

10 to-dos before starting your biz ■ The anti-hacker ■ 3 ways to guard your cyber-data

Michigan Tech

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MAGAZINE

WHALE THERAPY

A TALE OF HEALING, HUMPBACKS, AND GRIT





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Inside cover

Heavy spring rainfall sent water coursing over Hungarian Falls, a few miles northeast of campus near Hubbell.

On the cover

This humpback tail comes to us courtesy of Robert Raimo '79, who lives in Maui and captures images of the great cetaceans every chance he gets. Read more on page 20.

Correction

The Pep Band drummer on page 16 of the fall Michigan Tech Magazine was not properly identified. He is graduate student Jeremy Loucks.

1400 Townsend Drive

NEWS FROM MICHIGAN TECH



Biggest snowball crown returns to Tech

In 2006, Michigan Tech nabbed three wintery world records, including the biggest snowball fight and most snow angels. But records are made to be broken: one by one, each toppled. Last winter, Michigan Tech's ASME student chapter pledged to bring at least one of the University's long-lost Guinness World Records back to Houghton: the largest snowball.

With help from the Douglass Houghton Student Chapter of the Michigan Society of Professional Surveyors, they gathered on the softball field and began to roll. It took two and a half hours, but in the end, they created a snowball with a circumference of 32.94 feet, or 10.04 meters. Estimates were that it weighed in the neighborhood of three or four tons, said Parshwa Patwa, the third-year mechanical engineering major who organized the effort.

"The reason we did it is because the award was taken away, and we wanted to get it back to Michigan Tech," he said. "We cannot just lose stuff."



PHOTO: ERIC VOLK

Amping up solar power

Solar farms are a no-brainer in the sunny south, but what about in places where snow is measured in feet? Like, for instance, Michigan Tech? To learn more, the University's Keweenaw Research Center (KRC) is collaborating in a two-year nationwide study to gauge how snow affects solar panels' power generation and determine the best ways to compensate.

KRC is collecting data from an array of solar photovoltaic cells, each set at a different angle, from 0 degrees (flat) to 45 degrees. That information will be combined with data from other test sites in California, Colorado, and Pennsylvania, all established by the international engineering firm DNV GL. Based on similar studies, year-round losses can be anywhere from negligible to 18 percent.

A small variance in power generation may not make a big difference for a homeowner with solar panels. However, it's a big deal for commercial lenders being asked to foot the bill for big solar arrays. Eventually, the study results will be publicly available through the KRC website and through solar energy simulation programs provided by the US National Renewable Energy Laboratory.



Public Safety wearing video cameras

This year, Michigan Tech's police officers gained access to a new law enforcement tool: digital video cameras.

Routine interaction with the public will not be recorded, said Dan Bennett, director and chief of the Department of Public Safety and Police Services. The video cameras will only be used when an officer feels there may be a need to record an incident, such as during an arrest, a traffic stop, or an investigation.

There are sixteen cameras altogether, some to be worn on uniform lapels and some built into pairs of sunglasses. They are not intended to be covert; in fact, officers want members of the public to be aware that their actions may be recorded.

"There's no question in my mind that the cameras protect officers and the public," said Bennett. With incidents captured on video, there will never be a question about why an officer made a decision.

"It creates new levels of accountability that will benefit everyone," he said.

Sustainable vegetable garden takes root

Last spring, a small vegetable garden cropped up in the Wadsworth Hall courtyard. There's more to this garden than organic produce for students in Wadsworth Hall. The project partners hope that sustainably growing produce on campus will also raise food awareness. The gardeners employ sustainable practices such as square-foot gardening, companion planting, and natural pest management, i.e., squishing every plant-eating bug they see and hoping for the best.

The garden contains more than twenty-two types of vegetables and herbs, including basil, bok choy, cauliflower, flint corn, okra, parsley, pumpkin, radishes, spinach, wax beans, and seven tomato varieties. The plants live in twenty-two raised beds handcrafted of cedar planks, and everything harvested is served in the dining hall.



Tony Hayes, left, lead gardener and Peace Corps master's student, and residential life coordinator Alex Bruns tend the University vegetable garden. "Tender, constant care is needed for success," says Bruns.

UpLode



by Danny Messinger '12

Ever wonder what today's students are talking about? For an honest perspective on campus issues and events, we've pulled lines from a few recent articles in the Lode to illustrate what matters to students, from a new zombie apocalypse game sweeping campus to an across-the-board ban on tobacco.

"You also learn that these company reps are nice, personable people with the power to grant you a career. They are not here to scare you away; they are here to help you get where you want to be."

Katelyn Waara urges students to embrace the job search process and take advantage of mock interviews offered by Career Services. (September 17)

"Like any idealistic crusade, the smoking ban is a concept that in order to work requires not only support but action."

Zach Evans on ensuring success with a campus-wide ban of all tobacco products, which went into effect at the start of the fall semester. (September 10)

"It's been hard to miss the signs of the ongoing zombie outbreak here on campus over the past week."

But don't fret, *Lode* writer Rand Silvers says; it's all part of a campus-wide game, like tag from grade-school days. More than 75 students registered to play. (October 8)

"According to Twitter, as millions of Americans tuned into the VMAs, [Miley Cyrus's] performance spurred a wave of about 306,100 tweets per minute. Meanwhile, our country is nearly on the brink of war."

Megan Walsh, opinion editor, on which headlines grab attention in the Twittersphere these days. "Syria over Cyrus," she pleads. (September 10)

Headlines from The Daily Bull

Tech's (mainly) satirical student newsletter

Student Feels Like He and His Roommate Don't Get Out Anymore

Family Forced to Spend Time Together During Government Shutdown

Trapped on Breakers: Survivor's Journal

Tech Celebrates Semiannual Dress Up and Look Nervous Week

Guy Sleeping in Class Doing Better Than You

O-Week Couple Already Sending Out Save-the-Dates

Uncomfortable Couches Plague Campus, Students Suffer



A SMARTZONE IN THE COUNTRY

by Marcia Goodrich

It's been ten years since the Michigan Tech Enterprise Corporation SmartZone opened its first business incubator. Since then, it has created hundreds of jobs and injected millions of investment dollars into the local economy.

Michigan Tech researchers are shepherding their discoveries to market, one gee-whiz innovation after another. Students are getting internships and a chance to work with top companies even before they graduate. Those same companies are opening offices in the Copper Country and bringing in well-paid, professional jobs. Idle buildings have been brought back to life with millions in grant funding, heading off blight and creating vigorous centers of commerce and community.

A few numbers may be in order: the MTEC SmartZone has supported 44 technology companies,

created 32 start-up companies, attracted 6 Fortune 500 companies, created 351 high-tech jobs, established 4 incubator sites, and graduated 10 companies into the local community.

All this in a place that a popular postcard once described as two miles past the end of the Earth.

The SmartZone has been so successful that both Michigan Governor Rick Snyder and Senator Debbie Stabenow came to Houghton last summer to bask in the glow and add some shine of their own.

Snyder, who once chaired the Michigan Economic Development Corporation, said he was particularly



UPPER COUNTRY

WORK WHERE YOU WANT TO LIVE

pleased because SmartZones were conceived on his watch. "It's exciting to see an idea I helped create make such a difference in so many people's lives," he said at the August 12 tenth anniversary celebration, adding that good ideas are not enough. "The credit goes to the people who implemented it."

Stabenow was equally complimentary. "You are helping to set the pace for innovative technological development in the state," she said.

To get a visceral sense of the SmartZone's promise, it pays to talk with its executive director, Marilyn Clark '73 '78, who explains that the business incubator creates high-tech local jobs in two different ways: by supporting would-be entrepreneurs and by luring established companies to set up shop locally with the promise of bright, hard-working student labor.

The move was initially controversial, Clark said. "When we started this strategy, companies came here to get high-quality engineering talent at low cost," she said. That outlook has changed. "Cost is no longer the driver; it's talent. Nobody can get

enough engineering talent, so that's why they come here."

That's what motivated material-handling firm Dematic to set up shop in the SmartZone, first by opening a small R&D office for interns and then adding full-time staff to work on mechanical, electrical, and software project engineering.

Dematic is one reason the likes of Amazon and Walmart are so successful. The company designs and builds distribution systems that speed products through warehouses and distribution centers. It's a complicated process: "When you're ordering online, one click is the easy part," said Thomas Klanderman, Dematic's vice president of engineering.

Michigan Tech alumni working at Dematic were the first to push for a company presence in the SmartZone. "We have been hiring a lot of Michigan Tech graduates, and a certain percentage wanted to stay in the UP, if there were jobs," he said. "They told us about the SmartZone, and we put two and two together. The SmartZone creates the package."

Klanderman expects to have about twenty-five



Megan Frost

PROFILE OF A STARTUP FM RESEARCH MANAGEMENT

The infection started after her wisdom tooth was extracted. Then it morphed into a serious disease of the bone, osteomyelitis. To treat it, Megan Frost had to dose herself daily with drugs through a catheter inserted into a vein in her arm.

"I had forty-five days of self-administered antibiotics, and I had to change the dressing every two days," said Frost, an associate professor of biomedical engineering. "It was actually pretty disgusting. I thought, 'This is crazy. Why do we have to do this every two days?'"

Frost got well, and that could have been the end of it. But then she was invited to take a ten-month crash course for women on starting a business. With undivided support from the MTEC SmartZone and Michigan Tech, she was able to learn the basics of entrepreneurship while upholding her teaching and research responsibilities. Frost began working with the SmartZone, which provided a team of experts to evaluate her new product: an antimicrobial surgical dressing that only needed to be changed once a week.

"It's a billion-dollar problem created entirely by medical intervention," she said. "We are looking to do something that can fight it, and the SmartZone absolutely got the ball rolling."

The SmartZone helped her find a partner, Jeff Millin, the former CEO of Pioneer Surgical, in Marquette. "One thing I realized early on was that I have a very good understanding of the science and technology, but I don't know the first thing about business," Frost said. "I was looking for someone who could be a partner, and Jeff has been awesome."

They are now in the process of getting FDA approval to market the dressing. Their goal is to establish a presence in Hancock, with ten or fifteen scientists doing R&D to solve health problems.

"It's pretty exciting," Frost said. "It's been really intellectually stimulating to take a fundamental idea developed in the lab and make it into something useful. Plus, we can actually help make people's quality of life better. There's a lot of pain and suffering that goes on with those infections that's completely unnecessary."

interns and staff in the SmartZone by May. "The caliber of the students is excellent," he said. "They are well prepared, and the work ethic is great in the UP. Plus, the SmartZone has been great to work with as we've grown our business up there."

The SmartZone also helps would-be entrepreneurs start a business from scratch. For many, SmartStart is the first step in that process. A collaboration between the SmartZone and Michigan Tech's Office of Innovation and Industry Engagement, SmartStep is a five-week workshop that asks three tough questions: So what? Who cares? Why you? "Every researcher thinks they have the best idea since sliced bread and have no competition," said Clark. "What most of them have is a solution looking for a problem."

By the end of the program, about a third of the participants realize they don't have a viable product and go back to the drawing board, saving themselves money, time, and probable heartbreak. Another third graduate and form what Clark calls "lifestyle businesses": "They create jobs for themselves, go back into the community, and rent space, and that's fine."

The remaining are innovators with a promising high-tech product that could lead to more skilled jobs in the community. "Those are the people we really want to help," she said. They move into incubator space in one of the SmartZone's four buildings and receive an array of free or low-cost business-development services, from accounting assistance and legal services to high-speed Internet and financial counseling.

There's even an elegant meeting room with videoconferencing equipment that SmartZone entrepreneurs use to connect with their customers. "We have a company that sells to Bank of America and Chase," Clark explains. "When you meet with clients like that, you want to make sure you look big." You don't have to be a SmartZone business to use the facility, either. It's available to the public.

MTEC SMARTZONE: THE BACKSTORY

When Phil Musser signed on as director of the Keweenaw Economic Development Alliance (KEDA) in 1985, he knew he was facing an uphill climb. "The economy was in tough shape after the mines closed," he said. Nevertheless, KEDA was

soon helping manufacturing and service companies get a handhold. "We'd begun to develop relationships with tech firms, but we felt they needed a separate organization," he said.

Then along came SmartZones. The Michigan Economic Development Corporation invited communities, usually with universities, to submit proposals to establish special districts where high-tech business would be nourished. Funding would come from state property taxes generated by new development within the SmartZone borders.

With Michigan Tech's Pete Radecki and Jim Baker '93 '95 '05, and with the enthusiastic collaboration of the cities of Houghton and Hancock, Musser put together a proposal that was just what the state envisioned. Then, the consortium rustled up \$1.6 million, mostly from government grants but also with help from local banks and utilities. Those dollars led to renovation of the Powerhouse in 2003, establishing the SmartZone's first business incubator and funding for staff and operations.

"It was really exciting for KEDA," Musser remembered. "After the SmartZone started, we were getting spinoffs from Michigan Tech, like GS Engineering . . . Now those businesses are the core of our technology sector."

"They give us a diversity that helps us weather economic downturns," he said. "Smaller companies are agile, better able to respond to markets, and now we have a very good base to work from."

The secret to the SmartZone's success has been teamwork, said Hancock City Manager Glenn Anderson. "We've been as successful as we have because of the collaboration between both cities,

Michigan Tech, and KEDA," he said. "Other communities ask me why we've done so well, and I tell them we've eliminated the turf wars in the interest of economic development and job growth."

Both Houghton and Hancock have enjoyed new jobs, new residents, and new investment. "The SmartZone also played a pivotal role in establishing the Jutila Center," Anderson said, by renovating one floor into incubator space after Finlandia University purchased the old hospital.

"And we seem to have changed the culture to some extent, opened minds to the idea of commercializing research," he added. "It has exceeded my expectations. We had hoped for job growth and investment, but its far more successful than I had thought. I expect a very bright future."

Michigan Tech had its own reasons for backing the SmartZone. "Like a lot of universities, our biggest problem is attracting and retaining talent," said Vice President for Research David Reed.

Universities hire people, and those people come with partners. Finding work for significant others can be a challenge. "The University can't employ all of them, and the hospital can't employ all of them. Our solution is to try to grow business and employment opportunities in the community."

Now Michigan Tech faculty are moving their innovations from the pages of academic journals to the marketplace. "And there are the 350 jobs in the community, plus jobs in Walmart and gas stations and restaurants that wouldn't be there either, without the new SmartZone jobs," said Reed. "At the end of the day, that's what it's all about." ■

10 THINGS TO DO BEFORE YOU START YOUR NEW BUSINESS

The key to a successful business is solving a customer's problem. The solution can be a product or a service, but whatever it is, you need to do your homework.



Know your customers. Who are they? Will they really buy your product?

Identify what makes your product special.

Design, price, energy efficiency?

Understand your cost structure. Is your product cheaper than its competition? What is your customer willing to pay for the benefits you can provide?

Make sure you have what you need. Hard-to-get materials, unusual infrastructure, permits? What about patents? Are certain locations critical?

Identify your suppliers. Who will provide your materials, services, product distribution, marketing, and logistics?

Design a distribution channel. How does your customer learn about your product? How is it delivered? Where is the inventory, and who owns it?

Anticipate your customer relationship. What will it take to get and keep your customers?

Forecast revenue streams. How will your customers pay for your product? Buy it, license it, rent it?

List key activities. What absolutely has to be done? Secure FDA approval, develop production capacity, protect intellectual property?

Get help! In Michigan, your local SmartZone and Small Business Technology Development Centers are great places to start. Check out the SmartStart program offered through the MTEC SmartZone (mtecsz.com). Friends, family, classmates, and acquaintances can be very helpful once they know what you need and what hurdles you are facing.

Note: Thanks to John Diebel for providing this list, which was extracted from Business Model Generation, by Alexander Osterwalder and Yves Pigneur.

MONKEY BUSINESS

A STUDENT'S LOVE FOR
PRIMATES LEADS TO A
MOUNTAINTOP IN ETHIOPIA





Geladas are remarkably unfazed by the presence of humans. Here, Julie Jarvey starts her day identifying the study groups and counting the individuals present.

by Jennifer Donovan; photos by Julie Jarvey

The first time Julie Jarvey '11 saw a monkey in the wild, it urinated on her. "I was ecstatic," she says.

At the time, Jarvey was nineteen. Now she's twenty-four and heading for Ethiopia, where she can study the monkeys she loves so much.

Jarvey holds a BS in Wildlife Ecology and Management and a certificate in Geographic Information Systems. She began work on a master's degree at the University of Michigan this fall and—because she won an extremely competitive National Science Foundation Graduate Research Fellowship—will be doing her fieldwork at the Simien Mountains National Park in northern Ethiopia.

That will be a homecoming for Jarvey, who has already worked as camp manager at the park, home to about one hundred geladas—a species of monkey distantly related to the baboon. The gelada (pronounced JELL-a-duh) project based there is run by Jacinta Beehner and Thore Bergman, University of Michigan researchers who will serve as Jarvey's advisors.

THE GELADA—A MOST UNUSUAL MONKEY

The geladas are found only in the mountains of northern Ethiopia. They are somewhat similar to the baboon in appearance but are distinguished by a bright patch of skin on their chests. Males can weigh upwards of forty pounds, while the average female is about twenty-four pounds. The gelada is the only species in its genus and the only grazing monkey, living on a diet that is 90 percent grass. Though not considered threatened or endangered, there are only about five thousand geladas in the world. They're one of very few primates that live at higher elevations, climbing down steep cliffs to find protected sleeping spots.

Unlike many monkeys, however, geladas do not live in trees. "The babies will climb trees and fall or push each other off," Jarvey says. "Then they go right back up and do

Family values

The gelada family known as G unit huddle together for protection against the cold and damp. Bumblebee, the leader male, exposes big canine teeth that could inflict serious wounds if he were challenged by another male. Now, however, he is merely yawning.



When a new bachelor gelada takes over a family unit, he will attempt to kill the infants so the females become sexually receptive. The deposed leaders often stay in the group as subordinate followers to protect their offspring. This male is likely a follower clutching his infant, who has been scared by bachelors' chasing and vocalizations.

it again. Adults only go in trees to eat the rose hips and shake the branches."

Although she was barely twenty-one at the time, Jarvey scored the gelada project camp manager's job—partly because she was willing to work and live under primitive conditions with no pay, ten thousand feet up an African mountain, with assistants who came from a nearby farming village and spoke Amharic, a Semitic language with its own alphabet. But mostly, she was hired because she was bubbling with enthusiasm for the monkeys that live there.

"The idea of studying wild primates has captivated me ever since I watched *Gorillas in the Mist* when I was nine years old," says Jarvey. "I grew up idolizing Jane Goodall [probably the world's best-known primatologist, whose groundbreaking work with chimpanzees has been widely publicized]. But growing up in rural Upper Michigan does not open many doors in primatology."

Jarvey is not one to let a little thing like that stop her. Right after her freshman year at Tech, she spent the summer studying in Costa Rica. It was there that a tiny squirrel monkey urinated on her, sealing her career path once and for all.

In Costa Rica, she ran into a group of students who were following a troop of capuchin monkeys. One of the students told her they were in "primate field school."

"I was intrigued," Jarvey says. "I had never heard of primate field school."

It didn't take her long to find a primate field school for herself. She spent her next winter break in Nicaragua taking a field course in primate behavior and ecology.

"On my first day observing a troop of howler monkeys grooming in a fig tree, I received the high honor of being the first student to get hit by their falling feces," she recalls. "I always knew I was meant to be a primatologist."

AN ETHIOPIAN EXPERIENCE

During Jarvey's senior year at Michigan Tech, the opportunity arose to go to Ethiopia as camp manager for the gelada project there. The job is usually a field internship for new college graduates, but her professors agreed that it was too special an opportunity to pass up for want of a few classes. So she completed her BS on an Ethiopian mountaintop, receiving hard-earned credit for field experience.

"I THINK IT IS CREATING A SENSE OF PRIDE IN THEIR NATIVE WILDLIFE THAT IS CRUCIAL FOR ENSURING THE ANIMALS' SURVIVAL."

It was far from a walk in the park. "I was younger than most of the researchers working there, yet I was the boss," she says. She gathered project data, managed a team of three local assistants and the field site, dispersed and accounted for project funds, and maintained the team's rickety old truck, fondly nicknamed Sushi. "One month, we had thirty flat tires," she recalls.

Her field assistants constantly surprised her. Young men from a small village where their families farm barley and herd livestock, they were insatiably eager to learn. "They wanted to learn how to use the computer and work in the lab, how to process the fecal samples they were collecting every day," Jarvey says. "They all want to become park guides, and one has talked about getting a PhD in biology."

That illustrates an important, if unanticipated, benefit of involving local residents in the gelada project, the young researcher says. "I think it is creating a sense of pride in their native wildlife that is crucial for ensuring the animals' survival. It is also providing these local young people with a solid basis in field and biological experience and a financial base to build a successful life on. Perhaps they will lead the next generation of wildlife management in Ethiopia."

As soon as she arrived in Ethiopia, Jarvey became entranced with the geladas, which have a complex social structure and no fear of human beings. "They're used to seeing people, and they're not very curious by nature," she says. "They're definitely not vicious—unless you're another male gelada."

Geladas live in groups called units, which range from one male and one female to several males and five to ten females. Some of the males are "followers," allowed to run with the unit but rarely to breed with any of the females, Jarvey explains. Other males band together in bachelor groups. And there's a lot of jockeying for position, with follower or bachelor males challenging dominant males for their females.

"I saw one unit get taken over five times," she recalls. "It was an emotional roller coaster for me."

Jarvey identifies with the geladas because, she says, "I don't feel very different from them. You see so much of yourself in them, especially the babies. I'd just sit and watch them do things human babies do."

During her NSF fellowship research, Jarvey is studying nutritional ecology. She analyzes the geladas' diet and nutrition by comparing amounts of



A bachelor wanders through the village of Sankaber, where the field site is located in Ethiopia's Simien Mountains National Park. These boys, sons of the project's scout, always report to the researchers when geladas are in town.

protein in their urine, measuring a particular fecal hormone, and examining how the elevation of their grazing grounds affects their diet.

Collecting urine samples from the monkeys could prove tricky. "The plan is to collect it with a pipette after they've peed on a rock," Jarvey explains. "The only time this will work will be in the morning when they are climbing up from the cliffs and sitting on the rocks. I'll have to see if it's even feasible to collect urine this way. If not I'll have to use fecal hormones."

The scientists who run the gelada project are focusing on the behavior and social structure of the monkeys. Jarvey's focus is more on conservation.

"Understanding the effects of seasonality, climate, and altitude on gelada nutrition and stress will be useful for future conservation efforts and will help predict effects of climate change, an especially critical issue for species that live at high altitudes," she says. ■

PRACTICING THE DARK ARTS,



WEARING A WHITE HAT

by Marcia Goodrich

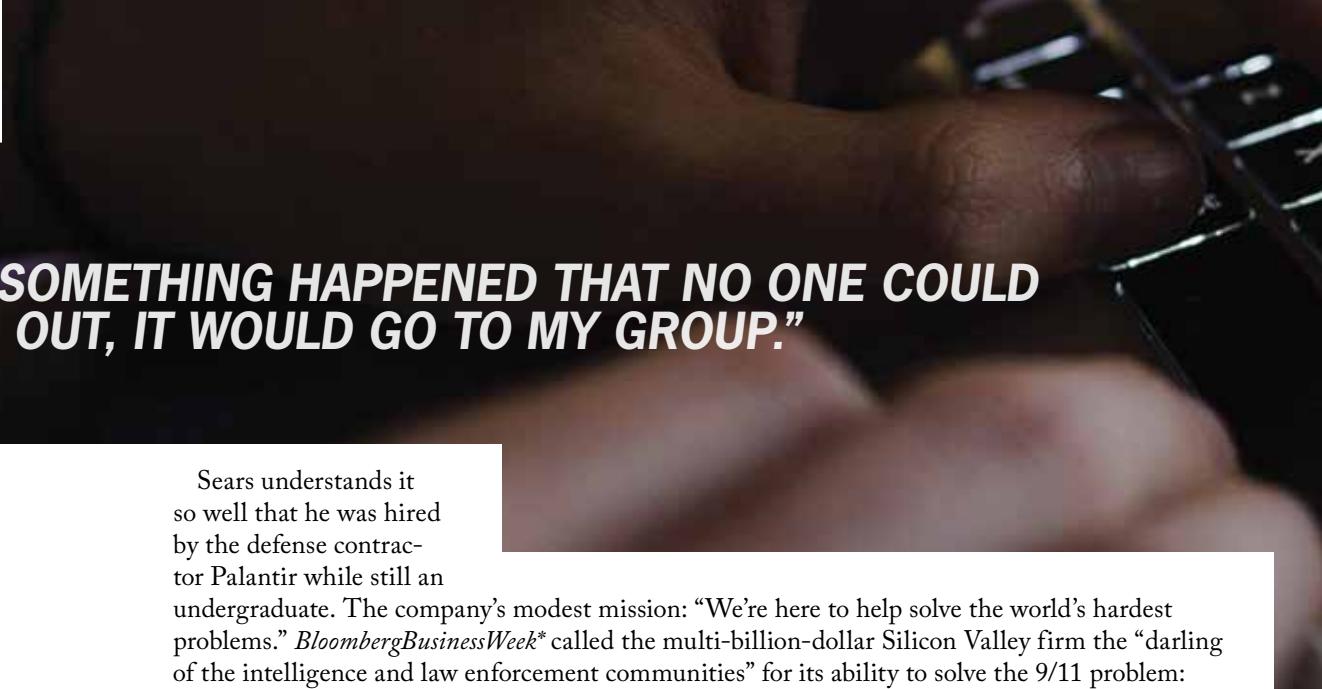
Ryan Sears '13 has an unusual skillset. He is a white-hat hacker, an expert in detecting, breaching, and fixing weaknesses in computer security systems. If he were a bad guy, he would be the stuff of nightmares. Fortunately, he is not.

That does not make him less formidable. When Sears invades a computer system—and he has invaded many—he places himself in a criminal frame of mind. “I ask, if I were evil, what could I do with this?” he said. “And then I never do evil, I just report my findings.”

Sears’ skills earned him a slot in the Google Security Hall of Fame while he was still an undergrad, for discovering a vulnerability in Gmail that would allow ne’er-do-wells to take over accounts. His reward? “They paid me \$3,133.70 for an hour’s work.”

Sears has been captivated by computing’s cat-and-mouse underworld since he was a twelve-year-old going to school and learning to crack video games. “Security has always been my passion,” he said. “It seemed to call me. It’s this weird, digital dark-arts practice, and there are no parallels in the real world.”

His specialty is software exploitation: capitalizing on coding errors to hijack software for one’s own purposes. “It can be used for good or evil,” Sears said. “The Russian business network and Chinese intelligence agencies do this on the dark side, and the only way we can defend against it is to understand it.”



"WHEN SOMETHING HAPPENED THAT NO ONE COULD FIGURE OUT, IT WOULD GO TO MY GROUP."

Sears understands it so well that he was hired by the defense contractor Palantir while still an undergraduate. The company's modest mission: "We're here to help solve the world's hardest problems." *BloombergBusinessWeek** called the multi-billion-dollar Silicon Valley firm the "darling of the intelligence and law enforcement communities" for its ability to solve the 9/11 problem: it assembles a constellation of apparently unrelated data—twinkly bits that on their own appear innocent—and raises the alarm if together they signal some nefarious intent.

Sears was first put in the public eye after he won the 2010 US Cyber Challenge, an Olympics of sorts for up-and-coming cyber-security wonks.

"That put me in the spotlight," he said. As a sophomore, he was flown to the White House for a meet and greet with officials from the likes of the FBI, the Secret Service, and the National Security Agency. He found their world fascinating, but in the end, after talking with Palantir, said no thanks to government service. "Security work is what I've known I've wanted to do forever, but there are ethical reasons I chose not to take the government route, and private industry will pay me more," he said with a shrug. "Plus I don't have to deal with any bureaucratic nonsense."

It's a step up from his previous job.

Sears got on Michigan Tech's radar after joining the Information Technology group. He started on the bottom rung, as a student worker in user support, but was soon promoted. After tackling increasingly complex assignments with aplomb, he was inducted into IT's equivalent of the Navy SEALs: Team Bulldozer. "When something happened that nobody could figure out, it would go to my group," Sears says.

In his eight years at Michigan Tech, Greg Booth hasn't worked with anyone quite like Sears. "He's scary smart, but in a good way," said the senior application systems analyst. "He has blocked a number of attacks on our servers. Sometimes problems would arise that we couldn't pursue, and we could give them to Ryan. He would always come up with a solution."

Sears' work with Booth and other IT staff was ideal preparation for his dream job with Palantir. "I can't overstate how important that's been," he said.

The IT staff were equally complimentary. "He's going to be an extremely hard person to replace," said David Hale, IT senior security officer. "But I'm very, very happy he found the job with Palantir. I would have liked to hire him, but we just can't pay him what he's worth."

Sears has a bright future, Hale predicted. "He will do very well out there. We'll see how long it is before somebody else snatches him up," he said. "When it comes to security work, Ryan's a natural."

On the academic side, Sears' most influential teacher was Brian Davis '91, who taught him about the underpinnings of computing. "I remember thinking, 'Holy crap! This is how computers work,'" Sears recalled. "I didn't realize that all your computer does is add, which is an amazing thing. Computers turn simple addition into smartphones, movies, aviation equipment—everything."

Davis is now an associate professor at Embry-Riddle Aeronautical University, in Prescott, Arizona. "Ryan is very intelligent, but there are aspects of the computer that people don't typically discuss," he said. "Ryan knew everything about a, b, and c, but didn't know how they related. I provided the linkage, so he could see the big picture."

*<http://www.businessweek.com/magazine/palantir-the-vanguard-of-cyberterror-security-11222011.html> "Palantir, the War on Terror's Secret Weapon," by Ashlee Vance and Brad Stone, Nov. 22, 2011



Sears is the sort of student teachers don't forget. "When I started working with him, he was a second-year, and even then he was the most capable person in computing security at Tech, including both faculty and staff," Davis said. His skills were such that he even assumed a teaching role in some of his classes.

A prodigy in his field, Sears nonetheless struggled with some required courses—he failed calculus twice at Tech before taking it from a community college and transferring the credit. Yet he was so proficient in his discipline that many of his major courses seemed a waste of his time.

The cumulative frustration nearly drove him to drop out, but he persevered. Six years after enrolling at Tech, Sears completed his BS in Computer Network and System Administration in May, mostly to please his family, especially his grandmother.

His mentor is glad Sears toughed it out. "I'm glad to hear Ryan's planning to graduate," Davis said last spring, noting that too often, self-taught computer wunderkinder drop out under similar circumstances, only to find themselves stuck in dead-end jobs for lack of a college diploma.

While in school, Sears worked remotely for Palantir from home and commuted to Palo Alto once a month. After graduation, he went to California to work as an information security engineer. As the name suggests, it's an open-ended position. Typical challenges are uncovering bank fraud or foiling "distributed denial of service" attacks on websites.

"In the hacker realm, especially among black hats, knocking websites off the air is a big deal," Sears said. "One of the first things I did at Palantir was re-architect our web server so it could stand up to a denial of service attack."

Co-worker Booth was sorry to see him leave.

"When Ryan said he got a job at Palantir, I was blown away," he said. "It's like you're in a band with someone who tells you he's going to go play with the Rolling Stones. You're kind of annoyed because you are losing him, but then you are also happy because he made it, and he deserved to make it."

The shadowy world of black and white hats can be an alarming place, said Booth. "But it's also reassuring that there are good people like Ryan on the right side." ■

3 SIMPLE TIPS FOR PROTECTING YOUR DATA

Most of us know the basics of protecting our personal computers: run current anti-virus software and enable the firewall. But when it comes to guarding data such as credit card numbers and bank information, many of us don't know how vulnerable we are until it's too late.

David Hale, Michigan Tech's information technology security chief, offers some simple tips to ward off Internet bandits.

CHOOSE A PASSPHRASE OVER A PASSWORD.

The longer, the better, if the system allows it. While a password like "@nuary5th" is better than "January," a passphrase like "Son born January 5th" is far superior.

USE A DIFFERENT PASSPHRASE FOR EVERY SYSTEM.

Otherwise, if one system is hacked, thieves can break into all the systems you use. To protect yourself, use an easy-to-remember passphrase and adapt it for each system, like "This 1\$ my password for my bank." and "This 1\$ my password for amazon." Even better, keep your passwords in a password safe and make the phrases different. Good password safes can be found at <http://lastpass.com> or <http://keepass.info>.

WHEN CREATING ANSWERS FOR YOUR SECRET QUESTIONS, LIE.

Bad guys don't need your password if they can answer your questions, and the real answers are often easy to figure out. A thief can guess your favorite color in a few tries. Instead, answer questions randomly. So for the question "What color was your first car?" you can answer "Florida Sun Red Burn." You can use the same answer for any question, or, better still, have different answers for each service and store them in a password safe so you don't have to remember them.

THE WHALE WATCHER

STRUCK BY A DEBILITATING ILLNESS,
AN ALUM FINDS STRENGTH AND SOLACE
AMONG THE HUMPBACKS.



by Joan Conrow, photos by Cassie Pali

The ocean, glass smooth on the leeward side of Maui, changes from aqua to turquoise to clear navy blue as Bob Raimo and his wife, Ellen, row steadily out to sea in their seventeen-foot dory.

The small islands of Lanai and Kahoolawe loom before them, hazy in the “vog”—volcanic smog blown up from the eruption of Kilauea on Hawaii Island. Two camera bags sit unzipped between them, ready for action the moment a humpback whale spouts, slaps its tail, or otherwise makes its presence known in the 150-foot depths where they wait, small boat gently rocking, two miles from shore.

The couple, who spend most of the year in Kihei and Maui and pass their summers on a barrier island in New Jersey, row out whenever wind and sea conditions permit, which is nearly every day.

“You get addicted to the whales,” says Raimo, a deeply tanned, burly man with a quietly direct way of speaking. “You just can’t explain it.”

Raimo, who graduated from Michigan Tech in 1979 with a BS in Forestry and a concentration in soil sciences, had no interest in either whales or photography when he first began rowing in the waters off Maui eleven years ago.

He was simply trying to stay alive and mobile—and stave off the other debilitating effects of multiple sclerosis (MS).





Ellen Raimo, pictured on the facing page with her husband, Bob '79, captured this breathtaking image of a humpback breaching off Maui in the Hawaiian Islands. When the couple rows out on the water, they sometimes hear the whales' siren songs echoing under the waves.

Raimo had always been athletic, an avid waterman. He was a surfer, a lifeguard, a member of his high school and college swim teams, a commercial clammer. When he was thirty-seven, a typical workout was swimming two miles in fifty-five minutes, five times per week. "I was in good shape," he recalls.

Then he woke up one morning blind in his right eye. Other symptoms arrived: muscle spasticity, weakness. He started falling down. Doctors were baffled, but Raimo kept seeking answers. He was finally diagnosed with multiple sclerosis, a chronic autoimmune disorder that eats away at myelin, the protective sheath that coats nerve fibers in the spinal cord and brain.

"At that time there weren't any wonder drugs to treat it," says Raimo, who was told he faced a future of growing immobility and deteriorating health. As his condition worsened, Raimo reluctantly sold his share in the thriving landscaping company he'd founded and nurtured.

"I was the president and basically had to fire myself when I got sick," he says. "It was very disappointing, because you work for years to build up a small business, and then you have to walk away."



NOT THE TYPICAL MULTIPLE SCLEROSIS PATIENT, RAIMO CAN BENCH PRESS HIS PHYSICAL THERAPIST.

For a time, Raimo was entirely bedridden, his MS complicated by a spinal fusion operation to repair a back injury. Then he found a good rehabilitation doctor at the University of Pennsylvania who implanted a pump that delivered a new medicine directly to his spine.

"That reduced the spasticity, and eventually I could get out of bed, into a wheelchair, and then onto crutches, so I could do more," Raimo says.

Meanwhile, Raimo and his family had moved to Maui, seeking a more laid-back lifestyle, since stress can exacerbate MS.

"I've been dealing with this for eighteen years now," says Raimo, who uses crutches to nimbly navigate on land. "You kind of wait for the next little disaster to happen. But if you don't do the physical therapy, you don't get better."

So Raimo does the physical therapy: biking, swimming, hand-cycling. He can even bench press his 140-pound physical therapist, who had never witnessed such a recovery.

"He's a miracle," says Ellen, his wife of thirty-one years.

The rowing began as another way to get in shape. After finding he couldn't control a kayak because of weakness on his right side, Raimo ordered a dory from the mainland that was similar to the boat he'd piloted in rough surf as a New Jersey lifeguard, but slower and more stable.

Though entirely comfortable in the rowboat, Raimo confesses he was initially timid about sharing the water with humpbacks. After all, adults are the size of a bus, and the frolicking babies weigh two tons at birth. So for a short time he employed the marine equivalent of "bear bells," banging on the side of the boat to warn whales of their approach as he and Ellen rowed out.

Now the couple's morning workout has evolved into an exercise in patience as they wait, boat barely bobbing, for the whales to come to them.

"We sit out here for hours sometimes and don't even talk, just watch the sky," Raimo says, glancing up at the expanse of cloud-swept blue. Sometimes, they hear the whales singing, haunting intonations as audible above the water as human conversations.



"Every day is an adventure," Raimo says. One calm winter morning they were paddling out and heard the distinctive sound of big bodies hitting the water. "I told Ellen she'd better get the camera out," he recalls. "She stopped rowing, pulled the camera from the case, and three whales breached at the same time four hundred yards away. The *Maui News* printed that shot on the front page, and the Honolulu TV station called and used the sequence on the evening news the next night. We thought it was hilarious."

Their photography was almost an after-thought. The couple began with cheap disposables, graduating to a digital camera Raimo had bought to photograph his son's surf sessions. The big investment was a telephoto lens that allows the couple to get stunningly clear pictures from a quarter mile away. They shoot rapidly and instinctively—the animals are visible for just a second or two—and discover the day's prizes later, when poring over images downloaded on the computer.

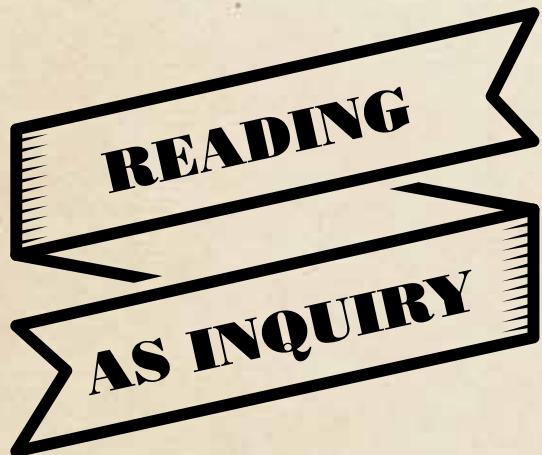
The couple also photograph kayakers and stand-up paddlers, many of them tourists having their first encounter with a whale. They jot down email addresses and send along the pictures, a practice that has earned them friends around the world.

On the water, their unique craft confers a certain notoriety. As their dory drifts in the deep blue, other regulars—paddlers, boaters, a lifeguard—swing by to chat and share tales of recent sightings. A tour captain suggests they save themselves some work and buy a motor.

But "Rowboat Bob" and Ellen simply laugh and slip their oars into the wind-rippled sea. Moving in synchronicity, they row toward land, discussing the unpredictability of whales, weather, water, and life. "Every day is different," Raimo says. "You never know what to expect. I'm just so glad to be out here." ■



READING WITH AUTHORS.



TURNS 10



Michigan Tech's summer reading program, Reading as Inquiry, began in 2004. Since then, first-year students have been asked to read a common book over the summer and discuss it with their peers in the fall.

Not all students take up the banner, but for those who participate, Reading as Inquiry is an animating introduction to collegiate life. We asked Elizabeth Flynn, professor emerita of humanities, to write about her ten years in the program. And we spoke with a student who learned more than she bargained for when she picked up this year's selection.



Early in fall term of 2010, as I was teaching Sherman Alexie's novel *The Absolutely True Diary of a Part-time Indian* in my American novel class, in walked Alexie himself, accompanied by Robert Johnson, a colleague in the Department of Humanities.

A student had been reporting on a review of the novel and was surprised that the reviewer had confused two of the characters. Alexie joined in the conversation, observing that reviewers too often read carelessly. We then got off on other topics. The class knew Alexie's visit was a possibility, and we had prepared questions for him. This was the first time in my many years of teaching that I taught a work in the presence of its author. I can still see myself sharing the front of the classroom with this quite tall man—an amazing teaching moment.

Alexie was on campus as part of Reading as Inquiry, Tech's summer reading program, now in its tenth year, and Johnson accompanied him because he initiated the program and serves as a coordinator. Students, and often their parents, read a common book over the summer and

discuss it in small groups led by faculty, administrators, or staff during Orientation Week, the week before classes start. Orientation team leaders and resident assistants, who are with the first-year students throughout Orientation Week, assist in the discussions. Facilitators have come from all areas of the University, and President Glenn Mroz, Vice President for Governmental Relations Dale Tahtinen, Vice President of Student Affairs and Advancement Les Cook, Associate Vice President and Dean of Students Bonnie Gorman, Evie Johnson in the Department of Humanities, and many others have been mainstays. Parents are welcome to join discussion groups created for them.

In every case but one, the author has come to campus to give a talk, almost always to a packed Rozsa Center.

Overflow crowds have necessitated live streaming to other rooms on campus in recent years. The one exception was Mary Shelley, nineteenth-century author of the novel *Frankenstein*, the selection in 2004, Reading as Inquiry's inaugural year. Although similar programs are common, Tech is one of the few technological universities to introduce a reading program for the entire first-year class.

Not surprisingly, a technological emphasis was evident in the first three selections: Shelley's *Frankenstein*, the classic Romantic novel about the unwitting creation of a destructive monster; *Feed* by M. T. Anderson, a dystopian and futuristic young adult novel; and *Garbage Land: On the Secret Trail of Trash* by Elizabeth Royte.

Since 2007, the choices have shifted to humanitarian issues: Benson Deng, Alephonsion Deng, and Benjamin Ajak's *They Poured Fire on Us From the Sky: The True Story of Three Lost Boys from Sudan*; Susan Carol McCarthy's *Lay That Trumpet in Our Hands*; Alexie's *The Absolutely True Diary of a Part-time Indian*; Jeannette Walls's *The Glass Castle*; and Conor Grennan's *Little Princes: One Man's Promise to Bring Home the Lost Children of Nepal*.

Ironically, one of the most popular books was Greg Mortenson and David Oliver Relin's *Three Cups of Tea: One Man's Mission to Promote Peace . . . One School at a Time*. Enthusiastic Michigan Tech students collected nearly \$6,000 in 2008 to support Mortenson's efforts to establish schools for girls in Central Asia. Three years later, a CBS investigation revealed that much of the book was fabricated and that,

while many schools had been built, Mortenson's charity was being mismanaged.

The 2013 book, *Full Body Burden: Growing Up in the Nuclear Shadow of Rocky Flats* by Kristen Iversen, a nonfiction narrative about growing up next to a secret nuclear weapons plant, returned to technological issues and is of special interest to Johnson, whose 2012 book *Romancing the Atom: Nuclear Infatuation from the Radium Girls to Fukushima*, explores similar themes. This year a celebration of the program's ten years was added to the author talks and facilitated sessions.

Reading as Inquiry began when then-Michigan Tech President Curt Tompkins solicited ideas for initiatives that would make the University a "different kind of place." With Bonnie Gorman '12, who was then in charge of programs for first-year students, Johnson pursued the project, and the pair launched it with two \$3,000 anonymous gifts. Since then, Reading as Inquiry has greatly benefitted from generous donations from Dave '72 and Elsa Brule, who have covered all expenses for the past several years.

Students, parents, and facilitators have been enthusiastic. I had a very good experience the first year of the program in that all of the students in my group, mostly majors in chemical engineering, had read *Frankenstein*, were enthusiastic about it, and some had studied it in high school. The discussion of *Feed* the next year was enhanced by the enthusiasm of the orientation team leader, who had perfected his own version of "Feedspeak" and wanted to share it with the group. His excitement prompted me in subsequent years to turn over

a portion of the discussion to the orientation team leaders and resident assistants. They always have great questions, often ones I would not have asked myself.

Beth Lunde, the assistant vice president for student life, has been involved in Reading as Inquiry since its inception. In reflecting on her experiences, she observes, "Students always seem to remember 'their book' from Orientation,

and in addition to the inquiry that takes place in group discussions, they always seem to take away a life lesson from the reading and discussion." If she had to pick just one thing that makes the program successful, she says it is "a unifying inquiry and reflection process for our University community."

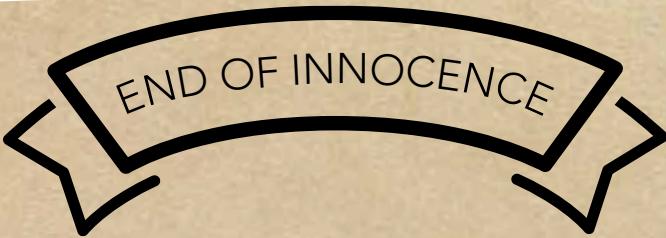
Reading as Inquiry brings reading and writing to the foreground for students

who are supposedly "non-reading"—oriented due to their math and science interests. Johnson says, "One thing we have learned is that indeed many of the new students do enjoy reading. For those who don't, many have mentioned how much they really liked 'reading an entire book.' And, because we have invited parents to come during the move-in weekend to discuss the book, we have several

nice stories of how much the families enjoyed reading the book together—some in audio books."

In May, I taught my last class as a professor in the Department of Humanities. It wasn't really my last class, though, since I will continue participating in Reading as Inquiry for some years to come. I wouldn't miss it.

—Elizabeth Flynn



Rocky Flats can happen anywhere

by Marcia Goodrich

Summer reading programs can reveal new worlds to students taking their first tentative steps into college life. Sometimes the insights—on poverty, racism, family dynamics—can be life changing.

But for one Michigan Tech student, the 2013 Reading as Inquiry selection revealed a sinking suspicion, if not the uncomfortable truth, that she and the author were living a parallel tragedy.

To protect her privacy, we will call her Melissa.

The first time she read the book, Melissa galloped straight over the sentence that would transform how she saw herself and her community. Later, she decided to read the book again. "I figured I'd find some sort of emotional connection, because of the people dealing with cancer," she explains. "That's when I caught the line. It said that groundwater contamination causes brain tumors in females."

Full Body Burden: Growing Up in the Nuclear Shadow of Rocky Flats is author Kristen Iverson's story of growing up near the Rocky Flats atomic weapons plant in Colorado; the toxic, radioactive waste that was secretly released from the facility; and the peculiar cancers that infected children living nearby.

Melissa has never lived near a covert Cold War weapons factory that loosed deadly plutonium on the local citizenry. Still, she has her own strange cancer, a brain tumor that was discovered when she was twelve. She has received proton radiation treatment, and it seems to have kept the tumor in check. But, like Rocky Flats, it's always lurking in the background.

"They think I was born with it, or got it very young," she says. It's not hereditary, and it's quite rare. Nevertheless, her mother has the same cancer, diagnosed when Melissa was just a year old. And so does the woman living next door. Melissa once

believed it had to do with something they ate. But after reading *Full Body Burden* for the second time, she began to wonder.

"I thought, 'Something weird is going on here,'" she says. She remembered seeing an old drainpipe oozing red gunk not far from her home. The pipe, she discovered, was draining the old township dump, which had been capped and then neatly covered up by a residential development.

Melissa looked for it in a US Environmental Protection Agency database. There was nothing about that particular dump, but there were two others not far from her home that were listed as Superfund sites in the 1980s—well before Melissa was born. One was remediated in 2011. Cleanup of the other is ongoing.

According to the EPA, one of the Superfund sites was used for industrial waste disposal with the full knowledge and cooperation of the township. "It was an unlicensed dump, and they put all kinds of things in there: paint, VOCs [volatile organic compounds like dioxin], all sorts of nasty stuff," Melissa said. "The groundwater plumes below the dump extend north and south for seven miles, and they have traces of the chemicals. What happened to us has always been a huge mystery, but now I can say this is a good contender."

Ironically, coping with cancer may have made this revelation easier to shoulder. "Something really big has to happen before I get upset," she says. "I got the treatment that I needed for the tumor, and I know a lot of people who have it a lot worse than I do. All in all, I've been extremely lucky."

Still, the experience has shaken her. "The township knew what was going on, and they still know it," says Melissa. "Sadly, for my family, the damage has already been done."

Her story does not end tied up neatly with a ribbon. No dramatic court cases or multi-million-dollar settlements are pending, no Hollywood screenplays are in the works. "At this point, there's not much we can do," she says. "We have talked about it as a family, and we're convinced there's something in our water, but it's very hard to prove."

Instead of trying to remediate the past, Melissa is looking forward clear eyed, with the knowledge that things are not always as they seem. "If I ever buy a house, I'm going to look at the EPA data to make sure there's no toxic sites in the area," she says. "If you don't know to ask, you'll never find out."

"There's some very creepy stuff out there." ■

MY THREE SONS



NATHAN, STEVEN, AND JASON SALIGA CONTINUE THE MICHIGAN TECH LEGACY OF ATHLETIC AND ACADEMIC SUCCESS BEGUN BY THEIR FATHER, TONY SALIGA '82.

by Wes Frahm; illustration by Brandy Tichonoff

Work hard. Have fun. Be nice.

That's the family motto for the Saligas, who make their home in Leonard, roughly forty miles north of Detroit.

Whether it's building a chicken coop, designing a remote control helicopter, or excelling in athletics, the adage seems appropriate.

It's also been applied to higher education.

"It fits Michigan Tech rather well," says Tony, a 1982 graduate in electrical engineering technology and a senior project engineer at General Motors. "You need to work hard at school, but there are plenty of opportunities for fun. And everyone in Houghton is nice."

The family motto and University matched so well that the Saligas' three sons all chose to come to the Copper Country for college—and to run, jump, and throw.

"I knew the education and opportunities I received from Michigan Tech and wanted the same for my sons," said Tony, who played basketball for the Huskies while earning his degree.

"I made a lot of friends while I was at Tech, and all of them are successful."

Nathan, the oldest son, knew he wanted to be a Michigan Tech engineer after visiting campus as an eighth grader. "My parents took me to campus when I was in junior high, and we met with [men's basketball] Coach [Kevin] Luke. I knew right then I was going to school at Tech," he remembers.

At six feet, seven inches, Nathan joined the men's basketball team but after one season found track and field a better fit. He ended up winning a conference title in the decathlon and setting school records in that event and the 400-meter hurdles. Nathan graduated magna cum laude in mechanical engineering last May and is now employed at Chrysler.

Middle brother Steven is now a fourth-year mechanical engineering student with a 3.86 grade point average and a member of the track and field team.

"I was simply looking for a good engineering school," he said. "Tech gave me a good scholarship, and it's worked out really well."



Jason, the youngest, insists he isn't trying to follow in his brothers' footsteps, despite joining the track and field and cross country teams this fall. "I just loved campus, the snow, and the feeling in the Houghton community," says the first-year chemical engineering student. "It helped that it was in Michigan and closer to home."

All the Saligas mentioned versions of their motto when talking about how they've experienced success.

"We always taught the boys to do the best they could do in whatever they were doing," said their mother, Sue. "They've all been driven to succeed."

Seems like the only conflict for the family of five, who once bicycled from Pittsburgh to Washington, DC, together, comes at the dinner table when the four engineers start talking technology.

Or maybe it's when Tony, true blue to GM, where he works as a project engineer, forbids Nathan to park his Chrysler in the driveway.

"I just go get started on the dishes," says Mom.

But usually, togetherness is the byword. The family has worked on a different project each of the past few summers: rebuilding a Chevy Blazer, putting an addition on the house, and constructing a remote-control helicopter.

This past summer's was a chicken coop.

"Dad's always had this fascination with chickens," said Steven. "Of course, as engineers we had to make it fully automated with temperature and humidity controls. You know, so you can sit in the living room and monitor it."

Work hard. Have fun. Be nice. Even to chickens.

Seems like a good formula for success. ■



O BROTHER, WHERE ART THOU?

FOR MANY TECH STUDENTS,
THE CORRECT ANSWER IS,
"RIGHT HERE."

by Marcia Goodrich

The brothers Saliga are not the only siblings to attend Michigan Tech. At any one time, there are dozens of sisters and brothers at the University. Those family ties generate a special energy, says Les Cook, Michigan Tech's vice president for student affairs and advancement.

"I've always been told you should replace yourself with someone better than you, but when I look at our students, I think, 'That's impossible, there's no way anyone could be any better.' And then little brother or little sister joins us, and you are awestruck, because they are as incredible or more so than their sibling. It tears at your heart-strings and makes you proud to be here."

Some talents, like math or cross country, run in families. Other siblings are night-and-day different. "You might get a student who is very driven, very academic, who can't wait to do all this research and go off to medical school," says Cook. "Then you'll meet their brother or sister, and their big focus is on doing things for others and becoming part of the community."

Alike or not, older siblings can be the University's best advertisement.

"The younger ones see what an incredible experience their brother or sister is having here, and they want to be a part of it," Cook says. "The spirit of the University is contagious, which is a good thing, because we want them to catch that spirit."

Parents also play a powerful role. "A fair number of these students are children of alumni, so they've had that Michigan Tech tattoo on them since they were born," Cook says. "But there are many other students whose parents didn't come here, who still have these profound experiences—the activities, the research, the co-ops, the great jobs they get when they leave—and even though the parents aren't our graduates, they want Michigan Tech for their other children."



From the Alumni Association

MTUQ&A

Chris S. Anderson '72

Recently retired as the president's special assistant for institutional diversity



Describe your work and its challenges.

My work was about improving preparation, access, and academic success for young people, especially underrepresented minorities and, in many cases, women. The challenge is that it takes a long time to address these issues and affect change, so the commitment must be comprehensive and long term.

What was the most important thing you learned on the job?

Building relationships and partnerships is critical. Funding was essential to support our programs, faculty involvement is essential, and an institution's commitment to create an inclusive environment is the keystone that makes everything work.

What surprised you most?

I was often made aware that many people are still resistant to diversity in subtle ways and do not understand its benefits. Also, almost everyone agrees that a good education is important, but when it comes to supporting precollege education, there is no uniform financial support or human response.

What are you most proud of?

I think it always comes down to people. When I hear from, or hear about, the students who have been helped by Michigan Tech's diversity programs, it makes the challenges worthwhile. Helping build our precollege outreach programs, working on the NSF ADVANCE project [a National Science Foundation program to increase the involvement of women in science and engineering in academia] and the Climate Study [to understand the concerns of women at Michigan Tech] were also significant

highlights that involved the campus community and a variety of partners.

What do you wish you had done differently?

I wish I had published more to give the programs and partnerships additional national visibility.

What are your hobbies and diversions?

Reading, gardening (plants in general—I am a biologist), cooking, baking, walking, and swimming in Lake Superior or the Portage Canal.

Tell something that people would be surprised to know about you.

Hmmm. I love Calvin and Hobbes. I like to bowl. I was an eighth-grade science teacher for a number of years, and I really have missed working with that age group.

Anything else you'd like to share?

I've been extremely lucky to have worked with experts in education and industry, and have learned so much from them. I will always appreciate their willingness to collaborate. I hope that over the next few years Michigan Tech will look more and more like our country and that it will be a leader in the STEM world, especially, in graduating students who have been educated in a very diverse and inclusive learning environment.

Note: For the second year, Michigan Tech has been recognized nationally for its efforts to create a more diverse and inclusive campus. The University received the 2013 Higher Education Excellence in Diversity (HEED) award from INSIGHT Into Diversity magazine, one of only fifty-five universities honored. To learn more, visit www.mtu.edu/news/stories/2013/october/story98196.html.

It's your year!

Make plans to join alumni and friends on campus
August 7–9 for Alumni Reunion 2014.

The featured classes will be the Golden Ms (those who graduated fifty-plus years ago) and the classes of '64, '74, '84, '89, '94, and '04. Also featured will be members of women's basketball Huskies and men's and women's tennis teams.

In addition to time-honored events such as the Pasty Picnic, Alumni Reunion Dinner, and Tech Talks, newer activities are fast becoming reunion traditions: pasty-making demonstrations, outdoor adventure programs, and family-oriented science activities.

Reconnect with your classmates and check out what's new at Michigan Tech. Visit www.mtu.edu/reunion for details.



Alumni Events

December 27–28 Detroit 49th Annual Great Lakes Invitational, Comerica Park	January 11 Big Rapids Hockey pregame: Michigan Tech vs. Ferris	January 12 Anaheim, California Detroit Red Wings vs. Anaheim Ducks	January 25 Albany, New York Union vs. RPI hockey at Times Union Center
January 26 Grand Rapids Brunch at Marie Catrib's	January 29 Chandler, Arizona Husky Happy Hour	January 30 Tucson, Arizona Husky Happy Hour	February 1 Bowling Green, Ohio Hockey pregame: Michigan Tech vs. Bowling Green
February 7–8 Houghton Winter Carnival, Alumni Broomball Invitational	February 7 Houghton Hockey skybox: Michigan Tech vs. Alabama-Huntsville	February 22 Marquette Hockey pregame: Michigan Tech vs. Northern Michigan	March 8 Mankato, Minnesota Hockey pregame: Michigan Tech vs. Minnesota State
March 10–14 Alternative Spring Break Alumni Social	March 13 San Jose, California Student/Alumni Reception	March 14–16 WCHA Playoffs	March 21–22 Grand Rapids WCHA Final Five
March 16 Houghton Keweenaw Alumni Chapter St. Urho's Day Celebration	<p>Events are being planned in Detroit, Marquette, Grand Rapids, and around the US. Check out http://mtu.edu/alumni for up-to-date listings.</p> <p>A number of chapters also have regular networking events for area alumni. Join your chapter's Facebook page for details.</p>		

facebook



What you say

From the Michigan Tech Alumni Association Facebook page

Alumni answer the question “Did you participate in Safehouse during your time at Tech?”

Yep, while I was in DHH. I lived in the all-girls house, and we always did a fun, non-scary theme. Alice in Wonderland one year, Disney the next. I was a tour guide and am terrified of scary stuff. I think I was more scared than the kids when I led them around the 3rd floor. I'll never forget the hand that reached out and grabbed my leg one year. I screamed so loud that it was me who scared the kids. LOL!

Yes! We built a mineshaft my senior year. I scared the crap out of some kids too! My freshman year, Safehouse was how I really met most of my hall. Great experience.

Yes! Some of my favorite memories are from Safehouse when I was living in the Attic in DHH.

We started it. DHH, 1986. Weather was supposed to be cruddier than usual for Halloween, we had custodial/kitchen crew with little kids, and we had a new RC. Two routes, scary and not-so. It was a blast.

The Fourth Annual Snowfall Contest is now open!

Accurately forecast the total amount of snow to fall in the Copper Country this winter and you could win!

Last season's snowfall total was a difficult one to predict. There was a trace of snow in mid-September but it wasn't until after the New Year that the majority of the season's accumulation fell. The Keweenaw received 67 inches in January, and our best snow day was February 19 with 12 inches falling in that 24-hour period, with high winds causing Tech to close for a day and a half due to the extreme weather. In the end, we received 225 inches of the white stuff with the last of it falling on May 12.

Alumni and friends, students, faculty, staff, and retirees are all invited to predict this year's snowfall. The contest closes February 15, and the guess that falls closest to the official Keweenaw Research Center total snowfall (without going over) wins. On June 1 the winner will be chosen from all the entries submitted. A consolation prize winner will also be chosen from all the entries submitted.

Visit <http://apps.alumni.mtu.edu/snow> and cast your vote for a chance to win a Michigan Tech Winter Survival Kit and a two-night stay in a guest room on campus.

Check out www.mtu.edu/memories/snow and read the memories posted by alumni and friends, and post your own stories about winter at Tech.

"From working at TechLine, I've learned how important it is to stay connected with the past. I love talking to alumni, hearing about their experiences, and getting their advice. It's amazing how much more I know about the school."

We owe so much to our generous alumni, and I hope the Student Philanthropy Council can encourage students to give back, so future generations can have all the wonderful things we enjoy that we might take for granted."

Katie Gauthier, civil engineering major, member of the Student Philanthropy Council and a student development officer for TechLine.



The Annual Fund

Making a difference—every day, every year.

Your yearly gift—no matter the size—helps students like Katie make the most of their Tech experience.

To give to the 2013–14 Michigan Tech Annual Fund, go to www.mtu.edu/giving, phone 906-487-2310 or toll free 877-386-3688, or mail your gift to the Michigan Tech Fund, Michigan Technological University, 1400 Townsend Drive, Houghton, MI 49931-1295

Michigan Tech

Alumni Association by the numbers

The Alumni Association was established in 1892 with ten members. Today, we celebrate traditions and create connections for more than 72,000 alumni and friends from around the world. The volunteer Board of Directors is dedicated to providing opportunities for you to be part of Michigan Tech. Today, those opportunities look something like this . . .

100

Regional events for alumni, students, and friends across the nation

3,750

Michigan Tech license plates in the state

6,834

Alumni Association Facebook page likes

3

Michigan Tech Magazines per year

72

Active regional chapters, 27 of those with Facebook pages

150+

Active chapter leaders and other volunteers across the country and around the world

9,250

members of the Alumni Association LinkedIn group. 500 also belong to the Alumni-Student Professional Networking subgroup.

26

TechAlum enewsletters a year

\$196,869

given to support Michigan Tech students, including

\$68,000

Michigan Tech Student Foundation scholarships over the past five years

\$38,869

from alumni chapter scholarship programs

\$90,000

from the Alumni Association Traditions of Giving scholarship/fellowship

Want to learn more? Visit www.mtu.edu/alumni or call us at 906-487-2400.

Join us for a tour of Malta

Alumni and friends are invited to join social sciences professor Mary Durfee on a seven-day tour of Malta being planned for early May 2014.

The Mediterranean island's small size makes it possible for visitors to experience its whole history—natural, economic, political, and cultural. The tour is being planned in conjunction with the University of Malta and includes visits to museums, gardens, and ancient ruins.

To learn more, contact Alumni Relations at alumni@mtu.edu or call 906-487-2400.



Class notes

What's up with you? Submit your own class note and photo online at mtu.edu/alumni/connect/huskylink or email us at techfund@mtu.edu.

1940s

John Erwin '49 (Engineering Physics) passed away October 3 in Reno, Nevada, at age 89. He served with the US Marine Corps from 1943 to 1946. In 1946, he married Patricia Jane Young, who died in 2007. He earned a master's in geophysics and had an active career in industry. In 1961, he was employed by Hercules Aerospace Company in Salt Lake City, as part of the design team for the Sprint anti-ballistic missile. In 1964, John joined the faculty of the Mackay School of Mines of the University of

Nevada, Reno, as a professor of geophysics and as a researcher with the Nevada Bureau of Mines and Geology. After his retirement in 1985, he continued to teach mathematics at Truckee Meadows Community College and Western Nevada Community College.

1950s

Paul de Maagd '58 (Civil Engineering) died July 15 at age 77. He graduated summa cum laude from Michigan Tech, where he was named a Distinguished Military

Student. In 1958, Paul met Cynthia Anne Baine at Isle Royale National Park; they married in 1960. In 1959, he was commissioned into the Army Corps of Engineers, where he supervised the installation of Atlas missiles in Nebraska. He graduated from Western Theological Seminary in 1965 with a Master of Divinity. Returning to civil engineering, he joined the construction management firm of Elzinga & Volkers, where he rose to vice president and supervised countless projects in the Holland area. He loved singing, was a member of the

Michigan Tech Glee Club, and toured the Netherlands with the Dutch International Choir. Paul also served on the Board of Directors of GMB Architecture & Engineering.

1960s

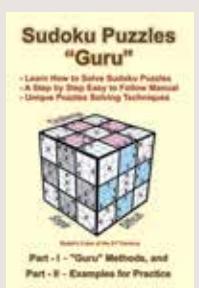
Jeffrey Floria '65 (Forestry) retired from the Ontario Ministry of Natural Resources in September 2012, after thirty years working in timber management. He is currently doing some consulting and enjoying fishing and hunting in northern Ontario.

ME alumnus authors Sudoku puzzle solution book

When **Dave (Divyang) Pandit** '69 (MS, Mechanical Engineering) retired in 2008 after nearly forty years with General Motors, he was ready to tackle his greatest challenge: Sudoku puzzles.

After countless attempts to solve the popular numbers game earlier, he was stumped. Then his eighty-six-year-old mother provided enlightenment in the form of an East Indian folk dance. In the circle dance called "Garba," you go round and round, with different steps, until the song or music is done. She directed her son, "Solve the Sudoku puzzle the same way."

Thus inspired, Pandit has written an easy-to-follow puzzle-solving manual, which outlines his unique techniques. Part I of *Sudoku Puzzles "Guru"* illustrates his methods with sample examples, and Part II provides examples for practice. The book is available at www.SudokuPuzzlesGuru.com, Amazon, and eBay.



Two civil engineering grads meet on their capstone project

While **Mike Haskin** '69, PE, (Civil Engineering) and **Gary Little** '70, CCM, (Civil Engineering) may have attended the same classes or even bumped into each other in the halls at Michigan Tech, but they met for the first time almost forty years later during the last big project of their long careers. They joined forces to oversee a \$55 million, three-year project at the Belmont Advanced Wastewater Treatment Plant, in Indianapolis, doubling its treatment capacity from 150 to 300 million gallons per day. Both Haskin and Little retired this summer and say were glad they finally got to meet up and work alongside one another.

1970s

John Wehmanen '71 (Mechanical Engineering) has retired from the federal government after a forty-year military and civilian career. His last position was as a facilities analyst on the Army staff in the Pentagon. John is proud of serving overseas for twenty-five years. He also retired from the Army Reserve a few years ago. John and wife Jung Ja are enjoying retirement in suburban Virginia.

Rick Hole '72 (Electrical Engineering) and Sonia Rodriguez were joined in marriage July 27, 2013, at Brazos Abiertos church in Tegucigalpa, Honduras.

Mark Premo '77 (Civil Engineering) has been promoted to president and CEO of Avanti Mining, effective October 1. Avanti is based in Vancouver, British Columbia. Mark joined Avanti as chief operating officer for Avanti Kitsault Mine in June 2012. He was with Chevron Mining since 1977, serving as president and CEO.

1980s

Claire Dedow '82 (Metallurgical and Materials Engineering) is retiring from General Motors after over thirty years of service. She is moving on to help the Komen Detroit Chapter as a Rally Ambassador volunteer and Race for the Cure Committee member.

Jim Niemczyk '82 (Mechanical Engineering) was recently promoted to vice president and general manager of American Panel Corporation (APC), where he has worked since 2001. APC is located in Alpharetta, Georgia, and is a global supplier of custom-designed and manufactured AMLCD displays for aircraft cockpit and rugged ground vehicle applications. Jim is also a private pilot flying out of KGVL in Gainesville, Georgia, and has a master's degree in engineering management (1987) from Northwestern University in Evanston, Illinois.

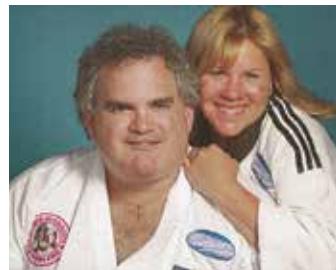
John Jamar '83 (Mechanical Engineering) has been elected to the Board of Directors of

the American Transmission Company. He is president/CEO of CCI, headquartered in Iron Mountain.

Bliss McGlynn, a legal firm co-owned by two Michigan Tech alumni, **Daniel Bliss** '83 (Mechanical Engineering) and **Gerald McGlynn** '84 (Mechanical Engineering), has joined Howard & Howard, a legal firm based in Royal Oak and specializing in intellectual property.

Albert Cipparone '84 (Electrical Engineering) reports that, despite his best efforts, his daughter chose another college near their northern Virginia home. He extends best wishes to all at Tech!

John McDaniel '87 (Electrical Engineering) received the 2013 IEEE Power and Energy Society Award for Excellence in Power Distribution Engineering. The citation for the award was "for technical leadership in distribution lightning protection and reliability."



Tammy and **Mark Trudeau** '86 (Mathematics) own Troy Martial Arts in Troy. Mark is also a founding member of the Six Sigma Black Belt Philosophy (Motorola, 1992). Tammy is a fifth degree black belt and master instructor for the school. Their school has been in business for over thirty years, and they would love to meet other Tech alumni and current students. Stop in!

1990s

Laura and **Peter Elzinga** '92 (Civil Engineering) are pleased to announce the birth of a son, Cort Brennen, born on July 2, 2013.



PHOTO: TROY STRIETER

Tech alums adopt a highway

Troy Strieter '97, an engineering manager at Halla Mechatronics in Bay City, has teamed up with fellow ME-EM grads from Nexteer Automotive to "adopt" a stretch of highway near Saginaw on behalf of Michigan Tech alumni. Pictured, left to right, are **Mike Suchomski** '10, **Jeff Lauman** '09, **Dale Wawrzyniec** '11, **Bret Schulte** '12, and **Mike Engesath** '11 at their first clean up.

Class notes

Matthew Loew '95 (Mechanical Engineering) has joined Maverick Innovation Lab in Delafield, Wisconsin, as technical director. This new endeavor helps industrial organizations with new product development. Matthew teaches at the Milwaukee School of Engineering part time and recently moved to Merton, Wisconsin.

David and **Christina (Wolf) Reich** '95 (Environmental Engineering, Civil Engineering) announce the birth of their third child, Victoria Ann, on April 7, 2011. She joins big sister Cassaundra (Cassie) and big brother Nathaniel.

Eric J. Schelter '99 (Chemistry), an assistant professor of chemistry at the University of Pennsylvania, has received a Cottrell Scholar Award from the Research Corporation for Science Advancement. Cottrell Scholars are early career faculty members committed to excellence in both research and teaching.

2000s

Audrey and **Jim Goetzinger** '04 (Civil Engineering) announce the birth of their third child, James Donald, born May 2.



Susan (Hallesy) '05 (Mechanical Engineering) and **John Jeske** '05 (Computer Science) announce the birth of their son, Henry Philip, born June 7.

Ryan '07 (Geology) and **Kathryn Gray** '07 (Geology) welcomed Daniel Patrick, born October 2, 2012. He was 8 pounds, 11 ounces, and 20.5 inches.

Nathan Klein '09 (Mechanical Engineering) has been hired as a production engineer at Perrigo's Allegan site. He currently resides in Wayland. Perrigo is a global healthcare supplier.



PHOTO: BROCKIT INC.

Wedding on ice

Bethlyn McCallum '08 (Electrical Engineering) met University of Minnesota Duluth student David Cummings when he traveled east for a Bulldogs vs. Huskies hockey game at the John MacInnes Student Ice Arena in 2009. Thus, it was only fitting that they marry on the ice, which they did, on August 10. "We're both big hockey fans, so why not?" Bethlyn said. The bridesmaids wore black and gold, Blizzard and the Pep Band made special appearances, and after the ceremony, the happy couple encouraged everyone to pull on their skates and take to the ice.

Letters to the editor

Remembering "Moose"

It was with mixed emotions that I read page 30 of the fall *Michigan Tech Magazine* and learned of Coach Larson's passing. I was saddened, of course, yet it was a comfort to know that he lived eighty-eight years in the Copper Country and had a great career at MTU. Coach Larson came into my life in 1959, when I joined the varsity rifle team; I lettered four years under his tutelage. Coach Larson was the Air Force ROTC rifle team coach, but he recruited me and Ken Cygon from the Army ROTC to form the varsity team.

He had an old Chevy Suburban van that he would load up with five or six of us to travel around to various meets at the University of Illinois, Grand Rapids, Marquette, etc. Those were great trips, as I saw places and made great friendships riding in the van for many, many hours.

F. C. Townsend '62

Professor Emeritus, Department of Civil and Coastal Engineering
University of Florida

In memoriam

The Michigan Tech family extends condolences to the relatives and friends of those who have passed away.

1940 Ernest A. Alvord	1951 Harry J. Beamish James O. Greenslade Caryl Elizabeth (Erickson) James Paul H. Kariniemi Robert W. Storm, PE	1959 Richard J. Britten A. Marshall Forsberg Roy H. Jurva Raymond G. Perry Charles S. Schack Robert J. Zgongc	1973 Dr. Margaret M. Harris Duane A. Karjala
1943 Edward O. Falberg Walter Potoroka Sr. Robert H. Pulford			1975 Marilyn M. Marshall
			1976 Paul J. Bader
1945 Robert D. Sampson	1952 Charles J. Croteau Raymond N. Erkkila Edward J. Karkoska Arne C. Koskela	1960 Thomas J. Korpela Paul W. McKie	1979 J. Richard Maier
1946 Ralph L. Paoli			1980 Joseph A. Lemsky
1947 Dudley G. Seay Orrin H. Wright	1953 Thomas R. Evans Bill M. Krieger Donald R. Lukkari	1961 John W. Stollery	
			1981 Matthew B. Buczek
1948 Albino J. Cigallio Kenneth W. Nickel	1954 John A. Chisholm	1962 Donald W. Thomson	1996 Jason M. Lewis
			2013 Eric W. Daavettila Jon L. Parker
1949 Paul M. Balconi John W. Erwin Norman A. Frank	1955 Eugene E. Foco	1964 David J. Dever	
1950 Charles P. Aho Harold R. Anderson Roy W. Nagle Jr. Theodore H. Olson Emil F. Platske Kenneth J. Stevens Raymond J. Wesolek, PE	1956 Wilbert R. Maki Raymond M. Trehewella	1967 James A. Trethewey	
	1957 Robert H. Johnson Jr. Wesley C. Stetler	1970 John B. Drummond, PE, CPE	
	1958 Paul R. DeMaagd Ronald E. Klammer Nestor H. Salminen Clifford A. Wylie	1971 Michael P. McKereghan	
		1972 Peter A. Hasselblad Susan L. (Hellman) Lines	

The fine print

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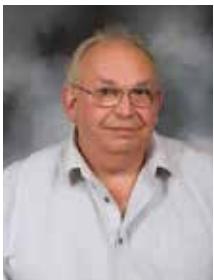
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Class notes

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Transitions



Tom Drummer

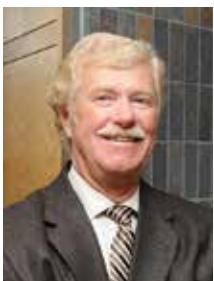
1954–2013

Tom Drummer, 59, a professor of mathematical sciences, passed away August 13 at his home in Chassell.

Drummer joined the math faculty in 1985. He served as interim chair of the department for several months during 1996–97 and at the time of his death was the department's graduate program director. He was a member of the University's Academy of Teaching Excellence. "He was a fantastic teacher, very popular and deeply concerned about students and what they needed to get out of their classes," said Mark Gockenbach, department chair.

Plus, he was simply a joy to be around. "We will all miss his booming laugh, his outgoing personality," said Gockenbach. Drummer had an active research program that included statistical analyses of wildlife populations, and he was never happier than when he was in a kayak fishing on a lake.

His door was always open, and he was always there with a helping hand, said his colleague, Professor Jiangping Dong. "You could always talk with Tom, and if you were having trouble, say with a student, he would say, I would do this and that. Now that he's gone, I don't know who I'll ask. I'm so sad that he's left us."



James Trethewey

1944–2013

James Trethewey '67, of Cleveland, Ohio, passed away suddenly October 13 at the age of sixty-nine. He was active in the University, serving on the School of Business and Economics Advisory Board and the Michigan Tech Fund Board of Trustees. He and his wife established the James and Dolores Trethewey Applied Portfolio Management Program Professorship and supported students through scholarships. In 2013, Jim received the Michigan Tech Alumni Association's Distinguished Alumni Award.

The Ironwood native majored in business administration. For most of his career, he was employed by Cleveland-Cliffs (now Cliffs Natural Resources), retiring as senior vice president of business development in 2007, after thirty-five years with the company.



Art Weaver

1925–2013

Art Weaver, 87, former professor in the mechanical engineering–engineering mechanics department, died March 6 following a brief illness. He came to the University in 1958 and rose through the ranks to professor, received the campus-wide Distinguished Teaching Award in 1961 and the Teaching Award of the ME-EM department in 1984. He retired in 1984.

"Art had a major impact on the quality of our academic program," said Bill Predebon, chair of the ME-EM department. "He was an outstanding teacher with high expectations of his students, and in turn he was highly respected by them and the faculty alike."

Weaver was married to Madelyn Dolley, who passed away in September 1992. He later married Phyllis Boutilier. He was honored with the Ken Hamar Award from the Michigan Tech Huskies Club in 2010 as a supporter of Michigan Tech Athletics. Art was also University marshal at commencement for many years.

Retirements

The following faculty and staff retired from Michigan Tech recently. The years they first came to Tech are listed below.

Christine S. Anderson, special assistant to the president, Vice President for Research, 1980

Susan T. Bagley, professor, Biological Sciences, 1979

Dallas K. Bates, professor, Chemistry, 1975

Debra L. Bruch, associate professor, Visual and Performing Arts, 1987

Anne K. Chambers, library assistant 5, Van Pelt and Opie Library, 1970

David J. Chesney, associate professor, Chemistry, 1986

Becky Christianson, interim director of employment services, Human Resources, 1978

Joann E. DeRoche, library assistant 5, Van Pelt and Opie Library, 1996

Marian Decaesari, food service helper, Dining Services, 1983

Judy M. Fynewever, senior lecturer, Kinesiology and Integrative Physiology, 1980

Paul M. Kilpela, research associate, Mechanical Engineering–Engineering Mechanics, 1976

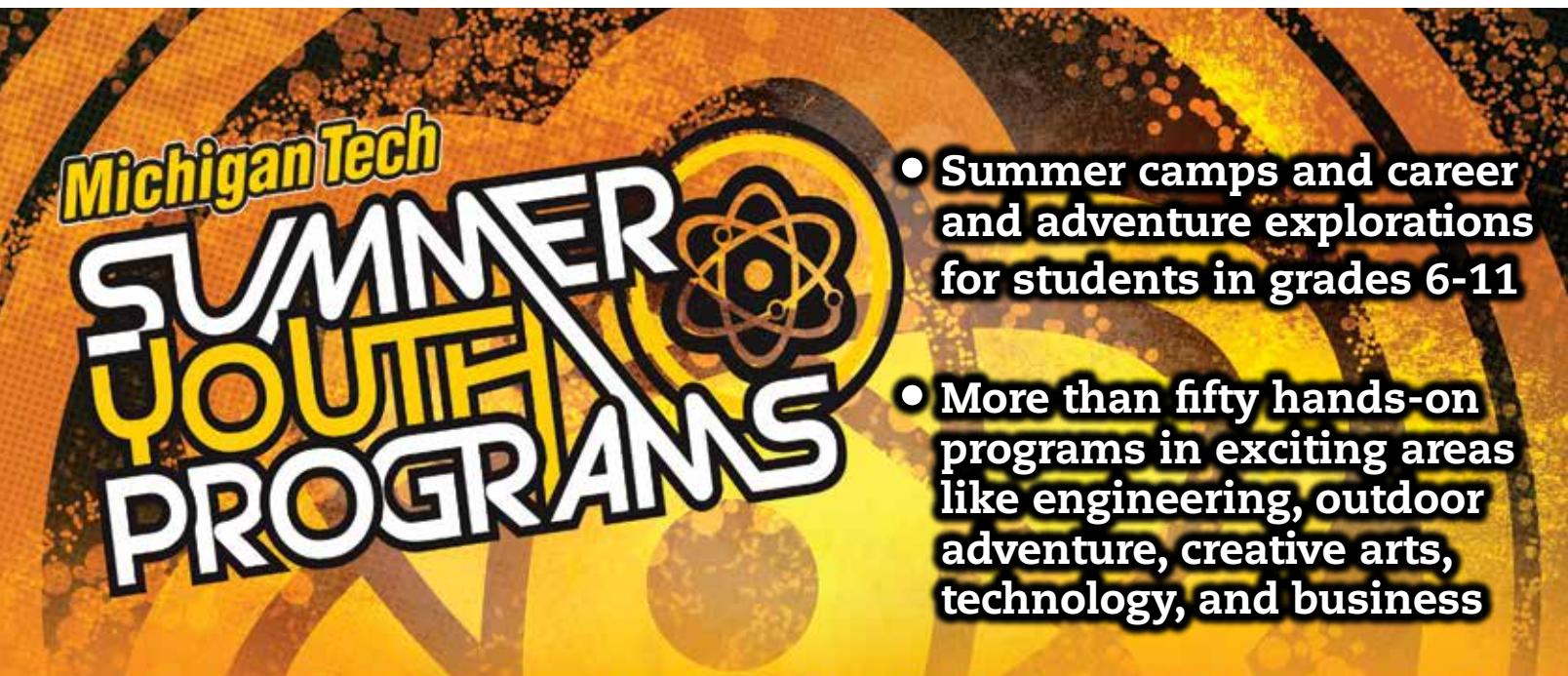
A planned gift is a way to shout “Go Tech!” long after the crowds go home.

Want to score a hat trick for yourself and for future generations at Michigan Tech? A planned gift can benefit you now and the Michigan Tech program of your choice down the road. Call us or visit our website to learn more.



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