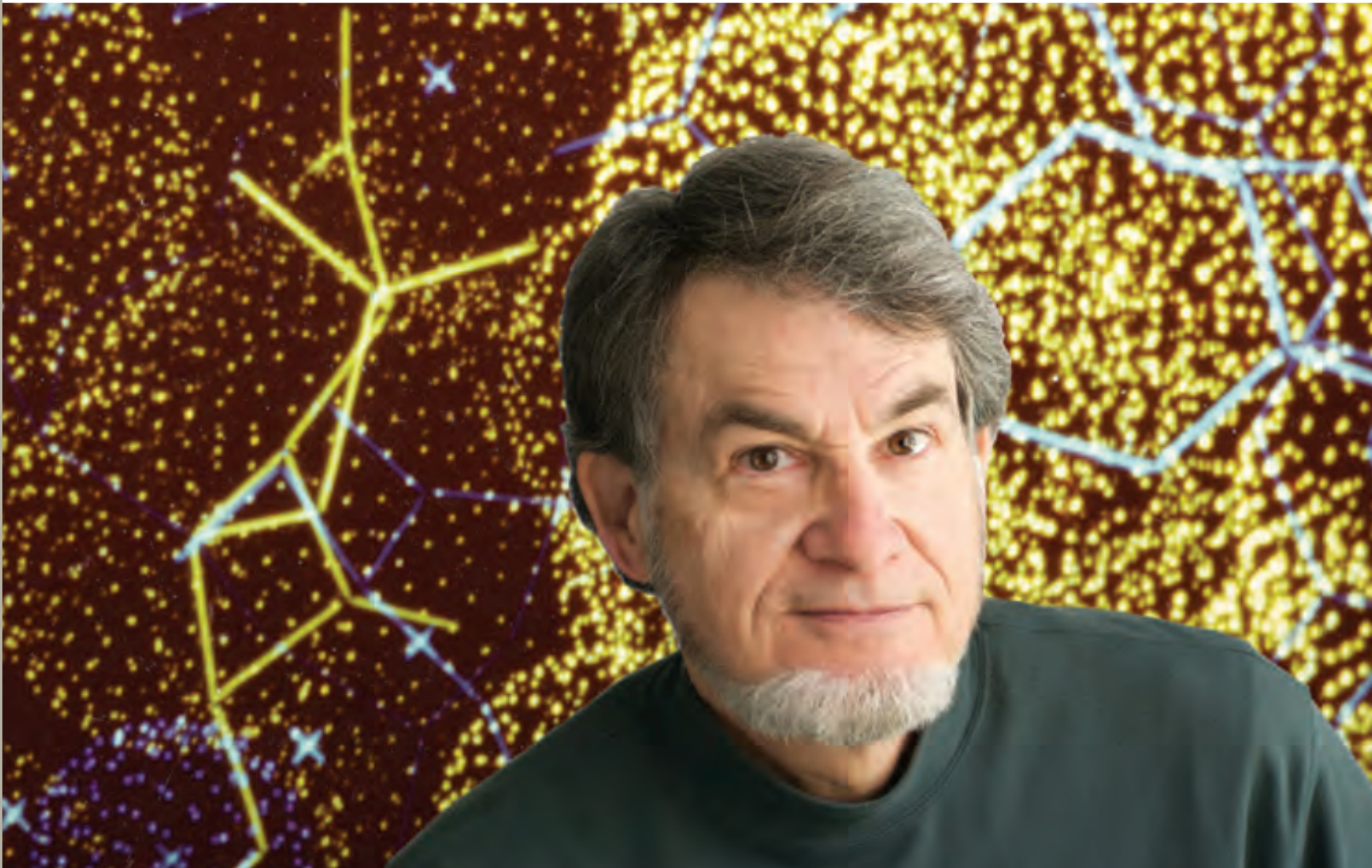


MISSOURI
S&T
MAGAZINE


WINTER 2011 | VOL. 85 NO. 4

Dodging debris
page 25

A PUBLICATION OF THE MINER ALUMNI ASSOCIATION REPRESENTING ALUMNI OF MSM, UMR AND MISSOURI S&T



Everyday
page 6 **HEROES**

A group of four students are sitting on a spare tire mounted on the back of a white SUV. The SUV is parked on a dirt road in a savanna-like environment with trees and a blue sky with clouds in the background. The students are smiling and looking towards the camera. One student is wearing a blue t-shirt with 'STATE ATHLETICS' on it. Another student is wearing a dark blue t-shirt with 'EW' on it. The SUV has a chrome bumper and a spare tire mounted on the back.

Share your Miner Pride.

"The education is great and the extra opportunities (like Engineers Without Borders) give me real-world experiences I couldn't get by studying in the classroom."

Jennifer Hoffman, AE'11, St. Louis
Engineers Without Borders and
Missouri Satellite Team Member

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Annual gifts from alumni help prepare Missouri S&T students to solve the problems of a technological world. Your contributions help make these experiences possible for current and future Rolla students.

In Bolivia, Jennifer Hoffman and 11 other S&T students installed slow sand filtration devices, a sedimentation tank and ram pumps to provide clean water to the homes of a community in need.

To learn more about ways to give, or how your gifts impact the lives of S&T students, go to giving.mst.edu or call 800-392-4112

contents

WINTER 2011

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- around campus **20-24**
- research **25-27**
- sports **28-29**
- homecoming **30-33**
- association news **34-35**
- section news **36-38**
- alumni notes **39-44**
- memorials **45-47**
- registry of donors **48-95**
- registry of volunteers **96-104**

Everyday HEROES

Father. Mother. Brother. Sister. Son. Daughter. Volunteer.
Co-worker. Friend. Responder. Engineer. Missionary. Fan.
Doctor. Teacher. Visionary. Soldier. Explorer. Builder. ...
Whatever name they go by, or title they hold, these are ordinary
people doing extraordinary things. They are our everyday heroes.

Relief and rebuilding in Joplin.....	6
Into the danger zone.....	9
Managing mosquitoes.....	10
Answering the call.....	10
Antibiotics at work.....	11
D-Day: A survivor's story.....	12
More than just a war.....	13
Building hope.....	14
Black gold, green Gulf.....	15
Engineer to educator.....	16
Miner league summers.....	17
Engineering with a mission.....	18
Social justice networker.....	19

On the cover: James Knox with a background image of penicillinase, the bacterial enzyme he and his lab mapped from X-ray data. To learn more, see page 11. (Photo by Kim Bova)

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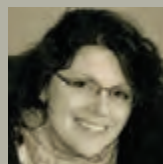
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From the editor

Megan Kean-O'Brien
Design and Production Editor



When does ordinary become extraordinary? When you combine a Missouri S&T education with a heart for making a difference.

The alumni featured in this issue of *Missouri S&T Magazine* have all made sacrifices in some way to make their world a better place. Whether they have given of their time, contributed their finances or swapped lucrative careers to pursue service, these everyday alumni have made the betterment of their respective communities a priority. They continually strive to improve the world by helping others achieve their dreams and goals — even when that dream is as basic as having clean water. In doing so, these alumni have become extraordinary. They have become S&T's "everyday heroes."

As you may have noticed, a special publication was mailed with this issue of the magazine. That publication, *Alumni of Influence*, was 140 years in the making. In it, we feature more inspirational stories. We hope that you will see the book as a testament to the excellence our institution is known for and the outstanding work of our alumni who have helped change and shape our world.

That is perhaps the number one thing I love about this university — its ability to transform individuals. For the last five years, I have heard story after story from students and alumni alike of how S&T has changed them; by giving students the tools for success, inspiring them to reach their individual potential, and turning dreams into reality, thereby allowing graduates to leave their mark on the world.

With this issue of the magazine, I am fulfilling one of my lifelong dreams — becoming an editor. If only my high school English teacher could see me now! But I do owe my dad an overwhelming debt of gratitude for seeing the potential in me and constantly pushing me to be a better writer (rest in peace, Red Pen). I take over for Joann Stiritz, who not only served as the design and production editor for the last four years, but as my mentor as well. I certainly have big shoes to fill, but I hope to continue to make this award-winning magazine the Best Ever. We wish Joann all the best as she joins the civil, architectural and environmental engineering department. We're fortunate to retain her talents within the university family.

Meet Megan

Here are a few facts about your new design and production editor:

- Soon will be an S&T alum. Megan plans to graduate in May with her master's degree in technical communication.
- Moved to Rolla a little more than five years ago from Sioux Falls, S.D.
- Selected to be part of UCDA's national "40 Designers Project."
- We're still holding out hope to "convert" Megan to cheer for the St. Louis Cardinals. As a new mom, she and her husband named their daughter, Brooklyn, after the Dodgers. But she does cheer for the Blues, so we'll give her that.
- And if school and a baby don't keep her busy enough, she also has two dogs, too.
- Megan has perhaps one of the most diverse music collections in the office, but you wouldn't know that if you stopped by between Thanksgiving and New Year's — Christmas music only.
- Ask her anything about reality TV or celebrity gossip. We dare you.

member benefits

As a graduate of MSM, UMR or Missouri S&T, you are automatically a member of the Miner Alumni Association and are entitled to:

Career Assistance:

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

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Chairs, lamps, watches, pendants, Joe Miner credit card, license plates for Missouri residents, and the official Missouri S&T ring.

To take advantage of these offers, or for more information, contact the alumni office:

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LaWanda Jones: Meeting the challenge



LaWanda Jones, CE'91 (second from left), is not one to shy away from a challenge.

As a student, she handled a rigorous engineering curriculum. As an engineer who progressed into the marketing field, she prevailed over a different set of challenges. And today, as the first female to chair the Chancellor's Advisory Committee on African American Recruitment and Retention (CACAARR) at S&T, she readily accepts a new challenge: to help S&T recruit a more diverse student body.

"There's no doubt an urgency for more technical minds needed to resolve our nation's most pressing issues," says Jones, the corporate marketing manager for ABNA Engineering. "As our population continues to experience a diverse shift, we must do all we can to prepare the next generations with educational opportunities to equip our society with leaders in technical careers."

This past spring, Jones began her term as chair of CACAARR, following **Gregory Skannal**, GeoE'85, who serves on the alumni association board. The committee,

made up of alumni volunteers, advises the chancellor's office on matters related to African American recruitment. Established in the mid-1980s in response to concerns related to campus diversity, early members created a lasting platform and generated a series of scholarships for African-American students. And it's making a difference. Minority enrollment has nearly doubled since 2000.

To build on this foundation, Jones encourages her fellow alumni to support a new challenge, presented by Maj. Gen. **Joe N. Ballard**, MS EMgt'72. Recently, Ballard and his wife, Tessie, donated \$250,000 to create the Ballard Challenge to support more minority students at S&T. A portion of these funds is dedicated to providing \$5,000 matches to encourage other alumni to endow scholarships of their own.

"Through this challenge, we have a unique opportunity to create a legacy which will empower African American talent for years to come," Jones says.

For more information about the Ballard Challenge, contact Greg Harris in Missouri S&T's development office at 800-392-4112 or email gfharris@mst.edu.

Say What?

“There is a new emphasis on this feminine ideal of beauty that’s emerging in the flapper figure ... this rail thin, flat-chested, small-hipped, almost boyish figure that becomes really the new ideal of feminine beauty during the 1920s.”

— **Patrick J. Huber**, associate professor of history and political science, discussing the 1920s exercise recordings of Wallace Rogerson during a September 2011 episode of the PBS program “History Detectives.”

“Changing the name of an institution is never easy, but Missouri S&T has provided a model for how to do it successfully.”

— **Henry Petroski**, the Aleksander S. Vesic Professor of Civil Engineering and professor of history at Duke University, in the October 2011 issue of *ASEE Prism*.

“Almost any kid that’s interested in science is interested in space science. So it’s a pretty easy sell.”

— **Bill Pabst**, state 4-H youth expert with University of Missouri Extension office, discussing Missouri S&T’s Aerospace Camp on St. Louis NBC affiliate KSDK.

“The reason to come to college is to learn. The reason to come to S&T is to learn a lot — to incomparably prepare you for your professional life.”

— **Selin Acar**, a senior in chemistry and president of the Missouri S&T Student Council, during her convocation speech to incoming freshmen.

by the numbers

11

National rank of S&T’s career opportunities and employer relations office among the nation’s career placement offices, according to the Princeton Review’s *The Best 376 Colleges*, 2012 edition.

16

Scholarships provided by a \$50,000 annual gift from Ameren to increase diversity in engineering. (See story on p. 21.)

12

Universities cited in the July issue of the journal *Nature* for outstanding technical communication degree programs. Missouri S&T was one of the 12.

7,271

Students enrolled on the first day of classes at Missouri S&T.

319

More students than the 2010 first-day total.

215

Number of employers attending S&T’s fall career fair Sept. 27.

The night started as one of celebration, as more than 450 seniors received their diplomas from Joplin High School on May 22. A light rain interrupted snapshots of new graduates and forced them to leave the open lawn of Missouri Southern State University for the shelter of their cars. Moments later, the day's joy and happiness turned into chaos as a deadly EF-5 twister ripped through the southwestern Missouri town.

Randy Ganz, CE'78, president and CEO of Dewitt & Associates in Springfield, Mo., was at his son's house in Iowa when his phone "lit up like crazy." Hearing about the devastation, he quickly worked with his senior project managers to gather a team and supplies — truckloads of plywood lumber, light-stand generators, and "anything that we thought we'd need that night."

Communications were down to next to nothing. "People didn't understand the real magnitude," Ganz says.

Mercy-St. John's Regional Medical Center, a nine-story building, took a direct hit, blowing out windows, tossing gurneys and mangling cars. Just a half mile away, Freeman Health Systems had lost part of its roof but was still functioning despite the pouring rain.

"We worked to get the roof under control, but we had several of our people doing nothing but transporting and carrying the injured to areas to receive emergency care," Ganz says. "This literally went on for hours as vehicles bringing the injured were lined up three blocks long. As darkness approached, the only lights visible for miles were from the generators at Freeman and the light towers that we had brought to the site."

The rising sun on Monday morning revealed the full extent of the twister's wrath. One-third of the town was gone. With the light of dawn came a call for help from Mercy-St. John's. Ganz and his team responded, securing sensitive information and equipment and placing 8,000 feet of fencing around the entire hospital.

Monday also brought with it hundreds of volunteers from around the state, including S&T freshman **Sean Brady** and his father, Ric, of Camdenton, Mo. The destruction they saw along Rangeline Road, Joplin's main drag, was indescribable.

The pair unloaded their Bobcat and got to work — turning cars right-side up, removing trees and debris, and even locating an elderly man's medication and money from underneath a massive pile of rubble. "I will never be the same," Sean Brady says of the experience.

While Brady and his dad were moving rubble, others from Missouri S&T were on their way to Joplin, bringing supplies like water and juice to the Red Cross. Among them were **Haitham Shtaiieh**, who works for Chartwells, the university's food service provider, and **Mohammed Debree** of Libya, a graduate student in engineering management.

After their first trip, the volunteer team grew to include members of the newly formed Islamic Help of North America (IHNA), which assists people who are in need, and S&T's Muslim Student Association. The now 10-member group returned to Joplin that Wednesday with more supplies.

"We have had up to 20 volunteers — mostly students from Rolla, Kansas City and St. Louis," says **Ranga Voona** of India, a graduate student in mechanical engineering. "Thanks to the efforts of many generous and hard-working volunteers and non-profit organizations involved, some fast-paced work is going on in Joplin. We all hope it gets back to normal as soon as possible."

(Top right) A volunteer takes a break from his clean-up duties and surveys the damage left by the tornado. (Bottom) A panoramic view of the destruction from 24th Street, between Kentucky and Grand streets. (Lower left) Emergency personnel walk through a severely damaged neighborhood. The tornado moved through much of the city, damaging two hospitals and hundreds of homes and businesses and taking more than 100 lives. (Top left) In this May 22, 2011, Associated Press file photo, a destroyed helicopter lies on its side in the parking lot of the Mercy-St. John's Regional Medical Center in Joplin, Mo. (AP Photos/Mark Schiefelbein)



Photo by Michael Koch

“People didn’t understand the real magnitude.”

— Randy Ganz, CE’78

“It was like a scene out of a movie that you just couldn’t imagine was real. I’m still amazed that there were only a few minor injuries.”

— Richard T. Bradley, CE’88, speaking of the St. Louis Good Friday tornado

FIERCE TORNADES

In another part of the state, **Richard T. Bradley**, CE’88, dealt with another tornado, the one that hit St. Louis on Good Friday, April 22, 2011, just weeks before the disaster in Joplin.

“The damage at Lambert-St. Louis International Airport was shocking to see on TV, but nothing close to what I saw when I got out there,” says Bradley, president of the St. Louis Board of Public Service, the city’s chief engineer, and the airport’s former assistant director of planning and engineering. “It was like a scene out of a movie that you just couldn’t imagine was real. I’m still amazed that there were only a few minor injuries.”

With power off, water coming in throughout the building and significant structural damage, Bradley led a preliminary detailed damage assessment of the facility and mobilized city and airport staff, contractors and consultants to begin immediate cleanup and repairs to get the airport in order and reopened.

Bradley credits his training for helping guide him through the process. “Engineering teaches you the principles, but it also teaches you to think on your feet and make the best possible decision you can for the situation you are given,” he says.

(Top) Crews inspect damage to the roof of Concourse C at Lambert-St. Louis International Airport Saturday, April 23. The airport reopened two days after a strong tornado caused significant damage. The airport director says one American Airlines 757 jet sustained significant damage, and four other American planes had minor damage.



Into the danger zone

by Lance Feyh, lfeyh@mst.edu

Recently, while deployed in Joplin, Mo., **Steve Winters**, PetE'83, was reminded of Sept. 11, 2001. "After the tornado," he says, "the smell of wet concrete dust brought an immediate flashback to the smells in New York."

By day, Winters is the associate director for student information systems at the University of Missouri-Columbia. But he's also a volunteer with Missouri Task Force 1. Managed by the Boone County Fire Protection District, Missouri Task Force 1 is part of the Federal Emergency Management Agency's Urban Search and Rescue Response System.

The task force uses the skills of people who have expertise in various areas. In addition to using his technical talents to operate "electronic victim detection devices," Winters leads a small team with canine search capabilities.

Winters first heard about Missouri Task Force 1 in 1998 during a presentation at a local meeting of the Optimist Club. He applied and was accepted in 1999.

"FEMA received presidential orders and activated MO-TF1 around noon on Sept. 11, 2001," Winters says. "We traveled by school bus to Whiteman Air Force Base for in-processing. ... We were loaded and flown out of Whiteman in the late evening of Sept. 11 on three National Guard C-130 aircraft."

After arriving at McGuire Air Force Base in New Jersey in the early morning, the team was moved into Manhattan. According to Winters, MO-TF1 had boots on the ground at Ground Zero in the afternoon of Sept. 12.

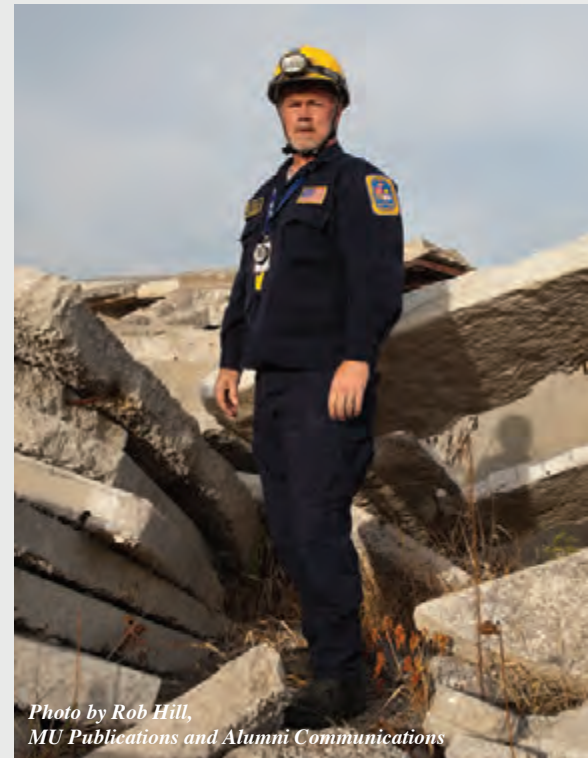
The task force worked continuous 12-hour shifts for the next nine days. Sadly, the last live victim rescued from the rubble in New York was found around 12:30 p.m. on Sept. 12. But Winters and Missouri Task Force 1 aided in the detection, location and recovery of bodies.

In addition to being deployed to New York in the wake of 9/11 and to Joplin following the recent tornado, Winters also spent 16 days in New Orleans after Hurricane Katrina struck in 2005.



At Lambert Airport, the tornado touched down, spewing debris over the airfield, bursting glass in the concourse and damaging cars atop a parking garage. Two days following the tornado, once the power was restored, the airport was operating at 70 percent capacity. Some flights had to be diverted away from St. Louis when the storm hit. (Above) A van hangs over the side of a parking garage. (Left) Storm damage is seen next to a parking garage outside terminal one.

Photos of the airport damage are courtesy of AP Photo/Jeff Roberson



*Photo by Rob Hill,
MU Publications and Alumni Communications*

Steve Winters, PetE'83, volunteers for Missouri Task Force 1.

Managing mosquitoes

by Lance Feyh, lfeyh@mst.edu



Six years ago, after he retired, **Jerry Sellers**, ME'69, got into the mosquito business. "I needed something to occupy my time," says the president and owner of MosquitoZone.

With his wife, Maura, Sellers started the business that caters to industries that deploy workers to places where malaria and other diseases and hazards are common, such as Africa (particularly in Chad) and New Guinea.

MosquitoZone goes to these developing countries to scout potential hazards and then establish procedures for protecting people who will be (or already are) working on a particular site. A team of entomologists is employed to study mosquitoes and "vector-borne tropical diseases," which are transmitted by insects. The company also provides advice about avoiding snakebites and poisonous plants.

Before starting MosquitoZone with his wife, Sellers worked for Conoco for 13 years and then did software work. He ended up getting involved in the mosquito field by accident because "no one else was doing it."

The company has many clients in the oil and gas business, as well as government agencies. In addition to helping prevent diseases and possible fatalities, MosquitoZone tries to ensure decreases in lost worker productivity.

Sellers and his wife live in Houston, where MosquitoZone is based.

ANSWERING THE CALL

by Mindy Limback, limbackm@mst.edu

The peace and quiet is broken by emergency sirens. Soon the distant thump of a medical helicopter gets louder. In communities across West Tennessee, paramedics arrive on the scene and administer life-saving care taught by **Gerald Foon**, ME'74.

For nearly 40 years, Foon has taught more than 1,000 paramedics and emergency medical technicians (EMTs) at Southwest Tennessee Community College, formerly known as Shelby State Community College in Memphis.

"I was fortunate to get in on the ground floor of a new profession," he says. Prior to the 1970s, emergency medical transportation was often provided by funeral homes, with little or no medical care being administered.

After receiving his engineering degree from Rolla, Foon moved to Tennessee and enrolled in Southwest, which was offering the state's first paramedic program. After finishing his courses in 1975, he was asked to join the college's faculty. In addition to teaching, Foon worked as a flight paramedic with the Memphis Police Department Helicopter Aviation Unit until 1984.

Currently an associate professor at Southwest, Foon previously served as chair of the college's emergency medical technology department from 1978 to 1998. Under his leadership, the paramedic program became the first in the state and the 14th in the country to receive national



Photo by Brad Luttrell

Associate professor Gerald Foon (left) demonstrates life-saving techniques on a simulator dummy for students in the paramedics program at Southwest Tennessee Community College.

accreditation from the Committee on Accreditation of Allied Health Education Programs.

The Tennessee Emergency Medical Services Education Association recognized Foon with a lifetime achievement award in 2004.

"My calling in life was not to be an engineer, but what I learned at Rolla helped me understand the treatments, new technology and procedures needed to teach my paramedics how to save a human life," he says.

ANTIBIOTICS

by Linda Fulps, fulpsl@mst.edu

at work

Society's widespread use of antibiotics often causes bacteria to genetically mutate to survive, creating antibiotic-resistant bacteria that can be deadly. But decades of research by **James Knox**, Chem'63, has given pharmaceutical companies vital tools to help them design new antibiotics or re-engineer old ones these resistant bacteria can't elude.

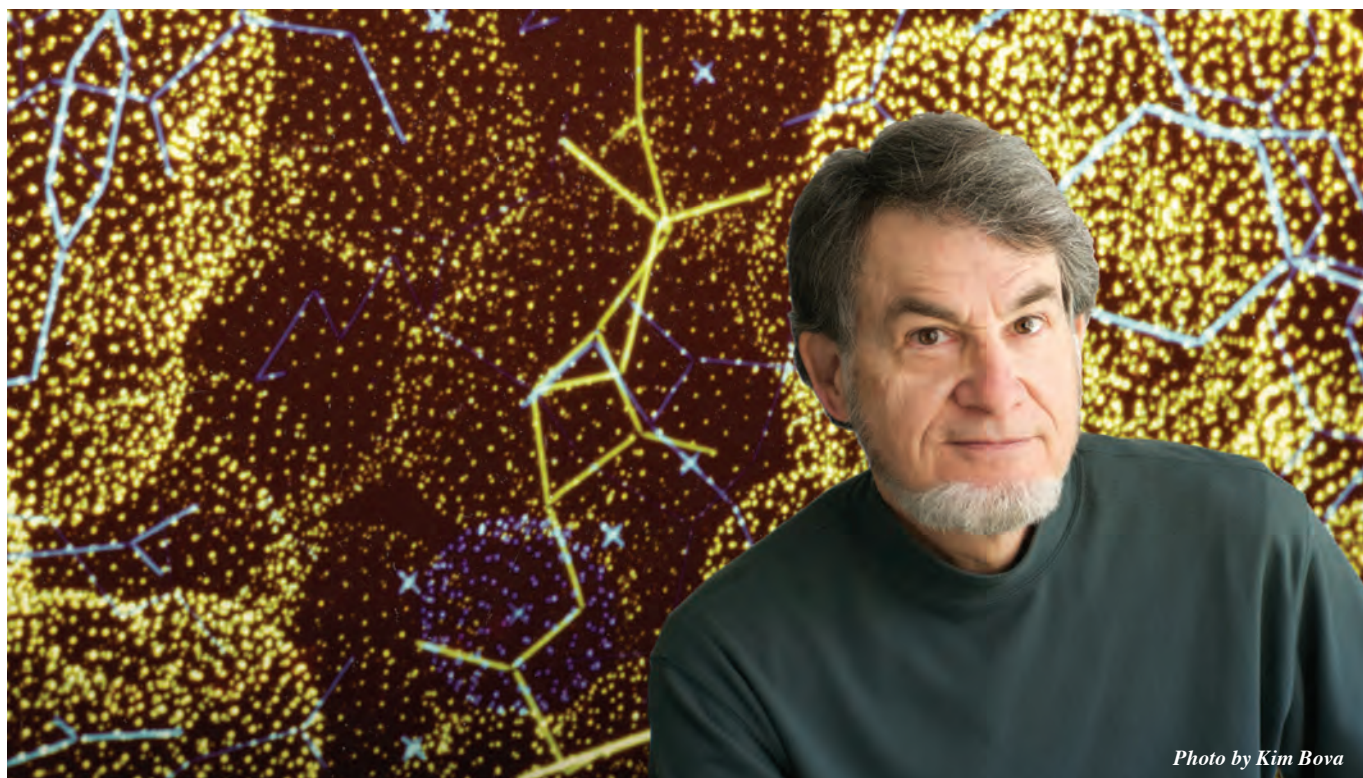


Photo by Kim Bova

James Knox with a background image of penicillinase, the bacterial enzyme he and his lab mapped from X-ray data.

A professor emeritus of molecular and cell biology at the University of Connecticut, Knox has spent his career illuminating these microscopic enemies. In the 1980s and '90s, the research he conducted in the X-ray diffraction laboratory at the university's Institute of Materials Science was the first to show penicillin bound to its bacterial target enzyme. His research was also the first to establish the molecular structure of other enzymes that provide penicillin and vancomycin-type antibiotic resistance.

Knox says investigations were published in the journal *Science* and were covered by major news organizations. They led to more than 100 invitations to speak around the world.

Knox says his molecular images continue to be used by pharmaceutical and academic scientists to understand antibiotic action and mutational changes, and to design new antibiotics.

"In the old days, it was trial and error — just testing whether a chemical killed the bacteria or not," Knox says.

"Now we can get an atomic-level picture of the enzymes' molecular structure, then the drugs can be rationally designed to interact with them."

His archived X-ray data and enzyme structure images are available for free from the Protein Data Bank. "They'll still be there in 100 years," he says. "As their methods of analysis grow, scientists and chemists will have new ways of using our basic data in their design of future antibiotics."

When he eventually made it out of the danger zone that day, **John Allen** went looking for a British ship — because they had the good scotch. Like many in his generation, he's reluctant to talk about it. The last thing Allen wants to do is make a big deal about his role in the invasion. "I just happened to be one of the guys who lived through it," he says.

He's referring to Normandy, of course. D-Day. On the morning of June 6, 1944, Allen, GGph'42, MinE'47, was in one of the first boats to reach the coast. His job was to help place charges that were designed to blow up the underwater barriers the Germans had rigged along the shoreline. If Allen and the other demolitions guys were successful, the allied forces still out in the channel would have a much easier time making land. With the beach in sight, Allen and his crew waded the remaining distance. Apart from the explosives they were carrying, he doesn't remember for sure if they were even armed. "We had one job to do," he says.

Meanwhile, Air Force planes had been relentlessly targeting the Germans, who were up on the cliffs; and, for a while, it looked like things might go really well. But, as things turned out, there would be plenty of resistance, lots of artillery raining down.

In the most dangerous of situations, Allen and his explosives partners, 10 of them, did their job that Tuesday morning. They placed their charges and helped clear the way for the allies to reach the beaches of Normandy. Eight of the 10 people Allen was working with were wounded or killed in the process.

After the war, Allen came back to Rolla on the G.I. Bill. He already had one degree — this was where he got his explosives experience in the first place. But he had a met a "Rolla girl," so he pursued a second degree in mining engineering. With that diploma in hand and a new wife, Helen "Chili," Allen went back to the mines for a while and then returned to military life. He became a career officer in the Navy, putting in more than 20 years.

Stationed for a time at Pearl Harbor, Allen was the resident officer in charge of the construction of the Arizona Memorial. As is the military custom, the family went from assignment to assignment and place to place, including Turkey, where Allen helped build-up post-war facilities.

After retiring from the Navy as a commander, Allen took a position with an architectural engineering firm based in Los Angeles, directing overseas contracts in 17 countries.

Eventually, Allen and his wife came back to Rolla for good. Now in his 90s, Allen is into aquaculture (fish farming) and alternative sources of energy (he's been studying liquid fluoride thorium reactors). He follows what's happening on campus. And he still enjoys a good scotch.

Allen doesn't mind talking about the places he's been and ideas that continue to intrigue him. In fact, he enjoys the conversation. But he wants you to know that he didn't do anything special on that day off the coast of France, that he was one small part of a very big effort. Getting this point across is very important to him. "I just happened to live through it," he insists.

"I just happened to live through it."

— John Allen, GGph'42, MinE'47

John Allen, GGph'42, MinE'47 (at top), and the demolition team, Allen's Stormy-Tetryls, are photographed with their commander. Allen (at right), in his Rolla home ... sans scotch.



Photo by Tommy Gilligan/ West Point PAO

Dennis Sugrue, GeoE'04, teaches environmental engineering at West Point.

More than just a war

by Mindy Limback, limbackm@mst.edu

Maj. **Dennis Sugrue**, GeoE'04, learned an important lesson during his time in Afghanistan — engineering projects can solve social problems, but only if they maintain a community's social balance.

Sugrue deployed in January 2006 with the 3rd Brigade Combat Team, 10th Mountain Division, for a 16-month tour in Afghanistan to establish relationships with the people living in the country's rugged and mountainous northeastern region.

"As remote as it was, they had common concerns with water, electricity and roads," Sugrue says.

A few of the villages sat on the "hair-raising" main road, bordered by cliffs on one side and a raging river on the other.

"We would assess and prioritize village needs by working closely with their leaders," Sugrue explains. During his time in Afghanistan, he worked on several water distribution projects, micro-hydro power generators and road improvement projects.

Today Sugrue is an environmental engineering instructor at West Point, where he teaches seniors how their engineering projects are really solutions to social problems.

"It's important to not disrupt the social balance in these complex societies," he says. "Sometimes we do more harm than good in trying to address their problems. If that becomes the case, you probably haven't bettered the situation."



Photo by B.A. Rupert

BUILDING HOPE

by Lance Feyh, lfeyh@mst.edu



Photo by B.A. Rupert

Greg Wayne, EE'79, co-founded an organization that provides home repair for those in need.

Before there was “Extreme Makeover” on national television, the Kansas City area had HopeBUILDERS Home Repair, a volunteer organization that does everything from changing light bulbs to installing wheelchair ramps to whole-house rehabilitations. The group, co-founded by **Greg Wayne**, EE’79, started as an outreach ministry of a collection of churches in 2000. Volunteers do most of their work on Saturdays.

“Thousands of volunteer hours have been donated to help hundreds of homeowners stay in their homes longer and live more comfortably,” says Wayne, who now serves as operations director. “Many of the homes we work on have dilapidated porches, steps, windows and doors, and are badly in need of weatherization measures.”

Wayne points to the case of an 80-year-old mother living with a

daughter who has a chronic disease. The daughter had fallen in the tub of their bathroom. HopeBUILDERS did a complete bathroom remodel for them. “I am always amazed when we first visit a client, and they’re surprised that we even showed up,” Wayne says. “They seem to be conditioned to being ignored or forgotten. I am moved when clients start crying as we finish a project, overwhelmed with gratitude.”

According to Wayne, the homeowners have often been cited by county code enforcement authorities because they are unable to correct the dilapidated conditions — physically or financially. HopeBUILDERS works with the authorities to address the issues.

Today, the group draws volunteers from area churches, community groups, corporations and professional organizations. They serve the four-county Kansas City metro area.

“The well-rounded education I got at Rolla has opened many doors for me, including my present professional function as a project manager of major projects and serving the community in a similar capacity to lead this organization,” says Wayne, who works for Black & Veatch’s energy division.

Black gold, green Gulf

by Lance Feyh, lfeyh@mst.edu

“We have some world-class tools in place to alert us if we are out of compliance and are always looking for new and improved ways to keep the Gulf safe.”

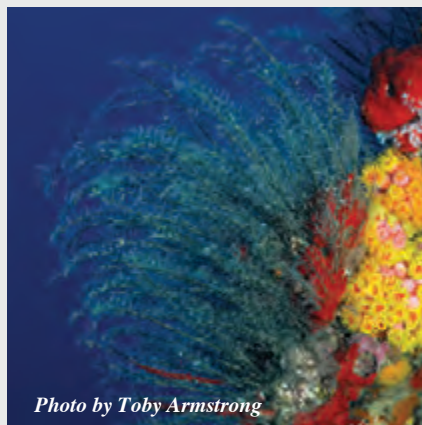
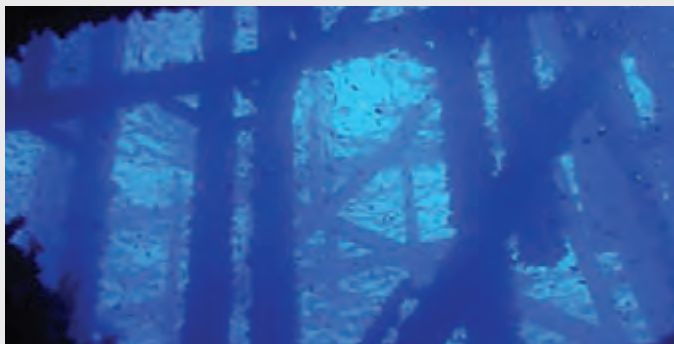
— John Hoffman, MinE’80

In 2007, two years after Hurricane Katrina hit New Orleans and three years before the Deepwater Horizon oil spill in the Gulf of Mexico, **John Hoffman** started Black Elk Energy, an oil company that strives to be eco-friendly.

Prior to starting Black Elk, Hoffman worked for Amoco Production Co. and other energy companies. “Black Elk stringently assesses technical information to protect against potential risks as part of our acquisition strategy,” Hoffman recently told Rigzone, an industry news organization. “Our approach extends the economic life of fields and delivers a greater volume of reserves to the U.S. energy market. ... We have some world-class tools in place to alert us if we are out of compliance and are always looking for new and improved ways to keep the Gulf safe.”

Hoffman, MinE’80, has also started “Save the Blue,” an initiative to protect and preserve ecosystems in the Gulf. As part of this initiative, he has met with members of Congress to discuss bills that would protect the reef ecosystems that form on offshore oil and gas platforms. “It’s been documented that each platform has 10,000 to 30,000 fish and mammals that use the ecosystem as a habitat,” says Hoffman, who is an avid scuba diver. “Is it right that we should destroy these ecosystems?”

“I would say that the Gulf of Mexico is one of the few places on earth where the health of the environment is so obviously linked to the community and economy.”



(Far left) High Island 571, one of Hoffman’s oil fields in the Gulf of Mexico. (At left) Hoffman, president and CEO of Black Elk Energy, gives an interview and answers questions about his company and “Save the Blue,” his initiative to protect and preserve ecosystems in the Gulf. (Bottom left) Underwater photos provide a glimpse of the coral life. The endangered black coral has found a new home by attaching itself to oil and gas platform structures, as seen in the far left photo. Other corals, such as the bryzoa and tubestora (at left), are also flourishing.

Photos were submitted by John Hoffman.

Photo by Toby Armstrong

In 2004, **Jerry Rich**, EE'74, took early retirement from a 30-year career as an electrical engineer with Eastman Chemical Co. and went back to school to become a teacher. After a couple of prerequisite courses at a local technical college, Rich entered a "career changers" program at the University of South Carolina. His first year of teaching was 2006.

"This is my sixth year of teaching fourth grade at White Knoll Elementary," Rich says. "I teach math and science and like to think that I am training future engineers."

Before Rich retired from engineering, his sister lent him a book by Bob Buford titled *Halftime: Changing Your Game Plan from Success to Significance*.

"I read the book and realized that, in the eyes of many people, I had probably been fairly successful," Rich says. "But was I really significant in the lives of others? After a couple of years of contemplation, the opportunity to make a change led me to pursue a teaching career."

Teaching is in Rich's blood. Both of his parents were longtime teachers. His mother began her career in a one-room country school that housed eight grades. In high school, Rich took a science class his dad taught.

Rich prefers to teach elementary grades — a time, he believes, before disciplinary problems keep kids from learning.

"I decided that younger students have not yet learned how to misbehave, and maybe that is where I belonged," Rich says.

In his spare time, Rich runs — a lot. Later this year he plans to run the Kiawah Island Marathon in South Carolina. It will be his 52nd.

"A friend of mine told me that when you turn 40, your body begins to fall apart," Rich says. "I refused to believe that and decided to do my best to prevent it. So far, I have run 51 marathons. One in each state and one in Washington, D.C."

All that running seemed like a natural progression for Rich.

"In 1993, I took a little trip around 48 states and managed to go inside all the state capitol buildings as well as Washington, D.C.," Rich says. It was a 15,000-mile journey that took a month to complete.

"Years later, the idea of running a marathon in each state seemed to be a natural (at least to me) follow-up," he says. "I made sure to visit the capitol



Photo by Jeff Amberg

Jerry Rich, EE'74, in his classroom.

buildings when I ran my Juneau, Alaska, and Honolulu, Hawaii, marathons."

Both running and teaching help Rich find significance in his life.

"The most rewarding part of teaching," Rich says, "is when a struggling fourth grader looks up at me after a one-on-one math session, smiles, and says, 'Oh, now I get it.'"

When he began his quest for significance, Rich set a goal of teaching for five years. At the end of that five, he decided he could survive five more years.

"I guess that gives me four more years to determine my next career," Rich says. "Real retirement, whatever that is, is probably not one of the options. Fourth graders help you stay young."

Minor league summers

by Lance Feyh, lfeyh@mst.edu



Photo by Danielle Austen

A big fan of St. Louis Cardinals baseball, **Helene Hardy Pierce**, EMgt'83, was very excited when, after moving to New Jersey, she found out the Cardinals had a Single-A Short Season team that played at a minor league stadium 10 minutes from her home. During the first game she attended with her husband in 2002, the team announced over the public address system that it was still looking for host families. "We called, and a day later, three guys moved in," Pierce recalls. "The following year, there were four players."

Pierce and her husband, Riley, hosted players for nine summers. This is the first year without a local team, but Pierce thinks a new one will come to the area in 2012.

"More than 50 players stayed in our home during that time," says Pierce, who is vice president of technical services, codes and industry relations for GAF, a large roofing manufacturer. "The team knew we were flexible. New players would often just show up at our house until their own host family arrangements could be made." One player from the Dominican Republic even moved his wife and their two young children into the home for three weeks.

Although major league players make huge salaries, and high draft picks get big bonuses, most minor leaguers exist on meager wages. Odds are they'll never make it to "The Show" (Major League Baseball). Pierce and her husband never charged their guests rent, and they kept the pantry full.

Pierce cooked on Saturdays and Sundays, when the team was in town. Word got out that she knew how to barbecue a brisket, or bake lasagna, pies, cakes and cookies — and "extra guys" were liable to show up.

"It was actually a match made in heaven because I could also bake and they devoured anything I made," Pierce says.

One of the players who showed up at the house was Brendan Ryan, who played for the St. Louis Cardinals from 2007-2010 before moving on to the Seattle Mariners. "He was a very nice young man," Pierce says. "Many who played with him are still happy that he made it because he was never an ego guy."

"Everyone who lived in our home was gracious and kind, realizing that we had opened it to them, and they respected that," says Pierce. "And over the years, we've stayed in contact with many of 'our' players. Out of the clear blue, we'll get a phone call or text message, just to say hello."

The 2008 Sussex Skyhawks (far left) pose for a team photo on their home field at Skylands Park in Augusta, N.J. The Skyhawks, a St. Louis Cardinals affiliate, was part of the independent minor baseball league Canadian-American Association of Professional Baseball (Can-Am League). The franchise ceased operations after the 2010 season when the team's lease on Skylands Park ended. This was the first time in 10 years without a local team in the area, but hopes are high that a team will return to the area for the 2012 season. (Center) Helene Hardy Pierce, EMgt'83, poses with minor league baseball player Candido "Candy" Martinez in this 2006 photo taken just after the season ended. Pierce has remained in contact with many of the players she has housed. She and her husband often refer to those players as "our" players. (Above) Pierce in her kitchen looking through her scrapbook collection of articles. She has collected a multitude of memorabilia from over the years, including a collection of signed baseballs, bats, helmets and bobble heads.



Photo by Sandra Elliott

ENGINEERING WITH A MISSION

by Mary Helen Stoltz, mhstoltz@mst.edu

Sarah Young is on a mission from God. Young, CE'94, is a project developer for Engineering Ministries International (EMI), a non-profit Christian development organization that serves the poorest of the poor in developing countries. Since its founding in 1982, EMI has worked on more than 800 relief and development projects in 80 countries.

This past fall, Young began her 25th project with EMI — leading a team of volunteers from the United States, India and Singapore to North India to begin designing plans for a seminary that will eventually house 300 students. While she was there, she followed up on a 2010 project — improvements to a water system for a school that serves disadvantaged children.

"I also visited a WASH Program (WATER, Sanitation and Hygiene) I helped start back in 2007," Young says. The program has helped provide wells and toilets for families in 20 villages.

"That has been my favorite project," Young says. "My dream all along has been to help people in North India get access to clean water and sanitation."

EMI works with thousands of volunteers around the world with a staff of around 40 professionals. As one of those staff members, Young is responsible for raising support to pay her own salary.

"My employer is not only EMI, but also about 40 families, individuals and churches who care about the work that I'm doing and want me to give from my skills to help those in need," Young says. "I spend quite a bit of time communicating with those who support me, not just to report on the work, but to build our relationships."

"It's like being part of a big family," Young says of working for EMI. "Since we are a faith-based organization, we are concerned about the development of people, so that they can live in a way that glorifies God in their work, families and personal lives."



Sarah Young, CE'94 (top), led her 25th project for Engineering Ministries International this year. (Center) Young takes notes while being shown the water and sanitation system. Young's dream has been to help the people of Northern India gain access to clean water and better sanitation. (Bottom) Young meets with local villagers.

"That has been my favorite project. My dream all along has been to help people in North India get access to clean water and sanitation."

— Sarah Young, CE'94

SOCIAL JUSTICE

by Andrew Careaga, acareaga@mst.edu

networker

When he was president of the Student Council at S&T, **Andrew Sears**, EE'95, leveraged technology to connect student governments all over the country by forming the National Student Government Internet Headquarters, an online resource for information exchange. Today, Sears is still using the Internet to connect people — but on a greater scale, and for a greater purpose.

“If the Internet can be used to connect millions of buyers and sellers, then why can’t it be used to connect the resources of the world to help the poor?”

— Andrew Sears, EE'95

Andrew Sears, EE'95, connects thousands of volunteers and interns with social service projects across the nation through TechMission.



Photo by Alonso Nichols

As the executive director of TechMission, a Boston-based non-profit, Sears connects thousands of volunteers and interns with social service projects across the nation. The organization also operates City Vision College, which offers online courses and bachelor's degrees in urban ministry, addiction studies and nonprofit management.

By harnessing the power of the Internet, Sears hopes to tap into “the largest social network in the world” — 2 billion Christians — to help eradicate poverty.

“If the Internet can be used to connect millions of buyers and sellers,” says Sears, “then why can’t it be used to connect the resources of the world to help the poor?”

Merging technology with spiritual matters is a passion for Sears, who approaches social justice issues with an entrepreneurial flair. He founded TechMission in 2000 with its first program, the Association of Christian Community Computer Centers, or AC4. Through AC4, Sears focused on trying to bridge the so-called “digital divide” between the technological haves and have-nots. The organization provided computers and training for hundreds of Christian community centers, mostly in urban settings.

Through that experience, Sears discovered deep-seated issues that computer hardware alone could not solve. “There’s a more fundamental educational

gap beyond the digital divide,” he says. “If people can’t read, they’re not going to be able to use a computer.”

That’s when he set about using technology for “connecting people with the poor,” in the words of TechMission’s tagline.

Last year, Sears’ organization connected 13,630 volunteers with more than 5,000 ministries and social service agencies through a volunteer-matching website called ChristianVolunteering.org and TechMission Corps, which is an AmeriCorps urban internship program.

But by combining his passions for technology and service to the poor, Sears discovered his true mission.

9/11

— 10 YEARS LATER —

History will look at the 10 years since the terrorist attacks of Sept. 11, 2001, as a period of “breathtaking American ignorance” on the part of the nation’s leaders, offset by tremendous adaptability among U.S. military personnel, says **John C. McManus**, a military historian at Missouri S&T.

“From the broader view, the same Wahabbi-oriented terrorists who attacked on 9/11 were actually at war with the United States long before that terrible day,” says McManus, an associate professor of history and political science at S&T.

He says the struggle dates from the early 1970s when Islamic terrorists began to hijack planes.

SEPT. 11, 2001, WAS JUST THE WAKE-UP CALL.

John C. McManus

“For 25-plus years there were incidents of varying seriousness, from the bombing of the Marine barracks in Lebanon in 1983 to the *Achille Lauro* to the 1993 World Trade Center bombing,” McManus says. For most of that time, the United States was fixated on the Cold War or the erroneous belief in the 1990s that the post-Cold War world was no longer dangerous. Sept. 11, 2001, was just the wake-up call.

McManus says the events of 9/11 led — directly or indirectly — to two protracted wars that demonstrate the limits of American power and technology. They also show that most wars tend to devolve into insurgencies, particularly in an age of superpowers.

“Napoleon learned this in Spain and Russia,” McManus says. “In our Civil War, the North may have won the conventional struggle but it lost the guerrilla struggle we now call Reconstruction. The ‘weaker’ side can always find a way to fight back, provided the will is there.

“I think future historians will marvel at the breathtaking American ignorance on the cusp of both 21st century wars, along with the equally breathtaking ability to adapt, innovate and succeed on the part of our military personnel,” McManus says.

“Churchill once said of the fighter pilots who won the Battle of Britain: ‘Never was so much owed by so many to so few.’ I think the same should be said about those very few Americans who have served in Afghanistan and Iraq. They comprise a tiny portion of our population, yet they have assumed an incredible burden and they have achieved varying levels of success. I personally believe that, without them, we

would have been attacked repeatedly in the last decade.”

A member of the Missouri S&T faculty since 2000, McManus is one of the nation’s leading experts on the history of Americans in combat. His latest book, *Grunts: Inside the American Infantry Combat Experience, World War II through Iraq*, illustrates how American troops on the ground, the “grunts,” have proven to be the crucial difference between victory and defeat despite the U.S. military’s reliance on technology in modern warfare.

S&T students held a candlelight vigil at the Havener Center to commemorate the 10th anniversary of 9/11.



Engineering diversity



Pictured left to right: Steve Parks, EMgt'82, supervisor of diversity for Ameren; former Chancellor John F. Carney III; Tom Voss, EE'69, Ameren chair and CEO; and Sharon Harvey Davis, director of diversity for Ameren.

Since 2000, Missouri S&T's minority science, technology, engineering and mathematics (STEM) enrollment has increased by 124 percent and female enrollment has increased by 53 percent. A new program established by Ameren aims to raise those figures even higher.

The Ameren Diversity in Engineering Scholarship Program will draw female and underrepresented minority students with financial need into engineering and computer science fields.

"A partner with Missouri S&T for many years, Ameren understands the importance of developing a diverse workforce by creating opportunities for a range of young people interested in pursuing engineering and computer science careers, particularly those who have historically been underrepresented in these fields," says **Thomas R. Voss**, EE'69, president and CEO of Ameren. "Missouri S&T is the perfect partner to help us create a more diversified engineering workforce."

The Ameren gift will also create a professional development program that will match scholarship recipients with corporate mentors who will provide guidance to the students in their academic careers. The program shows the importance of building diversity in engineering and computer science fields.

A recent study by the American Society for Engineering Education and *The Chronicle of Higher Education* found that minority college students represent the only student growth market in the next 20 years, but of all U.S. engineering students, fewer than 6 percent are African-American, 8.1 percent are Hispanic and about 2 percent are Native Americans or Hawaiian Pacific Islanders.

The study also found that while 57 percent of all U.S. college students are female, fewer than 18 percent of engineering students are female. S&T's average is slightly higher at 22.4 percent.

Top corporate partners

Missouri S&T benefits from partnerships with many corporations. But there are a select few companies whose connection with the campus is unrivaled. These are the companies that hire our graduates, invest in the university and support research. Their employees are active on campus, and Missouri S&T often provides continuing education to their workforce.

Recently, Missouri S&T's Corporate Relations Team, made up of senior campus leaders, selected S&T's 2011-2012 top corporate partners based on three years of data on four criteria: hiring, donations to campus, research expenditures and number of alumni employed.

Twelve companies top the list:

Ameren
Anheuser-Busch
The Boeing Co.
Caterpillar
Chevron
Deere & Co.
ExxonMobil
General Electric
General Motors
Halliburton
Monsanto
Sprint Nextel

S&T appreciates all these companies do and is glad to provide great services to them. To find out more about what S&T can do for your company, contact Mary Bird at 573-341-6596 or mbird@mst.edu.

For more information about our corporate partners, see page 90.

Sharing the vision: Liou and Midha

On Sept. 1, **Frank Liou**, professor of mechanical and aerospace engineering, became the Michael and Joyce Bytnar Professor of Product Innovation and Creativity. On the same day, **Ashok Midha**, professor and former chair of mechanical and aerospace engineering, became director of the Missouri S&T Product Innovation and Creativity Center (PICC). The pair will work closely to integrate product design and innovation into the department's curriculum.

It's a vision that's shared by **Michael**, ME'68, and **Joyce Bytnar** of St. Louis. Michael Bytnar is a retired president of Nooter Corp. of St. Louis. The Bytnars provided funding for the two S&T positions.

"The Bytnar Professorship is a unique opportunity to extend the department's vision for design education and to further establish the Missouri S&T program as a national leader in mechanical engineering design education," says **Warren K. Wray**, interim chancellor. "Dr. Liou has extensive design experience, and this position will allow him to further focus the department's efforts."

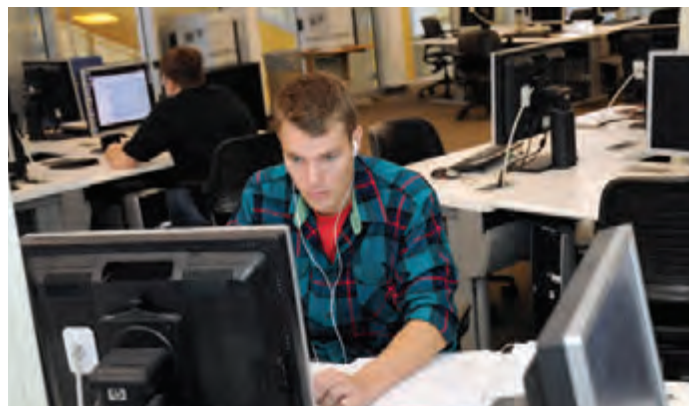
Liou, who also serves as director of the interdisciplinary manufacturing engineering program, will implement the department's design philosophy throughout the mechanical engineering curriculum and the design content courses, teaching graduate and undergraduate courses, and evaluating the department's design education to bring national recognition to the campus. He will also work closely with Midha.

Located largely at the center of Toomey Hall, Missouri S&T's mechanical and aerospace engineering complex, the PICC gives students a place to enhance their leadership, teamwork and communications skills while tackling real-world, hands-on

design engineering projects, Midha says. The center houses a presentation hub, design studio, prototyping loft, CNC machining center, conference room, rapid prototyping lab, multimedia conference and presentation room, fabrication corner, student machine shop, and an office for the department's graduate teaching assistants.

"The PICC is a vital link in the educational process of Missouri S&T's mechanical and aerospace engineering students, providing our graduates with the confidence and skills necessary to succeed in private industry," says Wray. "Dr. Midha's longtime service as chair of the department, and his leadership and vision in the area of design education, makes him an ideal candidate to lead this facility."

The Product Innovation and Creativity Center gives students practical, hands-on design experience.



S&T welcomes new Jones Chair



Kamal H. Khayat is the new Vernon and Maralee Jones Chair of Civil Engineering. Khayat was also named director of the Center for Infrastructure Engineering Studies and the Center for Transportation Infrastructure and Safety at Missouri S&T.

Khayat specializes in the development of high-performance cement-based materials for structural applications and rehabilitation projects. He focuses on self-consolidating concrete and high-performance concrete behavior.

Khayat earned his Ph.D. in civil engineering from the University of California at Berkeley. Prior to arriving at S&T this fall, Khayat was director of the Center of Excellence on Concrete Infrastructure Engineering at the Université de Sherbrooke in Canada. He was also head of the Integrated Research Laboratory on Materials Valorization and Innovative and Durable Structures at Sherbrooke.

Vernon, CE'53, and **Maralee Jones** endowed the chair in 2006 after making numerous contributions to Missouri S&T. Vernon Jones is the former president of Williams, an energy and communications conglomerate in Tulsa, Okla.



Missouri S&T honored the community's cultural diversity with Chinese dragons, dancers, traditional food and crafts, and camels during the 2011 Celebration of Nations.

Celebration
of
NATIONS

