Miners have a hand in things we use every day, from beauty products to bed springs.
Your generosity — either through cash gifts or donation of goods or services — goes beyond scholarship and capital projects. It provides the nuts and bolts (and solar panels and microscopes) that Miners use every day.

While you’re out, would you pick up a few things for us?

SHOPPING LIST:

- KMST natural-gas-powered generator (to use during a power outage) .................................................... $25K
- 3 Kegerators for the Hasselmann Alumni House ............ $3,500/each
- 15 ROTC Cannon Crew jackets .................................................. $35/each
- Industrial washing machine for athletics uniforms ............... $8,000
- New or used suits for the Missouri S&T suit closet (clean out your closet to help a student get a job!) ............... $250 avg.
- Clausing 20-inch drill press for mechanical and aerospace engineering ......................................................... $4,300
- 2 tubas for band program ............................................................... $3,000
- 1 Etiquette Dinner ............................................................................... $3,000
- 20 micropipettors for molecular genetics teaching and research in biological sciences ........................................... $2,000

THANK YOU!

Make a gift that makes a difference.
give.mst.edu
ON THE COVER

Miners are taught to push beyond theory to tinker with what could be. Many of the everyday items we rely on have a connection to a Missouri S&T graduate. Things like bleach, bed springs, shampoo bottles and trains, to name a few. Our favorites begin on page 22.
7,512
Students enrolled at Missouri S&T during the Spring 2013 semester. This is the highest spring enrollment since 1983.

11
S&T students who presented their research results to Missouri legislators during Undergraduate Research Day at the Capitol.

100
Missouri S&T freshmen who participated in FIRST robotics programs in high school. S&T will continue to host the FIRST Tech Challenge regional championship for three more years.

2
S&T Women’s Mucking Team’s place in the 35th International Intercollegiate Mining Competition held in Golden, Colo., in March. The Men’s A Team placed third. Alumni teams placed first and third in their respective divisions and the Co-ed Team placed 10th out of 13 teams. S&T will host the competition in 2014.

530
Individual recruiters at the Spring 2013 Career Fair.

81
S&T’s rank among the nation’s best graduate engineering programs as reported in U.S. News & World Report’s “America’s Best Grad Schools” listing.

1
The Advanced Aero Vehicle Group’s place in the advanced class at the Society of Automotive Engineers’ annual Aero Design East competition held in Fort Worth, Texas, in March. See story on page 12.

Missouri S&T Magazine is written, edited and designed by the staff of the Missouri S&T Communications Department and the Miner Alumni Association.

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magazine.mst.edu
S&T alumni touch everyday life.
This issue features Miners who craft and design the items we depend on every day — from the time you shampoo your hair in the morning until the moment you relax on your bed at night. Your fellow alumni, employed by companies like L’Oreal and Leggett & Platt, are the people who make these everyday items what they are — examples of innovative simplicity. A Missouri S&T education fuels creation and development of the essential goods and services that characterize our daily lives.

Issac Newton said, “If I have seen further it is by standing on the shoulders of giants.” Bearing in mind this apt sentiment, I invite you to imagine all of the ways you are lifted up by fellow alumni each day. Whether you consider the knowledge and experience gained on campus or the well-known items we use every day, Missouri S&T has allowed you to do more and live better.

Katie Jackson
associate editor and assistant director, alumni and constituent relations

1. Finished with her coursework, Katie recently began her dissertation for a doctoral degree in education leadership and policy analysis from the University of Missouri-Columbia.
2. She moved to Rolla from Minnesota almost five years ago.
3. Her husband, Joe, works in the registrar’s office and is enrolled in S&T’s MBA program. Joe and Katie have two cats, Stella and Carl.
4. When Katie’s not working or going to school, she’s running. She has finished three half-marathons and a handful of 5- and 10-kilometer races.
5. Katie is faculty advisor to Zeta Tau Alpha sorority and is a member of the Chancellor’s Retention Committee.

EDITOR’S TOP FIVE PICKS

1. An S&T microbiologist discovered an extreme microbe that can make biofuel production cheaper and reduce the need for fossil fuels. Learn more about this patented process on page 10.
2. Dianna Meyers, CerE’09, donned sneakers and ran daily for 365 days in 2012. Read about her drive and energy — and her job at Accenture — on page 6.
3. S&T senior Jonathan Sanders wants to travel to Mars and plans to help design a space vehicle to get him there. Read about his adventures as a SpaceX intern on page 21.
4. Did you know that 3M, the company that makes Post-It Notes, began as a mining engineering company? Read about Layland Watson, MinE’96, plant manager in 3M’s Decatur, Ala., plant on page 23.
5. Breenae Washington, EMgt’12, says MasterCard is more than a payment company. It’s a technology company that helps make the payment industry more secure. Read more on page 25.

CORRECTION

The picture that ran with the memorial for Gary L Reynolds, ME’73, in the Fall/Winter 2012 issue was actually Kurt R. Seidinger, ME’74, who lives in Drury, Mo. Their pictures were reversed in the 1974 Rollamo. The memorial notice and correct picture of Gary L Reynolds is on page 46 of this issue.
What was your best (or worst) summer job?

Maybe it was the coolest job ever or maybe it was so bad you counted the seconds until summer ended. Either way, we asked about your summer jobs and you told us.

**Q:** What was your best (or worst) summer job?

Maybe it was the coolest job ever or maybe it was so bad you counted the seconds until summer ended. Either way, we asked about your summer jobs and you told us.

**A:** In the summer of 1979, I worked for Fiat-Allis’ heavy equipment proving grounds south of Phoenix testing bulldozers, scrapers, loaders, etc., in high-temperature desert conditions. It was just like all those Tonka toys I played with as a kid, but in real life! It was our job to treat the machinery rough to see what we could cause to fail before it was commercialized for clients. The engineering manager seemed happy when I would come back to the shop with broken equipment, but then I would have to write up a failure report before I left for the day. Each morning, the plant manager would come out with the daily list of equipment we would operate that day. I usually got something fun, but one day I was assigned to the FL-1 (Front Loader-1), which I soon found out was a shovel. The full-time operators had a good laugh at the “college boy.” It was a great summer job that combined testing and engineering in real-life conditions.

**Jim Marfice**, ME’80
Gainesville, Texas

My best summer job was working at the S&T Rock Mechanics Lab. It was a fun summer and I learned so much, too! I learned how to weld while helping build an experimental waterjet contraption for recycling old tires. I’m thankful for patient instructors. I also learned how to drive a four-speed-on-the-column pickup truck, a diesel flatbed we picked up from Army surplus, and a skid steer loader with manual shift and leaky hydraulics. Good times, LOL!

**Greg Messler**, EMgt’99
Denver, N.C.

I was a blasting engineering intern at Newmont Mining at the open pit Twin Creeks Mine. That summer I designed pattern, worked with blasters and engineers, and got to photograph the blast every day.

**Maggie Hettinger**, MinE’10
Elko, Nev.

I worked at Bear River Ranch Science Camp and got to bottle-feed baby wallabies and feed snakes.

**Rexann Whorton**, Psyc’11
Ava, Mo.

Last summer, I interned at American Geosciences Institute in Washington, D.C., and absolutely loved it! It was a great learning experience on the interactions of science and public policy, which is benefiting me now as I work on my master’s degree back here in Rolla.

**Krista Rybacki**, GGph’12
Nashville, Ill.

Submit your answers to alumni@mst.edu, or respond via Facebook or Twitter, by Nov. 12, 2013.

Watch for the next question in your Miner Alumni Association eNewsletter.
The Spring 2013 magazine is outstanding. The range of coverage: cataract prevention, Benton art, 40 years of public radio, prostate cancer, personalities and computer science. Referring to the latter, I remember the large air-conditioned room with disks of tapes and the monitors outside. Even then, UMR as we proudly called it, was pioneering computer science courses and advancement. I believe I was the oldest undergraduate on campus at that time — 1972–75. Commencement came far too soon, but I remained connected with the university by coordinating its program at Fort Leonard Wood and with university support, initiating The University of the Third Age, holding classes in senior centers and retirement complexes in surrounding central and southern Missouri. Being a Missouri University of Science and Technology alumna is truly a status symbol.

Barbara Clayton, Engl’75
Port Townsend, Wash.

Dear Editor,
I would like to take this opportunity to thank you and all of the MSM, UMR and Missouri S&T alumni for so generously responding to the call for slide rules for the University Archives’ collection! Since the magazine reached the homes of our thousands of alumni last March, I have received dozens of phone calls and emails, all offering to send us marvelous things! Our alumni sent slide rules (even a 4-foot one), a class ring (a gift to the alumnus from his mom), Rollamo yearbooks, photos of St. Pat’s celebrations dating back to 1910, and on and on.

These are TREASURES to our archives! Please keep us in mind for your MSM/UMR/S&T goodies. Before you throw it away, call us at 573-341-4817 or email us at ahmadd@mst.edu. And next time you’re on campus, stop by Curtis Laws Wilson Library and check out our display case outside Room G-2. We change the display every quarter.

THANK YOU!
Sincerely,

Diana L. Ahmad
University Archivist

Join your alma mater online at news.mst.edu/social.
As a consultant for Accenture, Dianna Meyers spends a lot of time on the road. But that hectic pace doesn’t keep her from hitting the pavement in her running shoes.

Meyers, CerE’09, ran daily for 365 days in 2012 — missing only one day due to illness (2012 was a leap year). She jogged along the streets of Paris, on hotel gym treadmills from Peoria, Ill., to Beaverton, Ore., and, when no gym was available, up and down flights of hotel stairs. She even ran in place once in the far stall of a women’s restroom in London’s Heathrow Airport.

While she loves her work, the demanding travel schedule leaves little time for exercise. Meyers spends more time in hotels, airports and corporate meeting rooms than in her Kansas City, Mo., apartment or Accenture’s office in Overland Park, Kan.

“Sleep goes by the wayside, fast food can become the norm, and then there are client dinners at restaurants,” says Meyers, who joined Accenture in October 2009. “Only being home around three days on the weekend doesn’t give me much time to run to the grocery store to pick up fresh produce.”

Inspired by a cousin who ran every day of 2011, Meyers decided to follow in her footsteps. “What I learned was that if I made it a priority, it would happen.”

For Accenture, Meyers’ priority is to help Fortune 500 companies clean up their data and improve the way they manage all their information and databases. She helps corporations tackle “data governance” issues by “pulling people together to discuss who the owners of the data are and what the quality rules are. We ask, ‘Does everything need to be checked? How are they keeping track of customer information and what are the relationships of the data?’”

It may seem like an odd career choice for a ceramic engineering major. Accenture, a global consulting and technology management company, hires many S&T graduates, ranging from information systems and technology and business majors to mechanical and electrical engineers.

But Meyers thinks her choice of major prepared her well for the job. “Ceramic engineering is about solving real-world issues,” she says, “and that’s what I get to do every day and I love it.

“I’m in it for the long run now until I stop learning,” she says.
CHANGING OF THE COACHING GUARD

Two S&T athletic programs announced coaching changes in March.  

**Tyler Fenwick**, who served as offensive coordinator at Missouri Western State University for the past six seasons, was named head football coach. He replaces David Brown, who joined the coaching staff at Fresno State University.  

**Gabe Hall**, an assistant coach at the University of Dayton for the past two seasons and a former assistant at two schools in the Great Lakes Valley Conference, was named head coach of the men’s soccer program. He replaces Joe Ahearn, who is now an assistant coach at Northwestern University.  

Read more about them at minerathletics.com.

PROFS ON TV FOR $1,000, ALEX

*It took three tries, but Ilene Morgan finally succeeded in landing a spot on the game show Jeopardy! in 2012.*

Morgan, an associate professor of mathematics and statistics, is well-known around campus and in the Rolla community for her expertise at trivia. Members of the Missouri S&T community gathered for a watch party for her Jeopardy! debut on March 5. She finished in second place.

Morgan’s pursuit of an appearance on the program has been anything but trivial. Her quest began online, where she played the official version of the game all would-be contestants must complete. In 2007 and again in 2009, her score on the 50-question quiz was high enough to qualify her for a tryout.

That in itself is no small feat. According to Morgan, each year about 100,000 people take the online test and 2,000 to 3,000 are selected for an in-person audition. Of those, 300 to 400 will be selected annually as contestants on the show, which is now in its 29th season. Read more about her Jeopardy! experience at rol.la/whatismorgan.

ENGINEERING EDUCATION CENTER RELOCATES

The Engineering Education Center (EEC) has relocated to a new facility at a central location in St. Louis, sharing space with the University of Missouri-St. Louis West County Continuing Education Center. The EEC delivers 20 to 25 courses each semester, serving 400 to 500 students in Missouri and elsewhere.

“The facility can now simultaneously deliver up to four lectures to distance students as well as to the students on the Rolla campus and local students in St. Louis,” says **Victor Birman**, professor of mechanical engineering and EEC director. “New equipment makes it possible to pre-record distance classes and archive them for students who can’t attend real-time live lectures or who need repeated access to the lectures.”

IN PRINT

**Larry Gragg**, Curators’ Teaching Professor and Chair of history and political science, is the author of a book on Las Vegas in popular culture titled *Bright Lights City: Las Vegas in Popular Culture*, published in April.
Hou compares the way ants act in a colony to how cells function in the body. He calls the colonies “superorganisms.” His study, in the journal Biology Letters, compared the rates of metabolism, growth, reproduction and longevity of individual ants with those same traits for entire colonies. He based his models on Kleiber’s Law, also known as “quarter-power scaling.”

As Hou explains it, a horse may be 10,000 times heavier than a mouse, but it doesn’t consume 10,000 times more energy. Applying quarter-power scaling, researchers can determine that a horse only consumes 1,000 times more energy.

Hou combined data from actual ant colonies with mathematical predictions and found that body mass and metabolic rates increased at a consistent, nearly three-quarter-power scaling rate for worker ants and queen ants alike, as well as for their colonies.

Based on these findings, Hou and his colleagues then developed a mathematical model to predict colony lifespan by linking it with colony size, or mass.

Quarter-power scaling could also be applied to entire cities to see if they also function as “superorganisms.” Energy usage in a city, for example the number of gas stations or the total length of electrical cables, correlates to the size of the city, Hou says.

Comparing two similar people, the one living in the bigger city is more energy-efficient, Hou says. “As you can imagine, the number of gas stations per capita is smaller in New York than in St. Louis, and smaller in St. Louis than Rolla, which means more people share one gas station in New York than in St. Louis, than in Rolla.”
**MAPPING THE ROUTE TO STUDENT SUCCESS**

A group of Missouri S&T students is helping Garmin International Inc. develop new GPS products and technologies through an internship program at a new software engineering facility established on campus last fall.

The facility supports semester-long part-time internships throughout the school year, says Robert Buehler, CSci’05, MS CSci’09, a software engineering team leader with Garmin and manager of the facility.

“The facility first opened in December and we’re up to nine undergraduates so far,” Buehler says. “They spend their days working on a variety of tasks for our aviation and automotive products, including embedded software, verification testing and internal tools.”

Students work side-by-side with Garmin engineers and get hands-on experience developing future GPS products and technologies.

“We are open to providing internships to any qualified S&T students,” Buehler says. “The software engineering focus lends itself most easily to computer science and computer engineering majors, but that hasn’t stopped us from picking from others as well. These opportunities are going to be filled by the best fit for the company.”

Garmin worked closely with S&T’s office of technology transfer and economic development (TTED) to open the new facility, which is located in the Technology Development Center, a 22,000-square-foot building in Missouri S&T’s Innovation Park.

“Students are given a lot of flexibility in their hours to compensate for the unique schedule of a full-time student, with many needing to work outside of standard business hours,” Buehler explains. “We are very impressed with the caliber of students that S&T produces, and seeing how well they work with so little supervision reinforces that.”

“We plan to be up to 20 interns by September and continue to expand here at Missouri S&T,” Buehler says.

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**UNIVERSITY OF MISSOURI LEGISLATIVE DAY 2013**

On April 3, Missouri S&T alumni and friends visited with lawmakers in Jefferson City to garner support for the four-campus University of Missouri System as part of Legislative Day at the Capitol. Attendees included: Jim Foil, CE’74; Dan O’Sullivan, Phil’82; Matt Coco, CE’66; Bob Bay, CE’49; and Michael McMenus, LSci’81.

Missouri S&T representatives included: Chancellor Cheryl B. Schrader, Darlene Ramsay, Katie Jackson, Nancy Zamanzuk, Katie Machovsky, Steve Tupper, Eric Bohannan, Edna Grover-Bisker, Glenn Morrison, Matt Limmer, Randy Stoll and Mike Bassett.

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**MISSOURI S&T CAREER FAIR**

Career opportunities and employer relations hosted its Spring 2013 Career Fair on Feb. 19 with 197 employers in attendance, including 22 new employers. S&T students and alumni visited with 530 recruiters in hopes of landing a full-time job, internship or co-op opportunity.

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**STAT HOSTS BREAKFAST FOR ALUMNI**

Before the Spring Career Fair began, alumni recruiters were treated to a continental breakfast hosted by the student alumni association, Students Today, Alumni Tomorrow (STAT), and S&T’s Engineers Without Borders.
Mormile, a professor of biological sciences, discovered a particular bacterium, called *Halanaerobium hydrogeniformans*, that thrives in high-alkaline, high-salt conditions. The bacterium can eliminate the need to neutralize the pH of the biomass, a step required in the alkali treatment of biomass to produce hydrogen fuel and other biofuels. Mormile and her fellow researchers have been awarded two patents for developing a biofuel production process that uses the microbe.

The conventional method of biofuel production involves the steam-blasting of switchgrass and straw to separate lignin, an unnecessary byproduct, from the cellulose that is needed to create the biofuel. The process requires electricity, usually produced by either coal or natural gas, to generate the steam. That process releases considerable amounts of carbon dioxide while burning fossil fuels. The breakdown of the lignin produces compounds that inhibit fermentation and lead to lower hydrogen yields.

Treating the switchgrass and straw with an alkaline substance removes the lignin with limited formation of the harmful compounds, but the resulting slurry is highly alkaline and very salty. Before the discovery of *Halanaerobium hydrogeniformans*, a neutralization step was required before the fermentation process could begin. Using Mormile’s bacterium, that step can be eliminated.

“We realize this isn’t going to solve all the transportation fuel problems, but we’d like to see this develop into regionalized solutions,” Mormile explains. “Farm communities could take agricultural waste, perform the alkaline pretreatment, feed it to an onsite reactor and produce hydrogen fuel directly for use on the farm.”

Mormile studies extremophiles — life forms that exist in extreme conditions. The *Halanaerobium hydrogeniformans* bacterium used in Mormile’s hydrogen fuel production study came from Washington’s Soap Lake, which is unique in that it has not turned over in more than 2,000 years because of its high salinity. Its water has the same pH as ammonia and is 10 times saltier than seawater.
BATTLE OF THE BRAINS

Scholarship donors and the students who benefit from their generosity pooled their brain power on April 19 to vie for the title of “Smartest Miners” as part of the Battle of the Brains trivia challenge during MinerFest. The evening, which included a casual picnic dinner, was filled with recognition and fellowship.

CELEBRATING THE CLASS OF 2013

On May 14, the Miner Alumni Association hosted its biannual Grad Finale celebration for graduating seniors. Students celebrated their graduation with a free barbecue outside the alumni office. The association welcomed about 170 graduates into the Miner alumni family at this event.
KNIGHTS OF ST. PATRICK

Eight alumni and friends of Missouri S&T were dubbed Honorary Knights of St. Patrick during the 105th Best Ever St. Pat’s Celebration in March. Retired Rolla Police Chief Stan Spadoni was named Honorary St. Pat and served as marshal of the St. Pat’s parade.

2013 HONORARY KNIGHTS

• Roger Dorf, ME’65, chair of the board of Airwalk Communications and member of the board of the National Chamber Foundation of the U.S. Chamber of Commerce
• Mark Fitch, associate professor and assistant chair of environmental engineering at Missouri S&T
• Steve Hargis, director of public works for the city of Rolla
• Shenethia Manuel, associate vice chancellor of human resource services, affirmative action, diversity and inclusion at Missouri S&T
• Jason Smith, 8th District U.S. representative
• Don Sparlin, professor emeritus of physics at Missouri S&T
• Timothy Wolfe, president of the University of Missouri System
• Joan Woodard, Math’73, a consultant and retired executive vice president at Sandia National Laboratories.

AEROSPACE TEAM ROCKETS TO A WIN

Despite crashing its first plane during testing, Missouri S&T’s Advanced Aero Vehicle Group won the Society of Automotive Engineer’s 2013 Aero Design East competition. Sponsored by Lockheed Martin, the competition was held in Texas in March at the Fort Worth Thunderbirds Flying Field.

The competition required the students to design and build an 8-pound aircraft capable of carrying a 15-pound static payload and a 3-pound “humanitarian aid package,” a sandbag that was to be dropped on a target from 100 feet in the air. Scoring was based on the sandbag’s proximity to the specified target.

S&T’s team earned first place in the presentation portion of the competition and third place in design. The team was in first place overall at the end of the first day.

No team in S&T’s class was able to successfully complete the flight portion of the competition. Teams struggled in the strong Texas winds and even after achieving liftoff, many vehicles crashed or failed to target the designated drop zone. With no points being awarded for the flight aspects, the Miners remained in first place. ■
The system monitors the health of bridges by collecting data autonomously and then detecting patterns that provide clues about the structures’ integrity.

The “multicopter” gets its name from its appearance. The radio-controlled mini-helicopter has multiple propellers to lift it into the sky and is loaded with an assortment of cameras, sensors and other technology that help it to maneuver and hover. Yin’s group has created several versions of the machine, including a hexocopter (six propellers) and a quadcopter (four propellers).

While the flying machine may not be groundbreaking, it is incredibly practical, says Yin, an assistant professor of computer science at S&T.

“Imagine you need to perform a check-up on a bridge that is over an extremely fast-flowing river, or even spans a section of the ocean,” says Yin. “The standard procedures are extremely labor-intensive and time-consuming. With a multicopter, you have a feasible solution to a dangerous problem.”

Yin’s research is funded by Lockheed Martin and sponsored by the Mid-America Transportation Center, a consortium of Midwestern universities based in Lincoln, Neb.; Missouri S&T is a member of the group. The finishing touches of this project are set to be completed by December 2013.

Chris Seto, a sophomore in computer engineering, and Yunxiang Mao, a Ph.D. candidate in computer science, work with Yin.

“These aircraft can be very precisely flown, so even in sensitive environments, such as those with many obstacles, the aircraft can still be successfully maneuvered,” Seto says.

“In the future, besides its initial intentions for bridge structure monitoring, this technology could be incorporated into military or corporate use,” Yin says. “Similar to drone uses, auto-detection and tracking is going to be important. Or even something like farming. If you have 60 acres of corn, you can monitor which areas need attention or irrigation, or find where the cows are on a very large farm.”

REMOTE-CONTROLLED BRIDGE MONITORING

The current method of inspecting bridges for structural damage is labor-intensive and, in some instances, dangerous to all involved. But Zhaozheng Yin is developing a safer, more efficient solution dubbed the “multicopter.”
SUMMONING ALL SUPER MINERS TO RETURN! REUNITE! RECONNECT! IN ROLLA!

UNCOVER A HOMECOMING OF HEROIC PROPORTIONS ...

FRIDAY, OCT. 18

ALUMNI ASSOCIATION MINER LEGENDS LUNCHEON

Noon–1:30 p.m.
Havener Center, St. Pat’s Ballroom
Help us honor our Miner superheroes at the
Miner Legends Luncheon.
Tickets for event: $20

SILVER AND GOLD GATHERING

5–8 p.m.
Alumni Patio, Castleman Hall
Social Time: 5–8 p.m.
Dinner Buffet: 6–7:30 p.m.

Kick back and relax with family and friends for a casual buffet dinner on the patio.
Meet the Super Miners, including our 2013 Miner Alumni Association awardees
and student design team members.

Tickets for event
• $25 for adults
• $10 for children ages 6 to 12
• Free for children under age 6

SATURDAY, OCT. 19

SUPER MINER 5K

9 a.m.
Allgood-Bailey Track
Join the Central Ozarks Section for a beautiful run,
jog or walk through the S&T campus. All alumni,
friends, faculty, staff and students are welcome.
Registration fee
$15 for students (K–college)
$20 for alumni

FOOTBALL GAME, MINERS VS. ST. JOSEPH’S COLLEGE

1 p.m.
Allgood-Bailey Stadium
Tickets for event
• $8 for adults
• $6 for students (K–college) and seniors age 65+
• Free for children under age 6 and S&T students with a valid student ID

KICK-OFF TAILGATE PARTY

11 a.m.–1 p.m.
Alumni Tent, Gale Bullman
Multi-Purpose Building parking lot
Join us for a tailgate party with grilled hot dogs and hamburgers,
$1 beer and other tailgate goodies.

Tickets for event
• FREE for those who pre-register online or call by Oct. 11, 2013

Tickets purchased at the door:
• $10 for adults
• $5 for children ages 6 to 12
• Free for children under age 6

REGISTER TODAY

Register online at
mineralumni.com/homecoming
or call 800-JOMINER

WHEN YOU ARRIVE ...

All alumni should pick up their registration packets at the Homecoming Welcome Desk:
• 1–7 p.m. Friday, Oct. 18, in Castleman Hall
• 10:30 a.m.–1 p.m. Saturday, Oct. 19, at the Alumni Tent in the Gale Bullman Multi-Purpose
   Building parking lot
THURSDAY, OCT. 17

GEOLGY AND GEOPHYSICS
ADVISORY BOARD MEETING
10–11:30 a.m.
Havener Center, Mark Twain Room

ACADEMY OF ENGINEERING
MANAGEMENT PICNIC
11:30 a.m.–1 p.m.
Schuman Park, lower pavilion

ACADEMY OF MECHANICAL AND AEROSPACE
ENGINEERS BOARD OF DIRECTORS MEETING
12:30–4:30 p.m.
Havener Center, Silver and Gold Room

ACADEMY OF MECHANICAL AND AEROSPACE
ENGINEERS INDUCTION DINNER
5–10 p.m.
Matt’s Steakhouse, 12200 Dillon Outer Road, Rolla

ACADEMY OF COMPUTER SCIENCE BANQUET
Reception: 6 p.m. Dinner: 7 p.m.
Matt’s Steakhouse, 12200 Dillon Outer Road, Rolla

GEOLGY AND GEOPHYSICS
HOMECOMING BANQUET
6–9 p.m.
Havener Center, Carver-Turner Room
Cost $25
RSVP to Patty Robertson at pattyr@mst.edu or call
573-341-4616 and indicate if vegetarian meal is desired.

FRIDAY, OCT. 18

ACADEMY OF MECHANICAL AND AEROSPACE
ENGINEERS ANNUAL MEMBERSHIP MEETING
7:45 a.m.–2 p.m.
Matt’s Steakhouse, 12200 Dillon Outer Road, Rolla

ACADEMY OF MECHANICAL AND AEROSPACE
ENGINEERS SPOUSE AND GUEST EVENT
8 a.m.–2:30 p.m.
Location TBD

SOUVENIR REPRINTS OF YEARBOOK PHOTOS
8 a.m.–4 p.m.
Provided by Curtis Laws Wilson Library,
Havener Center atrium

ACADEMY OF COMPUTER SCIENCE MEETING
8:30 a.m.
Room 327 Computer Science Building

ACADEMY OF ENGINEERING MANAGEMENT
BUSINESS MEETING
8:30 a.m.–noon
Engineering Management Conference Room
Room 226 Engineering Management Building

MINER ALUMNI ASSOCIATION
COMMITTEE MEETINGS
9 a.m.–4:30 p.m.
Havener Center

ACADEMY OF MINES AND METALLURGY
MEETING
9:30 a.m.–3 p.m.
Havener Center, Silver and Gold Room

ORDER OF THE GOLDEN SHILLELAGH
EXECUTIVE MEETING
10–11 a.m.
Room 107 Castleman Hall

ALUMNI ASSOCIATION MINER LEGENDS
LUNCHEON *
Noon–1:30 p.m.
Havener Center, St. Pat’s Ballroom

ACADEMY OF MINER ATHLETICS
COMMITTEE MEETINGS
Noon–4 p.m.
Hall of Fame Room, Gale Bullman Multi-Purpose Building

HOMECOMING REGISTRATION
1–7 p.m.
Castleman Hall

BIOLOGICAL SCIENCES DEPARTMENT
HOMECOMING PICNIC
2:30–4 p.m.
Schrenk Hall, front lawn

JACKLING JOCKS DINNER
5 p.m.
Castleman Hall

SILVER AND GOLD GATHERING *
5–8 p.m.
Alumni Patio, Castleman Hall

ACADEMY OF MINER ATHLETICS BANQUET
AND INDUCTION CEREMONY
5–8:30 p.m.
Castleman Hall

SATURDAY, OCT. 19

SUPER MINER 5K *
9 a.m.
Allgood-Bailey Track

ALUMNI ASSOCIATION BOARD AND
ANNUAL MEETING
9–11 a.m.
Havener Center

HOMECOMING PARENT MEETING AND
RECEPTION
10 a.m.
Havener Center, St. Pat’s Ballroom A and B

HOMECOMING REGISTRATION
10:30 a.m.–1 p.m.
Alumni Tent, Gale Bullman Multi-Purpose Building
parking lot

MISSOURI S&T ATHLETIC HALL OF FAME
ROOM OPEN TO VISITORS
11 a.m.–12:30 p.m.
Gale Bullman Multi-Purpose Building

KICK-OFF TAILGATE PARTY *
11 a.m.–1 p.m.
Alumni Tent, Gale Bullman Multi-Purpose Building
parking lot

FOOTBALL GAME, MINERS VS.
ST. JOSEPH’S COLLEGE *
1 p.m.
Allgood-Bailey Stadium

* SEE PAGE 15 FOR DETAILS.
REUNION OF ELECTRICAL ENGINEERING GRADUATES OF ’62, ’63 AND ’64
2–5 p.m.
Faculty Lounge, Emerson Hall
RSVP to Tom VanDoren at vandoren@mst.edu

JACKLING JOCKS ANNUAL BANQUET AND BUSINESS MEETING
6–9 p.m.
Location TBD

SUPER MINER ALUMNI SOCIAL
7–10 p.m.
Public House Brewing Company
600 N. Rolla St., Ste. B
Drop in for a pint and enjoy some local music. Come and go as you please. Payment may be made directly to the brewery.

SUNDAY, OCT. 20

CHANCELLOR’S ADVISORY COMMITTEE ON AFRICAN AMERICAN RECRUITMENT AND RETENTION MEETING
1–3 p.m.
Location TBD

SPECIAL CELEBRATIONS

SIGMA NU 110TH ANNIVERSARY
For more information contact Darren Peeler at darrendpeeler@gmail.com

JACKLING JOCKS 16TH ANNUAL REUNION
For more information contact Debert Day at 573-364-5569 or day@mst.edu, or Newton Wells at 979-690-3650 or mnwells1@verizon.net.

ALUMNI ACHIEVEMENT
• Col. John Pierre Powell, AE’87, president, PAMCO Investments Corp.
• LeRoy E. Thompson, CE’56, MS CE’65, retired principal and vice president, C3TS, and emeritus professor, Florida International University

ALUMNI MERIT
• Kathryn A. Walker, MS EMgt’82, managing director, OPENAIR Ventures

ROBERT V. WOLF ALUMNI SERVICE
• Bradley H. Hornburg, CE’69, CEO, Landmark Contract Management Inc.

DISTINGUISHED YOUNG ALUMNI
• Daniel P. Ellis, CE’99, vice president, Crafton Tull and Associates
• Karlynn Sievers, Engl’96, LSci’96, physician and clinical assistant professor, University of Wyoming

FRANK H. MACKAMAN ALUMNI VOLUNTEER SERVICE
• Jerry D. Parsons, CE’70, retired materials engineer, Illinois Department of Transportation

CLASS OF 1942 EXCELLENCE IN TEACHING
• Jennifer Pattershall, assistant professor of psychological science at Missouri S&T
HONORING A GEOLOGY LEGEND

The late A.C. Spreng was passionate about rocks and passed that enthusiasm on to generations of S&T geology and geophysics students. In January, local artist Lynn Grannemann donated her mixed-media painting “Exploring Missouri’s Past” to Missouri S&T in Spreng’s memory. “I contacted Dr. Spreng when I needed fossils and rocks for this piece,” says Grannemann. “He was so helpful and kind. I continually needed more and more samples and he graciously allowed me to borrow them.” Pictured with Grannemann (right) are Ralph Flori, PetE’79, MS PetE’81, PhD PetE’87, associate professor and chair of geological sciences and engineering, and Francisca Oboh-Ikuenobe, professor of geological sciences and engineering.

A NEW OLD TRADITION

St. Pat’s arrival in downtown Rolla aboard a railroad handcar on March 13 marked the revival of an old tradition. In the early days, St. Pat arrived in Rolla by rail, but that tradition was derailed in 1996 because of safety concerns. In recent years, he arrived on a custom manure spreader. Robert Hribar, a senior lab mechanic in mechanical and aerospace engineering and a 2012 Honorary Knight of St. Patrick, worked with St. Pat’s Board members to modify the handcar for street travel.
GIANT FORCES IN SUPER-STRONG NANOMATERIALS

In a study that could lead to advances in the emerging fields of optical computing and nanomaterials, Jie Gao and Xiaodong Yang, both assistant professors of mechanical engineering, report that a new class of nanoscale slot waveguides pack 100 to 1,000 times more transverse optical force than conventional silicon slot waveguides.

The findings, which were published in the Sept. 24 issue of the journal Optics Express, could lead to advances in developing optical computers, sensors or lasers.

Gao and Yang describe the unusual optical and mechanical properties of nanometer-scale metal-dielectric structures called metamaterials. Using computers, they simulated nanometer-scale models of metamaterial slot waveguides, which are structures designed to channel beams of light from one area to another. Waveguides function like tiny filaments or the wires of an integrated circuit, but on a much smaller scale.

For their study, the Missouri S&T researchers simulated slot waveguides made of layered structures of silver and a dielectric material arranged like the alternating bread and meat in a club sandwich. A nanometer — visible only with the aid of a high-power electron microscope — is one billionth of a meter, and some nanomaterials are only a few atoms in size.

Gao and Yang simulated what would happen with modeled identical waveguides stacked with a tiny air gap between them. They then measured the transverse optical force between the waveguides. Optical force refers to the way beams of light can be made to attract or repel each other, as magnets do.

They found that “the transverse optical forces in slot waveguides of hyperbolic metamaterials can be more than two orders of magnitude stronger than that in conventional dielectric slot waveguides.” For this reason, Gao and Yang describe the magnitude as “giant” in the title of their Optics Express article, “Giant transverse optical forces in nanoscale slot waveguides of hyperbolic metamaterials.”

JUST HOW SMALL IS NANO?

One nanometer is one-billionth of a meter. It’s difficult to imagine just how small that is, so here are some examples according to the National Nanotechnology Initiative:

- DNA: 2.5 nanometers in diameter
- Hair strand: 90,000 nanometers in diameter
- Raindrop: 2.5 million nanometers in diameter
- Ant: 4.5 million nanometers in length

RESEARCH UPDATE

In a process comparable to squeezing an elephant through a pinhole, Jie Gao and Xiaodong Yang have designed a way to engineer atoms capable of funneling light through ultra-small channels. Their research is the first to demonstrate that the material — a specially designed “meta-atom” of gold and silicon oxide — can transmit light through a wide bandwidth and at a speed approaching infinity.
Total points scored by Mary Ann Bradshaw in the indoor pentathlon at a February 2013 Illinois Wesleyan meet. This is a new school record.

Consecutive New South Intercollegiate Swimming Championships titles Missouri S&T has won. Next year, the Miner swimming team will compete in the Great Lakes Valley Conference.

Total career pitching wins by starters Kyle Robertson, Chris Bowe and John Auble heading into the 2013 season.

Toni Knar’s career three-point total, second on Missouri S&T’s all-time list.

Capital One Academic All-America selections at Missouri S&T for the 2012–2013 season as of the end of May. They are Adam Stensland, NucE’13, and Caleb Collier in men’s soccer, Brian Peterson, ChE’11, in football, Jennifer Costello, ChE’13, in volleyball and Kaylea Smith in softball.

Hits in Will Morrison’s baseball career — a total that ranks sixth on S&T’s all-time best list.

Rebounding average for Miner basketball player Mudi Eruteya, who ranked fourth in the Great Lakes Valley Conference.
“Duct-tape me to a rocket — I’m ready,” says Sanders, a senior aerospace engineering major from Webb City, Mo.

Sanders got a head start on his dream last summer as an intern for SpaceX, the California-based rocket manufacturer. Working in the company’s manufacturing and engineering area, a division of the structures department, Sanders helped develop the heat shield for SpaceX’s Dragon spacecraft. Last August, the Dragon successfully attached and delivered cargo to the International Space Station, becoming the first commercial spacecraft to do so.

Being a part of that historic achievement fueled Sanders’ desire to pursue space exploration. He is again interning this summer at SpaceX (Space Exploration Technologies Corp.). “My contributions were relatively small,” he says, “but I’ve always wanted to work with something that goes into space.”

His plans for the future are much more ambitious.

“I would like to put people on Mars,” says Sanders. “Putting people on another planet and extending as far as we can — that’s science fiction becoming reality. What could be cooler?”

Sanders took an unconventional route to his internship. After speaking at S&T’s Alumni of Influence event in November 2011, he met one of the evening’s honorees, Brian Matthews, ME’81, founder of River City Internet Group in St. Louis. Intrigued by Sanders’ interest in SpaceX, Matthews contacted some of his connections at the company. From there, Sanders “got a call from a recruiter, and after that I got a call for an interview.”

So launched Sanders’ career as a SpaceX intern.

“We’re involved in a space race again,” he says. “It’s a different kind of space race because it’s based on private competition, which drives the price to go into space. It’s very exciting.”

Jonathan Sanders wants to be involved in the next great space race — and not just as an engineer helping design future space vehicles. He also wants to fly to Mars.

ROCKET MAN
Miners are makers. Maybe not always in the traditional sense, but the theme of making is a deeply rooted part of who they are.

Look around your house. Your office. Your car. Nearly everything you see has a connection to a Miner, from basic personal needs like shampoo, diapers and prescription medications to lawn mowers, bleach, bed springs and adhesives. Even the railroad that transports these goods and the credit cards you use to purchase them involve Miners.

That trait has marked Rolla students since the university’s founding in 1870. From the first day they step onto the Rolla campus, Miners are taught to push beyond theory — to grasp and tinker with what could be. To think. To create. And to do the hard, practical work needed to make things happen.

We’ve come a long way since our graduates helped drive the Industrial Revolution and launch the Space Age. Today, our graduates continue the tradition of creating real solutions to everyday problems. In corporations around the world, Miners use their skills, knowledge and creativity to produce the goods and services that we encounter every day.

Nine different alumni — and the companies that employ them — are represented in this issue. Their stories illustrate just a few of the ways that Miners touch our everyday lives. We may not know what tomorrow’s great must-have will be. But we know our grads will be involved in making it.
By Mindy Limback | limbackm@mst.edu

“By the time Layland Watson left Rolla in 1996, he knew how to drive a haul truck, design a mine, and work in open pit copper mines and underground coal mines — tasks a mining engineer would normally expect to have acquired after some time on the job. “I truly believe the co-op opportunities in Rolla prepare you to go to work,” Watson says. “You work a regular schedule and it prepares you for real life. It gives you instant credibility with prospective employers.”

With four co-ops under his belt, Watson, MinE’96, joined 3M as a process engineer for an open-pit quarry in Little Rock, Ark. The facility produced roofing granules — the small, coated pieces of rock found on roofing shingles.

People don’t always associate 3M with mining, but the company was founded in 1902 as the Minnesota Mining and Manufacturing Co., Watson says.

Mining has been part of Watson’s whole life. He was born in a gold-mining town in Western Australia and grew up in Rolla under the watchful eye of his father, former metallurgical engineering chair John Watson.

After leaving Arkansas, Watson worked at a number of 3M facilities across the United States. While working as a product manager at a multi-technology plant in Cumberland, Wis., he was asked to help lead the micro-finishing film business. He enrolled in the University of Minnesota’s Carlson School of Management and spent every Friday and Saturday night in class for two straight years to earn his MBA.

“I was in Cumberland for three years before I left to work at the headquarters in St. Paul,” Watson says. “It was a project management assignment, known within the company as a black belt position that let me lead projects for Scotch Brite products and window films. I then went on to a plant manager role in Northern California at an optical film manufacturing facility.”

Today, Watson is the plant manager at a facility in Decatur, Ala. The plant manufactures specialty resins and films that serve as the base for many finished products.

“The great thing about 3M is we’re so diverse that even a guy in mining engineering can advance,” Watson says. “You aren’t pigeonholed. You can progress to be what you want to be.”
rad Lind, EMgt’96, is a quality guy. To him, quality — the continuous improvement of products and services — is a key driver in improving consumers’ lives.

A member of The Clorox Co.’s corporate quality assurance team, Lind focuses on reducing risks and increasing consumer value with new and existing products.

A 16-year veteran of the company, Lind and other members of his team do that by examining the several different data streams available from all the business units — from its namesake bleach and cleaning products unit to Kingsford charcoal. He takes a systematic approach to driving out waste at the plant.

“We are the guardians for the consumer,” he says of his team. “We have the right processes, tools and systems to build great brands for customers and consumers.”

After graduation, Lind joined First Brands Corp. in Rogers, Ark., as a production supervisor at a Glad manufacturing plant. It was a typical entry-level position for an engineer with the company.

“During the interview process, I went on site to the plant,” he says. “If you had told me before I went that it would have been a good fit, I would never have believed it. But it truly was a great fit for me personally and professionally.”

Lind liked that Clorox Co. is a true manufacturing facility and over time, he says, he got to see it move from manual processes to automation. The company now embraces technology, Lind says.

Lind had the opportunity to take on different roles after Clorox acquired First Brands in 1999.

“After the acquisition, Clorox was nearly twice the size of the former First Brands Corp.,” he says. “It’s been great.”
After leaving Arkansas, Lind joined the leadership teams at a Glad manufacturing plant in Amherst, Va., and then later at Forest Park, Ga. At that time, due to supply chain needs, the company closed a couple of plants and shifted its operation to the Atlanta area.

For the last three years, Lind has worked in a satellite office in Kennesaw, Ga., where operation services and R&D teams are housed.

“If you’ve been around manufacturing long enough, and doing enough, you develop an invaluable lens,” he says. “Getting experiences in the plant is a great place to get started for anyone who’s going to get in the world of manufacturing. You understand how critical people, processes and technology are to drive out waste and achieve your goals.”

Outside of work, Lind enjoys spending quality time with his family. He and his wife, Angela, have a 10-year-old son and an 8-year-old daughter. A former Miner football player, Lind now finds himself on the sidelines, coaching his son’s football and basketball teams or cheering on his daughter’s competitive gymnastics team.

As Clorox celebrates its 100th anniversary this year, Lind credits the company’s success to its emphasis on finding the right people.

“We’re relatively small and competing with giants, but we’re boxing above our weight,” he says. “We have great people who work together, understand business and consumer needs, and understand how to get product to market quickly.”

Breenae Washington, EMgt’12, didn’t know what to expect when she started her first job after graduation.

“I thought I’d be treated like an intern, but I’m not,” she says of her project management position with MasterCard in O’Fallon, Mo. “Although there’s a steep learning curve, I’m learning as I go.”

Washington says she’s discovered there’s a big misperception about the company. “We’re not a payments company — we’re actually a technology company that works on solutions to make the payment industry more safe and secure,” she says. “We don’t issue cards or control interest rates.”

As a member of the global project management office, Washington helps manage the financial aspects, plans and team schedules for projects.

“I get a lot of exposure to different things here,” she says. “I worked on the environment testing phase of Priceless Cities, a unique program that gives holders one-of-a-kind experiences around the world, including fine dining, world-class sporting events and indulgent shopping experiences. It started in New York and has expanded to 20 cities around the globe.”

She’s also part of a team that is working to help MasterCard better market itself to top talent.

“It’s easy to find the positives about working here,” she says. “MasterCard cares about its employees’ development and job satisfaction, and it promotes from within. I can set my own path here.”
Carthage, Mo.-based Leggett & Platt manufactures a broad array of products, so it’s only fitting that one of the company’s staff vice presidents has an equally broad resume of experience.

Randall Wood, ME’85, MS ME’87, began work at Leggett & Platt as a director of operations optimization nine years ago. He moved into a leadership role and then took his current position. Today, a typical workday begins before 6:30 a.m. Wood says the early hour gives him time to prepare for the day’s meetings and planning sessions.

Wood credits his broad experience prior to joining Leggett & Platt with his career success. After graduation he began work for General Electric analyzing heat transfer in the engines of F-16 aircraft. He left GE to pursue a Ph.D. from the University of Missouri-Columbia to “get closer to manufacturing,” he says.

While finishing his Ph.D. dissertation, Wood took a job at Joplin, Mo., based Able Body Corp., designing sleeper cabs for the heavy truck industry. After a product launch, he took on a lean manufacturing role in the company that expanded his business expertise.

Wood then took a job managing a Vermeer plant in Iowa that made stump grinders, brush chippers and large tub grinders. After a short stint as a stay-at-home dad, Wood joined Simpler Consulting to provide lean manufacturing solutions to companies like Lockheed Martin and Snap On Tool.
Randall Wood, ME’85, MS ME’87 right, a staff vice president, leads Leggett and Platt’s business system office. The photos on page 26 show some of the company’s 130-year history. The photos below show some of Leggett and Platt’s current operations.

“My broad experience both prior to Leggett & Platt, and with L&P, has prepared me for this career,” Wood says. “I have seen a variety of businesses and manufacturing processes and been involved in virtually every aspect of manufacturing.”

Leggett & Platt itself has a broad manufacturing footprint. The company began 130 years ago with a partnership of ideas and know-how that produced the first commercially viable bed spring. The company has come a long way since J.P. Leggett and C.B. Platt first shook hands.

“Our bedding components are found in most sleep products in the United States, including fasteners, fabrics, bed frames, foundations, sheets and pillows,” Wood says. The company then expanded into home and office furniture and carpet padding and underlay.

The company also diversified into automotive seating, retail fixtures, and steel wire and tubing industries. It manufactures wire and tubing for its own components as well as those produced by other companies. It also provides lumbar support in automotive vehicle seats and engineered tubing components for the aerospace industry.

Today Leggett & Platt has grown to more than 130 manufacturing operations in 20 countries with 19,000 employees.

“I help our partners around the globe achieve success in their business and in their careers,” Wood says. “I enjoy developing the strategy for our business process development and the supporting technology, and then executing that strategy.”

Wood has a longstanding connection to S&T and the Rolla community. While he was in college, his father, Richard Wood, ME’64, and his mother, Betty, lived in Rolla. Betty worked at the old Foster’s Bakery. Today, Wood’s son, Ryan, is studying computer science and computer engineering at S&T.

“I thoroughly enjoyed my time at Missouri S&T and certainly gained a great education that has propelled my career,” Wood says.
according to researchers at the Bureau of Labor Statistics, most American workers last four years with an employer. Katie Dambach, ME’06, defies that statistic. “I have never interviewed with another company,” Dambach says of her experience with Procter & Gamble. “I got the first internship and never looked back.”

Dambach, a manufacturing project leader for Pampers, acts as a liaison between her plant and others. Her workday includes preparing projects, making sure proper documentation is done, facilitating conference calls between “diaper design engineers” at various plants (both domestic and international), and troubleshooting the execution and assembly process. And while these job duties don’t necessarily sound like those of a typical mechanical engineer, she says her current position allows her to draw on her engineering background.

“School allowed me to learn mechanical troubleshooting, an ability and strength of engineers; it’s more about the process than design,” she says. “Because of that, engineers tend to be more mobile and progressive in their careers.”

Dambach was first introduced to P&G when she was invited to attend a Minority Technical Summer Camp in Cincinnati after her freshman year at Missouri S&T. “The next summer, I interned with Bounty Research and Development in Cincinnati,” she says.

Dambach returned to P&G for two additional internships, both times to the manufacturing site in Cape Girardeau, Mo., the same plant where she currently works. She and her husband, Travis, live in their nearby hometown of Jackson, Mo., with their toddler, Birkley.
Dambach says her daughter gives her an invaluable perspective on her career. “Not only am I a producer, I’m a consumer. Therefore, I really understand the need for the quality checks and all that goes into producing the diapers,” she says. “They have to be perfect because they are going on our most prized possessions — our babies.”

The amount of pride and dedication Dambach puts into her work is a direct reflection of what P&G puts into their employees. “Our employees are our number one asset,” says Dambach. “Without them, there is nothing. P&G builds leaders and invests in their employees — they really care.”

For example, Dambach recalls running into the plant manager who hired her seven years earlier. He had since become a vice president, working in Cincinnati. “He came up to me and said, ‘Hi, Katie! How are you doing? How’s Travis?’”

P&G strives to maintain the family-friendly feel it was built upon more than 175 years ago. Headquartered in Cincinnati, P&G has production plants in more than 80 countries and consumers in more than 180 countries. The company now manufactures more than 300 products, from Crest to Tide, and at least one product is found in nearly every American household, according to a recent Wall Street Journal report. “I love knowing that what we make improves our consumer’s lives every day,” says Dambach. “It’s pretty cool to be part of that.”
es, it’s an old company. It’s been a fixture in the transportation industry since Abraham Lincoln signed the Pacific Railway Act of 1862 to create a transcontinental railroad. But that doesn’t mean Union Pacific is out-of-date.

“Most people look at us and think, ‘You’re a railroad, you must use a lot of old technology,’” says Travis Duncan, BAdm’08, IST’08. “And while it’s true that Union Pacific has been around for 150 years, we are a leader in developing and applying cutting-edge technology in transportation.”

The nation’s largest railroad covers 23 states across the western two-thirds of the United States and employs about 45,000 people.

Based in Omaha, Neb., Duncan is manager of “MyUP,” Union Pacific’s internal company portal. “It’s a place where our various departments (operations, marketing, sales, etc.) have access to the information and applications they need to do their jobs. Our goal is to be a one-stop shop that brings together what they need on a daily basis,” he says.

Because MyUP touches all departments, I get to interact with a lot of people throughout the company and learn about all the different pieces of the business,” he says.

Duncan says he was initially drawn to UP because of its technology aspect, not from a fascination with trains as many other employees have. But he’s a fan now. “I’ve developed a real appreciation for trains since I’ve been with Union Pacific,” he says. “We get things from one place to another in ways trucks just can’t. A single train can carry as much as 300 trucks can. And we’re really efficient too, with less impact to the environment.”

Union Pacific moves freight, not people, but Duncan plans to get out in the field soon and take a ride on one of the trains himself.

He encourages new graduates and others to consider Union Pacific for a career. “A lot of baby boomers will be retiring in the next few years, creating tremendous career opportunities for younger employees,” he says.

“It’s the diversity in both the technology and people that makes Union Pacific a fun, challenging and rewarding place to work,” he says.

“We are a leader in developing and applying cutting-edge technology in transportation.”
am Patterson is one of the voices of John Deere.

A design engineer in John Deere’s rotary mower group, Patterson, ME’06, is passionate about his work — making lawn mowing easy — and it shows in the company’s latest “How We Run John Deere” video, which features Patterson.

Patterson designed the two new high-capacity mower decks on John Deere’s updated X700 tractor. He followed the project all the way through production, working on everything from computer modeling to performance and reliability testing. That breadth of knowledge made him a natural fit for the video.

“Aside from making tall grass short, my main job is to make it very easy for the customer to attach the mower deck to the tractor,” Patterson says.

There is one latch to flip in the front of the tractor, but the majority
Find out what Sam thinks about the X700 mower deck. Scan the QR code with your smart phone or visit rol.la/samx700. Scroll down or click on the Deck link to watch the video.

Anita Heinzke, ChE’10, thinks outside the shampoo bottle.

That creative thinking earned Heinzke, a project engineer in L’Oreal’s Florence, Ky., hair care facility, a $5,000 Beauty Shakers award from the company. Her suggestion — to use corn plastic in L’Oreal shampoo packaging — took third place out of more than 900 submissions in the company’s annual ideas competition.

“Corn plastic is a 100 percent biodegradable material that has a lot of environmental benefits,” says Heinzke, who works with the lines that fill bottles with shampoo. “Most plastic is made from oil, but this type is made from corn. It could potentially save hundreds of thousands of barrels of oil annually by switching our products alone to this material.”

Heinzke is helping the company with its recent launch of the new restage of the L’Oreal shampoo line, Advanced Haircare. It required the purchase of $6 million in new equipment and the installation of four packaging lines that were modified to handle the capacity.

“L’Oreal is a company that gives its employees a lot of opportunity and freedom to be creative,” Heinzke says. “The company has a strong passion for promoting women in science. Every day there is something new and challenging.”
MISSION, GOALS
AND BENEFITS

MISSION
The association proactively strives to create an environment —
embracing communication and participation by Miner
alumni and friends — to foster strong loyalty to the university
and growth of the association. The association increases its financial
strength and provides aid and support to deserving students,
faculty and alumni.

GOALS
• Increase alumni pride in their association with Missouri S&T and
the Miner Alumni Association
• Increase alumni involvement, especially that of young alumni
• Increase alumni contributions, both in the number of alumni
making a financial commitment and in the dollars raised to
benefit Missouri S&T and the Miner Alumni Association
• Strengthen relationships with faculty, staff and students on
behalf of the alumni association.

The officers and other members of the association’s board of
directors provide leadership and personal participation to achieve
these goals and fulfill this mission. For their efforts to be a
success, they need YOUR active participation as well, in whatever
alumni activities you choose.

BENEFITS
CAREER ASSISTANCE
Missouri S&T’s career opportunities and employer relations will
help you in your job search. For information, call 573-341-4343.

SERVICES
Online Community
including searchable directory at mineralumni.com
Access to alumni office
via email (alumni@mst.edu)
Address update service
so you don’t miss your Missouri S&T mail
Insurance discounts
Travel opportunities
MINER MERCHANDISE
Chairs, license plates (for Missouri residents) and the official
Missouri S&T ring.

GET MORE INFORMATION
Want to know who else is planning to attend a
section event in your area? Need more details
about an upcoming event? Register online at
mineralumni.com, click on the events tab,
select the events you want to attend then
click registration.

MINER ALUMNI ASSOCIATION
Representing more than 50,000 alumni worldwide
For more information about your representatives,
go to alumni.mst.edu/groups/boardofdirectors.

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Strengths:
• Alumni Networking
• Career Development
• Student Involvement
• Community Engagement

For more information about your representatives,
go to alumni.mst.edu/groups/boardofdirectors.

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MINER ALUMNI ASSOCIATION
Representing more than 50,000 alumni worldwide
For more information about your representatives,
go to alumni.mst.edu/groups/boardofdirectors.
CELEBRATE OKTOBERFEST WITH THE BAY AREA SECTION

San Francisco Bay area Miners will connect with their fellow alumni as they celebrate fall and enjoy fine German dining at the Bay Area Section’s Oktoberfest event. The group will meet for beer and cocktails at 5 p.m. Saturday, Oct. 26, at Teske’s Germania Restaurant and Beer Garden. Dinner will follow at 6:30 p.m.

To register online for this event or to see who is attending, go to mineralumni.com. Click on the “Events” tab, select Oct. 26 from the calendar on the right, select the Oktoberfest event listing, and click the “Registration” button. If you do not have access to register online, please RSVP to Dennis Leitterman, EE’76, MS EE’77, at 408-249-6959.

Last year, more than 30 alumni and friends celebrated Oktoberfest with the Bay Area Section at this annual event.

Teske’s Germania Restaurant and Beer Garden
255 N. First Street and Devine
San Jose, Calif.
408-292-0291
teskes-germania.com

UPCOMING SECTION EVENTS

Central Ozarks
Shrimp Feed
Saturday, Aug. 24
5 p.m. Beer and Cocktails
6 p.m. Dinner
Lions Club Park
Highway 63 South, Rolla
Pavilion 5

Coastal SC-GA
Homecoming Celebration
Saturday, Oct. 19
Time TBD
Colt outing followed by dinner at
the home of Kraig Gordon, EMgt’76
201 Summerton Drive
Bluffton, S.C.

Bay Area
Oktoberfest
Saturday, Oct. 26
5 p.m. Beer and Cocktails
6:30 p.m. Dinner
Teske’s Germania Restaurant
and Beer Garden
255 N. First St.
San Jose, Calif.

Falls of the Ohio
Bowling night
6:45 p.m. Friday, Aug. 16
Vernon Lanes
1575 Story Ave.
Louisville, Ky.

Bluegrass and Burgoo
5-7 p.m. Sunday, Sept. 1
The Waterfront
Intersection of River Road and
Zorn Avenue
Louisville, Ky.
Kentuckybluegrassfestival.com

Day at the Races
Noon Friday, Oct. 4
Keeneland
4201 Versailles Road
Lexington, Ky.

Dinner at Captain’s Quarters
7 p.m. Friday, Nov. 1
Captains Quarters
5700 Captain Quarters Road
Hamrods Creek, Ky.

Lincolnland
Student Send-Off
3-8 p.m. Sunday, Aug. 4
The homes of Rich CE’69
and Carolyn Berring
10 Beach View Lane
Springfield, Ill.

Kentucky Bluegrass Festival
5-11 p.m. Sunday, Sept. 1
The Watertower
Intersection of River Road
and Zorn Avenue
Louisville, Ky.
Kentuckybluegrassfestival.com

Day at the Races
Noon Friday, Oct. 4
Keeneland
4201 Versailles Road
Lexington, Ky.

Dinner at Captain’s Quarters
7 p.m. Friday, Nov. 1
Captains Quarters
5700 Captain Quarters Road
Hamrods Creek, Ky.

Motor City
Student Send-Off
6-8 p.m. Saturday, July 27
The homes of Andrew, EE’04, and
Tessa, ME’04, MS ME’06, Baughman
37845 Meadowhill Drive
Northville, Mich.

Alumni Road Trip to Missouri
S&T Homecoming
Friday, Oct. 18-20
Contact Lori Crocker, AE’88
loricrocker@sbcglobal.net

Lincolnland
Student Send-Off
3-8 p.m. Sunday, Aug. 4
The homes of Rich CE’69
and Carolyn Berring
10 Beach View Lane
Springfield, Ill.

Rock the Track
Noon Friday, Oct. 4
Keeneland
4201 Versailles Road
Lexington, Ky.

Dinner at Captain’s Quarters
7 p.m. Friday, Nov. 1
Captains Quarters
5700 Captain Quarters Road
Hamrods Creek, Ky.

Society of Petroleum Engineers
Alumni Reception
5:30-7 p.m. Monday, Sept. 30
Hilton Hotel Riverside,
Oak Alley Room
2 Poydras St.
New Orleans
HUGH AND LINDA COLE:
SILVER AND GOLD DONORS

Six months after graduating from high school in Hazelwood, Mo., Hugh Cole, EMgt’72, enrolled at Missouri S&T, determined to become the first engineer in his family (and first in his family to receive a college degree).

With the exception of that first summer, when I worked at the Chevy plant in St. Louis, I went to school year-round,” says Cole, now managing partner of AGI–Goldratt Institute, an organization he’s been with since 1993.

His four years at Rolla weren’t easy, he recalls. Like most students at the time, the Vietnam War, pressure about the draft and a severe U.S. recession weighed heavily on his mind. To supplement their income, he and six other students formed a horn-driven, pop-rock band known as Miller’s Cave. They played music in the style of Chicago and Blood, Sweat and Tears for dances and parties in Rolla, Columbia, St. Louis and, often, at Fort Leonard Wood.

“Everyone has been successful — probably more than what we thought would be possible. When we were in Rolla, we basically had nothing. Sometimes I wonder how I got through. It was hard to come up with the $395 a semester for tuition, much less living expenses!”

Despite the struggles, Cole graduated and joined Unidynamics, a division of Universal Match Corp., for 18 months before being hired by another Rolla grad to work for the Linde Division of Union Carbide Corp.

“Linda and I were newlyweds for a week before I had to leave for an engineering training program in Pueblo, Colo.,” Hugh recalls. Linda, who was attending the University of Missouri-St. Louis, would go on to join Hugh in Colorado after she completed her last semester at UMSL.

The job took the couple around the country. They lived in nine houses in 18 years while raising their two children, Doug and Lindsay. Hugh held both line and staff positions in production, engineering and marketing, while Linda worked as an elementary school teacher.

“I wouldn’t change any of those experiences,” says Cole, who chairs the executive committee of Missouri S&T’s donor recognition society, the Order of the Golden Shillelagh. “I think that’s what gives you an appreciation for making things better.”

The Coles’ desire to help others led to their decision to give back to Missouri S&T. The couple recently created the Hugh and Linda Cole Silver and Gold Scholarship. The scholarship will benefit engineering management students who have significant financial obstacles that threaten their ability to stay enrolled.

In addition to the award, students with remaining unmet financial need may also qualify for university loans that are interest-free while they are in school as well as campus work-study opportunities.

“I do understand that many students in Rolla are first-time college students,” he says. “I can totally appreciate it. If you can somehow afford to help, why wouldn’t you do that? We know the kids’ lives will be better because of it. What’s a better thing to do than to give someone else an opportunity?”

Photo by Chris Disel/Chris Disel Photography
DOING OUR PART

Calista LaBrell’s entry in a Trash Art contest sponsored by the Ozark Rivers Solid Waste Management District at the 2013 Missouri S&T Earth Day Celebration held on campus on April 22. LaBrell was a seventh-grade student at St. George School in Hermann, Mo. Just one example of S&T’s community outreach, the event featured Solar Village tours, contests and hands-on activities for hundreds of area youth, as well as our own S&T students. (Photo by B.A. Rupert)
A HOME COMING OF HEROIC PROPORTIONS

WHEN LAST WE MET OUR HEROES, THEY WERE BATTLING DISEASE AND POOR SANITATION, LANDING ASTRONAUTS ON THE MOON, HARNES SING THE POWER OF THE SUN, AND BUILDING THE VERY INFRASTRUCTURE OF OUR GREAT NATION. COME TO THE LEGENDS LUNCHEON TO MEET A FE W OF OUR NEWEST HEROES AND FIND OUT HOW THE LEAGUE OF SUPER MINERS WILL SOLVE THE NEXT GRAND CHALLENGES.

TUNE IN OCT. 18-20 – SAME MINER TIME, SAME MINER CHANNEL.