap" by Associate Professor of Mathematics **Dr. Roger Johnson** has been accepted for publication in the British Journal Teaching Statistics next year. Bootstrap statistics seem to accomplish the impossible by making inferences about a population by taking repeated samples from the data (rather than the population).

Dr. V. Ramakrishnan, Distinguished Professor of Civil Engineering, **Kumar R. Santhosh**, former Tech graduate student, and Leif G. Wathne, Concrete Material Engineer, Federal Highway Administration, presented a paper on High Performance Concrete at the PCI/FHWA/FIB/International Symposium in September in Orlando, Florida. This paper was also published in the Symposium Proceedings. Dr. Ramakrishnan, also presented a paper entitled "The Performance Characteristics of Synthetic Hybrid Fiber Reinforced Concrete" at the American Concrete Institute Fall 2000 Convention in Toronto, Canada, from Oct. 15-Oct. 20. He also attended five technical committees of the ACI as an active member.

Dr. Mike Langerman, Chair and Professor, Department of Mechanical Engineering, and **Dr. Stan Howard**, Professor, Department of Materials and Metallurgical Engineering, attended the International Congress on Applications of Lasers and Electro-Optics (ICALEO) during the week of October 2, 2000.

Dr. Zbigniew J. Hladysz, Professor, Mining Engineering, presented a paper, "Virtual Mine Design Paradigm," during

American-Polish Symposium in Las Vegas, Nevada. The symposium was held in conjunction with MINExpo 2000 and XVIII World Mining Congress, October 9-12, 2000. Dr. Hladysz was a member of the organizing committee of the symposium.

Dr. Larry Stetler, Assistant Professor in the Department of Geology and Geological Engineering, received the Benard A. Ennenga Award. The Benard A. Ennenga Faculty Award was established by Mr. Ennenga to recognize excellence in teaching at the School of Mines. The recipient may be a faculty member who has demonstrated excellence in teaching and/or motivating students. The recipient receives a cash award of \$1300.



Dr. Sookie Bang, biology Professor in the Department of Chemistry and Chemical Engineering, received the Presidential Award for Outstanding Professor. The Presidential Award is based on exemplary performance as an Assistant, Associate, or Full Professor at the South Dakota School of Mines and Technology.



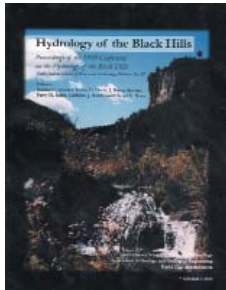
Rick MacDonald, Tech's computer support team leader, received the Virginia Simpson Award. The Virginia Simpson Award was established by Mrs. Simpson to help support and encourage new or continued involvement by SDSM&T faculty or staff with the Rapid City community. This involvement may be through participation in community activities, social services, and/or volunteer services. The award includes a check for \$600.



A total of 115 awards were given to students, faculty, staff, and friends during the 50th Annual Honors Convocation held March 29 on Campus.

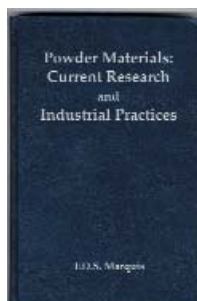
PUBLICATIONS

The South Dakota School of Mines and Technology has just published Bulletin No. 20: "**Hydrology of the Black Hills**," a collection of the latest hydrology research completed in the Black Hills. The 245-page manuscript contains 32 full papers from the 1999 Conference on the Hydrology of the Black Hills, held in Rapid City. The papers describe research by the U.S. Geological Survey, the South Dakota Geological Survey, and the South Dakota School of Mines and Technology. The topics covered include atmospheric conditions, hydrogeology and ground water, geochemistry, stream flow, and regional studies. You can purchase "Hydrology of the Black Hills" for \$42.10 from Tech's Department of Geology and Geological Engineering. Call (605) 394-2461 for information.



"Powder Materials: Current Research and Industrial Practices", **F.D.S. Marquis**, editor, ISBN 0-87339-456-9, The Minerals, Metals and Materials Society, 1999.

Korlahalli, R.R., Degraw, A., **Marquis, F.D.S.** and **Puszynski, J.A.** "Densification Characteristics of Combustion Synthesized Alpha Sialons", Powder Materials: Current Research and Industrial Practices, F.D.S. Marquis, TMS, 1999, pages 129-137.



PERSONNEL CHANGES

FAREWELL:

Philip Bjork, Director/Professor, Museum of Geology (9/14/00)
G. Jeanie Eatherton, Academic and Enrollment Services (9/21/00)
T. Ashworth, Professor, Physics (9/30/00)
Teresa Heinbaugh, Secretary in SKILL, (12/21/00)
Marcia Bawdon, Bookstore (12/22/00)
Darlene (Gregg) Ulvestad, Cashiering Services (1/16/01)
Lora Phillips, Business and Administration (1/19/01)

WELCOME:

Dr. Adel Heriba, Assistant Professor, Geology and Geological Engineering (9/25/00)
James R. Gray, Assistant Mens Basketball Coach, Intercollegiate Athletics (10/1/00)
Stephen G. Buchholz, Public Information Manager, University and Public Relations (10/5/00)
Carol Kjar, Assistant Coordinator of Academic Support Development, Academic and Enrollment Services (12/1/00)
Tisha VanRavenhorst, temporary Secretary, Student Activities and Leadership Center (12/1/00)
Ilona Hermanson, temporary Senior Claims Clerk, Business and Administration (12/7/00)
Theresa Roth, Secretary, Graduate Education and Sponsored Programs (12/11/00)

Michelle R. Hargis, Secretary, Information Technology Services (12/19/00)
John Staben, Faculty, Instructor, Mathematics and Computer Science (1/01/01)
Chelsea R. Lien, Programmer/Analyst, Title III Project Management (2/1/01)
Dr. Gale Bishop, Faculty, Director of Museum/Professor, Museum of Geology (2/1/01)
Shawn R. Waldie, Programmer/Analyst, Title III Project Management Office (2/8/01)
Dr. Ann West, Exempt, Research Scientist I, Institute of Atmospheric Sciences (2/12/01)
Michael Halter, Bookstore Buyer, University Bookstore (3/1/01)
Annette Sickler, Accounting Assistant, Business and Administration (3/1/01)
Karen Connors, Senior Claims Clerk, Business and Administration-Student Accounts/Cashiering Services (3/12/01)

CHANGE IN POSITION:

V.J. Hedrick, has been reclassified to an Associate Programmer Analyst in Information Technology Services (8/1/00)
Toni Moore, has been reclassified to a Library Technician (9/25/00)
Barbara Hughes, has accepted an Administrative Assistant I position in Academic and Enrollment Services (11/15/00)

Congratulations to the SDSM&T Team

for receiving recommendation to proceed with the proposal for the new National Underground Laboratory at Homestake

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Barb F. Dolan, Coordinator of Academic Support Development, was awarded \$365,000 from the US Department of Education for a project entitled "Strengthening Student Success through Student Data System Enhancement and Equipment Upgrades."

Dr. Karen L. Whitehead, Vice President for Academic Affairs, was awarded \$269,922 from the National Science Foundation for a project entitled "Computer Science, Engineering, and Mathematics Scholarship Program."



Dr. John H. Helsdon Jr., Professor, Department of Atmospheric Sciences and Institute of Atmospheric Sciences, and **Dr. Andrew G. Detwiler**, Professor, Department of Atmospheric Sciences and Institute of Atmospheric Sciences, were awarded \$151,000 in additional funds from the National Science Foundation for a project entitled "Airborne Observations and Storm Modeling in Support of the Severe Thunderstorm Electrification and Precipitation Study (STEPS)."

Dr. Sanjeev K. Khanna, former Assistant Professor, Department of Mechanical Engineering, and **Dr. Robb M. Winter**, R.L. Sandvig Professor, Department of Chemistry and Chemical Engineering, were awarded \$67,547 in additional funds from the National Science Foundation for a project entitled "Development and Manufacturing of Highly Damage Resistant Fiber Glass Reinforced Window Panels for Buildings in Hurricane Prone Areas." Dr. Winter was also awarded \$45,000 from the Camiller and Henry Dreyfus Foundation for a project entitled "The Interphase Chemistry and Nanomechanical Properties of Polymeric Composites."

Dr. Maribeth H. Price, Assistant Professor, Department of Geology and Geological Engineering, was awarded \$101,404 in additional funds from NASA for a project entitled "Application of Remote Sensing to Forest Resource Inventory and Habitat Modeling."

Dr. John M. Weiss, Associate Professor, Department of Mathematics and Computer Science, and **Dr. Antoinette M. Logar**, Chair and Professor, Department of Mathematics and Computer Science, were awarded \$64,477 in additional funds from Raytheon for a project entitled "MODIS II."

Dr. Paul L. Smith Jr., Professor Emeritus, Department of Atmospheric Sciences and Institute of Atmospheric Sciences, was awarded \$49,262 in additional funds from the National Science Foundation for a project entitled "Armored T-28 Aircraft Facility for Research Requiring Storm Penetrations."

Mike T. Greenwald, Research Scientist II, Museum of Geology, was awarded \$25,000 in additional funds from the US Department of Interior – Bureau of Reclamation for a project entitled "Paleontological Monitoring and Documentation of the Distribution Portion, Mni Wiconi OST Distribution."

Dr. Chris H.M. Jenkins, Professor, Department of Mechanical Engineering, and Coordinator, Materials Engineering and Science Ph.D. Program, was awarded \$13,645 in additional funds from Triton Systems, Inc. for a project entitled "Material Development for Large Deployable Space Optics." Dr. Jenkins was also awarded \$10,250 in additional funds from Boeing for a project entitled "Membrane Mirror Development."



Dr. James E. Martin, Professor, Department of Geology and Geological Engineering; Curator of Vertebrate Paleontology, Museum of Geology, was awarded \$17,565 from the USDA Forest Service for a project entitled "Four Mosasaurs."

Carrie Herbel, Collections Manager and Preparator, Museum of Geology, was awarded \$15,700 from the US Department of Interior-Badlands National park for a project entitled "Casting of Archaeotherium Skeleton and 3 Fossil Jaws."

Dr. Lee A. Vierling, Assistant Professor, Biology Program, was awarded \$14,000 from EarthWatch Inc. for a project entitled "EarthWatch Calibration."

Dr. William J. Capehart, Assistant Professor, Department of Atmospheric Sciences and Institute of Atmospheric Sciences, was awarded \$10,700 in additional funds from the National Oceanic and Atmospheric Administration for a project entitled "Improved Representation of Snow and Its Subgrid Distribution in a Coupled Model System."



Dr. Jan A. Puszynski, Dean, College of Materials Science and Engineering, and Professor, Department of Chemistry and Chemical Engineering, was awarded \$7,500 from Northshore Mining Company for a project entitled "Analyze and Evaluate a Long-term Effect of High-Temperature Corrosion of Furnace Grate Bars."

Dr. Sherry Farwell, Dean, Graduate Research and Education, was awarded \$315,388 in additional funds from South Dakota State University (prime-NSF) for a project entitled "South Dakota EPSCoR Cooperative Agreement (Round 4)." In addition, Dr. Farwell was also awarded \$212,500 from NASA for a project entitled "South Dakota Space Grant College and Fellowship Program." Dr. Farwell was also awarded \$8,350 in additional funds from the University of North Dakota (prime-NASA) for a project entitled "Public Access Resource Center (PARC) Empowering the General Public to use EOSDIS-Implementation Phase III."

Dr. Lee Vierling, Assistant Professor, Department of Atmospheric Sciences and Institute of Atmospheric Sciences, was awarded \$161,000 in additional funds from NASA for a project entitled "Earth Systems Connections: An Integrated K-4 Science, Mathematics, and Technology Curriculum."

Dr. Mark Hjelmfelt, Professor, Department of Atmospheric Sciences and

Institute of Atmospheric Sciences, was awarded \$111,500 in additional funds from the National Science Foundation for a project entitled "Mesoscale Boundary Layer Structures Observed During the Lake-Induced Convection Experiment (Lake-ICE)."

Dr. Jacquelyn Bolman, Director, SKILL, was awarded \$100,000 in additional funds from NASA for a project entitled "Provide for Scientific Knowledge for Indian Learning and Leadership for Mission to Planet Earth."

Dr. John T. Bendler, Professor, Department of Chemistry and Chemical Engineering, was awarded \$80,000 in additional funds from the National Science Foundation for a project entitled "Molecular Design and Synthesis of Novel, High-Performance Polycarbonates."

Dr. Edward F. Duke, Professor, Department of Geology and Geological Engineering, and Manager, Analytical Services, Engineering and Mining Experiment Station, was awarded \$70,000 from the National Science Foundation for a project entitled "Quantifying Metamorphic Processes with Remote Sensing and Field Spectroscopy."

Dr. Robb Winter, Sandvig Professor, Department of Chemistry and Chemical Engineering, was awarded \$66,902 in additional funds from the National Science Foundation for a project entitled "REU Site: Molecular Level Modification of Surfaces."

Dr. Scott Kenner, Associate Professor, Department of Civil and Environmental Engineering, was awarded \$46,142 from the USDA-Forest Service for a project entitled "Common Water Unit, BHNH Integrated Resource Inventory."

Dr. Maribeth H. Price, Assistant Professor, Department of Geology and Geological Engineering, was awarded \$42,671 in additional funds from NASA for a project entitled "Application of Remote Sensing to Forest Resource Inventory and Habitat Modeling."

Dr. Mel Klasi, Associate Professor, Department of Civil and Environmental Engineering, was awarded \$39,644 from SDSU (prime-US DOT) for a project entitled "South Dakota Local Transportation Assistance Program."

Dr. Jon Kellar, Chair and Professor, Department of Materials and Metallurgical Engineering, was awarded \$5,000 from Dakota State University (prime-Small Business Association) for a project entitled "SBIR/SBA." Dr. Kellar, was also awarded \$26,125 from the SD Board of Regents

(prime-Great Plains Foundation) for a project entitled "Acquisition of a Research Grade FT-IR Spectrometer."

Dr. Kellar, along with **Dr. Lidvin Kjerengtroen**, Professor, Department of Mechanical Engineering, and **Dr. William Cross**, Research Scientist III, Department of Materials and Metallurgical Engineering, were awarded \$5,000 in additional funds from the National Science Foundation for a project entitled "A Multi-Scale Approach for Understanding the Role of the Interphase in Polymer Matrix Composites."



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You Are Invited . . . CALENDAR OF EVENTS

APRIL

April 1
Daylight Savings Time Begins

April 2
Spring Fling Week

April 3
Grubby's Cup

April 6-7
Am. Soc. Of Civil Eng. Regional Competition

April 6
Theta Tau and Alpha Delta Pi Social

April 7
Delta Sigma Phi Formal
Track Meet @ TBA

April 8
Palm Sunday – Passover
All Campus Leadership Recognition

April 9-17
Early Registration Week

April 13
Good Friday

April 14
Track Meet @ TBA

April 15
Easter
Income Taxes Due

April 16
No Classes

April 19-21
Drama Club Spring Production

April 20
Theta Tau Formal
Track @ Blue Hawk Invitational

April 21
Triangle Formal
Am. Soc. Of Civil Eng. Spring Banquet
FE/EIT Exam

April 22-28
Sexual Assault Awareness Week

April 24
Design and Technology Fair
Residence Life Appreciation Banquet

April 25
Professional Secretary's Day

April 27
Alpha Delta Pi Informal

April 28
Track @ Jack Christensen Invitational
Alpha Omega Epsilon Formal

April 29

Concert Choir and Master Chorale
Spring Concert

MAY

May 1
May Day

May 2-3
Bookstore Clearance Sale

May 4
Symphonic Band and Jazz Band
Spring Concert

May 4-6
Children's Science Center (CSC) Space Day

May 5
Track @ Howard Wood Relays

May 7-11
Finals Week
Textbook Buy Back

May 11
President's Graduation Reception
Semester Ends
CSC Dinosaur Overnight

May 12
Graduation 10 a.m. @ Civic Center
Track @ DAC-10 Conf.

May 13
Mother's Day
Mother's Day Celebration @ CSC

May 13-26
Field Paleontology Expedition at Fossil Lake, Oregon

May 14
Four-week Classes Begin

May 28
Memorial Day – No Classes

JUNE

June 2
CSC Bubble Festival and Summer Program Kick Off

June 4-29
Technology for Teaching and Learning Basic Session

June 8
CSC Dinosaur Overnight

June 11
Second Four-week Classes Begin

June 14

CSC Summer Programs Begin
Flag Day

June 14-16

National Concrete Canoe Competition in San Diego, Calif.

June 16-19

AP Calculus AB Institute

June 17

Father's Day
Father's Day Celebration at CSC

June 17-30

Paleontology Dig at Hell Creek, N.D.

June 18-22

Technology for Teaching and Learning Advanced Session I

June 18-22

Paleontology for Families

June 20 –23

AP Math Vertical Teams

June 21-22

Summer Orientation

June 25-26

Summer Orientation

June 25-28

Hoopsters Basketball Camp

June 25-29

Technology for Teaching and Learning Advanced Session II

JULY

July 1-14

Jurassic Dinosaurs and Mammals Dig

July 4

Fourth of July

July 9

Third Four-week Classes Begin

July 9-20

Pig Dig in the Badlands National Pk

July 16-27

S.D. Dinosaurs in Hell Creek Dig

July 19-20

Summer Orientation

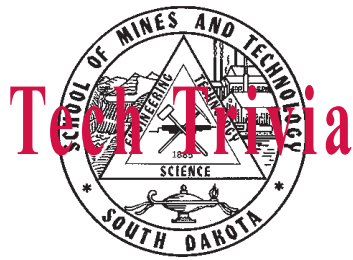
July 23-24

Summer Orientation

July 30-Aug 1

Young Hoopsters Basketball camp

4,000 copies of this publication were printed @ a cost of \$1.53 each (printing costs only).



Did you know that...

- Tech's concrete canoe entry in the 1990 national competition weighed approximately 290 pounds? This year's canoe, dubbed "Storm Chaser," weighs 68 pounds.



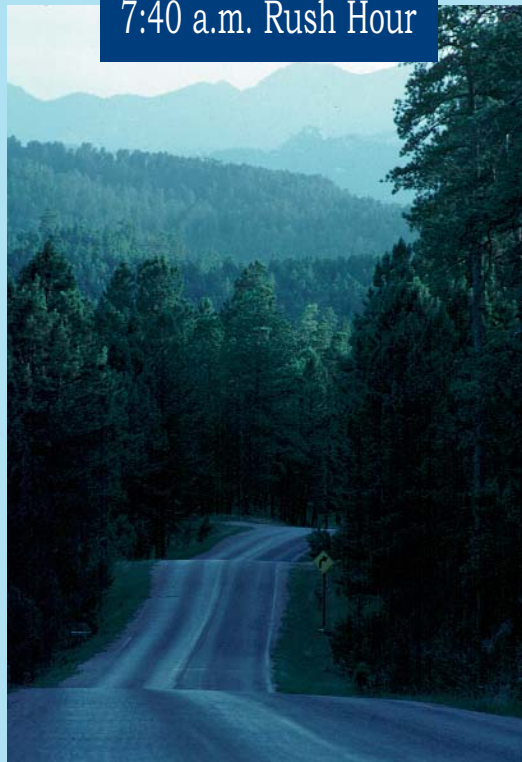
- Tech's first graduating class (1890) consisted of two women and one man? They were Benjamin Poznansky, Caroline Feigel, and Eva Robinson.
- Tech's first permanent student resident hall on campus was for married students? It was called Campus Place and was completed in 1946.



- The first School of Mines expedition to the Badlands was held in 1899?



7:40 a.m. Rush Hour



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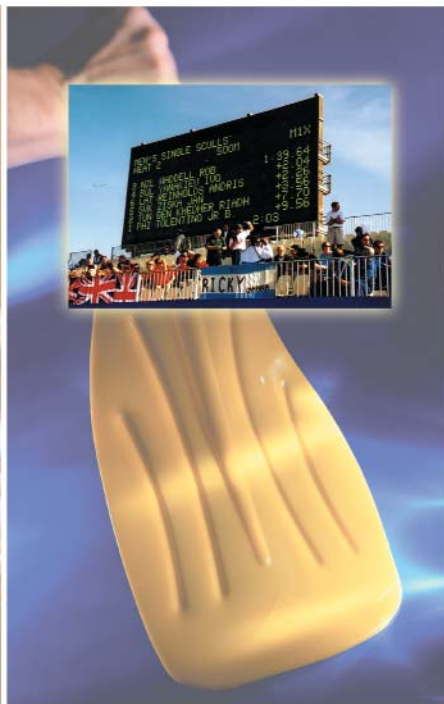
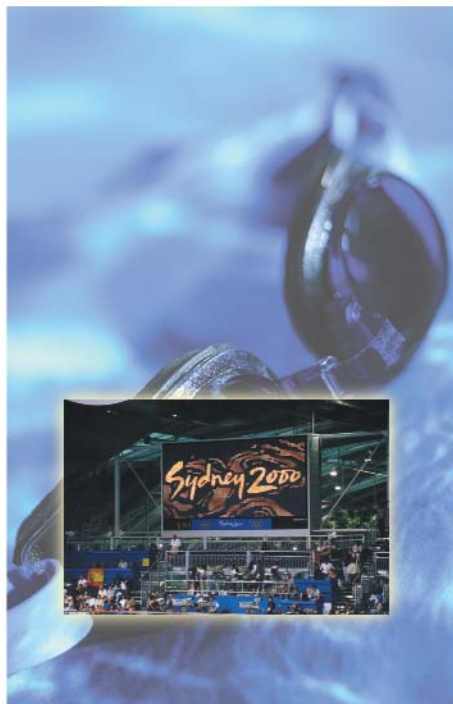
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