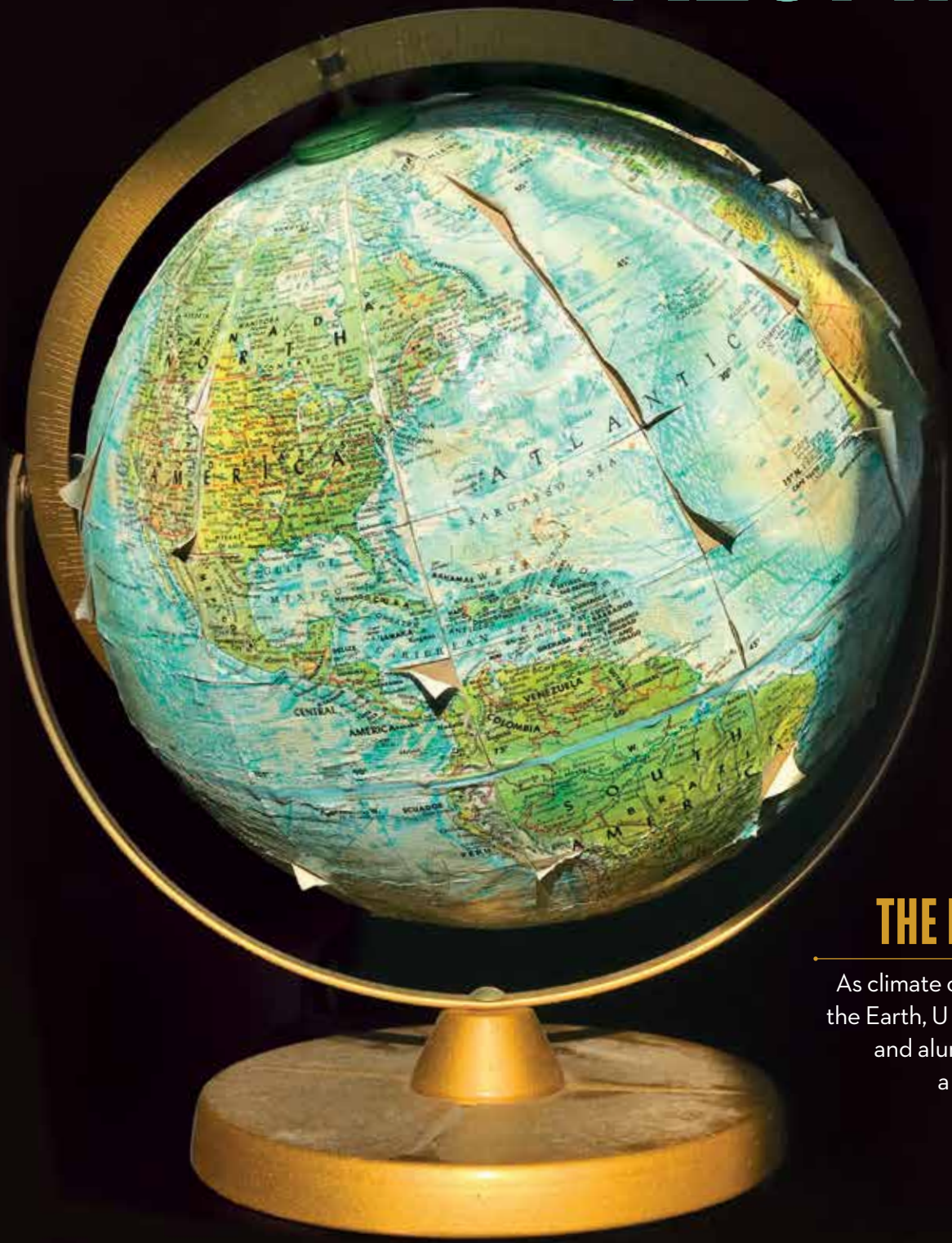
UNIVERSITY OF MINNESOTA ALUMNI ASSOCIATION | SPRING 2021

Minnesota ALUMNI



THE HEAT IS ON

As climate change threatens the Earth, U of M researchers and alumni work to build a "greener" future.

Also Inside: Gopher men's hockey celebrates a centennial on ice • How the U of M campus was built

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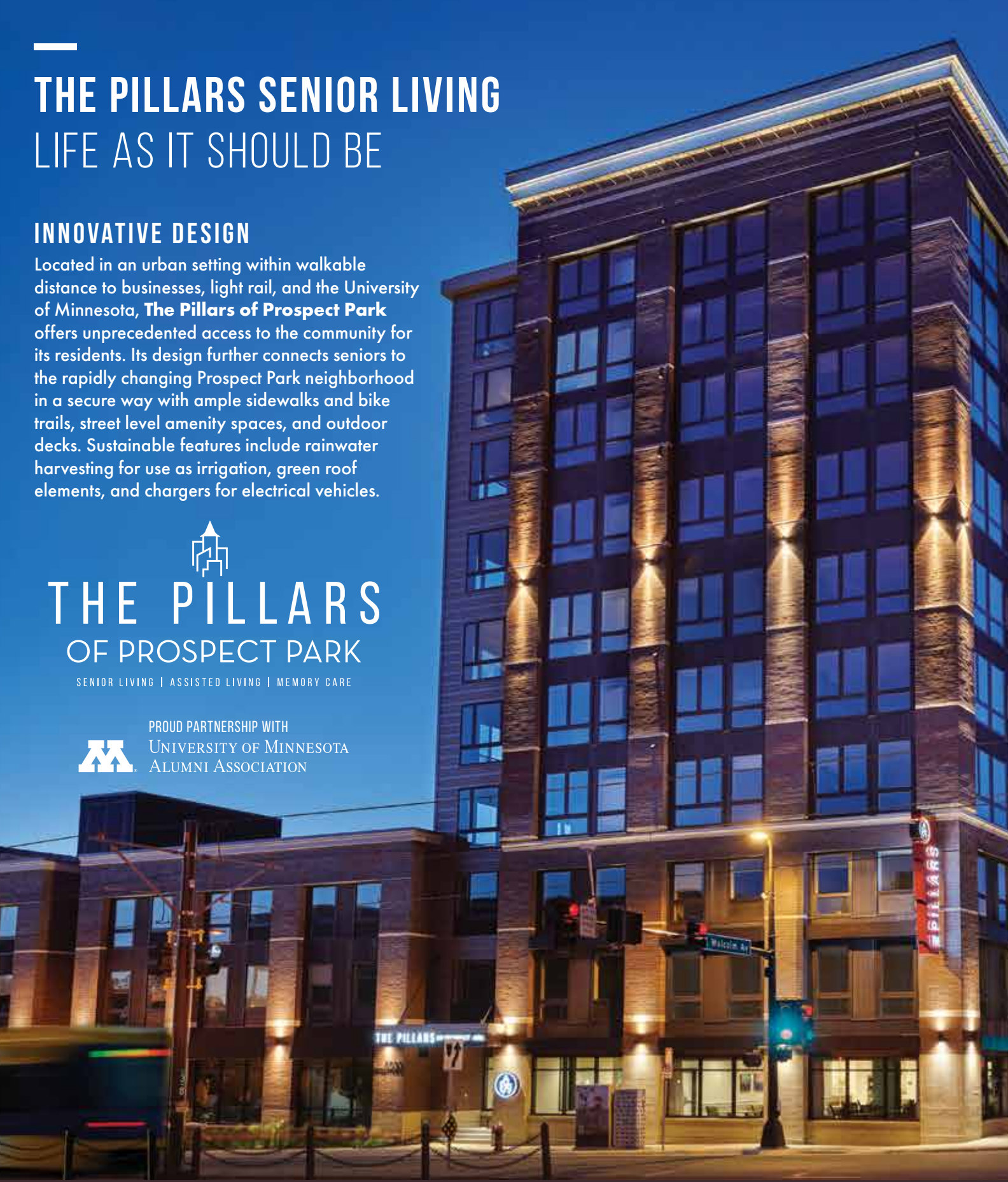

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EBENEZER

The Crisis du Jour

I've found myself distractedly musing in recent days as to what the upper limit is on the number of crises the human mind can contemplate at once. The answer, at least for me, tends to hover right around "just one."

Of course, that isn't helpful at all when the huge issues jockeying for our limited attention span multiply on a daily basis.

Against the backdrop of the worst pandemic in generations—and with the specter of mutated Covid-19 viruses lurking in the wings—this past year has surpassed itself for awfulness. Last May, the death of George Floyd put a long-overdue spotlight on the reality of structural racism in this country. On every daily newscast, it also becomes even more abundantly clear that the U.S. is deeply fractured. In addition, fringe conspiracy theories seem to surface now in polite society with alarming frequency.

Add in a heart-stopping live broadcast of a deadly January siege on our nation's Capitol and we've got the cherry on top of an already rotten year.

And yet, as a nation, to emerge from the turmoil of 2020 better, stronger, and more resilient, we must find ways to grapple with not only these immediate challenges, but yet another long-term existential threat, climate change.

In late January, the *New York Times* succinctly summed this up: The year 2020 tied the record with 2016 for hottest on record. In addition, devastating wildfires, record Arctic ice-floe melts, unprecedented flooding, and historic rainfall events all brought this crisis directly to our front door.

You've probably seen the T-shirt, bumper sticker, or coffee cup that states, "I Believe in Science." I do, too.

The U of M and the alumni who've passed through the doors of this renowned land-grant, research institution give us ample reason to believe in and embrace the power of science. Some of the world's best researchers make their professional homes on these campuses, and many are focusing their efforts on finding ways to stop this catastrophe in the making.

The reality is that our climate is changing, and that this progression will likely be cataclysmic, but that we have the knowledge to halt it or mitigate its effects, if only we can find the willpower to do so.

In this issue, sparked by the reenergized focus the Biden Administration has placed on slowing climate change, we look at how U of M researchers and alumni are already helping us bring a greener Minnesota and world into fruition.

And remember: If we don't act, our children, grandchildren, and their grandchildren will pay the price. And if we don't act *now*, unchecked climate change could make 2020 just the prologue to a truly heartbreaking story. ◘

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Minnesota ALUMNI

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Scott Streble

Memories of Coach Warmath

I greatly appreciated your article "That Championship Season" (Winter 2021), which is, in part, about racial integration of Big Ten football.

I met Judge Dickson in September 1958 when I, a small white guy, enrolled in the U of M and moved into Territorial Hall. My roommate and I set up a tiny radio station, and the signal traveled throughout the building on heating pipes.

For Christmas that year, my grandmother gave me a beautiful bedspread she had made of multicolored pieces of fluorescent cloth. It was on my bed one day when Judge and a few other guys, some Black, some white, came to my room. Judge had brought shoe-shining equipment and promptly sat on my bed to clean and polish his shoes. (I feared greatly for my bedspread but decided against saying anything. Very soon, his shoes were shiny, and my bedspread remained pristine.)

Months later, when I was student body vice president, I helped organize two trips to the Rose Bowl to watch the Golden Gophers. One year we charted 13 buses and the other year an entire train. During the bus trip, I called in every day to a Minneapolis radio station to report on our progress.

About the same time, many students from the U of M traveled south on "Freedom Rides" to put their bodies on the line for racial justice and opportunity.

Kenneth D. Weiss (B.S.B. '62)
Derwood, Maryland

I really enjoyed reading the article about my father-in-law, Murray Warmath. It was well researched and accurate, and it was a bright spot for us in an otherwise ugly year.

I graduated from Minnesota in 1965 on a NROTC Scholarship. Carol Warmath and I were married in 1967 until her death in 2010. We have three children but no football players! My daughter also went to pharmacy school at the U of M, and Murray has five grandchildren who all called him PaPa.

A couple of interesting stories I was reminded of in reading this article.

I was in the SAE fraternity across from the Athletic Department. Our sleeping dorm faced University Avenue and the Cook Hall parking lot. When I went to bed between 10 and 11 p.m. each night, Murray's car was still there. When I woke up at about 7 a.m., he had gone home to Edina, slept a few hours, and was back. I do not see how he kept that pace up. I dated his daughter for a year before I ever met him, and I was warned not to meet him if he had lost that Saturday!

And the best athlete Murray said he ever coached was Bobby Bell, who lives here in Kansas City. Bobby and many others always attended Warmath family events as they were family.

I had your cover copied and framed them for my children as keepsakes.

Richard Dillow (B.A. '65)
CAPT USN, retired
Kansas City, Missouri

The Winter 2021 issue of the alumni magazine was very special for me.

I had always been a fan of Big Ten football and it was one of my greatest thrills to see my first game in the fall of 1955. From then through 1983, I was a season ticketholder, along with my wife, Diane, who also graduated from the University with a bachelor's degree in physics.

We were always happy to go to the games, win or lose. We always rooted for the Gophers and we never thought of the color of anybody's skin. They weren't Black or white; they were all Golden and they were all "GOPHERS"!

Jerry McAllister (B.S. '57)
Green Valley, Arizona

Correction and Ed. Note: We heard from a number of people that the photo we ran of the 1960 Gopher's team in our Winter 2021 issue didn't depict the starting lineup, due to incorrect information logged on the photo in the U of M archives. One who brought this to our attention was the tackle of that spectacular team. See below.

Hi. I enjoyed the article, but you pictured the wrong team. The 1960 team had Sandy Stephens at QB, Dave Mulholland and Bill Munsey were the halfbacks, and Roger Hagberg was the fullback.

The line had Bob Deegan and Dick Larson at the ends, Frank Brixius (me) and Bobby Bell were the tackles, Tom Brown, winner of the Outland trophy, and Jack Mulvena were the guards, and Captain Greg Larson was the center.

So ends your ancient history lesson for the day.

Frank Brixius (B.S. '61)
Naples, Florida

Frank Brixius, left, with Murray Warmath and Bobby Bell in 2010.

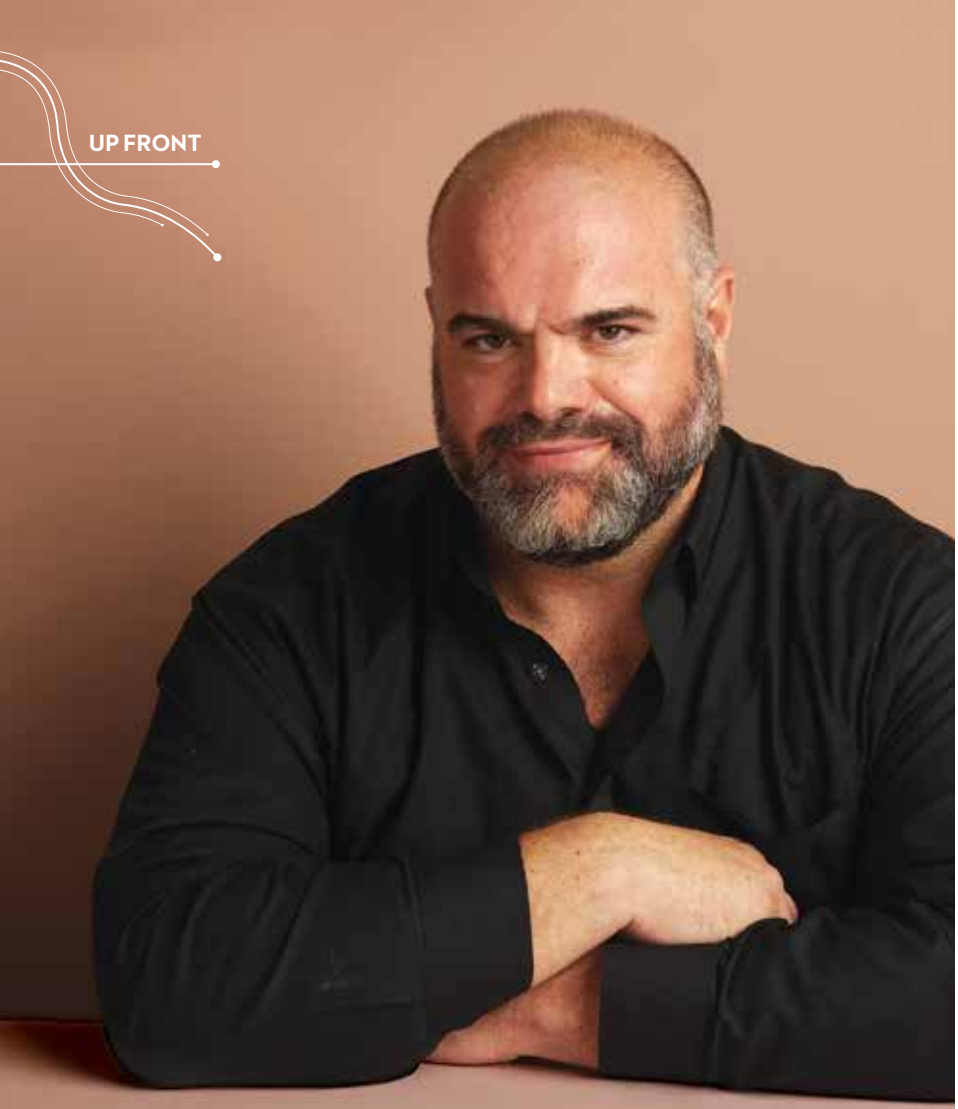
WHAT DO YOU THINK?

Send letters and comments to umnalumnimag@umn.edu

Growing Greener

Through U of M Extension's Regional Sustainable Development Partnerships, research focuses on a number of subjects, including finding ways to build efficient, deep winter greenhouses that operate with a minimum of fossil fuel. Pictured here is one of five in the state, at Alternative Roots Farm near Madelia, Minnesota. Inside, owner Brooke Knisley tends boxes of luxurious greens in early February.

Photo by Malwitz Photography



Alumnus Produces LGBTQ Documentary

Joel Chiodi (B.S. '94), left, executive produced the four-part HBO Max series *EQUAL* about the Stonewall Uprising, which has been nominated for a GLAAD Media Award for best documentary.

The series, narrated by Billy Porter, star of the current television drama *Pose*, chronicles landmark events and leaders in LGBTQ history through archival footage and reenactments. *EQUAL* stars several actors including Samira Wiley, Jamie Clayton, and Anthony Rapp.

Chiodi, who graduated from what is now known as the Hubbard School of Journalism at the U of M, says, "Of all the things I have done, this is the thing that has brought me back to my roots at the U of M, where I came out and started my journey as a gay man. It has been a three-year labor of love chronicling the early pre-Stonewall-uprising heroes of the LGBTQ movement."

U of M Alumna Designs Award-winning Mask

Julia Duvall (B.S. '15, M.S. '17), a graduate of the U of M's College of Design, helped design a face mask called the B2 for the company Breathe99 that was named by *Time Magazine* as one of the best inventions of 2020, one of three mask designs selected in the article.

The magazine noted that the machine-washable, flexible, rubber-like face piece holds two replaceable filters that remove about 99.6% of particles.

Duvall, part of the product team who designed the mask, says "I would not have been able to do the work I am doing now without my time at the U of M, the connections I've made there, and the opportunities it has afforded me."

The mask sells for $59.99 and filters are $7.99, available at breathe99.com.

Julia Duvall models the B2 mask she helped design.

Mask courtesy Breathe99 • Chiodi courtesy Joel Chiodi

Report on UMPD, Public Safety Released

After a multi-month investigation of perceptions of public safety on the U of M campus, in January consultant Cedric Alexander, right, an expert in law enforcement with over 40 years in public safety, released a 59-page report with his recommendations.

Alexander was hired last year to conduct interviews and listening sessions across the University about sentiments related to the University of Minnesota Police Department (UMPD). This occurred after some members of the University community expressed concerns about feeling unsafe on campus. Critics of the UMPD also became more vocal about the department after the death last spring of George Floyd.

Alexander and his team gathered input from hundreds of students, parents, alumni, faculty, staff, and administration, as well as UMPD officers.

President Joan Gabel welcomed the report and promised to implement certain recommendations immediately, including equipping UMPD officers with body cameras; continuing regular meetings with the mayors of Minneapolis and St. Paul to keep communication lines open and to coordinate, as needed, on public safety issues; purchasing and distributing a campus safety app to all students, faculty, and staff; and transitioning Department of Public Safety/UMPD oversight to Senior Vice President for Finance and Operations Myron Frans.

Recommendations in the report fell into eight broad areas:

1) Strengthen trust and legitimacy;

2) Embrace procedural justice;

3) Differentiate and realign policing responsibilities;

4) Engage the U of M campus community in UMPD training;

5) Measure outcomes and impacts of these efforts;

6) Better use equipment and technology to improve safety and feelings of safety;

7) Improve community engagement in accountability and transparency;

8) Recognize the U of M as a role model in addressing police and safety reforms.

> “When any part of the American family does not feel like it is being treated fairly, it is a problem for all of us.”

From a new report on perceptions of public safety on the U of M campus. Read the complete report at president.umn.edu/dr-alexander-report.

Alumna Advises First Lady

Alumna Mala Adiga (M.P.H. ’97) has been appointed policy director to First Lady Jill Biden after formerly serving as a senior policy advisor to the Biden-Harris campaign and at the Biden Foundation.

Adiga previously served as deputy assistant secretary of state in the Bureau of Educational and Cultural Affairs for the Obama Administration. She is expected to help Jill Biden, a longtime teacher, focus on education-related issues.

In addition to holding a master’s in public health from the U of M, she holds a bachelor’s degree from Grinnell College in Iowa and earned her law degree from the University of Chicago.

End of an Era

For generations of U of M students, the Dinkytown McDonald’s was a familiar, comforting stalwart, particularly after late nights. However, after 57 years, the business has now closed and is slated to be demolished. Future plans for the site include an apartment complex.

McDonalds: Jack Rodgers/Minnesota Daily • Alexander courtesy Robin Wolfson Agency

> “I think we need to spend decades on all the things that have gone wrong with Native Americans. Is the University doing enough? Never.”

Tadd Johnson, senior director of American Indian Tribal Nations Relations and professor in the American Indian Studies department, speaking to the *Minnesota Daily* newspaper about the Mellon Foundation grant.

Ben Hovland

A Minnesota Transform workshop with Minnesota Youth Story Squad codirector Kari Smalkoski and VISTA's Srija Chatterjea-Sen, joined by local high school students

$5M Grant for Racial Justice

The Andrew W. Mellon Foundation recently awarded the U of M a $5 million grant to create more just and equitable futures for all through Minnesota Transform: A Just University for Just Futures. The grant will fund efforts around the University's relations with Minnesota's tribal nations. See other stories and resources about racial justice on the Alumni Association's Addressing Racism website at umnalumni.org/addressingracism.

MPact 2025 and a Greener University

Sustainability is not just a word but a core priority for the University of Minnesota. Through MPact 2025, the University's first systemwide strategic plan, we are amplifying this important work at the intersection of our shared values and action, or what we define as System Commitments.

In 2004, the University of Minnesota's Board of Regents adopted a "Sustainability and Energy Efficiency" policy. Since then, we have joined many national and international sustainability and climate change efforts, while also establishing institutional goals, including to reduce the University's greenhouse gas emissions. From 2008 through 2019, we experienced a 39 percent greenhouse gas emission reduction on the Twin Cities campus and 36 percent across the system. In addition, the U of M-Morris is now carbon neutral for all of its electricity use. Over 60 million kilowatt hours of the University's electricity use comes from renewable sources, which is enough to power 5,500 homes.

In this important work, we are committed to advancing contributions that are uniquely Minnesotan. Central to this distinction is our MNtersections Commitment, which is inspired by Minnesota to improve people and places at world-class levels. It is here where the questions that our state poses and our strengths as a University intersect, and where the opportunity for robust collaboration across state and local government, higher education, philanthropy, and the private sector allow us to unlock our state's innovation potential. It is also where, in addition to our focus on health and food and agriculture, we amplify our efforts to build a fully sustainable future.

We have established goals, action items, and measures aligned to demonstrating our state and worldwide leadership in sustainability and environmental teaching, research, and convening power. And we are holding ourselves accountable with two distinct measures: First, we are committed to establishing and increasing our Times Higher Ed Sustainable Development Goal rankings, including, but not limited to, climate action, clean water, and land ecosystems.

Second, we aspire for all five system campuses to achieve a gold rating from the Association for the Advancement of Sustainability in Higher Education (AASHE) by 2025. AASHE's Sustainability Tracking, Assessment and Rating System (STARS) program recognizes sustainability accomplishments in areas such as academics, research, operations, and engagement. To date, only the University's Duluth and Morris campuses have earned this distinction (the Twin Cities campus' gold rating is currently expired).

We have also established goals, action items, and measures for developing system leadership and governance coordination for sustainability initiatives, including to launch annual systemwide and campus sustainability meetings by June 2021. By 2023, we intend to establish a next generation systemwide Climate Action Plan for 2030, as well as plans for each of our campuses.

Our collective action and implementation aim to advance positive, meaningful progress. We want to build on more than a dozen U of M startups related to energy and environment that are bringing technologies and approaches to build a fully sustainable future.

And we want to multiply that impact through BioMADE, the major new manufacturing institute on our St. Paul campus, which is supported by the U.S. Department of Defense. It squarely positions the University as a leader in developing a sustainable, circular, bio-based economy.

The U of M helps our neighbors through the Climate Smart Municipalities partnership between Minnesota cities and the German government. There's also Extension's Clean Energy Resource Teams, Regional Sustainable Development Partnership, and the Resilient Communities Project.

My sincere appreciation to you for sharing your proud alumni voice over recent weeks and months as we've developed our sustainability goals and our broader MPact 2025 plan.

The University's path to creating a fully sustainable and impactful future is better and more inspiring because of each of you. ◘

Hannah George on the night shift at the U of M's Infectious Disease Diagnostic Lab.

Jayme Halbritter

On the Frontlines of Covid-19

The U of M's Med Lab Sciences Program is educating a highly diverse group who test to determine if we've contracted the novel coronavirus.

By Elizabeth Foy Larsen

Last January, Hannah George (B.S. '19) started her first career job as a medical laboratory scientist at the U of M's Infectious Disease Diagnostic Laboratory at Fairview M Health. She was excited to use the skills she'd mastered at the University's Medical Laboratory Sciences Program to do microbiology testing for a number of infectious diseases. Working nights, she read cultures and performed polymerase chain reaction (PCR) tests, which amplify small sections of a person's DNA to find anything from a virus to a genetic disorder.

Little did George know that within a month of starting the job, she'd be playing a key role in Minnesota's response to the Covid-19 pandemic.

As part of her work testing patients for Covid-19, George logs whether Fairview patients are symptomatic and then categorizes other important information, such as whether or not they are scheduled for surgery or are pregnant. She then performs PCR tests—currently considered the most reliable Covid-19 test—to identify if a patient has the virus. "[At the start of the pandemic] we were doing Covid testing basically our entire shifts," she says. "That put it into perspective how big and serious this is."

The Medical Laboratory Sciences Program was established in 1922 and is one of the oldest programs of its kind in the country. "We are the hidden health care profession," says Janice Conway-Klaassen, associate professor and director, who notes that laboratory scientists make up the third largest cohort of medical professionals after doctors and nurses. "Most people don't know who does their laboratory testing."

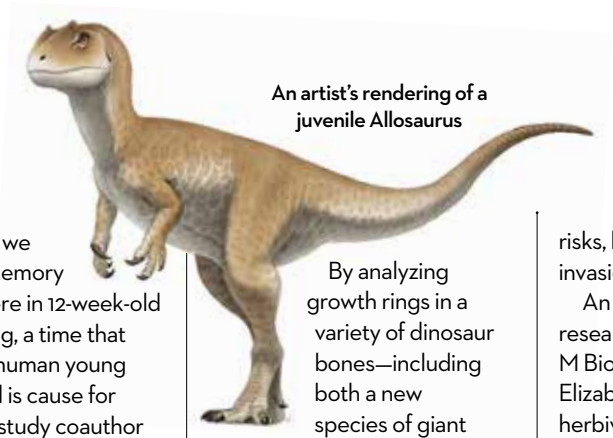
The degree is an upper division undergraduate program. For the first two years, students take courses that are similar to those for a biology degree. The last four semesters focus on courses specific to the field. In addition, the degree requires an extra semester in clinical training in a hospital or research laboratory to get hands-on experience processing specimens. Students—there are usually between 40 and 45 in each class—take a national certification exam after graduation. In addition, the classes are highly racially diverse: For each of the past three years, 42 percent of students in each cohort have identified as Black, Indigenous, or people of color (BIPOC).

The real-life training makes graduates highly employable, especially in Minnesota, where there is a shortage of laboratory scientists. "The program coordinates your clinical rotations at a hospital doing the work while you are still a student," says Kylie Labog (B.S. '18), who moved to the Twin Cities to attend the program after graduating from the University of San Diego. "That appealed to me because internships and clinical rotations were very competitive and hard to get into."

Today, Labog works as a medical technologist in an infectious disease lab at the Hennepin Healthcare Research Institute, which is part of the Hennepin Healthcare System. Before Covid-19, she implemented a respiratory panel that tests for 15 types of viruses—from flu strains to the rhinovirus. Now, she's also researching the effectiveness of different Covid-19 tests and assays.

Conway-Klaasen says this program is especially popular with first-generation college students. This year, the program received a $3.25 million grant from the Health Resources and Services Administration (HRSA) to provide scholarships for disadvantaged students. Students also use their degrees and jobs as stepping-stones to—and a way to finance—medical school, veterinary school, nursing school, or dental school.

"We're not seeing the patient face to face, but we may be treating or informing the treatment of 700 or 800 patients a day," says Conway-Klaassen. "How important and critical is that to the health and well-being of the population? Laboratory scientists are critical to the proper treatment, diagnosis, and management of patients on an everyday basis. If laboratory testing is not accurate and timely, then physicians are making decisions that are ill-informed." ◘



An artist's rendering of a juvenile Allosaurus

CBD and Pregnancy

Cannabidiol, more commonly known as CBD, is everywhere. There's CBD tea, CBD face cream, CBD soap, even CBD dog treats—each promising to soothe anything from frayed nerves to blotchy skin. Now, researchers at the University of Minnesota's Department of Animal Science and College of Veterinary Medicine are looking at whether the use of this non-psychoactive compound of cannabis has an impact on developing fetuses.

Researchers gave pregnant mice daily doses of CBD, which were scaled comparably to what an adult could purchase over the counter and use. They continued these doses throughout lactation until the pups were weaned. The pups were then taken off CBD and followed through adulthood in a study of CBD's potential effects on behavior and molecular impacts.

The findings were significant and could potentially lead to future safety recommendations about CBD's effect on developing brains. Researchers discovered that the impact of CBD exposure in utero continued into adulthood. It caused increased anxiety for adult female mice, although it also seemed to improve some memory functions. CBD-linked gene pathways were also associated with neurological disorders, including autism spectrum disorder, substance abuse disorder, and epilepsy.

"The effects we observed on memory and anxiety were in 12-week-old mouse offspring, a time that approximates human young adulthood, and is cause for concern," said study coauthor Nicole Wanner, a postdoctoral fellow in the College of Veterinary Medicine. "DNA methylation marks in the brain are largely set during fetal development, and the presence of CBD during that process appears to direct certain permanent changes."

This study appeared in the January 2021 issue of the journal *Clinical Epigenetics*.

Dinosaur Growth Spurts

Tyrannosaurus Rex dinosaurs were huge, often weighing in around 6,000 pounds. Scientists have understood for some time that these dinosaurs got massive during teenage growth spurts. However, researchers weren't sure about the growth patterns of all large bipedal dinosaurs. An international team of researchers, which includes U of M Earth and Environmental Sciences Professor Peter Makovicky, is now answering that question. The hope is that the findings will shed light on the growth patterns of living birds that evolved from these dinosaurs.

The researchers looked at carnivorous dinosaurs from different times in the Mesozoic Era to see if those growth spurts held steady through generations.

By analyzing growth rings in a variety of dinosaur bones—including both a new species of giant carcharodontosaurid that was discovered and excavated by Makovicky in Argentina, as well as the famous T. Rex SUE in Chicago's Field Museum—researchers discovered that growth patterns depended on a dinosaur's family. T. Rex and their cousins had rapid adolescent growth spurts, gaining as much as 35-45 pounds per week. But another group of apex predators, allosauroid carnivores, grew slowly.

Makovicky and his colleagues plan to use the samples from this study for further research to understand why dinosaurs grew the way they did.

This research was originally published in the November 25, 2020 edition of *Proceedings of the Royal Academy B*.

Grazers and Pollution

The burning of fossil fuels and widespread use of fertilizers in agriculture has caused an increase in phosphorus and nitrogen, nutrients that boost the growth of plant life in grasslands and other ecosystems. But while the idea of more green life may sound like a good thing, excess grasses can actually be harmful to the environment because they lead to increased fire risks, loss of native species, and invasions of non-native species.

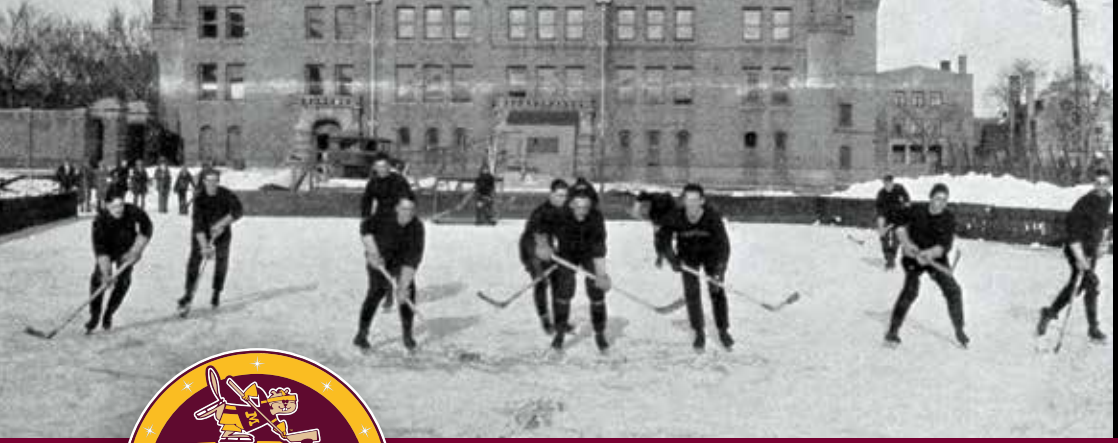
An international team of researchers that includes U of M Biological Sciences Professor Elizabeth Borer found that wild herbivores—including zebras, reindeer, and guanacos—can eat some of that excess plant life. Their study examined 58 locations on six continents and also looked at whether or not humans introduced domesticated grazers, such as cattle and sheep, onto the lands.

"Our goal is to measure the [result] of two of the most important impacts humans have had on the Earth's ecosystems—increasing supplies of limiting nutrients, such as nitrogen and phosphorus, and changing the density of grazing animals," says Borer. "By building a collaborative network of scientists, we have been able to conduct globally relevant research, generating new insights across continents."

Their findings show that while wild grazing animals can offset some of the negative impacts of excess nutrients, they cannot graze as much plant growth as is needed to control unintentional nutrient pollution. Researchers say more study is needed to determine whether or not introducing domesticated grazers can improve the health of grassland ecosystems.

Originally published in the November 27, 2020 issue of *Nature Communications*.

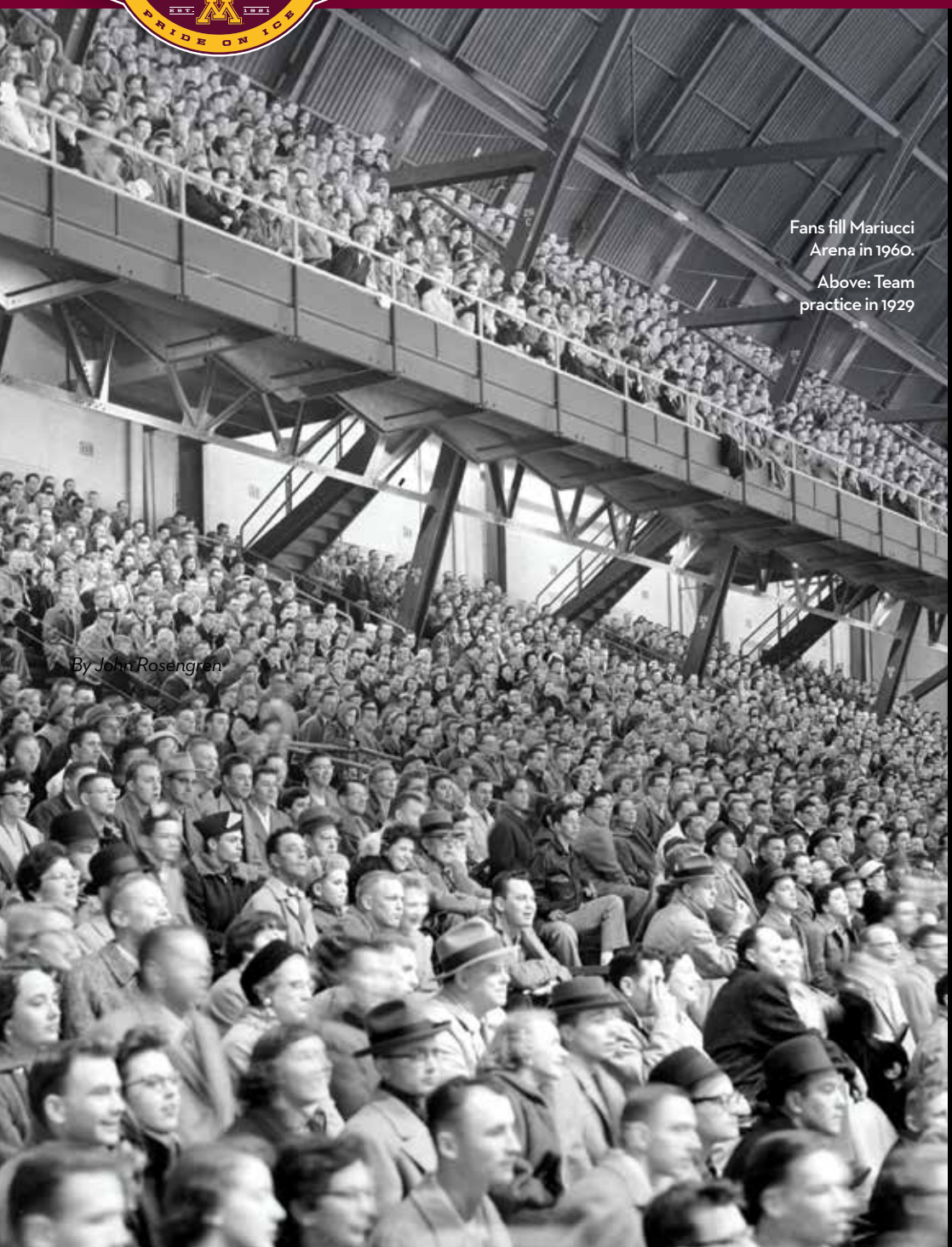
Thanks, as always, to University Public Relations for their help with these briefs.



The Gopher's mens' hockey team celebrates 100 years. Here's a look back at some highlights.

By John Rosengren

CENTENNIAL ON ICE



Fans fill Mariucci Arena in 1960.

Above: Team practice in 1929

By John Rosengren

Dan Wehage remembers the day he became a Gopher hockey fan: April 2, 1989. A recent Twin City transplant from Fargo, he bought a ticket on the street for the NCAA championship game. Inside, he felt the electric buzz in the old Civic Center. It intensified through three periods that ended tied 3-3 and into overtime, when Randy Skarda's wrist shot beat the goaltender but clanked off the pipe and Harvard scored minutes later. "I can still hear the crossbar," Wehage says. "Even though the Gophers lost that game, I got hooked."

He's not alone. No other team has borne Minnesota's identity longer, represented the University to the nation as prominently, or enjoyed success in the way the Golden Gophers men's hockey team has—developing its fan base over 100 years.

They've won seven national championships (including five NCAA titles in 1974, 1976, 1979, 2002, and 2003); sent legions of players to the NHL (18 played at hockey's highest level last season and 10 alumni have their names engraved on the Stanley Cup); stocked the U.S. national team rosters, including those that won Olympic gold medals in 1960 and 1980; and produced four Hobey Baker Award winners (Neal Broten, Robb Stauber, Brian Bonin [B.S. '04] and Jordan Leopold [B.S. '07]).

Since the University granted ice hockey varsity status in 1921, the team has become "the heartbeat of the state," as Athletic Director Mark Coyle says. In 2020-21, the team's centennial season, the University will honor its 100 best players and coaches, plus ask fans to select an All-Century team. (This year's team started the season in inspired fashion, winning their first 10 games to briefly rank No. 1 in the nation.)

Good from their inception, the Gophers won their first national title, bestowed by the National Intercollegiate Athletic Association and shared with Yale, in 1929. The second came in 1939-40 from the American Athletic Union during an undefeated season with one of the greatest Gopher teams of all time, starring All-Americans Harold Paulsen and Captain John Mariucci.

After playing at various venues, such as the state fairgrounds Hippodrome, the old Minneapolis Arena, and an outdoor rink on campus, the Gophers were finally able to play on their own indoor ice when the remodeled Williams Arena opened in February 1950. John Mayasich, the Eveleth high school sensation, showed up two seasons later, in 1951-52, entertaining the Gopher faithful for four years while he racked up a school record 298 points (which comes out to an eye-popping 2.7 points per game).

Minnesota's "Godfather of Hockey," John Mariucci, with players

Mariucci, another Eveleth native, took over as coach for Mayasich's sophomore year and elevated the program, taking the team to two national championship finals, which included a heartbreaking loss to the underdog (New York) Rensselaer Polytechnic Institute Bachelors in 1954.

Mariucci earned his nickname as Minnesota's "Godfather of Hockey" for the way he boosted attendance—in 1953-54 the Gophers led the nation with 103,000 fans attending 18 home games—and promoted the development of youth hockey to fill his college roster during 13 seasons as coach. But he inspired even deeper respect among his players. "He was like a Roman god," says Dick Meredith (B.S. '57), a Gophers forward for four seasons.

Fittingly, Williams was renamed for Mariucci in 1985, and so was the new arena built across the street in 1993. Lou Nanne—an All-American who played for Mariucci from 1960-63, then 10 seasons with the NHL North Stars before becoming their general manager—credits Mariucci for much of his success. "He made me what I am," Nanne says. "He was like a dad to me. I loved him."

Glen Sonmor replaced Mariucci in 1966 and took the Gophers on a Cinderella run to the NCAA finals in 1971, where they lost to Boston University 4-2. He left early the following season to coach the Minnesota Fighting Saints in the upstart World Hockey Association. Ken Yackel Sr., who had been an All-American Gopher defenseman in 1954, took over, but the program was in such disarray that rumors swirled the school would shut it down. Enter Herb Brooks for the 1972-73 season.

Brooks, who played for the Gophers from 1955-59 and graduated with a psychology major, quickly established a dynasty with three national titles in six years and a second-place finish in 1975. The 1976 campaign was most notable for the semifinal game against Boston University, which quickly—after only 68 seconds—broke out into a bench-clearing, half-hour brawl that was squelched only by turning out the arena lights. Terriers coach Jack Parker bitterly accused Brooks of orchestrating the fight, which resulted in the ejection of BU's top scorer and a Gopher victory.

At the start of the 1978-79 season, Brooks, who usually cast his team as underdogs, proclaimed the Gophers would win the national title, which put tremendous pressure on one of Minnesota's most talented teams—a group that included eight players who would win gold for Brooks the following winter in Lake Placid. With them, Brooks implemented the European style of weaving and cycling that baffled opponents. His players respected his knowledge of the game and ability to manipulate them to play their best, though they didn't necessarily like him for it. "Herbie would find where your edge was and push you right to that edge," says goalie Steve Janaszak, who was the 1979 NCAA tournament MVP.

The final against North Dakota, who had edged the Gophers for the WCHA title in the last weekend of the

All photos courtesy University Athletics

The Gophers celebrate on the ice at the Xcel Energy Center after winning the 2002 NCAA Championship, their first title since 1979.

regular season, provided the opportunity for revenge in an outing best remembered for the game-winning goal by Roseau freshman Neal Broten. Halfway through the third period, a falling Broten chipped the puck over the pads of the goalie who had come out to challenge him. Almost 40 years later, in the 2007 WCHA title final, also against North Dakota, Blake Wheeler replicated the play: Tripped by a defender, in mid-flight he swatted at the puck with one hand to beat the goaltender and win the game in overtime.

Doug Woog (B.S. '67), an All-American center at the U of M in 1965, became the coach in 1985. Recruiting exclusively from within the border became harder during his 14 seasons, when the number of Minnesota Division I hockey programs doubled from two (UM and UMD) to four (St. Cloud, Mankato, and Bemidji State came in 1999 to make it five). Woog's loyalty to homegrown talent may have kept him from winning a national title, though from 1985-1999, his teams made six NCAA Frozen Four appearances and compiled a 388-187-40 record, a .662 winning percentage besting both Brooks (.624) and Mariucci (.584).

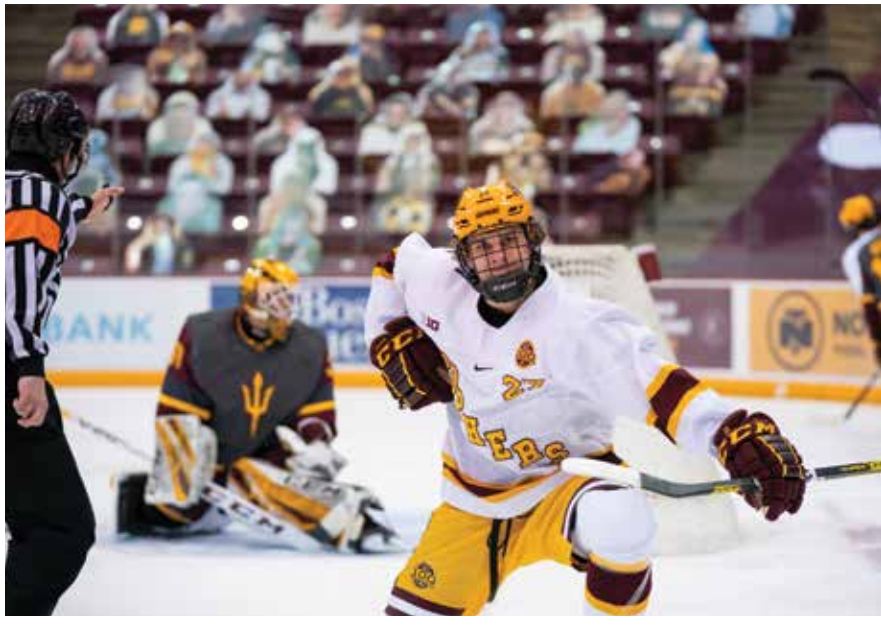
But in his debut season, Woog encountered resistance from the team's top player, senior Pat Micheletti, whose older brothers Joe and Don had both won national championships with the Gophers. The youngest Micheletti, who had scored 48 goals the previous season, had been moping and not scoring. The two had it out in Woog's office mid-December, with Woog providing an attitude correction. Prior to the meeting, Micheletti had scored seven goals; afterward, he scored 25. "He won my respect that day," Micheletti says. "He had a good way of reading people's personalities and dealing with them."

Don Lucia, who succeeded Woog in 1999-2000, broke ranks by recruiting outside the state, with two of his prospects restoring national champion status to the program. Through more than six decades in the Western Collegiate Hockey Association, from 1951-2013, the Gophers developed their most intense rivalry with the North Dakota Fighting Sioux. So it was ironic that a kid from North Dakota, sophomore Grant Potulny (B.S. '04)—the only non-Minnesotan on the Gophers since 1987—banged in a rebound during overtime of the 2002 NCAA final against the University of Maine at the Xcel Energy Center to give the Gophers their first national title in 23 years.

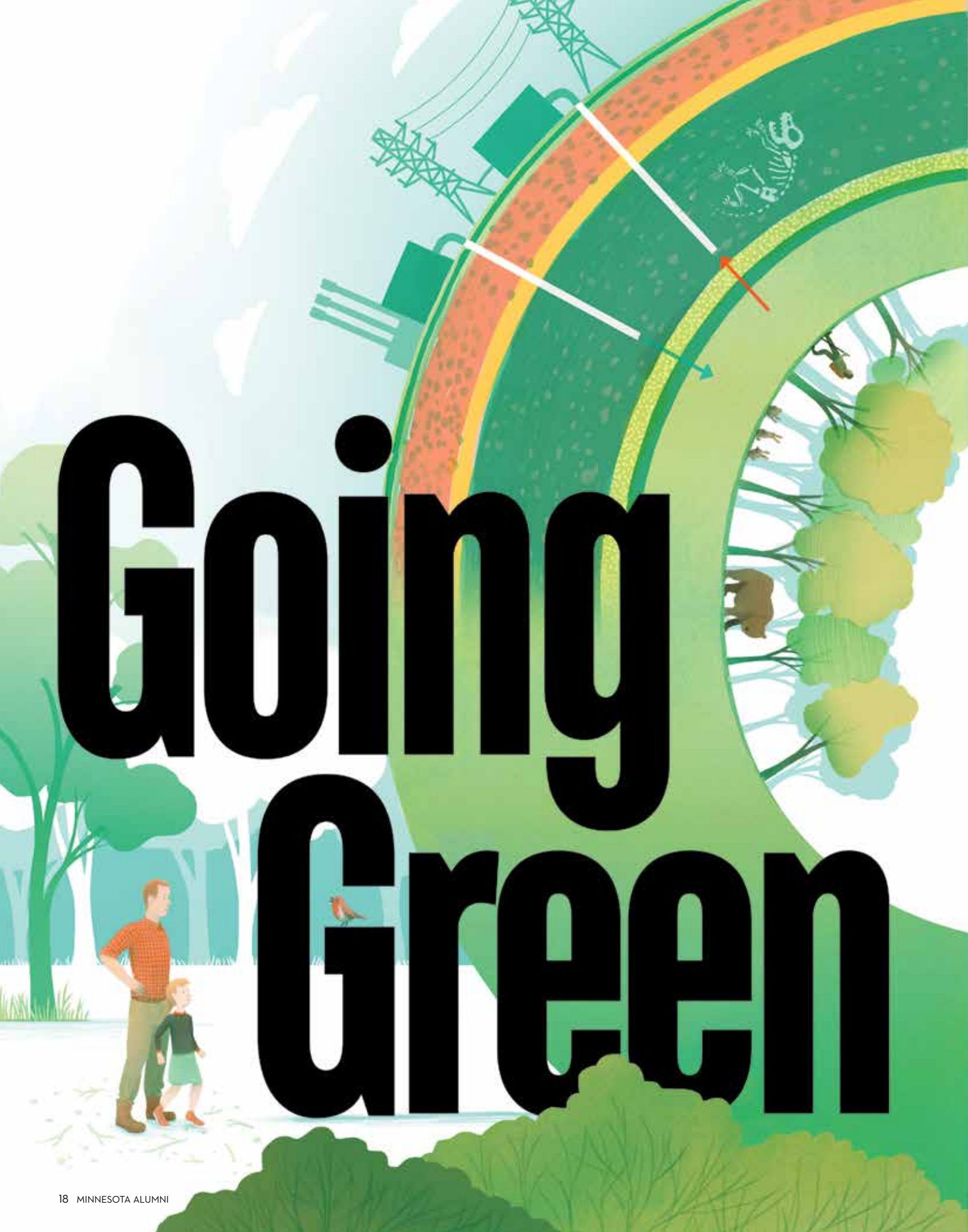
The next season, freshman Thomas Vanek, an Austrian, scored the overtime goal in the semifinal on April 10, 2003, against Michigan. Two days later, with the score tied 1-1 in the third period against the University of New Hampshire, Vanek (the eventual tournament MVP) scored what became the game-winner in a 5-1 victory to give Minnesota its first ever back-to-back national championships in hockey.

The Gophers added another chapter to their storied rivalry with North Dakota on February 2, 2008, when a fight broke out in the traditional postgame handshake line. An 8-year-old hockey player from Edina at Mariucci that evening watched his favorite Gopher, Blake Wheeler, go at it with one of the Fighting Sioux. Today, he counts that as one of his most vivid memories of Gopher hockey—a history he, as the returning captain of the Gophers in their 100th season, carries forward. "It's an honor to wear the 'C,' given the tradition," says Sammy Walker. "I'm proud to be a Gopher." ◘

John Rosengren is a Pulitzer-nominated freelance writer in Minneapolis.



Blake McLaughlin scored twice in Minnesota's 10-2 rout of Arizona State on January 22 this year.



Going Green

Even amidst a pandemic, climate change remains a looming threat. U of M researchers and alumni are hard at work creating a "greener Minnesota" for coming years.

By Elizabeth Foy Larsen • Illustration by Michael Kirkham

Growing up in the Twin Cities during the 1960s and 1970s, Teddie Potter (M.S. '99) and her family eagerly anticipated spotting the first robin every April.

"It meant that spring was on the way … that the patterns of nature were working," says Potter, who is the director of planetary health and a clinical nursing professor at the University of Minnesota's School of Nursing.

By the time she was a college student in 1975, Potter started noticing a change in Minnesota's natural patterns. She discovered the robins weren't disappearing in the winter months. What's more, ice on the region's lakes, which had usually been thick enough to skate on in November, no longer hardened at a predictable time.

These disruptions, she says, were the dawning of her awareness of climate change.

As a nurse, Potter is deeply invested in healing not just a patient's particular illness but the larger systems that cause or exasperate health challenges. She sees how the health of the planet and people are interconnected, including why injuries from car accidents and falls have escalated in recent years due to icy streets that used to be covered in snow, or how spikes in allergy-induced asthma are caused by ragweed pollen seasons that now average 21 days longer than they did in Minnesota in the mid-'90s.

As a result, in 2020, Potter helped found a global nursing movement called Nurses Draw-

Teddie Potter is a clinical nursing professor and director of planetary health at the U of M School of Nursing. She is also a founder of Nurses Drawdown, a multinational group that works to directly combat climate change.

down in an effort to decrease greenhouse gases and other causes of climate change. "According the Gallup Poll, nurses are the most trusted profession in the United States," she says. "I wanted to use the trust people have in nurses to scale [science-based climate change solutions] and take our work to the level of a movement." Today, Nurses Drawdown partners with 16 organizations worldwide and has 700 members. The group promotes a number of climate-related initiatives, including encouraging a move to more plant-based diets and advocating for a transition to renewable energy.

While the subject of climate change remains a flashpoint for some who dispute the fact that the earth is warming or that humans are precipitating it, reputable climate researchers, including those at the U of M, say we face a crisis in coming years.

In fact, 2020 has tied for the warmest year on record, matching a previous milestone temperature from 2016. Researchers say that climate change is exacerbated by the proliferation of greenhouse gases (GHGs), which the Environmental Protection Agency (EPA) characterizes as ones that trap heat in the atmosphere. These GHGs—carbon dioxide, methane, nitrous oxide, and fluorinated gases—primarily enter the atmosphere through the burning of fossil fuels or as a byproduct of producing those fuels; through natural processes such as organic decay or farming or raising animals; and through industrial activity.

Although the factors driving climate change are highly complex, moving to renewable, more sustainable energy sources and lessening our dependence on fossil fuels is seen as key to slowing this progression.

This past December, United Nations Secretary General Antonio Guterres gave a speech highlighting the fact that 70 percent of the world's most climate-vulnerable countries are also among the most politically and economically fragile. He also issued his strongest statement yet on climate change, urging all countries to declare "climate emergencies" before the relentless warming of the Earth tips us into a dangerous maelstrom we can no longer control.

With the Biden administration now prioritizing climate change, *Minnesota Alumni* looks at what a greener Minnesota—and country—could look like in coming years.

Andrea Ellen Reed

Combatting climate change has gained new urgency on a national level recently. The controversial Keystone XL pipeline permit, which would have allowed transport of so-called "dirtier" fossil fuel from the tar sands of Canada through the U.S., has been revoked (at least temporarily). The U.S. has also rejoined the Paris Climate Accord, the binding treaty on climate change that the Trump administration withdrew from in 2019. More than a hundred other climate-related rules and laws are also currently under review.

Ambitious future plans call for investing more heavily in "green technologies," including solar, wind, and biofuels, and moving away from energy production that relies primarily on fossil fuels. (The Covid-19 stimulus bill that was passed in December includes a number of clean energy provisions, including a two-year extension on the solar investment tax credit and additional tax credits for new wind and offshore wind projects.)

The Biden administration has also proposed investing $1.7 trillion over the next 10 years to promote policies to ensure the U.S. achieves a 100-percent clean energy economy and reaches net-zero emissions no later than 2050. (Net-zero emissions refers to removing all man-made GHG emissions from the atmosphere through reduction measures or by not creating the emissions in the first place.)

To fund this ambitious plan, the current administration hopes to leverage an additional $5 trillion in investments from the private sector and state and local governments.

While all these efforts will almost certainly not bear fruit, this renewed emphasis on the climate means we will probably see changes in every aspect of our lives, from how and what we use as transportation to how we heat and illuminate our homes and offices.

"Today, 'going green' means [figuring out] how we maintain our fundamental connections to nature, which are necessary for life and can be sustained over the long term," says Gabriel Chan, an assistant professor of Science, Technology, and Environmental Policy (STEP) at the U of M's Hubert H. Humphrey School of Public Affairs. "How do we create a more sustainable society that will allow for prosperity one generation from now, two generations from now, three generations from now, in perpetuity, [where] we don't overconsume our precious natural resources? Part of that answer is to radically rethink how we produce and consume energy."

Chan notes that we use energy to power two main systems: transportation, which still depends largely on gasoline or diesel fossil fuels, and electricity, which in Minnesota still

What is "Cleaner Energy?"

Renewable energy sources such as wind, solar, hydropower, and geothermal are usually considered "clean" energy because they do not rely on fossil fuels. Bio-based fuels like ethanol are also generally considered cleaner because they are made from renewable resources like corn. Some argue that nuclear power should also be considered cleaner energy but the problem of safely disposing of spent fuel rods that will remain radioactive for many, many generations complicates the matter.

Underground Warmth

When it comes to sustainable energy, most people know about wind and solar power. But geothermal energy, which harnesses energy from the sun stored in shallow ground to heat and cool buildings, is also an emerging

Alumnus Jimmy Randolf at Pipefitters Steamfitters Local 455 in St. Paul, where Darcy Solutions installed its first commercial system. The well has 20 times the heat exchange capacity of a traditional geothermal borehole.

opportunity. The process relies on tapping into steady underground temperatures, which stay relatively constant at 50 to 60 degrees, and then circulating that heat or coolness via pipes throughout buildings. (Other countries in the world, including Iceland, already rely heavily on a different type of geothermal energy produced by underground volcanic activity.)

Jimmy Randolph (Ph.D. '11) was doing graduate research at the U of M on a heat exchange technology when he cofounded a geothermal technology that he spun off into Darcy Solutions, a Twin Cities-based company for which he is the chief technical officer.

"Geothermal ground source is the most efficient way to provide building heating and cooling, short of opening a window, and it saves people money," says Randolph. "It's a great technology for socially and economically disadvantaged areas."

One of Darcy Solutions next projects is in North Minneapolis at the Minnesota State Offices Workforce Center at 1200 Plymouth Avenue North. The Como Zoo in St. Paul is also exploring working with Darcy Solutions to provide its energy needs.

"It's the optimal technology to reduce people's costs of owning or renting a home," Randolph says.

Capturing Sun at Red Lake

For **Robert Blake**, above, a graduate student at the Carlson School, the idea of a career in renewable energy came as an epiphany—in the form of an imaginary polar bear wearing sunglasses.

Blake conjured up the idea of his solar installation company, Solar Bear, in 2009, in the aftermath of the untimely death of his older brother, William Blake, a Minneapolis police officer. Robert was 35 years old, mourning the loss of his brother and best friend, and serving as a surrogate father figure for his brother's children when he created his company. He believes the idea came to him in the form of a bear to serve as a guide to help him find a way forward and make the world a better place for his nieces and nephews.

Blake decided to explore business opportunities in solar energy. He founded Solar Bear in 2017. It's the only American Indian-owned solar installation company of the 146 in Minnesota; Blake is an enrolled member of the Red Lake Band of Chippewa. In 2020, he started a second company called Native Sun Community Power Development, a nonprofit that promotes renewable energy and helps American Indians and others learn how to transition to clean energy. In 2018, Solar Bear installed solar panels on the Red Lake Nation Government Center, the start of a multistage process to make the Red Lake Band of Chippewa energy independent. Blake believes that relying solely on gaming for revenue is unwise for Red Lake. Providing jobs in renewable energy will, he hopes, point the tribe to a positive future of energy independence.

Native Sun also runs a program called Solar Cub, which teaches young tribal members about the interdependence of a healthy environment, clean energy, and American Indian culture. "We've got to quit being at war with this planet and start being at peace with it," Blake says. "No one owns the sun. We have 180,000 terawatts that hit the world each day, and we're only harnessing 17 of them."

There is certainly potential for growth. According to the Solar Energy Industries Association, Minnesota ranks 14th in the nation for solar installations and has enough solar capability to power 3 percent of the state's total electricity. The industry currently accounts for 4,335 jobs.

means relying primarily on coal-fired power plants, although that's changing. In 2019, 19 percent of Minnesota's electricity came from wind power and 18 percent came from natural gas, with much smaller amounts generated by renewable options that include solar, biomass, and hydropower.

"In order to decarbonize our economy—to green our economy—we need to reduce carbon emissions in both of those systems," explains Alexandra Klass, a professor at the U of M Law School, whose areas of expertise include energy law, environmental law, and natural resources law. Last September, Klass was appointed by Governor Tim Walz to serve on the Governor's Advisory Council on Climate Change.

Today, roughly 28 percent of GHGs emitted in Minnesota and across the country come from transportation, according to the EPA. Vehicles powered by gasoline or diesel create those gases, whether from the car itself or through the process of producing that petroleum. (See sidebar on pg. 25.)

In 2007, Minnesota Governor Tim Pawlenty signed the Next Generation Energy Act. It requires the state to reduce GHGs by 80 percent between 2005 and 2050, and to support clean energy, energy efficiency, and other renewable energy standards. At the time, interim goals were also set: a 15 percent reduction by 2015, and a 30 percent reduction by 2025. However, in a report to the Legislature in January, the Minnesota Pollution Control Agency noted Minnesota missed its goal in 2015, and is not on track to meet future goals. Since 2005, overall GHG emissions have declined just 8 percent

To do better will require a shift in our collective mindset away from the idea that needed changes are too expensive, especially in an economy that has already been battered by a pandemic. "The status quo is not cost free," Klass says. "The status quo is what is leading to floods, wildfires, and other significant impacts of climate change that are costing Minnesota hundreds of millions of dollars every year."

Klass was an early adopter of a technology that may soon become more prevalent in the greener economy-Minnesota of the future. "I have driven a[n electric] Nissan Leaf for the last six years," she says, noting that she recently upgraded to a Tesla Model 3, which has a significantly longer driving range. "The reason I chose it was because there were very few electric models available here when I started wanting an electric car back in 2015. That's not true in California, where there's lots and lots of different models of electric cars, because there's a mandate that they're sold there.

"All of the car companies know that electrification is

Catching the Wind

Workers construct what will be the concrete foundation of a wind tower at Ridgewind, a project in Woodstock, Minnesota, developed, built, and operated by PRC Wind.

In the summer of 1988, **Paul White (M.A. '92)**, left, was a graduate student at the U of M, studying energy technology and environmental planning when scientist James Hansen from the Goddard Space Institute testified before Congress that the Earth was warming. Hearing Hansen's warning was an epiphany for White. "I jumped in with both feet," he says of his decision to pursue a career in wind energy.

White started out running the office of an industry policy association in California, and eventually worked on a proposal for California Governor Pete Wilson's biennial energy report. That job required him to meet with the owners of every wind project in the state to research what it would look like to repower the state's wind industry with larger turbines. That door-to-door approach would serve him well in 1997, when he founded PRC Wind, a Minnesota-based company that develops wind energy projects by prospecting across the region, including in areas that are retiring their coal-fired plants. This creative problem-solving work includes anything from meeting with farmers and leasing land to working with state and local government to get permits, secure financing, conduct environmental studies, and hire companies that build the actual turbines.

Today, PRC Wind has developed more than two gigawatts of wind-generating electricity capacity—the equivalent of two large coal plants. But there are challenges. "Our power grid is not built to support the growth of the windpower sector," says White. "We need the grid to be designed in a fashion that will work for remote locations in North Dakota and Wyoming, and then be able to ship that power to markets in Chicago and Los Angeles." It's an effort he says is on the scale of what it took to build the interstate highway system or putting a man on the moon.

White's commitment to decarbonization has also led him to contemplate starting a green airline, using agriculture-based bio-jet-fuel. "Nobody thinks about their flights to Europe or New York when you ask them about global warming," he says. "The reality is that your portion of a single long-haul flight's CO_2 emits your lifetime quota of the amount we can all emit and keep global warming in check."

White envisions leasing a Boeing 737-400 that would fly between the Twin Cities and San Diego once a week. He has applied for the lease for the jet, but progress stalled during the Covid-19 pandemic. He hopes to return to the project this year.

Ned Mohan believes that getting to electric energy that is 80 percent carbon free by 2030 is achievable, but it will take innovative solutions—and perhaps a renewed comfort with nuclear power—to get to 100 percent carbon free by 2050.

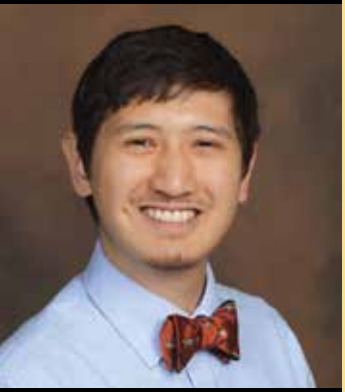
going to be required in [coming years in] China, in Europe, in places like California," she says. "And so even two years from now, you're going to have a lot more models, and all of those models are going to have a much longer battery range."

As for revising the other major system behind GHGs—energy—Minnesota is in a unique position when it comes to transitioning to greener production technologies simply because the state doesn't have fossil fuels that can be harvested. While Minnesota workers will inevitably be impacted by a shift to more renewable energies, the state doesn't have to wrestle with the challenges faced by states where fossil fuel industries drive politics and public policy.

"A net renewable energy is likely to grow a lot of jobs in Minnesota, without necessarily the same kinds of job losses," says Chan. "Energy transition has such a big potential benefit for the whole state and for the whole country and the whole world, frankly, that we need to find ways to create that alignment—so that people see that benefit, feel that benefit [from] green energy."

The Minnesota Energy Factsheet, produced by research firm BloombergNEF for the Business Council for Sustainable Energy, outlines key trends impacting energy demand, supply, and investment in the state. It reports that Minnesota imports

Advocate for the Earth



When **Kerry Wang (Ph.D. '19)**, left, was an undergraduate chemical engineering major at Rice University in Houston, he fulfilled one of his general education requirements with a course about environmental sociology. Wang was used to seeing climate change through the lens of science, but this course showed him the real-world implications.

"I started seeing environmental issues not just as technological challenges but as broader social issues," he says. "Environmental problems are also social justice and civil rights problems." He carried this new awareness with him when he arrived at the U of M in 2012 to pursue his doctorate in materials science and engineering.

In 2015, Wang founded the UMN Energy Club, an interdisciplinary student organization that promotes a multipronged approach—from engineering to law to design—to advocating for sustainability and energy. "I want curious people to meet each other and learn from each other and teach what they know, and do this intellectual crosspollination so we can get a real understanding of what it means to be sustainable, what it means to address climate change in a serious way," he says.

Today, Wang is the lead renewable energy instructor at MIGIZI, a Minneapolis-based nonprofit that provides career counseling and media and leadership training for American Indian youth. He develops the curriculum and teaches courses that prepare students for careers in renewable energy and energy efficiency. "I think there's a lot that we can learn from our Indigenous relatives and community on how we relate to each other and the natural world," Wang says. "I think there are ways that we can promote, we can be a positive influence for each other and for all life on Earth."

Wang believes this framework will also foster other positive changes.

"We find that the best ways to be kinder to the environment are often linked with how to be kinder to each other," he says. "If you manage to dramatically reduce some environmental impact, and then you get shot by the police for doing an everyday activity that humans do, that's not winning, right? That's not being sustainable."

of energy fell to their lowest level in over two decades in 2020, thanks to increased investments in solar and wind. What's more, it says clean energy and energy efficiency support over 61,000 jobs in the state, growing 4.7 percent in 2018 alone. In addition, in 2019 nearly half of Minnesota's power came from carbon-neutral sources, according to the Factsheet. (Carbon neutral means that emissions that are being generated are being offset elsewhere.) Power sector carbon emissions also decreased 37 percent between 2005 to 2019 due to the clean energy transition.

Further improvements to Minnesota's energy economy will require not only advocacy for new public policies but also innovative business initiatives.

That said, creating an infrastructure to support renewable energy in Minnesota comes with challenges.

"Anything you do is going to have side effects," says Ned Mohan, a Regents Professor in the College of Science & Engineering who researches energy systems and power electronics. As a child growing up in India, Mohan traveled to rural communities with his civil engineer father. "These towns had no electricity and we had to use kerosene lamps," he remembers. Those early experiences convinced Mohan that access to electricity is a basic human right.

"People may say that we should generate all our electricity through wind and solar. But wind doesn't always blow and sunlight doesn't always shine," he says. Mohan believes that getting to electric energy that is 80 percent carbon free by 2030 is an achievable goal, but that it will take more innovative solutions—and perhaps a renewed comfort with nuclear power—to get to 100 percent carbon free by 2050. In addition, we need to consider how to sustainably dispose of solar arrays and wind turbines when they are past their shelf life.

Some experts believe this is a moment when more and more people will embrace bold initiatives. "Because of the intersection of this pandemic, Covid-19, the intersection of the world awakening around structural racism, [and] the climate change disasters that we're seeing played out in front of our eyes, enough people are saying, 'Oh my gosh, our current system doesn't work. What do we do? How do we transform it?'" says Teddie Potter.

"It's not about going back to normal, because the system hasn't always worked for everyone," Potter adds. "Clearly it doesn't work for the planet. So, the new system we need to build is a system that has the potential to really be an equitable system, a system where everyone has an opportunity to rise to their full potential. I think it's absolutely possible—I think it's the most exciting time to live right now." ◘

Elizabeth Foy Larsen is the senior editor of *Minnesota Alumni*.

The Future of Four Wheels

According to the Minnesota Department of Transportation (MnDOT), transportation remains the largest producer of GHG emissions in Minnesota, even though the Minnesota Department of Agriculture notes the state is also a national leader in ethanol policy and was the first to mandate using the cleaner-burning fuel in vehicles.

Still, in 2020, Governor Tim Walz announced plans to adopt California's Clean Car Standard, which will require manufacturers to make cars that pollute less, with a particular emphasis on bringing more electric cars to market and building charging stations throughout the state. Electrifying school buses, city buses, and delivery trucks could also decrease GHGs, as will urban planning that prioritizes biking and walkable communities.

MnDOT developed a report called Pathways to Decarbonizing Transmissions in 2020. The report found that light-duty vehicles—cars, vans, pickup trucks—are the largest segment of GHG emitters, according to **Siri Simons (B.A. '12, M.A. '20)**, above, a sustainability coordinator at MnDOT.

In addition to developing incentives for users to switch to electric vehicles and reduce miles traveled, the report recommends Minnesota consider expanding the use of biofuels produced with organic materials, including plants and animal waste, to power vehicles. This would include heavy-duty vehicles that can't shift entirely to electric power right now, such as snowplows, which are however able to run on a biofuel-blend during the warmer months of October and November.

Future U of M research, including from the new Bioindustrial Manufacturing And Design Ecosystem or BioMADE Center at the U of M's St. Paul campus, also intends to focus on expanding the state's biofuel possibilities, among many other innovations.

Leading by Example

At the U of M, combatting climate change is serious business and a top priority.

By Frank Jossi

Contractors finished installing solar panels on a steel canopy above a dull parking lot next to the University of Minnesota's Law School in 2019. They covered an empty green space next to the parking lot and Mondale Hall's rooftop with panels, making the multisite solar installation the largest on campus. It's the most visual manifestation of the University's longstanding commitment to clean energy and sustainability.

Over the past decade, the U of M has made its support of renewable energy plain by investing in solar through utility-operated clean energy programs and on-campus solar installations. And by improving building efficiency and generating energy through a relatively new combined heat and power plant—less noticeable but still important developments—the University has reduced its greenhouse gas emissions by at least 39 percent over the past 11 years.

Beyond targeting the campus's energy consumption, the University relies on research by scientists, architects, and policy experts to develop pathways to green the state and country's power infrastructure.

As part of President Joan Gabel's MPact Systemwide Strategic Plan, which the Board of Regents approved in June 2020, the U of M is implementing a next-generation Climate Action Plan for 2030, including proposing a plan for each of its five campuses.

The ultimate goal is both simple and mind-numbingly complex: Reduce greenhouse gases and waste while improving water stewardship. By 2050

The University has reduced its greenhouse gas emissions by at least 39 percent over the past 11 years.

One of the multiple solar panel installations at the U of M-Twin Cities campus.

the University wants to be carbon neutral, offsetting any remaining emissions with clean energy.

The University's sustainability website (italladdsup.umn.edu) offers a "walking tour" that highlights 34 such efforts, from green roofs on several buildings to highly energy-efficient buildings and sophisticated stormwater reclamation systems to environmental education-related programs and composting. And the University boasts well regarded climate-oriented research organizations such as the Institute on the Environment (environment.umn.edu), which studies and funds research on clean energy, sustainable agriculture, land use, and water conservation.

Another example of a U of M research effort, The Chan Lab (chan-lab.umn.edu), examines energy and climate policy at a local, regional, and national level.

Higher education's leadership role in both studying and working to slow climate change is growing. Julian Dautremont, programs director at the Association for the Advancement of Sustainability in Higher Education, notes colleges have become leaders in the field. "There is a national commitment that many institutions have signed that commits them to reach carbon neutrality that doesn't exist to the same degree in other sectors," he says.

On the other hand, structural changes at universities often take a great deal of time, a drawback in a global climate crisis. Though unwieldy, large universities do, however, have built-in advantages in combatting climate change that include sustainability staff, market purchasing power, and budgets allowing for more significant investments, Dautremont says.

The U of M made sustainability a priority long ago. The University's first real push began in 2004, when the Board of Regents first adopted a policy around energy and sustainability, according to Shane Stennes, director of the Office of Sustainability. "That was really the first big push for the introduction of sustainability as an organizing principle at the University," he says. Sustainability is a concept that includes combatting climate change by working to preserve scarce resources, including reducing reliance on fossil fuels.

A few years later, then-University President Robert Bruininks and Vice President Kathleen O'Brien created and hired a sustainability staff dedicated to encouraging the U of M's efforts in this area. The University even achieved national recognition during this time when TCF Bank Stadium became the first collegiate or professional field in the country to earn LEED (Leadership in Energy and Environmental Design) certification from the U.S. Green Building Council for excellence in sustainable design. Now dozens of stadiums carry LEED certification, among them Target Field, U.S. Bank Stadium, and Allianz Field. And the former president's namesake, Bruininks Hall, is also LEED certified.

President Eric Kaler reaffirmed the U of M's commitment by signing the White House Act on Climate Agreement in 2015. Today, sustainability is one of the top five systemwide priorities for the U of M. Such leadership matches the size of the challenge, says Stennes. "Our scientists at the University and across the globe are sending really clear messages and signals to all of us to say this track

"Our scientists at the University and across the globe are sending really clear messages and signals to all of us to say... fossil fuels cause climate change."

Shane Stennes, director of the U of M's Office of Sustainability

that we're on, where we are highly dependent on fossil fuels, [is that] fossil fuels cause climate change," he says. "It's time for us to change course and [reduce that dependence] really fast."

Still, it will take decades to eliminate carbon from the University's operations. Within the next year, carbon production from energy used by the U of M will decrease more, to around 50 percent (from a 2008 baseline). "That's really significant," Stennes said. "That would be putting us on a leading pace compared to our peers in the Big Ten and compared to other universities across the country."

Those aspirations would be far easier in a warmer state where electric heating—produced through non-fossil fuel means—could adequately warm buildings. That becomes a tall order in a cold weather state where gas heating remains popular, inexpensive, and reliable on subzero winter days. The ever-present cost equation gives a yin-yang quality to investments that help decarbonize the campus, yet may prove a barrier to reaching a net-zero finish line.

The University of Minnesota's first concerted push toward sustainability as a core principle began in 2004, when the Board of Regents adopted the idea.

Consider the East Bank's retrofitted Old Main Energy Plant overlooking the Mississippi River. Opened in 2017, the combined heat and natural gas plant operates at 83 percent efficiency, better than twice that of a typical power plant. Heat created when the turbine generates power gets turned into steam to heat the University's hospital, sports arenas, and classrooms.

The plant also saves $2 million in energy costs annually and allows the University to maintain electricity to the hospital and other important buildings should the grid fail. Emissions dropped an additional 10 percent to 13 percent when the plant came online. Yet the facility will someday become an obstacle to a cleaner campus because it relies on natural gas, a greenhouse pollutant.

"The primary clean energy challenge for the University is that we still use a fair amount of fossil fuel to keep campus buildings heated in the winter and to provide hot water and steam for University processes and research labs," Stennes says. "Finding a workable substitute for that is going to be a challenge and it's going to take a lot of effort."

Clean Energy Investments

Another tack for pushing emissions down at the U of M has been adding clean energy and improving efficiency through retrofitting buildings, or by designing new ones that perform well using less electricity and natural gas. (The University's other significant carbon sources, commuting and air travel, would require behavioral change and a transition to electric vehicles by staff and students.)

Solar energy and efficiency investments, in contrast, pay for themselves quickly. The University has installed two megawatts of solar panels on both Twin Cities campuses at nine locations. The clean energy company Ameresco built the solar projects before assigning the contract to a private company called Encap MN Solar LLC that pays the University for the electricity the panels produce through a power purchase agreement.

On an urban campus without much land available on which to build solar or wind generators, the University has instead taken advantage of two other options: Community solar gardens and Xcel Energy's Renewable*Connect program. Both allow customers to subscribe to long-term contracts with outside clean energy generators that potentially pay off in savings on electricity and, more importantly, help reduce overall carbon emissions. In 2013 Minnesota legislators created one of the nation's first and now biggest community solar programs. Campus solar installations and subscriptions to community solar gardens and the Renewable*Connect program offset 27 percent of the campus's purchased electricity and saved millions of dollars—a good start, but just a beginning salvo.

Another target for decreasing carbon emissions is improving building efficiency, the so called low-hanging fruit of sustainability. By merely building and renovating buildings better, the campus saves money on energy consumption while increasing indoor air quality.

The University ensures efficiency of new and existing

structures by following a set of standards known as B3, overseen by the University's Center for Sustainable Building Research (csbr.umn.edu). B3 offers guidance on developing sustainability goals for energy, water, waste, and indoor environments. Buildings over a certain size using state money are also required to abide by B3 guidelines.

A recent example: the $104 million renovation of Pioneer Hall. The dormitory has occupancy sensors in common areas, programmable thermostats in rooms, LED lighting, specialized windows, Energy Star-rated appliances, and a heat recovery system that captures stale air to warm fresh air. The dormitory also shares a 5-million-gallon rainwater capture system with the new health sciences building that first cleanses runoff before eventually returning it to the Mississippi River.

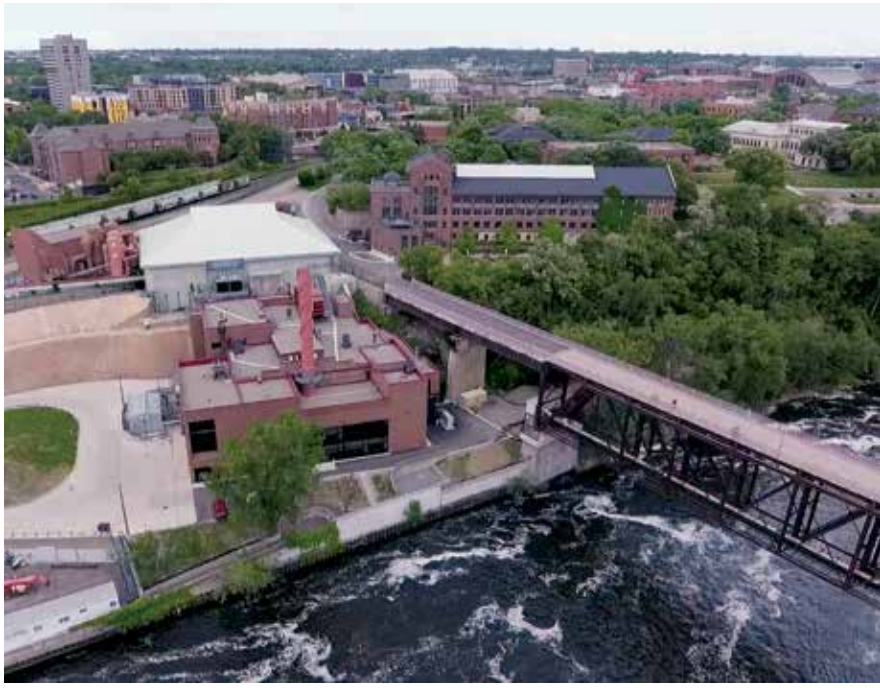
Richard Graves, director of the Center for Sustainable Building Research and an associate professor in the College of Design, said that by rigorously following the B3 guidelines, the University's new properties consume 20 to 30 percent less energy than required by building codes. Graves says the University has done an excellent job of working with Stennes and his team on campus-wide solutions that focus less on one structure and more on how an entire campus area might benefit from district energy or solar serving several buildings.

The University's focus on renovating existing structures serves as a good approach to greening the campus because it uses less energy than constructing new buildings. "It's really the way to go," Graves says. "It's been great that that's been the University's strategy."

All these initiatives are laudable but sometimes remain hidden from the public, perhaps by Midwestern modesty. Jessica Hellmann, director of the Institute on the Environment, believes the University should speak more to its ambitious goals and achievements to allow "other people to come along on this journey, which is part of the University's job," Hellmann says. "We're not just here to educate students who are enrolled, but to serve as a learning community for the entire state."

A Call for Change

Across the U of M, a number of sustainability initiatives have come from departments, faculty, and students. Representatives from the Medical School came to Stennes and his staff with an initiative to increase the recycling of waste products from laboratories. Sustainability coordinator Carley Rice says the school introduced compostable wipes and paper towels to improve recycling and now wants to study how its freezers might operate more efficiently. (Students also want to reduce the problem of birds hitting campus building windows, an issue currently being researched by a graduate student, Rice says.)



The retrofitted U of M energy plant operates at 83 percent efficiency, better than twice that of a typical power plant. It also saves $2 million in energy costs a year.

Many students have similarly ambitious goals. Madeline Miller, a sophomore, serves as Environmental Accountability Committee director for the Minnesota Student Association. The group wants the University to divest from fossil fuel investments in its portfolio, get rid of Styrofoam food containers, switch the campus food provider to local companies, and continue moving to more clean energy sources.

"We know that the choices that we make now and the things that we're working towards will benefit not just our generation, but generations after us," she says. "So little has been done for so long that now we need to see change."

Outside the campus, the University participates in the Sustainable Growth Coalition, an organization focused on developing a collective "circular economy" based on clean energy, renewable materials, and water-saving approaches. Composed mainly of corporations and nonprofits, Stennes sees the University as perfectly suited to play a role in this because of its expertise in sustainability and its built-in slate of experts.

"To the extent we can reduce pollution, we reduce those costs to society—which might include farmers in western Minnesota who lose money if their crops fail because the frost comes in too early or their fields are flooded in the spring, and they can't get out to plant a crop," Stennes said. "There are benefits in an extended way and they are a little bit harder to quantify, but they are meaningful." ◘

Frank Jossi covers Minnesota for *Midwest Energy News*, part of the Energy News Network. He also writes the monthly "Sustainable" column for *Finance & Commerce*.

Greener Farms of the Future

Mark Luinenburg

Fields of tall grasses waving gracefully in the wind represent one of the iconic images of the American agricultural tradition. But, over the decades, that pastoral image has changed. Today much of American agriculture consists of industrial-scale, chemical-intensive, single-row crop farming—with corn and soybeans being dominant, particularly in the Midwest.

Unfortunately, the natural environment has suffered as a result of this move. Growing corn, soybeans, and other row crops contributes significantly to overall emissions of the greenhouse gases (GHGs) that accelerate climate change. The Minnesota Pollution Control Agency says agriculture contributes 25 percent to the GHG emissions in the state. And according to the Intergovernmental Panel on Climate Change (IPCC), the United Nations body that examines the science behind our warming earth, the three main causes of the increase in greenhouse gases over the past 250 years have been fossil fuels, land use, and agriculture. The IPCC said in 2019 that worldwide "agriculture, forestry and other types of land use accounted for 23 percent of human greenhouse gas emissions." (The Environmental Protection Agency says that U.S. agriculture overall contributed roughly 10 percent to the country's GHG emissions in 2018.)

U of M researchers are partnering with farmers to find new ways to cultivate the soil and raise animals—and help mitigate climate change.

By Dan Emerson

Carmen Fernholz at his farm near Madison, Minnesota. This plot of organic corn was initially his daughter Connie Carlson's project, but it grew into a collaborative effort between them.

However, the challenge here is significant, because farmers often must choose to plant readily salable commodity crops for economic reasons, leaving them with few good alternatives.

That's why more and more Minnesota farmers and University of Minnesota researchers are deeply engaged in identifying how agricultural practices might change in the future to reduce emissions and better protect soil and water, thereby benefitting the climate. Since much of ag research takes place in the field, those two categories—farmers and researchers—often overlap, and there are examples all around the state of Minnesota, led by the U of M.

Some of the burgeoning change is driven by consumers, says Connie Carlson, a market opportunity development specialist for the Forever Green Initiative, a joint U of M and USDA Agriculture Research Service (ARS) program.

"There has been a shift across the spectrum in the ag industry as consumers have become more and more aware about climate change, the need for stewardship of natural resources, and engaged in food itself," Carlson says. "There has been a ripple effect; we've seen industries of all sizes responding to that, because that's where consumers are shifting their dollars."

The U of M's College of Food, Agricultural and Natural Resource Sciences (CFANS) has a network of Research and Outreach Centers throughout Minnesota. One of them is the West Central Research and Outreach Center (WCROC) in Morris. Researchers there are involved in a number of projects with the ultimate goal of reducing fossil fuel consumption in production agriculture.

For instance, the GHGs carbon dioxide, methane, and nitrous oxide are produced during the manufacture of nitrogen fertilizer, which is widely used in agriculture. But by using renewable energy sources, "we could replace 100 percent of the fertilizer made with fossil fuels," says Mike Reese, WCROC director of renewable energy. WCROC's Renewable Hydrogen and Ammonia Pilot Plant uses a portion of the wind energy generated from a nearby turbine to produce fertilizer. The University is also leading a partnership with the U.S. Department of Energy's National Renewable Energy Laboratory (NREL) and Proton OnSite, a Connecticut-based firm, to develop a small-scale ammonia synthesis system using water and air, powered by wind energy.

"[Industrial] agricultural practices have caused us to lose a lot of nutrients, especially carbon. We're in a deficit; a lot of the carbon that was in the soil is now in the atmosphere."

Anna Cates, soil health specialist with the Minnesota Office for Soil Health

Safeguarding the Soil

One approach that could make big strides toward a greener Minnesota relatively soon is switching to ag management practices that better protect the soil, which is a huge repository for the carbon that is both necessary for life and a major cause of warming when released into the atmosphere. (Carbon in soils can be released into the air through a variety of agricultural tasks, including overuse of fertilizer, tilling, monocropping, and other practices.)

"Soil is the world's largest reservoir of carbon, much larger than the 'pool' of carbon in the atmosphere," says Anna Cates, soil health specialist with the Minnesota Office for Soil Health (MOSH)—a collaboration of the Board of Water and Soil Resources and the U of M Water Resources Center. "[Industrial] agricultural practices have caused us to lose a lot of nutrients, especially carbon. We're in a deficit; a lot of the carbon that was in the soil is now in the atmosphere."

Soil conservation strategies include planting cover crops, no-till and reduced tillage farming, switching from corn and soybean rotations to perennial grains such as crested wheat grass, or restoring fields to native grasslands. To reduce carbon emissions from the soil, "reducing tillage is one of the lowest-hanging fruit farmers can undertake," Cates says. "It's not always possible with certain crops and takes a little bit of a learning curve on how to manage impaction, weeds, etc., but in working with Extension educators and ag retailers, that is a place where some gains can be probably made very quickly."

Carlson notes farmers are open to change if it can be done without negatively impacting their income. And Minnesota farmers have already experienced climate change in the form of "extreme" rain events, which have become more common and damaging, she says.

"We're working with some pretty innovative growers who may already have an inclination to try out new things," Carlson explains. "Groups like the Sustainable Farming Association and the Minnesota Farmers Union have long advocated soil health work. They understand what the Forever Green Initiative is trying to do."

At present, while many Minnesota farmers are heavily invested in conventional (chemical-intensive, row crop) agriculture, if they are interested in trying more eco-friendly alternatives, Cates and her colleagues recommend starting small and renting equipment to manage experimental patches to gain insight into the new practices.

Carlson agrees that the rapidly changing climate makes it urgent for the world to take action, and agriculture can play a significant role in that effort. "We're building a whole tool kit so that Minnesota can be a 'forever green' state, with perennial crops dotting the landscape, and farmers can become heroes."

The Forever Green Initiative is also engaged in developing new crops that keep farmland in continuous living cover, year-round, thereby protecting the water and soil and providing wildlife habitat. And they are also cash crops, Carlson notes. One such dual-benefit crop is Kernza, the first commercially available perennial grain grown in the U.S. It can be used for baking, milling, distilling, and "puffing" as a cereal product. U of M researchers who developed a new variety of Kernza are working with farmers around the state to test it, Carlson says, in addition to winter annual oil seeds like camelina. Another potential new cash crop being tested is hybrid hazelnuts, which can grow perennially even in Minnesota's harsh climate.

A Modern Traditionalist

Carmen Fernholz, the father of Connie Carlson from Forever Green, has been an organic farmer since 1975. He farms about 500 acres near Madison, Minnesota, as both an ag modernist and a traditionalist. In employing "sustainable" ag practices, he's helping to bring back some of the earth-friendly practices he remembers from his youth in the 1950s. In the first half of the 20th century, most farmers grew and rotated a mixture of crops, he notes, such as wheat, oats, corn, and flax, rather than focusing solely on corn and soybeans.

"When I was growing up on the farm, my mother had a wheat grinder and ground her own wheat for baking bread," Fernholz says. "Dad would 'flag out' an acre of wheat field that never got sprayed with chemicals. There was a message behind that," he adds.

Fernholz believes that large-scale farming of corn and soybeans has produced unintended consequences. As modern agriculture evolved, commodity prices have dropped, leaving farmers' margins smaller and smaller.

Ralph Kaehler is the fourth generation to farm his family's land near St. Charles, Minnesota. He's incorporated solar energy panels to help power the farm.

Dean Riggott

"Today, [when prices go down], it's difficult to make any amount of money," he says. "The only way to deal with that has been by growing more. That has had a lot of negative impact."

In recent years, Fernholz has been doing less fall tillage on fields that have been harvested, leaving corn stalks in place, and growing cover crops like alfalfa to help the soil stay in place over the winter. "For two or three years, we've had 500 acres with no tillage, and cover crops growing on it. We're really finding a significant beneficial impact on soil quality," he says. "As we increase our understanding of our impact on the soil, we are going to see that these techniques are a necessity. I'm hoping that we can learn to do this without being regulated. If we keep working with people like the U of M researchers on soil health and practices, we can incorporate them."

In 1997, Fernholz served as one of the first endowed chairs of the Minnesota Institute for Sustainable Agriculture, a partnership between CFAN, U of M Extension, and the Sustainers' Coalition, a group of community-based nonprofit organizations. As both a farmer and a researcher, he's worked with U of M graduate students on projects such as isolating a bacteria that was fatal to Canadian thistle, a noxious weed. One of Fernholz's most recent collaborations with the University is growing a test plot of about 15 acres of a new Kernza variety.

Another farmer-researcher is Jane Jewett (B.S. '92, M.S. '95), associate director and coordinator of the information exchange program at the Minnesota Institute for Sustainable Agriculture. On their farm in Aitkin County, Jane and her husband, Joe Jewett, raise beef cattle using a technique called rotational grazing. Cattle graze on fields covered with a mixture of cool season grasses and legumes, "rotating" to a new patch of land nearly every day. Cattle raised on grasses rather than corn-based feed produce healthier meat, according to some researchers. And the perennial grasses help build the soil's organic matter and improve its ability to hold water, Jewett says, in addition to minimizing carbon loss.

She'd like to see more widespread adoption of earth-friendly grazing techniques but believes more grower education is needed about the benefits of the practice.

Dennis Haubenschild says agriculture has the potential to supply 40 to 50 percent of the nation's renewable energy "if we used all of the tools available." Haubenschild and his sons have 1,600 cows, each of which produces about 80 pounds of manure per day.

Another challenge is that while there is a robust system of crop insurance to cover row crops, insurance available for livestock and forage is "sketchier," says Jewett. And, given how deeply invested most farmers are in row crop agriculture, "there is a lot of hesitation among farmers to try something different. Some of that is based on concern whether the economics of it will work."

Switching to Alternatives

Another primary strategy to shift agriculture's impact on the earth is switching from petroleum-based energy to alternatives like wind energy and biogas. The goal is to make farms "carbon neutral" operations.

Dennis Haubenschild contends agriculture has the potential to supply 40 to 50 percent of the nation's renewable energy "if we used all of the tools available." Among the tools Haubenschild and his sons use on their farm near Princeton, Minnesota, are 1,600 cows, each of which produces about 80 pounds of manure per day. Burning the manure inside an anaerobic digester produces energy in the form of biomethane. The gas can be used to power a turbine to generate electricity and heat, or it can be fed into a natural gas pipeline to be sold to a local utility.

The digester the Haubenschilds began using in 2000 produces 100 to 125 kW per hour—enough electricity to power their dairy, plus 40 homes.

The Haubenschilds have partnered with the Minnesota Department of Agriculture, the Minnesota Project, and the University of Minnesota Biosystems and Agricultural Engineering Department to conduct fuel cell research using biogas from the farm's anaerobic digester (known as ADs). Some of the biogas created in the digester is piped to a University research facility on the farm to power a 5kW fuel cell.

The Haubenschild farm was also one of the first in the U.S. to sell carbon credits on the Chicago Climate Exchange, beginning in 2001. (The program only lasted for five years, under its enabling legislation). Haubenschild partnered with Environmental Credit Corporation, a credit aggregator that sold carbon credits to the Exchange, along with power

companies, corporations, and other entities. Now the Haubenschilds are seeking federal grants to help defray the cost of building a much larger generator, planning to sell the electricity they generate to the local utility, East Central Energy. Producing revenue is good, but "the most important thing is we want to be carbon neutral and sustainable," Haubenschild says.

University researchers like Bo Hu, a professor of bioproducts and biosystems engineering, want to develop a more stable system that can provide economic incentives for farmers to run smaller scale AD systems, using subsidies similar to those that made corn ethanol a viable industry. Centerpoint Energy is among the entities lobbying for mandated "blending" of AD-generated methane with the natural gas sold by companies like Centerpoint. If public support is provided for on-farm digesters, "we can create a new industry that will duplicate the success of the corn ethanol industry," Hu says.

Where the Sun Shines

Along with conventional crops, Ralph Kaehler harvests energy directly from the sun on his family's fourth-generation farm near St. Charles, Minnesota. He's also a solar energy entrepreneur. His son, Cliff, earned accounting and finance degrees at Georgetown University and worked for Credit Suisse before moving back to Minnesota and launching the family's "other" business, Novel Energy Solutions LLC. NES has installed more than 200 solar systems since it opened in 2012 and developed more than 100 megawatts of community solar garden (CSG) projects, including the first four CSGs in Xcel Energy's Minnesota territory.

A typical on-farm array is a 40-kilowatt (kW) system that produces about $415 per month at a 10 cents per kilowatt-hour (kWh) electric price, says Kaehler, who unsuccessfully ran for the Minnesota Senate in the recent election. That is the maximum size for net metering with rural electric coops. A 40 kW array costs about $90,000 for a cash purchase, with a payback time of eight to 12 years.

"Solar panels are just the beginning," says Kaehler, who has worked with U of M researchers as a co-researcher and consultant. "Improved batteries to enable storage will be a game changer. With the projected growth of electric vehicles in the coming years, "what if there were charging stations at farms? As storage technology improves and becomes more affordable, people will have the option of going off the grid. So utilities are going to have to learn how to cooperate or lose customers. We will be using fossil fuels for some time, but we can't keep using them at the rate we have been. If we are going to leave a world with opportunity for our kids and grandkids, we are going to have to change." ◘

Dan Emerson (B.A. '74) is a freelance writer in the Twin Cities area.

Architects Cass Gilbert and Clarence Johnston competed to outline the future of the flagship U of M–Twin Cities campus—a contest that was both contentious and complex.

By Tim Brady

More than a hundred years ago, two of Minnesota's finest architects vied for the opportunity to create a whole new vision for the U of M-Twin Cities campus. The legacy of their work and rivalry remains evident today.

As the U of M embarks on a new master planning process for what its Twin Cities campus will look like far into the future, it's engaging and enlightening to look back at its history.

In fall 2019, two Twin Cities organizations cosponsored an event that described the relationship between prominent architects Cass Gilbert and Clarence Johnston—up to and throughout their work for the University of Minnesota. Like the architects themselves, the members of the Cass Gilbert Society and the Clarence Johnston Society are generally friends and brethren in the school of architecture. They had no trouble spending a collegial morning together at Ralph Rapson Hall in the School of Architecture listening to Barbara Christen, author of

Cass Gilbert in 1907

Cass Gilbert: Life and Work, and Johnston biographer Paul Clifford Larson describe the lives of these architects and their intersection with the campus.

A post-discussion tour of the campus—hosted pre-pandemic—revealed how Johnston's work on the mall is thick and distinguished: Walter Library, Northrop Auditorium, Morrill Hall, Lind Hall, and others are evidence of his labors. So are many buildings elsewhere in Minneapolis and St. Paul, from Williams Arena to the Cattle Barn on the state fairgrounds.

Cass Gilbert's work is apparent as well: It was his plan that took the campus south, providing the essence of its 20th century growth along Northrop Mall and across Washington Avenue. In recent years, interest in Gilbert's original plans have echoed the southern focus of the renovations at Coffman Memorial Union, as once more, the U of M stretches out toward the Mississippi.

In 1908 the University of Minnesota Board of Regents had announced a competition for the design of a new campus addition. Not only was the number of students at the U of M growing every year, but trends in academic instruction had dramatically increased the number of colleges, departments, and professional schools needed for turn-of-the-20th-century students. The expanding University required an expanded campus, one that could fill the burgeoning requirements of the school for years to come.

Some members of the Board of Regents already had a good idea who might be the person for the job: Cass Gilbert. Raised primarily in St. Paul, Gilbert was already an architect of national renown and had established his first architectural firm in his home city in the 1880s. He built his reputation while building churches and mansions in the neighborhoods on and surrounding Summit Avenue. His early career culminated in the design and construction of the Minnesota State Capitol in 1898, a project that won him

HISTORY *on the* GROUNDS

Clarence Johnston in 1919

A postcard depicts the University of Minnesota campus in 1907

wide acclaim and one he would always consider a great highlight of his career.

With seemingly nothing left to prove as a Minnesota architect, Gilbert took off mid-career for New York, and continued a long professional life that included the design and construction of a series of monumental buildings around the nation, including the Alexander Hamilton Custom House in Manhattan, statehouses in West Virginian and Arkansas, the St. Louis Art Museum, the United States Supreme Court in D.C., and perhaps most notably, the Woolworth Building in Manhattan. The Woolworth Building, completed in 1913, was at the time the tallest structure in the world and earned Gilbert the reputation as the father of that most modern of early 20th century architecture, the skyscraper.

Through all his advances, Gilbert maintained his connections to Minnesota. And when he was contacted in 1907 by a couple of members of the Board of Regents to talk about plans to expand the campus, he was more than willing to meet and sketch out some ideas.

At the time, the Minneapolis campus of the University consisted of about a half a dozen buildings huddled near University Avenue. Burton, Shevlin, Pillsbury, and Eddy Halls, lined up along Pillsbury Drive facing the campus knoll, were the buildings that greeted most visitors. The newly built Armory was nearby on Church Street. It didn't require a futurist to envision what might eventually become the sprawling, two-river-bank campus of 2021 (along with a whole other campus in St. Paul) and to see that big changes were needed to get there.

After discussions with his contacts at the Board of Regents, Gilbert went back to New York and, along with his staff, created six initial studies for a campus plan that suggested an expansive and dramatic vision for a new University. Done in a Beaux-Arts fashion, the renderings envisioned a campus sweeping south of its current location, all the way to Washington Avenue (and ultimately beyond, to the Mississippi River).

Recognizing that what he was suggesting was a monumental undertaking, Gilbert hoped his ideas would be understood as a decades-long project. "Gilbert was concerned that he might be frightening the Board with the scale and complexity of what he was envisioning," says architectural historian and Gilbert expert Barbara Christen. Not only were those concerns justified, but further opposition to Gilbert arose from then-Regent Pierce Butler, who had a personal enmity toward the architect, and thought, for good measure, that Gilbert's fees were too high.

An early Cass Gilbert drawing from 1910, in which he considered a domed structure for the future Northrop Auditorium.

Left: the construction of Walter Library in 1922, with Smith Hall in the background. Above: The nearly completed exterior of Morrill Hall in 1924. All three were designed by Johnston.

To slow the process down and appease Butler's concerns, it was decided to open the creation of a campus plan to a general architectural competition, a decision that left Gilbert a bit shocked, according to Christen. "All of sudden he was competing for a job that he thought he already had."

Through his own talents and the fact that his allies on the Board supposedly supplied him with early copies of the competition rules, Gilbert got a head start, won the contest, and got the contract. The concern over his fees, however, was not done.

Over the next year and a half, in multiple drawings and sketches, Gilbert fine-tuned and expanded his ideas. His grand vision for the University now swept south from a space designed for a large auditorium structure (where Northrop Hall would be constructed in about 20 years), down a mall with parallel rows of buildings housing new academic departments and professional schools, toward Washington Avenue, which would be subsumed in a subterranean scheme to house auto and trolley traffic beneath a green space. A campanile (bell tower) was planned for the space currently housing Coffman Memorial Union and below it, a terraced subset of campus buildings, with Greek gardens featuring two amphitheaters and stretching all the way down to the Mississippi.

All beautiful, but a giant gulp for Minnesotans thinking of the cost of all this Grecian-style grace. Gilbert also announced he planned to oversee not only the design of the campus but construction, as well. At this juncture, the Board of Control, the state agency that would actually be paying the proposed construction bills, stepped in.

There was, as it happened, another highly regarded, well-established architect in the area willing to do the job for considerably less than Cass Gilbert. Clarence Johnston had bona fides that nearly matched Gilbert's. He, too, was raised in St. Paul, and like Gilbert, was educated at MIT before returning to build a career in the capital city. They were friends and correspondents growing up; their first firms were located in the same building in downtown St. Paul. Though they competed with mutual ambition for many of the same mansion- and church-building jobs in St. Paul, there was no evident bitterness between them.

While Gilbert had the higher national profile, in many ways, Johnston was the winner of the parochial competition. His mansions are not only thick along Summit Avenue (including the Pierce Butler Mansion), but include the famed Glensheen Mansion in Duluth. Though he lost a competition for the design of the state Capitol to Gilbert in the 1890s, Johnston was selected to be the official Minnesota state architect in 1901. This post gave Johnston a hand in virtually every building constructed using state funds.

Johnston was already wondering how he might fit into the campus planning project when complaints about Gilbert's fees reached critical mass with the Board of Regents in 1910. In simple terms, Gilbert's fees were suggested and structured by standard rate tables from the American Institute of Architects; Johnston's fees were considerably lower. When it came time for the state of Minnesota and the Board of Regents to award contracts for the actual construction of the first buildings on the new campus, it was Johnston's firm that got the work. Cass Gilbert headed back to New York, assuming, perhaps rightly, that there would be bigger fish to fry in Manhattan. ◘

Tim Brady is a freelance writer who has contributed many history pieces to *Minnesota Alumni*.

A WORLDWIDE EMERGENCY

Alumna Sanda Ojiambo helps fight climate change as executive director of the Global Compact at the United Nations.

By Elizabeth Foy Larsen

Growing up in Nairobi, Kenya, Sanda Ojiambo (M.A. '98), was deeply aware of global inequalities, an understanding that came into even sharper focus when she went away to college and graduate school in North America, including earning her master's degree at the University of Minnesota's Humphrey School of Public Affairs.

"Because of my life experiences, I always knew that I wanted to work in a space where I could interrogate why there are haves and have-nots in the world," Ojiambo says.

Last June, she got the opportunity to do this on a sweeping scale when she became the CEO and executive director of the United Nation's Global Compact. Founded in 2000 by then-U.N. Secretary-General Kofi Annan, the Compact is the world's largest voluntary corporate sustainability initiative. It operates on the premise that there are 10 principles for how businesses of all sizes can and should be run that prioritize human rights, labor, fighting corruption, and the environment. The Global Compact has over 12,000 business members and 3,000 non-business stakeholders across 160 countries.

Because she accepted her new position in the middle of a pandemic, Ojiambo worked remotely from Nairobi for several months before relocating to New York City last September.

Minnesota Alumni spoke with her via Zoom about the Global Compact's commitment to the environment and the unfolding climate crisis, and to find out how the UN enlists companies to commit to building a better world.

Minnesota Alumni: In December, U.N. Secretary-General António Guterres issued his strongest statement yet on climate change, urging all countries to declare "climate emergencies." How does this imperative inform your work?

Ojiambo: The runaway impact of the climate crisis has been at the core of our agenda. It's very clear that business cannot continue on this trajectory because it's not sustainable.

In 2019, we launched what we call our Business Ambition for 1.5°C, where we challenge business leaders to take on this challenge by setting science-based targets [for greenhouse gas emissions]—because there is a science around how we can mitigate and manage this climate crisis—and then aligning with a 1.5-degree pathway in terms of emissions and growth. To date, we have over 300 companies that have signed up for this [initiative alone]. Collectively, this spans about 42 [industry] sectors and close to 50 countries.

We're looking at not only companies mitigating what already exists, but also how we shape new companies and new businesses. What does it mean to start off a company with this whole balanced approach towards climate? How do we get these new businesses quickly on a green growth path, as opposed to navigating significant mitigation measures later?

Climate change impacts affluent and less affluent countries differently. Do you believe that more affluent countries have a responsibility and a moral obligation to work to fight this inequity?

The harsh reality is that the developed world and more developed economies have been responsible for the establishment of the carbon footprint that we have. But the impact is felt all around the world: rising sea levels, melting Arctic, unprecedented famine, flood, fire around the world.

I think at this point in time, it's not really about blame. I think it's about collective responsibility. The action happens and what we put in place to ensure that we do not have a repetition of that action as we go forward. And [again], working with companies and said economies on how they grow.

A vast part of the world is shifting from traditional, low-income economies into manufacturing and other sectors. And in those countries, you have a choice: Are you going to pursue a green model of growth? And so I think that we all must work together. It's a crisis that will continue to impact across sectors and across businesses, with opportunities for innovations and lessons learned. But I also do think … we need to pay attention

"I went to the Humphrey School because I always felt that the biggest change happens when you're able to make an impact on the policy level and overall framework in which development issues play out."

to how developing economies are growing toward the right resources, such that technologies and green technologies can be adopted and adapted as soon as possible.

We need to make sure that the language and the parlance around climate changes is transferable, is acceptable, and we're very clear what that transition part looks like for new and emerging economies going forward.

President Biden has put climate change at the forefront of his political mandate. What steps would you like to see the U.S. take within his administration's first few months?

Rejoining the Paris Agreement is one of the biggest opportunities that we have to mobilize collective action to address the climate crisis. [The Trump Administration withdrew from this treaty to limit and mitigate greenhouse gas emissions worldwide, but President Joe Biden has now rejoined the agreement.] It's our chance to work together, to really address existing challenges, but also look at the opportunities around a better, more balanced growth in a lot of the other parts of the world.

Is there anything from your time at the U of M that helped steer you toward where you are today?

I went to the Humphrey School because I always felt that the biggest change happens when you're able to make an impact on the policy level and overall framework in which development issues play out. Because I had a strong commitment to working in the field of development, it was a clear match for me, for what I wanted to do. ◘

This interview was edited and condensed.

Nancy Musinguzi

Ceaseless Fascination

Alumna treads an unconventional career path from chemical engineer to patent attorney. *By Kat Braz*

When a newspaper reporter asked teenage Janal Kalis (B.S. '73, B.S. '79) what she wanted to be when she grew up, Kalis replied, "a scientist or a lawyer." In time, she would achieve both.

Kalis, now a patent attorney at Schwegman, Lundberg & Woessner in Minneapolis, grew up the eldest of five on a 160-acre family farm in south central Minnesota. The first in her family to graduate from high school, she first enrolled at the U of M as a history major. She received grants, worked part time, and took out student loans to pay for school. For one campus job, she prepared lecture slides for the art history department. "In those days we had huge projectors that heated up like ovens," she says. "They

> “It just came to me. Wouldn’t it be cool to find out how many chemical engineering graduates are inventors?”
>
> **Janal Kalis**

were tricky to operate. Learning how projectors work was very useful.”

Kalis loved history but eventually switched majors to biochemistry, which she viewed as a more lucrative field. While she loved her biology classes, she wasn’t impressed with the chemistry classes she took at the time because she felt some professors resented women students “taking up a seat that should have gone to a man.”

Following graduation, she worked in a campus virology lab, where she helped discover a virus linked to deaths in renal transplant patients. “I am a coauthor on a few studies now cited in medical school textbooks,” she says. “That’s a little bit of immortality, at least for now.”

The lab was also across the street from the chemical engineering department and “It seemed like it could be kind of fun, so I tried it out.” After three years of part-time classes, she earned a degree in chemical engineering, one of only 18 women in a class of 100. (Times have changed today with regard to enrollment: The Chemical Engineering and Materials Science [CEMS] department now has roughly 265 male and 135 female undergrads, and 146 men and 71 women in graduate school.)

Kalis initially worked for Cargill in Iowa before moving west to work in the electrical utility industry. She took a job in Delta, Utah, as a startup engineer for the Intermountain Power Plant. It was during that time that she saved up enough money to go to law school at the University of Utah.

Because of her fascination with the history of technology, patent law felt like a natural extension of her engineering career. For the past 30 years, she’s practiced as a patent attorney, collaborating with inventors to protect their intellectual property.

As she looks toward retirement, Kalis now hopes to find ways to give back, such as the pro bono research project she recently completed for CEMS. (See sidebar at right.) While strolling the engineering campus a few years ago, she noted the plaques along the sidewalk honoring great scientists from the U of M. “It just came to me,” Kalis says. “Wouldn’t it be cool to find out how many chemical engineering graduates are inventors? How many hold patents?” She decided to find out.

She obtained a list of chemical engineering graduates from 1918 to 2018 and crosschecked their names with individuals in a patent database. The percentage of alumni inventors turned out to be higher than she expected. More surprisingly, although the number of women enrolled in chemical engineering grew slowly over the past century, the percentage of women alumni in each class who hold patents remains relatively stable, about 20 to 25 percent.

“I don’t have a feel for the environment that women inventors face right now,” Kalis says. “I think they might not face the same problems of being viewed as some sort of oddity. When I became an engineer, I didn’t experience any sexual harassment, but it certainly existed. And in those days, your option was either to put up with it or quit.”

As she reflects on her path, Kalis says young professionals need to stay flexible.

“Your life doesn’t unfold in a straight line, so don’t be disappointed when you don’t end up where you thought you would,” she says. “One thing I’ve learned over the years is you just never know where something that you learn in one area might be of use in another area, and that’s been especially valuable as a patent attorney.” ◘

Kat Braz is a freelance writer based in West Lafayette, Indiana.

A Century of Invention

When Janal Kalis undertook a pro bono research project to discover how many inventors have come out of the U of M’s Department of Chemical Engineering and Materials Science, she found that 8,886 alumni graduated from the program between 1918 and 2018. Of that number, 3,177, or 35.7 percent, of both men and women have been named as inventors on at least one U.S. patent, U.S. patent application, or European patent.

Of that 8,886 total, 7,478 graduates were men, and 39 percent, or 2,917, of them were named inventors on patents. Of the 1,408 female graduates, 18.3 percent, or 260, were named inventors.

The data also showed that men and women CEMS inventors have patents in virtually every area of technology, and that the largest employer of inventor alumni from CEMS is 3M.

Serious Money for Women's Rights

As executive director of Women Moving Millions, Sarah Haacke Byrd bridges the gap between funders and organizers in the ongoing fight for women's rights. *By Steve Neumann*

With rising domestic violence, 750 million girls out of school worldwide, and large numbers of adult women forced out of the workforce, the ongoing Covid-19 pandemic has been particularly hard on women and girls. To make matters worse, there remains a persistent lack of capital flowing to support organizations and leaders fighting these challenges, with only 1.6 percent of philanthropic dollars going to organizations that support women and girls, and only 0.5 percent of foundation dollars going to women and girls of color, according to the Indiana University Lilly Family School of Philanthropy.

Sarah Haacke Byrd (B.A. '00) has been working to rectify that as the executive director of Women Moving Millions, a global membership community based in New York City. More than 340 philanthropists worldwide, primarily women, have committed nearly $800 million to organizations benefiting women and girls. Individuals who belong

Denise Chastain

to the organization commit to donate a total of $1 million or more within 10 years to such nonprofit organizations or initiatives.

Executive director since 2018, Haacke Byrd was raised to work for the greater good. Both of her parents were teachers; her father was president of the school board, city councilor, head of the teachers' union; and both parents regularly volunteered on political campaigns.

But more than that, it was Haacke Byrd's educational experience at the University of Minnesota and beyond that cultivated her dedication to working to strengthen civil society. "Political science was always my passion," Haacke Byrd says, "and fortunately, the U of M has one of the top political science programs in the country.

"The professors enriched my understanding of global political theory and human rights issues," she says, "and the University has an ecosystem where I was able to explore various ways to think about how I would actualize a career with a degree in political science."

One of those ways was volunteering 10 hours a week in the fundraising office of the Center for Victims of Torture during her junior year. Another was a year later, when the executive director of that organization needed help with a study of tactical innovations that were happening globally around human rights practices.

"I worked directly with him on that, which was really rewarding," Haacke Byrd says. "He also introduced me to a fellowship opportunity through the Human Rights Center at the Law School for aspiring human rights practitioners to work in non-Western contexts."

Through that fellowship, Haacke Byrd was able to spend the summer working with the Helsinki Citizens Assembly in Istanbul, Turkey.

After college, Haacke Byrd continued her human rights work at the Anti-Defamation League in leadership development until 2010, and in 2012, began work as the director of operations for the Bellevue/NYU Program for Survivors of Torture. "That experience was transformative," Haacke Byrd says. "To find a leadership position in a nonprofit organization after having that volunteer experience in Minneapolis, and bringing that commitment to helping survivors of political violence thrive in a complicated city like New York, felt like coming full circle for me."

It was also during that time that the World Health Organization released a groundbreaking study on women and violence globally. "The study said 1 in 3 women are victims of intimate partner violence globally, and I didn't know that," Haacke Byrd says. "Anti-violence work had been threaded throughout my entire career, but that's where I realized my passion is women's rights."

Haacke Byrd discovered that, at a time when the women's rights movement was gathering strength, it wasn't seeing a significant uptick in funding. That was also when she was recruited to work for Women Moving Millions. "I thought that if I could help strengthen the connection between the funders and leaders on the front lines of the gender equality movement, then that could be my contribution to the movement."

This year, in response to the gendered impact of Covid-19 on women, particularly women of color, Haacke Byrd and Women Moving Millions made the decision to launch a new $100 million campaign called Give Bold, Get Equal. Since the campaign's launch in September 2020, it has secured $95 million in commitments.

But Haacke Byrd's ultimate goal is to move beyond the group's member community and put pressure on other individuals, companies, and foundations to examine their funding so they can give organizations like Women Moving Millions a bigger slice of the philanthropic pie.

"Parity isn't going to be achieved with one board member on one corporate board," Haacke Byrd says. "To change the structural and systemic inequities that exist for women, you've got to have more funding going to support those leaders who know exactly what to do." ◘

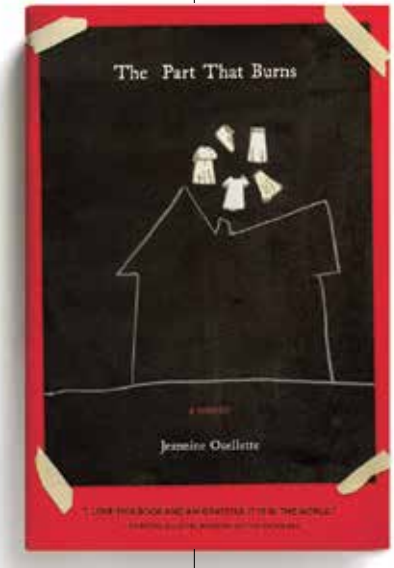
Steve Neumann is a freelance writer based in Pennsylvania.

Epic Journey: A Childhood Memoir

Minnesota Alumni's quarterly roundup of notable books.

By Lynette Lamb

Memoirs about abusive and neglected childhoods are hardly a rare commodity. Mary Karr's *The Liars' Club*, Jeannette Walls's *The Glass Castle*, and Tara Westover's *Educated*—great books all—spring immediately to mind, each featuring a girl-child narrator/adult author wrestling with her painful early years. But rarely have I read a memoir as delicately wrought and convincingly told from a child's point of view as **Jeannine Ouellette**'s *The Part That Burns: a memoir in fragments* (Split/Lip Press).



Ouellette, a longtime Minneapolis writer and teacher, studied journalism at the University of Minnesota and now works as an editor here. Born in 1968 in Duluth, she was the product of teenage parents who split while she was still a preschooler, which led to a childhood spent hopping among her parents' various houses and apartments in Wyoming and Minnesota and, worse, among the various stepfathers and boyfriends attached to her mentally ill mother.

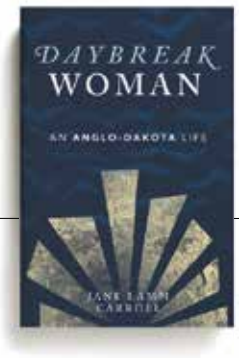
The book starts with a capsulated version of her childhood, cleverly told through a series of dogs representing each period. The fat Cairn Terrier of chapter one belongs to Ouellette's mother in her later years, by which time she had returned to her native Duluth and was living alone in a squalid apartment. A mutt named Petey is next, a companion of Ouellette's early childhood who is tormented by her stepfather, Mafia—a foreshadowing of Mafia's malevolent nature, which makes up a dark subtheme.

By the time the author has worked her way through Brandy the retriever, Charlie the Pekingese, Trixie the Scottish Terrier, and Smokey the Keeshond, the reader has developed a deep understanding of the author's peripatetic, neglected childhood. Shuttled among a troubled mother allied with equally troubled men, an uninvolved father, and stepmother who clearly prefers her own children, Ouellette somehow manages to grow up fairly intact, enroll in college, and marry (at a young age) a kind if overbearing man.

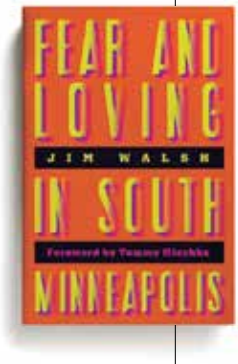
Later in the book, we get further glimpses into the author's life, both through a succession of stories about New Year's Eves and a mother-daughter conversational reminiscence between Ouellette and her youngest child, Lillian Ouellette-Howitz.

It is only when Ouellette, then in her 20s, produces Lillian and her two siblings in quick succession that she comes fully into her own, struggling mightily—and successfully—to grow into the sort of attentive, engaged, deeply loving mother she herself had always longed for.

Along the way, the reader will enjoy a compelling story full of fascinating characters, always rooting for the brave, resilient girl at its heart.



and Other Minnesota Stories



A VERY DIFFERENT challenge is represented in *Hudson Bay Bound: Two Women, One Dog, Two Thousand Miles to the Arctic* (University of Minnesota Press), **Natalie Warren**'s (Ph.D. expected in '23) tale of the challenging canoe trip she and Ann Raiho undertook from Minneapolis to Hudson Bay. Inspired by Eric Sevareid's 1935 classic, *Canoeing with the Cree*, the college friends set out to follow his 2,000-mile route from Minneapolis to Hudson Bay—the first women to make the expedition. Along the way they encounter the ecological devastation of the Minnesota River, the dangers of huge Lake Winnipeg, and some tense times as teammates (at one point they were communicating only by written notes), but also the glorious sights of moose, polar bears, Northern lights, pearly pink sunrises, and wild, free-flowing waters.

Southwest of Raiho and Warren's voyage lies the land of the Dakota, which they call *Mni Sota Makoce*. In *Daybreak Woman: An Anglo-Dakota Life*, (Minnesota Historical Society Press) **Jane Lamm Carroll** (M.A. '83, Ph.D. '91) tells the remarkable story of Anpao Hiyaye Win or Jane Anderson Robertson, a Dakota/white woman whose life spanned most of the 19th century and bridged two worlds. In this book, Carroll ably accomplishes what she sets out to do: to "put women and Dakota people back into the narrative of Minnesota history."

Tales of more recent Minnesotans are featured in *Staring Down the Tiger: Stories of Hmong American Women* (University of Minnesota Press), edited by **Pa Der Vang** (M.S.W. '03, Ph.D. '07).

This collection of 33 stories, essays, and poems by Hmong women is the second publication assembled by the St. Paul-based organization Hnub Tshiab: Hmong Women Achieving Together. Contributors range from 70-year-old Song Yang, whose first husband was killed in Laos during the Vietnam War, to Douachee Vang, a far younger woman for whom that country is familiar only as a setting for stories told by older relatives. Throughout the book are themes of immigration and displacement—and the stories of many more women forced to bridge two worlds.

For a strong contrast—the tales of one white man firmly ensconced in one Southwest Minneapolis neighborhood—pick up a copy of *Fear and Loving in South Minneapolis* (University of Minnesota Press) by **Jim Walsh** (B.A. '90).

In this collection of his columns from the now defunct Minneapolis community newspaper the *Southwest Journal*, readers will come to know and love the people and places of the author's Lake Harriet neighborhood. Enjoy his evocative descriptions of night swimming, neighborhood musical jams, the magical Lake Harriet rose garden, and park benches dedicated to lost hometown rockers—and try not to be jarred by his occasional abrupt departures to a friend's Montana cabin or the Bogotá hostel where he lived while adopting his children. ◘

Lynette Lamb (M.A. '84) recently completed *Strokeland*, a memoir of her husband's life-altering stroke and its aftermath.

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ALUMNI NEWS & EVENTS

GREETINGS ALUMNI AND FRIENDS

As spring semester progresses, I'm reminded that this season is a time of transition, with commencement right around the corner. In two months, the Class of 2021 will cross the threshold from student to graduate. We look forward to welcoming them into the alumni family.

This spring our graduation celebrations are tempered by challenges, including the ongoing pandemic. But there is reason for optimism, thanks to the loyal U of M alumni community, many of whom stand ready to welcome, assist, and mentor the Class of 2021.

As I reflect on this impressive group and the valued members and donors who make the Alumni Association's work possible, several words come to mind: Community. Empathy. Resilience. These capabilities are needed now more than ever. Through your involvement with the Alumni Association, you demonstrate them in many ways, including guiding and supporting each new class of graduates. Your efforts remind me of a quote by Helen Keller: "Alone we can do so little; together, we can do so much."

The Alumni Association continues to offer services and resources that meet the needs of alumni during this time, thanks to you. For instance, the Maroon and Gold Network connects students and alumni worldwide for pivotal networking conversations to advance their careers. More than 8,000 currently participate in the network, which has doubled in size each year since its launch in 2018. In addition, February was our Third annual Career Month, which featured webinars and other virtual resources and events designed to help alumni and students ignite career success.

You have also made it possible for us to create resources such as curated information hubs that detail the latest discoveries and innovations from the University of Minnesota on important topics like COVID-19 and social justice. This and more can be found on our website at **umnalumni.org**.

This is a challenging time, but the U of M community is a wellspring of innovation and creativity. You are an important part of this journey, and together, we can do so much.

Lisa Lewis

President and CEO
Life Member and Alumni Leadership Circle Donor
University of Minnesota Alumni Association

U OF M ADVOCATE OF THE YEAR

Paul Portz (B.S. '69) was the recipient of the Alumni Association's 2020 Advocate of the Year, honoring his many impactful actions to support the University's agenda. Since joining the Minnesota 201 alumni advocacy network in 2017, Portz has traveled to the Capitol and other locations on several occasions to meet with legislators, including Representative Rick Hansen, Representative Ruth Richardson, and Senator Matt Klein.

"It is critical that alumni forge a conversation about the impact of the University on their lives," Portz says. "I encourage all alumni to connect directly with their legislators to support the University's legislative requests."

Please contact Adam Yust at adamyust@umn.edu and ask about the Minnesota 201 network, which supports alumni in connecting with each of Minnesota's 201 legislators.

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For details, visit: **umnalumni.org/benefits**

A SPECIAL WELCOME
to our newest Life Members!*

By joining more than 20,000 loyal and enthusiastic UMAA Life Members, you are changing lives and creating possibilities for the U of M community, including students and recent graduates. Your membership accelerates careers, creates local and global connections, supports alumni-owned businesses, sparks learning, and so much more. Thank you.

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Reflects October 11, 2020 to January 10, 2021

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CAREER MONTH CONNECTS MORE THAN 1,300

Career Month is an entire month dedicated to engaging alumni and students in valuable and meaningful career development and networking opportunities.

This year we hosted our Third Annual Career Month in February, and held webinars, workshops, and our signature networking event, Maroon and Gold Connections, all to ignite career success. We successfully engaged with more than 1,300 alumni and students throughout the month and expanded our network of students and alumni within our networking platform, Maroon and Gold Network.

Support from the Career Support Fund, members, and great partners like Freedom Financial and Avenica make this event and others possible.

Career Month Highlights include:

- Eight virtual events and webinars
- Four Alumni Career Spotlights during the month
- Our signature event, Maroon and Gold Connections, featured Walter Bond, a former professional basketball player turned motivational speaker as the keynote, with his address on "The Power of Connections;" industry-based networking sessions, 1:1 networking, and expo booths with our sponsors.

BUY-ONE, GIVE-ONE FACE MASK PROGRAM CONTINUES

At the end of January, the Alumni Association made the final delivery of its 25,000 face masks donated to patients, families, and caregivers at M Health Fairview.

Thank you to those who have made this possible by participating in the buy-one, donate-one program with the Alumni Association's Minnesota Alumni Market. It doesn't stop here, though! Donations now will be designated for U of M students in on-campus housing through the face mask program. Nearly 2,000 have been designated so far, so help keep the momentum going.

A variety of adult and youth sizes of the reusable, cloth face mask are available for $15. A replenishment pack of three face masks is also available for $25. Check out all the design options available at MNAlumniMarket.com.

The program was made possible thanks to our partners, Woodchuck USA, Liberty Mutual Insurance, The Pillars of Prospect Park, and Securus ID.

Dusty Return

Randall Wehler (B.A. '70) is a retired psychologist. As a lifelong fossil hunter and amateur astronomer, he ponders the depth of time. He lives in Moorhead, Minnesota.

Illustration by James Heimer

By Randall Wehler

My younger brother, Danny, and I always loved the rock formations on a cattle ranch in the Lance Creek region of eastern Wyoming. The natural breakdown of these soft rocks had exposed small vertebrate fossils about 66-69 million years old, there for the taking, thanks to our rancher friend and his family. Our fascination with them started in the early '70s and continued through Danny's master's degree in geology, up until about four years ago when he unexpectedly passed away.

It was easy to find fossils such as fish and amphibian vertebrae, garfish scales, bone-like armor plates, leg bones, jaw fragments, and maybe an occasional reptile claw. These were some of the body parts of both sea and land animals to be found, typically no larger than a human fingernail or thumb. In death, these varied creatures had descended downward into water and sand, and with a gentle tug of gravity, became part of an ancient inland sea coastal plain. To sift through the weathered sand and find these treasures was a paradise of excited exploration and chatter.

Danny was my only sibling. Over 40-some years, we sometimes brought guests with us on our expeditions, including our own parents and our spouses—my wife, Carla, and Danny's husband, Wayne. We wanted to keep the location a family secret to prevent others from exploiting the specimens.

I recall that our travels together to the sandstone landscapes in Wyoming had similar dialogues year after year such as:

"Danny, another summer beyond Paleontology 101! I can't wait till we get to Jim's ranch. Hope it isn't as hot, dusty, and windy as last year. But you hung in there and picked up a lot of nice pieces."

"Hey, Randy, you know it's a blast out there. Hope we'll have enough water along. Last year, I didn't like choosing between drowning my thirst or washing off the sandy, sweaty dust that was all over me."

Sometimes our talk went deep, like when we discussed galaxies 60-some million light years away, whose light left the galaxy when these creatures were alive. Our evening binocular sky views, free of light pollution, were simply astounding.

Danny and Wayne eventually moved from Minnesota to Arizona, but we still got together yearly. My brother had always been rather private about his own health. That's why it was such a shock when we got a telephone call from Wayne. Danny had been suffering from a terminal illness which he'd kept to himself. He had taken his own life. I felt numb and said little after this.

Wayne had Danny's body cremated and his ashes were placed in a boxed urn. Danny's wish was to have his ashes scattered at Bushy Tailed Blowout, a large fossil-laden sandstone hill on the ranch.

On the day of the total solar eclipse of 2017, before sunset, Wayne emptied the urn at the blowout site. It was a breezy day and a surprising gust of wind swept Danny's dust upward to scatter onto the land below.

Tears dropped as the fine dust settled downward. But those tears of sorrow were tinged with a warm feeling of eternal close brotherhood and a special partner friendship. ◘

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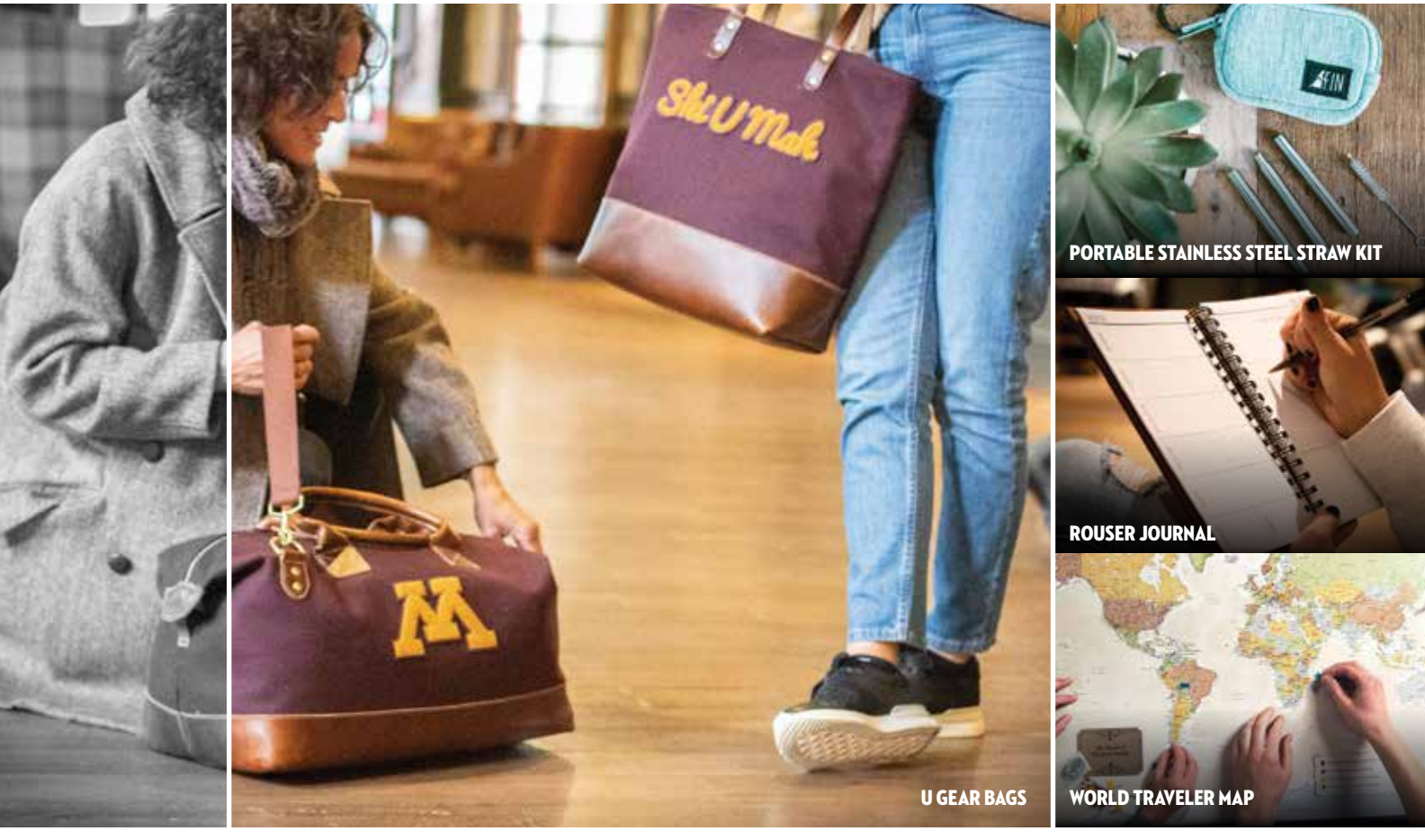

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