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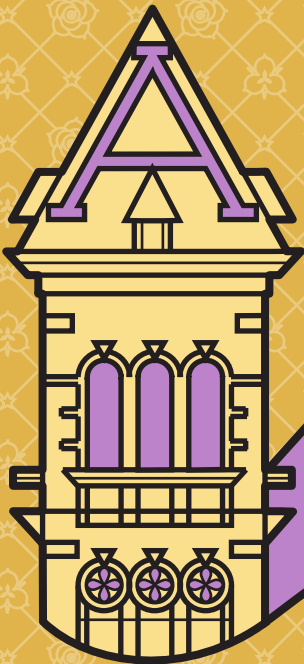
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UTAH STATE

WINTER 2020



“NO ^{HAIR-BREADTH} DISTINCTION
WILL BE MADE
BETWEEN THE SEXES.
HERE THE YOUNG
LADY MAY ENTER

SIDE-BY-SIDE

WITH HER
BROTHER...
SHE MAY KEEP
BY HIS SIDE,

OR GO AHEAD

IF SHE
CAN.”

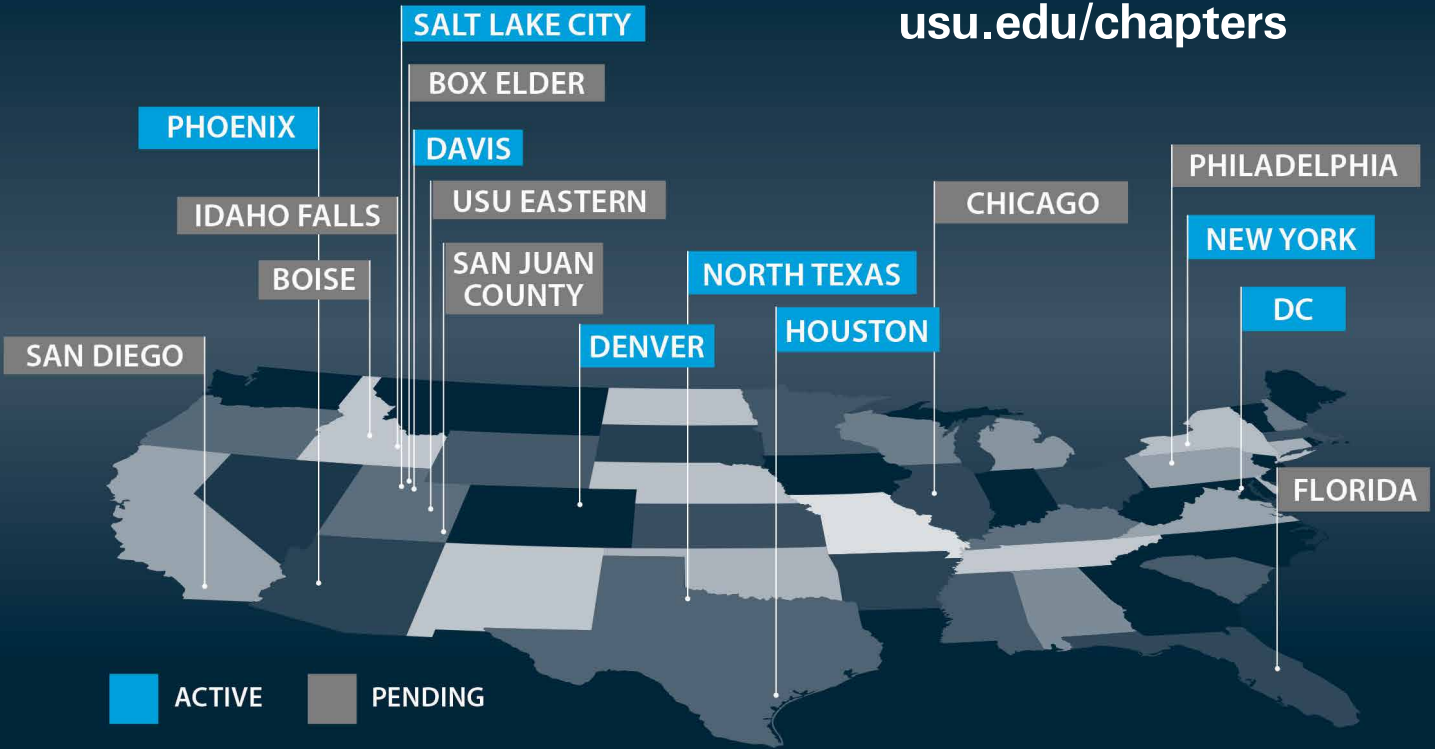
SARAH WALKER EDDY,
1890 UAC DEDICATION



YEAR OF THE
woman

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*When I was a kid in Montana,
I loved pretending that I was a*
pioneer —
*being the first to explore a new area
in the American West.*

My exploration of new lands was done by riding a stick horse miles and miles and miles, along cattle paths that I pretended were buffalo trails. One treasured fantasy was pretending I was part of the Lewis and Clark Expedition that mapped the Yellowstone River, including where it flows a mile from my childhood home.

This fascination with being “the first” has continued through my professional career. Over the years, I’ve reported the discovery of several genetic mutations that influence or cause traits in farm animals. My research team was the first to name callipyge, a phenotype that results in heavily muscled buttocks in sheep. I’ve also been the first woman in several positions I’ve held at Utah State University, including the appointment as USU’s 16th President and first female president. While I don’t believe that I was appointed to the president’s position because of an affirmative action goal, I do believe my hire is an affirmative action success for USU and the state of Utah.

When traveling outside the state of Utah promoting USU with my husband John, I recall introductions where the people assume John is the USU president. It is not everyone’s first reaction to assume a woman is holding a senior leadership role.

I think the West is where it is easier for women to make their mark in leadership. When pioneer women came to the Intermountain West, they walked beside the men across the prairie. Pioneer women were right there building the homes and settling the land. In addition, the West’s legacy in



In August, students from USU’s Museum of Anthropology showed President Noelle Cockett materials from its “A Woman Speaking to Women” exhibit, which featured political cartoons drawn by Nina Allender for “The Suffragist,” the weekly publication of the National Women’s Party.

agriculture has used women’s hands and expertise in growing plants, crops, and animals. Therefore, it doesn’t surprise me that five of the ten university presidents in Utah and seven of the 12 presidents in the Mountain West Conference are women.

I believe many women practice a collaborative management style that is very much needed and welcomed in today’s world. Women frequently invite diverse voices to the table and seek

alternative opinions and ideas when making decisions. Women leaders often have high approval ratings because people within an organization appreciate when their voices are heard and when their input is valued. I hope more women seek leadership opportunities in the coming years and leverage their roles by using transformative management when leading their unit.

One of my goals in creating the University’s *Year of the Woman* campaign that started in August is to lift up the often-forgotten legacies of the women who carved a path for women’s suffrage in the United States. We have partnered with organizations such as Better Days 2020 to carry these stories across the state. My second goal for the *Year of the Woman* is to celebrate the women who helped make USU what it is today and have brought wonderful attention to our great university. Since I first joined the faculty in 1990, I have met the most incredible women affiliated with USU—people who are mothers and sisters, astronauts and entrepreneurs. I want to share these special stories with people who love USU.

My hope is throughout 2020 you will join me in celebrating the women and their pioneering ways who shaped USU, Utah, and beyond. And in that way, we can inspire others to become “a first”.

Noelle Cockett
USU President



Photo by John DeVilbiss.

Where There's a Wheel

Doing something that has never been done before, such as bringing a Ferris Wheel to the Quad, is what defines pioneering. I think of other wheels involving handcarts and the vision and fortitude they required.

We explore the traits and achievements of pioneers in this issue by grabbing hold of the spokes that are our professors, students, and alumni. In particular, we keep a keen eye on the women of Utah State who dare to dream and act on their aspirations, as we celebrate the university's *Year of the Woman*.

"Make no little plans," said Daniel Burnham, who oversaw the creation of the 1893 Chicago Fair. Our university was in its infancy when he challenged someone to one-up the grandiose wrought iron Eiffel Tower built for the 1889 world's fair in Paris. Ideas followed, but Burnham belittled them "for their failure of imagination." Come up with "something novel, original, daring, and unique," he chided them. George Washington Gale Ferris Jr., 33, an engineer from Pittsburgh, did just that.

If a Ferris Wheel on the Quad, like the one we saw in August, should become a new tradition, credit our persistent student government pioneers. They blazed the trail and brought something out of the ordinary onto a campus that spins with equal splendor. For there is something about a Ferris Wheel that captures the imagination and speaks of the students and professors who walk the Quad with frequency. There is something about the feeling of the late-summer sun on your skin and the sight of Old Main and the Wellsville Mountains as they sink and rise, sink and rise, with every turn of the giant wheel. It is a reminder that school is not just about the books and classes, but about the ride itself, and those with whom you share it. It is about the ups and downs that you can expect with every revolution marking every new semester, and a reminder of how quickly it ultimately passes.

John DeVilbiss
Executive Editor, *Utah State* magazine

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Sam and Kacie Malouf hustled to make \$1,000 a month to keep their business afloat. Today their luxury bedding company is reshaping how businesses can do good and do well.

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Each year, 50,000 seedlings make their way into the flower beds at Utah State's flagship campus. That's primarily the work of Brian Daines, master of colors.

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Mary Cleave saw a sign in the post office advertising applications for astronauts. She is now one of just 40 women who've been to space.

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To outsiders, Logan, Utah, may not seem like a destination for the arts. Marie Eccles Caine helped change that.

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Quinn Grover often skipped class to go fishing. His life is better for it. An excerpt from his book *Wilderness of Hope: Fly Fishing and Public Lands in the American West*.

A New Path // Web Exclusive

Before Ben Kolendar led economic development efforts for Salt Lake City, he worked to rebuild Afghanistan's economy. utahstatemagazine.usu.edu/a-new-path.

On the Cover: Sarah Walker Eddy was among the first faculty members of the Agricultural College of Utah, now Utah State University. Learn more at usu.edu/year-of-the-woman.
Illustration by Elizabeth Lord, '04.

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Where is This?



First right answer wins Aggie gear. And while you're at it, letters to the editor are always welcome!

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@usuaggielife

Photo by Mike Johnson.

Wonderings

This from a 10-year veteran summer citizen, now considered in part as an alum.

You have been doing some neat stuff with the magazine, especially the *Nourish* issue, and now in the current one with the letter from the president about up-close personal interaction and learning from one another.

Makes me wonder. If personal contact is so missing and useful, does USU's online everything forestall it? No neat 18-year-old sophomore needs to visit any office to register, turn in notes, get copies, look up reference help, pay a bill, ask questions ... and thus has no chance for face-to-face encounters that maybe lead to something serious. How does courting occur?

Anyhow, regarding chocolate. Please pass on the enclosed article from the *Albuquerque Journal* about a UNM professor who found chocolate remains and pottery dating back 500 years, showing its uses at Chaco Canyon in New Mexico ... To the author of the article "The Art and Science of Chocolate." It makes me wonder, linguistically, if there's a relation between Chaco and chocolate?

Thanks, and keep up the good work.

—Bruce Ellison, Logan summers, 2003–2016

Special Spirit

I was so thrilled to receive my *Utah State* magazine today.

Jennie Taylor has been in the news a lot, but I didn't realize she was a USU gal. So sorry for her loss.

The whole magazine was awesome and I just couldn't put it down. I am thankful for all the articles about these "special Aggies." They have had to go through so much in life to help themselves and others. These stories will help those that might be in need.

I appreciate your time and effort. There was a "special spirit" throughout the whole magazine. Wow!!! An excellent issue. You all deserve an "A"!!!! Go Aggies!

—Marlene Humphreys Warner '59

Fond Memories

Love getting the *Utah State* magazine, brings back fond memories and pride that USU is maturing into a recognized institution worldwide! Proud of my two degrees from USU!

—Rey LeRoy Barnes, BS '60 MS '62

Up in the Night

Just received my copy in the mail. Thank you.

This is a very interesting issue, but the item which caught my attention first was the cover. I wonder if I am just too old (90), too frugal, or just out of touch with the present printing practices. The black cover is not easy to read with my weak old eyes, but the concern I have is more on the cost of ink or toner or what is used in your printing process. I wince when I see our bulletins printed with white on black because of the waste of toner, especially when I had to change toner cartridges. I have seen reports where the use of a different font can make big savings in ink and toner.

Tell me if I am just "up in the night" in more ways than one or if there is any sense to this email. Does it cost more to print the white on black cover, or is it insignificant?

Thanks,

—Berwyn J. Andrus, Bountiful, Utah

(Editor's Note: You sent us on a fact-finding mission. Our printer assures us, ink is ink and the cost is the same regardless of color. Rest easy!)

A Complicated, Open System

I read Jim Steitz's letter to the editor (Fall 2019) with interest.

First, it was called global warming. When the globe didn't warm enough or fast enough, the radical environmentalists changed it to climate change. But, of course, the Earth's climate, throughout its 4-billion-year history, has always changed. Dinosaurs, those giant reptiles, needed tropical forests to survive. Their remains have been found as far north as Montana and South Dakota. So, that kind of implies a hot climate some 25–100 million years ago. Were the dinosaurs driving vehicles with internal combustion or diesel engines? Or was it too many dinosaur farts?

Realize that our world is a complicated, open system. It is not a closed system that can be studied in a science laboratory. That is, we can test Ohm's Law by holding one variable, resistance, constant, and then vary another variable, say current, to measure the last variable, voltage. We cannot isolate the earth from the sun, nor can we dictate when and where volcanoes are allowed to erupt.

I am no climate scientist. But I was a physicist once. And the great thing about science, at least the field I used to know, was the absolute need for skepticism. Without skepticism, snake oil works, fake cancer cures will sell unabated, Elvis lives, and I have oceanfront property to sell you in Arizona. No, hold that, I have anthropogenic climate change to sell you.

—**Frederick Su, BS '69, MS '73
Physics; Ph.D '79 Physics,
University of Connecticut
Bellingham, WA**

Too Tired!

Thank you for providing the recipe for "Hazel's White Bread" in your Fall 2019 issue. I remember, with fondness, that irresistible thick, warm, and buttery cinnamon bread. But the recipe was all in miniscule Kg's! By the time we made all the necessary conversions, we were much too tired to even think of making bread!

—**Julie Johnson '82, Provo, UT**

A Gatekeeping Problem?

I read "Rise of the Machines," and I'm left with several unresolved issues. I agree that AI-generated fake news is a threat, but I'm not sure it's the main issue. Mr. Warren is concerned that mainstream media (MSM) could "unintentionally" broadcast "fake news." He continues that the MSM is the victim in this, yet it appears to me that they are perpetrators or at least abettors.

A current example is MSNBC Lawrence O'Donnell's apology and retraction of his story reporting that Russian oligarchs had co-signed Deutsche Bank loans to President Trump. During his original news broadcast, he added the meaningless qualifier "if true." According to Politico, he relied upon a single anonymous source close to the bank. While an apology and retraction were issued, unchanged is the fact the story was broadcast. Furthermore, not all the original story viewers necessarily saw the retraction.

This raises several issues. First, would Mr. Warren be OK with this level of reporting? Further in his article, he quotes reporter Matthew LaPlante: "If you're going to share a piece of information ... Verify. Verify. Verify." Mr. O'Donnell didn't. Why did he think it was OK to not use the layers of MSNBC fact checkers besides depending on a single anonymous source?

Mr. Warren refers to the MSM remaining "trusted gatekeepers" of news information. Yet gatekeeping can work in suppressing information. For example, I've never read any serious curiosity regarding the Bill Clinton and U.S. Attorney General Loretta Lynch meeting on the Phoenix airport tarmac during the 2016 campaign. Or how about journalistic interest in Jeffrey Epstein and how he acquired his fortune. Those are just two that come to mind.

I would rather sift through more reporting sources than depending on omnipresent MSM gatekeepers (and that includes Google and Facebook) for my news.

—**Isaac Martin '74
Sherman Oaks, CA**

From the Web

A Serious Threat

I grew up in the Salt Lake Valley during the 1960s. My dad was a Captain in the U.S. Air Force Reserve at Fort Douglas as Military Police Officer. During one of his weekend warrior exercises our family volunteered to stay in a Civil Defense Bomb Shelter at Murray High School in Salt Lake City, with several other families, for three days and two nights. We lived in the shelter just like it was a nuclear bomb being dropped and the fallout that followed.

Your article "Care for a Saltless Saltine?" brought back a lot of memories about that experience. I don't think a lot of people realize how serious the nuclear threat was. Thanks,

—**Lee Sjoblom '77**

The Aftermath of Us

"The Aftermath of Us" is a good article focused around fires and water management. My first thoughts regarding the change of fire intensity in the West made me think of the problems caused by Cheatgrass and how that has changed fire timing in the western environment. It is so invasive and is extremely explosive and changes fire intensity. Traveling through western Utah you see its purple presence in vast tracts a lot more than I did 40 years ago. I appreciate the information on the dams filling with silt and the possible cure is mini-dams and beaver introduction.

—**Curtis McCarthy '81**

Cell phone Servants

It has been my observation that cell phones do get in the way of enlarging our circle of friends and broadening the learning experience. Learning to effectively relate and interact with others is something that must be done if the university is to help prepare students to become leaders. I appreciate President Cockett speaking out on this matter in her column. Too many students are becoming indentured servants to their cell phones.

—**Allen C. Christensen '79**



The Quad has seen lots of things, but never before a Ferris Wheel.

TRADITIONS

The Fifty-Foot View

The Quad has been home to farmer encampments, military exercises, farm and orchard experiments, and even a tree nursery. It has seen cow-milking competitions and ice sculpture contests. It made possible the first football game played against the University of Utah, in which the Utah Agricultural College Farmers prevailed 12–0. It has hosted cricket matches, baseball games, rugby, lacrosse, track and field events, and even quidditch players riding broomsticks ... “but no, I’ve never heard of a Ferris Wheel gracing the Quad,” says Robert Parson, university archivist.

And there it was in the northeast corner, all dressed up in candy apple red and white, glistening like an amusement ride left behind, defying anyone who might be taking the start of school a little too seriously. That is what they were aiming for, at least, says Cooper Low, student events vice president who won the Ferris Wheel lottery.

For years, student VPs tried to bring one to the Quad, but it all came together for Low, and with only five days to spare. That is because Ferris Wheels, for all their simple pleasures, are complicated—and in short supply—especially the ones on wheels. And then there’s the costs, the scheduling, the approvals from risk management, purchasing, facilities, the legal office ...

But finally, one August afternoon one appeared with its cheery lights in a star-spangled string of red, white, and blue laced between its mighty spokes. A blur of color that turned the staid daytime Quad into a nighttime carnival—exactly what they were going for, Low says. “Something out of the ordinary, out of the box, and over the top.”

A new perspective of the university, too, and a perfect way to give students a singular first-week experience, says Spencer Bitner, associate director of student involvement and leadership. “It may not be the fastest ride, but the experience of being 50 feet up in the air and seeing Old Main and the valley from that perspective is pretty unique.”



FOOD

If it Looks like a Chicken ...

In a field often dominated by sweets, food scientists from Utah State University developed a meatless nugget for the 2019 Idaho Milk Processors Association (IMPA) new products competition and won the \$10,000 top prize. More than half of taste testers queried by the team said they wanted to eat less meat, so we modeled Moogets after a paneer burger sold in India, says Savannah Branson, a graduate student in microbiology and the USU Food Science Club president.

“We tricked a 3-year-old,” she smiles. Early iterations were too gooey when served hot and lacked the consistency of chicken, Branson explains. “It was just fried cheese.” The team found that by adding vital wheat gluten to the paneer it gave the 79 percent dairy product the stringy texture of peeled chicken. “It looks like a chicken nugget, it feels like a chicken nugget,” she says. But how does it taste? “Like chicken.” Branson and her four team members are working with USU to patent Moogets and are talking with industry representatives about acquiring the meatless novelty. “We could sell out,” Branson says. “That would be great.”

Chicken illustration from the Noun Project.

SOUND BITE

“The hope is now students don’t have to look for the campus police’s physical location. It will be as easy as pulling out their phone.”

– USU student body president Sami Ahmed in *The Utah Statesman*

Utah State Safe, the official campus safety app, was released in the fall and integrates campus security systems with safety features such as location sharing, crisis alerts, and emergency contacts. Get it here: apparmor.com/clients/usu.edu.

AWARDS & HONORS

- The U.S. Nuclear Regulatory Commission awarded two grants totaling \$831,628 to Utah State University to encourage careers and research in nuclear, mechanical, and electrical engineering, and related fields to meet workforce needs.
- Students in the Department of Landscape Architecture and Environmental Planning’s (LAEP) 2018 Urban Theory and Design studio won a 2019 Utah American Planning Association Outstanding Award for their project reimagining the railyard and sites around the Ogden and Weber Rivers to enrich the city’s identity.
- Utah State University Extension was awarded a \$1 million grant from the Health Resources and Services Administration to fund an integrated opioid response effort that bridges prevention, treatment, pain management, and recovery in Tooele County with additional tribal outreach in the Uintah Basin area.
- Utah State University biochemist Lance Seefeldt, an expert in nitrogen fixation—a key process for global food production—was invited to serve on the scientific advisory board for the Bill & Melinda Gates Foundation, which tackles issues including world hunger.



EVENTS

Tanner Talks 2020

**March 19 • 7 pm
Eccles Conference
Center Auditorium**

A century after the 19th Amendment was ratified, Carol Anderson, author of *One Person, No Vote: How Voter Suppression is Destroying our Democracy*, will speak on how the right to vote is worth celebrating and protecting. She is the keynote speaker for the university's interdisciplinary symposium on voting rights. For more information on conference events, visit history.usu.edu/voting-rights-symposium/index.

◀ **Tuesday, March 17 • 3-4 pm
Russell/Wanlass
Performance Hall**

Shigeko Sasamori was 13 when she was disfigured by the atomic bomb detonated over Hiroshima and has worked for the last 60 years as an advocate for a nuclear free world. She shares her story "Surviving the Atomic Bomb: Towards World Peace" with the USU community. Her presence on campus will foster deeper understanding of what wars do to humankind," says Atsuko Neely, a Japanese lecturer, who invited Sasamori to speak.

SOUND BITE

“My goal is to provide our communities with widely accessible mental health resources that are not limited by many of the barriers people typically encounter when looking for help.” – **Michael Levin, associate professor of psychology**

What if you could learn skills traditionally learned from a therapist using a self-paced format in the privacy of your own home? Utah State University psychologists created ACT Guide, an online mental health program centered on acceptance and commitment therapy (ACT). Visit scce.usu.edu/services/act-guide.

Cockett's Review of USU

If you were to word cloud Noelle Cockett's 2019 State of the University address, "student success" would have stood out among other keywords, such as "underserved," "research," "outreach," "inclusiveness," and "respect." These are part of 10 priorities she laid out to students, faculty, and staff in the Taggart Student Center ballroom on Oct. 1.

Some Numerical Highlights:

\$8.3 million

A tuition plateau change now includes online classes, allowing students up to 18 credits on the 12-credit tuition and fee rating they were paying before. "We are giving almost 80,000 student credit hours on that plateau for free each year. This is actually a savings of \$8.3 million to our students."

34%

Despite a flat enrollment rate, USU has seen a 34 percent increase in the number of students obtaining bachelor's degrees since 2011, meaning that students are actually graduating with degrees they enter seeking.

\$341 million

USU was awarded \$341 million in research grants this past year—its highest ever. "We are literally pumping in over \$219 million of expenditures into the state economy, and particularly in Cache Valley."

RESEARCH



\$1.9 Million to Boost Wheat Yields

The USDA's National Institute of Food and Agriculture awarded more than \$1.9 million dollars to associate professors Jennifer Reeve and Earl Creech for their research on organic dryland wheat. Their 4-year project stems from earlier research by USU soils scientists who hauled dairy manure compost to a dryland wheat farm in Snowville, Utah, in 1994. Yields increased, but the costs outweighed the benefits of restored soil fertility, at least, at first. Subsequent researchers found that the sites were still producing much more than untreated control farms. Reeve and Creech are testing how various soil and compost types and crop rotations affect wheat yields on sites in Utah, Wyoming, and Montana.

CEO Personality Affects Stock Prices

A team of researchers from institutions including USU's Jon M. Huntsman School of Business studied how the market reacts to CEOs' observable personalities known as the "Big Five" personality traits: conscientiousness, neuroticism, extroversion, openness, and agreeableness. It was the first study to examine how these traits influence "the value and volatility of a stock as well as how firms can translate given levels of risk into shareholder returns," says Gary Thurgood, assistant professor of management, who was involved with the research. "We discovered that the market actually picks up on CEOs' personalities in a measurable way."

For instance, firms with more neurotic CEOs experienced a 2.04% higher stock risk, on average, and did not increase returns in their firms. The team developed a machine learning algorithm to study and compare personality traits of 200 S&P 1500 CEOs, which they applied to more than 3,000 CEOs of S&P 1500 companies between 1993 and 2015 to examine the financial impact. Their findings were published in the *Academy of Management Journal*.

Illustration from the Noun Project.

Food Insecurity Hits Home

College students are a relatively unstudied population when it comes to hunger issues, and yet, they are among the most likely populations to experience food insecurity in the United States. Rates vary between institutions, but estimates suggest between 25 to 50 percent of college students nationwide are food insecure, says Mateja Savoie Roskos, a community nutrition professor at Utah State University. And USU is no different. A recent campus study found that 32 percent of Aggies are food insecure, meaning they have insufficient access to nutritious foods.

“Initially, some suspected USU would have a lower rate because of the strong network of support from family members and religious groups,” Savoie Roskos says. “But there are still a lot of people who can’t put food on the table.” The researchers found that more than 70 percent of food insecure Aggies have jobs, 22 percent are married, and 9 percent have children. In the fall, USU joined 24 other universities to participate in a national study conducted by West Virginia University to investigate the prevalence of food insecurity on college campuses nationwide.

Early Career Accolades

- Trisha Atwood, assistant professor in watershed sciences, received a National Academies of Sciences, Engineering, and Medicine Gulf Research Program Early-Career Research Fellowship for her pioneering work exploring how native predators like sharks affect the amount of carbon stored in marine ecosystems. The fellowship supports emerging scientific leaders with financial and mentoring support and allows researchers to take chances early in their careers.
- Ryan Berke, assistant professor of mechanical and aerospace engineering, received \$450,000 as part of the Air Force Young Investigator Research Program for his work creating safer, longer-lasting turbine engines. The award supports his team’s effort to develop a new way to measure high-cycle engine fatigue by pairing vibration-based testing with camera-based measurements to see how materials deform under extreme temperatures.

AGGIE MADE

Emboldened by the spirit of Old Main, the Aggie Made program highlights the products and celebrates the notable innovations of creative Utah State alumni.

Some projects were born in the classroom and eventually cultivated from unique ideas into highly successful realities, while other creations took form after graduation and evolved into compelling products that enrich our lives.

For information on getting involved in the program contact:
HEIDI ADAMS - HEIDI.ADAMS@USU.EDU | 435-797-0587
AIMEE BRUNSON - AIMEE.BRUNSON@USU.EDU | 435-797-1906

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AGGIE MADE
 FOR AGGIES, BY AGGIES

More Than Meets the Eye

Toxins are everywhere, said Jennifer Peeples in the 44th annual Honors Program Last Lecture on Sept. 25. More than we are even capable of imagining, she said in her presentation, “Picture Your Poison.” Much, much more. Peeples, professor of communication studies, discussed visual symbols, signs, photographs, and videos that shape our understanding of toxicity and create what she called “toxic imaginary.” But toxins are real, so why imaginary?

“The term ‘imagined’ is used in theories to understand how people make decisions and act when it comes to entities that are too large or complicated for individuals to know in their entirety,” she said. The challenge is that we need to take action to keep ourselves healthy every day. To do this, we create a toxic imaginary that works like shorthand to help us decide what to put in our mouths, when to wash our hands, and what products or activities to avoid. The problem is when these symbols “become domesticated—a mere decoration” or lack meaning across cultures, such as the way radiation or biohazard signs are used as rock band insignias on t-shirts. While we may rely upon symbols to help us comprehend dangers, the ability to communicate the complexities of the dangers posed is daunting.

Common toxins found in our bodies include compounds such as those found in paints, lead, arsenic, mercury, asbestos, and insecticides, some of which babies absorb in the womb. As of 2016, only nine chemicals of 84,000 registered with the U.S. Environmental Protection Agency, have been banned. Why is that? “Invisible things are hurting us, but if we can’t see them, we are less likely to worry about them,” Peeples said. *Listen to her talk in full at* honors.usu.edu/get-involved/last-lecture/index.



Photo by Jeff Hunter '96.

The Associated Press poll ranked the Utah State men’s basketball team for the third time in school history. The last time the Aggies made the cut was during the 1970–71 season when it was ranked No. 12 in the first poll of the year. Mountain West Player of the Year, Sam Merrill, is among the four starters who returned for the 2019–20 season.

A FIRST FIRST

In November, Utah State’s men’s cross-country team captured its first-ever Mountain West title, led by senior Dallin Farnsworth, who became the first Aggie to win a MW Championship race. Farnsworth’s time of 21:14.2 broke the MW Championship record, surpassing the previous record by 20 seconds. “Records are meant to be broken, so I’m sure next year the record will be broken again,” he says. “But it’s definitely exciting to run well, and it just gives confidence to myself, my teammates and the coaches that we’re doing something right.”

Weather You Like it or Not

The haughty shorts of August must now be taunting the frigid scarves of January in unsuspecting dorm room closets. Freshmen launched their college careers at 84 degrees on the first day of class Aug. 26, a “wonderfully average” day, observes Jon Meyer, with the Utah Climate Center, which offers the longest continual record of weather in the state, dating back to 1893. By now, frigid days are upon us. On Dec. 20, 1924, the Logan campus saw a record low of minus 25. “Last winter’s coldest temperature was a balmy 1 degree on Jan. 2,” he says. But take heart—it’s “spring” semester, after all. *For more interesting weather stats, go to* www.climate.usu.edu.





It doesn't look like much, at first.

A chimney and wall of bricks framed by steel slats. Two sliding concrete doors cover small archways in the stone. An odd fireplace that appears like it could come tumbling down if one pushed hard enough. But inside is where fire, wood, and clay meet, sometimes, to glorious effect.

Most of the time, ceramicists don't succeed in what they set out aiming to do. But it's in the trying that we find something else along the way worth doing, says John Neely, professor of art in ceramics at Utah State University.

He is a master of atmospheric firing and the inventor of this brick behemoth. The train kiln he designed has a burry box at the bottom with a stepped grate system and an updraft chamber that serves as a chimney. It burns more efficiently than the Japanese Anagama model it was inspired by, reducing the amount of wood needed to heat the kiln by about half.

"It's an accidental byproduct," Neely says. "It's not something we set out to do, but something we learned."

At 19, an opportunity arose to study in Japan, and Neely spent the better part of the next decade in the country studying Japanese pottery. After joining the USU faculty in the '80s he received a research grant from the university to experiment with new firing techniques. The train kiln design went through several iterations before settling on the one standing outside the ceramics studio today firing one weekend in late October. The design is in the public domain and has been exported abroad to so many countries Neely's lost track. One of his protégés alone has built 22.

"That's just the tip of the iceberg," Neely says. "It's a box of bricks. It's really hard to patent a box of bricks. You can claim it and get accolades for it, but fundamentally I believe that information wants to be free. So, build it, adopt it, adapt it."

By Kristen Munson

Loading the train kiln with ceramics before firings is practically its own art form.



A Living Legacy

By Kristen Munson

One frigid October morning, tiny snowflakes whirl past the Manon Caine Russell Kathryn Caine Wanlass Performance Hall. The snow disappears the geometric pattern segmenting the cement walkway between the hall and the Nora Eccles Harrison Museum of Art. The powder seems to absorb all the sounds of morning. There is no birdsong. Even footsteps are silent. The unexpected storm forces a kind of quiet reflection.

Ann Preston, the artist responsible for “Passacaglia,” the behemoth sculpture of repeating gray and silver tetrahedral shapes adorning the lobby of the performance hall, once described the building as having “a vulnerability, an openness” that allows one to “think your own thoughts and feel your own feelings.”

She could have been describing the hall’s namesakes. Their portraits hang beside the sculpture, which Preston crafted to invoke “passacaglia,” a musical composition of successive variations over a steadying base. Similar but independent. Different but melodious—like the women of the Eccles and Caine families who shaped the landscape of the arts at Utah State University for the last half-century.

Ross Peterson, ’65, USU emeritus history professor, recalls meeting Marie Eccles Caine, “the catalyst” for the family’s philanthropy to USU, while an undergraduate studying history. She was passionate about the arts and endlessly curious. She came to everything from visiting speaker series to musical productions, Peterson says. “She was a presence. It wasn’t like a grand entrance—she was just there.”

Marie was the type of person who penned handwritten notes of encouragement to students, Peterson says. He knows because he received one.

Her support of students was unflagging and something she passed down to all three of her children: Kathryn ’38, George ’43, and Manon ’53. Marie cultivated a living legacy through her family’s giving to the arts with the establishment of scholarships, visiting artist series, permanent collections, library resources, and world-class facilities. She wanted to “create an atmosphere of culture, of art, and art appreciation so students could not only develop their own talents but appreciate them in others,” Peterson says.

Without this mindset, and a desire to do things that benefit the whole community, the concentration of arts programming and facilities would not be here at Utah State, he says. “It was never about them. They did it because they cared and they cared about this place.”

Marie Eccles Caine was born into a pioneer family in 1892. Her father, David Eccles, was an enterprising Scottish immigrant who moved to Utah as a teenager and built a fortune from lumber, railroads, and banking endeavors, among others.

“Grandmother’s dad came from nothing,” says Marie Russell-Shaw from her home in Montana. “Maybe knowing the difference between having very little and being able to give to others who have less than you,” helped spark their giving, she muses.

In Scotland, his family had to work so hard to stay alive, she says. “I think he was just amazed by the opportunities he was given to prosper here, and he wanted to share those opportunities with others.”

If you care about something, Russell-Shaw says, share that with other people. “Grandmother always felt like art and music just made the world a better place.”

Agnes Pelton, “Nurture”, 1940, oil on canvas, 34.375 × 32.5 inches.
Gift of the Marie Eccles Caine Foundation. Collection of the Nora Eccles Harrison Museum of Art, Utah State University.

Marie and her eight siblings were raised in Logan and she attended the Agricultural College of Utah (UAC), now USU, where her husband George Ballif Caine founded the dairy sciences department and served as department head for nearly 40 years. They raised three children at the base of Old Main Hill and each attended USU. But before motherhood, before she married, Marie painted.

She moved east to study at the Chicago Art Institute and in New York. It was very unusual for a young woman to do that at the time, Russell-Shaw says. “She strongly believed in women’s rights to be independent and to have equal opportunities. She had opinions and felt that women of all kinds, in all fields, should be respected for what they were capable of doing. That was definitely a part of her philosophy.”

Marie was about 5 feet tall—if that—and a person who, in her eighties, decided to learn how to drive. (“Oh, it wasn’t good,” Russell-Shaw confides.) Marie earned a restricted license to cruise about town, and when she wanted to visit friends and attend the symphony in Salt Lake City, she boarded a bus in Logan wearing a wool coat with a fur collar.

Marie was not afraid to share her opinions or passions with people. Neither was Russell-Shaw’s mother Manon. “My mom was very willing to let you know what she thought,” she says.

“[Marie Eccles Caine] strongly believed in women’s rights to be independent and to have equal opportunities. She had opinions and felt that women of all kinds, in all fields, should be respected for what they were capable of doing.” – Marie Russell-Shaw

Manon loved the outdoors and was heavily involved with the Girl Scouts. And like her mother, Manon had a love affair with the arts. She studied music and sang in choirs and operas—a natural fit considering she was named after an opera.

“My grandmother exposed mom to the arts at an early age, which sent her on a lifelong path of enjoying all sorts of music and also the visual arts,” Russell-Shaw says.

She was named after her grandmother. “Which characteristics of my grandmother was [my mother] thinking of when she named me?” chuckles Russell-Shaw. Marie’s love of nature and music is something she recognizes in herself.

“Growing up my grandmother stayed with us often, and every Saturday afternoon she’d turn on the opera,” Russell-Shaw remembers. She would listen too, for a spell. “I was pretty young and opera does go on a really long time. But I think when you see someone appreciate something so much it did inspire curiosity later in life, and I do enjoy it now. She definitely brought your attention to look at things in a way that wouldn’t have been my natural instinct.”

Marie would notice things others didn’t always see.

George Wanlass has similar memories of his grandmother. He credits her with instilling in him a willingness to look at the beauty of the world.

“She thought Logan Canyon was one of the beauty spots of the world,” he says.

“I remember driving up Logan Canyon with my grandfather and grandmother and she was sort of like a lecturer. She would tell you where to look, and her excitement and the wonder that she conveyed was contagious. I guess I had a natural inclination to want to look at those things too.”

Whenever Wanlass visited his grandparents he noted the Henry Moser painting hanging over the piano. It was this noticing that drove him to ignore a shoddy frame around a treasure in a junk shop in Hyrum.

“The very first thing I ever bought was a very small painting of Bear Lake by Henry Moser,” he says. “I remember paying \$7.50 for it.”

The acquisition launched Wanlass on a path of art collecting that began with Utah artists in the 1890s–1930s and led to works by under-appreciated artists of the American West. It’s a passion he has continued for the last 30 years.

And USU has benefited from that passion. The art collection at the Nora Eccles Harrison Museum of Art (NEHMA)

has more than 5,000 objects—more than 1,000 of which were gifted by Wanlass through the Marie Eccles Caine and Katherine C. Wanlass Foundations. The museum was established in 1982 by Nora Eccles Harrison—Marie’s sister and Wanlass’ great aunt—with an initial gift of \$2 million and 400 ceramics from her personal collection. Wanlass has helped to build and shape the collection since the museum’s founding.

“He has been the largest influence in terms of the uniqueness of the collection,” says NEHMA director and chief curator Katie Lee-Koven.

Wanlass is trained as a historian and spends hours scouring auctions—big and obscure—hunting for exceptional pieces by under-recognized artists. This is unpaid work he does on behalf of the museum. And his research has paid off as Wanlass has routinely been “ahead of the market,” purchasing pivotal works just before artists get recognized, Lee-Koven says.

“We’ve never collected based on the market value; it’s never been about that. It’s about expanding the stories of art in the American West.”

Strolling through NEHMA, one may notice works by



Upper left: Harrison Grouage, *Nora Eccles Treadwell*, 1982. Oil on canvas, 38.75 x 53 inches. Museum Permanent Collection. Collection of the Nora Eccles Harrison Museum of Art, Utah State University.

In 2017, USU historian Ross Peterson wrote in the *Herald Journal* that “the extended Eccles family and their foundations have more than preserved and created support for the arts. They have enabled hundreds of students to fulfill their dreams and potential.” Pictured clockwise from the top: Nora Eccles Treadwell Harrison; Marie Eccles Caine; Manon Caine Russell; and Kathryn Caine Wanlass.

more female artists than typically found on the walls of many metropolitan museums.

“There are two reasons for that,” Wanlass says. “One is because I believe in equality. But beyond that, there are some very talented women artists in the American West who are undervalued. For instance, an artist named Agnes Pelton is just starting to get some attention. But way back when I bought something for the museum a lot of people didn’t know who she was.”

Wanlass is like his great aunt in that regard.

“She was very prescient in certain fields,” he says, noting her eye for jewelry design. Nora’s first husband was the photographer Walter Treadwell who trained with Ansel Adams. (NEHMA has a folio of Adams’ in its collection.) But ceramics interested her most. She was a potter intrigued by Southwestern ceramists. Among NEHMA’s collection is a documentary film on Maria Martinez, that Nora produced.

“I didn’t have a lot of exposure to Noni,” Wanlass admits, “but I remember how charming she was and how interested she could be in a young person.”

She could make someone feel that what they were doing and creating was important. Wanlass points to a drawing he made as a kid that Nora made into a tile, “which bestowed an importance on it that I don’t think it had originally.” Wanlass still has that tile in his kitchen.

Nora’s ability to make young persons feel valued continues to be part of the educational programming at NEHMA.

“We realize that many students at USU may never have stepped foot in a museum before,” Lee-Koven says, adding that NEHMA strives to be an accessible resource for the community. It has a mobile art truck that brings art education to schools and events off campus. The museum doesn’t charge admission either, making K-12 students a regular sight at exhibitions.

Manon Caine Russell Kathryn Caine Wanlass Performance Hall.



Photo by Jeremy Jensen.

Perhaps early exposure to the arts can light a fire within. At least, that’s what happened with Wanlass. At 16, his mother Kathryn “dragged” him to some of the great museums of Europe. “It made a lasting impression,” he says.

Like her mother, Kathryn had an exceptional eye for color and a sense of responsibility to one’s community.

“When we grow up in a family, we don’t realize until subsequently after, how beautiful our parents are, especially our mothers,” Wanlass says. “She was concerned about other people.” When she moved back to Logan she joined boards including the Sunshine Terrace and Ellen Eccles Theater because she wanted to contribute to the community, not just monetarily, but with whatever expertise that she had, he says.

Marie Eccles Caine instigated a culture of philanthropy and service to a region outside the rail lines that helped generate the family fortune. Collectively, her family members have given more than \$16 million to the arts at USU. When the performance hall was built, her daughters secured a world-class architectural firm that could marry the buildings already in place with a new point of view. The Manon Caine Russell Kathryn Caine Wanlass Performance Hall is like no other building on the Logan campus—an exterior that is both austere and complicated, with a welcoming interior that nurtures the best from performers alike.

If Marie could see what she sparked decades ago, both Wanlass and Russell-Shaw believe she would be most proud of the performance hall. The funding for it was provided by her two daughters, and the acoustics and the beauty of it are inspiring, he says. Marie would have loved to attend a performance there.

As a child, Megan Wanlass spent a lot of time in the vestibule of her great-grandmother’s home waiting to take her to USU events. It was a legacy that continued with her grandmother and she credits her family’s support of the arts as what steered her toward a career in theater—a journey that began with Unicorn Theater in Logan. Children’s theater still exists in Logan today, in part, because of Marie’s initial gift.

Both Megan and her father believe that children’s theater can be transforming for kids and set the stage for a life-long appreciation of the arts.

“Something communal happens in theater,” she says. “People all come together, which is very rare in the world these days. They witness a model society or a society that is challenged by something. I think it’s a great way to have difficult conversations.”

Megan’s daughter recently turned 16 and has spent much of her childhood attending productions with her mom. It may, hopefully, leave a mark. “We are definitely a family that has inherited this love of the arts,” Megan says. “And it goes generations now.” **A**

WOMEN'S

MOVE-



MENT



REDEFINED

By Kristen Munson



THE LETTER READS LIKE A SMIRK—DASHED OFF ON TWO PAGES OF LETTERHEAD AND SCRATCHED IN THICK BLACK CURSIVE.

“I was taken aback to think that a university would fund such a study,” a Colorado physician’s assistant wrote concerning LaJean Lawson’s MS ’85 research on the sports bra. “I meant that you put so much time and effort into what honestly reads ridiculously. You could have spent the grant money better by strapping the gear yourself and jogging a few laps and suggesting the most comfortable fit.”

And therein lies the rub—the idea that one woman could stand in for all women and represent the needs, preferences, and problems of her sex.

“Sorry, but I laughed (as did most of my colleagues) through the entire article,” he concluded.

But with an estimated global market value of \$6.5 billion dollars—and growing—it’s Lawson who’s still chuckling 30 years later.

Since her landmark study was published in the journal *Sports Medicine* in 1987, Lawson has consulted for Champion athletics, running its bra lab and finds herself continually improving sports bras using science. It was not a career that existed when she enrolled to study historic costume design as a graduate student at Utah State University in the early ’80s.

While researching her thesis on knitting, Lawson’s main subject died, and so did her paper. Her major professor suggested she tack some questions onto a survey he was conducting so she could



"I've said many times,

things happen in your life ...

don't judge them to be bad or good."

— LaJean Lawson, MS '85

gather some data to write a thesis. We got back the data, Lawson says, and my questions had been mistakenly removed. “I thought I was becoming the poster child of the student who never finished.”

That error changed everything.

“I’ve said many times, things happen in your life,” she says. “Don’t judge them to be bad or good.”

Lawson was drawn to sports during a time when women weren’t always welcomed onto athletics fields. In high school, my basketball team still played by “girls’ rules,” she says. “It was all before Title IX. I was one of only two girls that took PE all four years.”

An early adopter of the Jogbra—the first modern sports bra made from two jock straps sewn together—Lawson recalls finishing marathons with bleeding nipples. “There had to be a better way,” she says.

During noontime runs with Deana Lorentzen, an assistant professor in the health, physical education, and recreation department, the two women wondered if anyone had ever studied sports bras before. Suddenly, Lawson’s third thesis, “A Comparison of Eight Selected Sports Bras: Biomechanical Support, Overall Comfort Ratings, and Overall Support Ratings,” was born. Lorentzen co-wrote a grant to fund Lawson’s study, which at the time, was the largest study to use biometric data and user feedback.

Their timing was auspicious. Just a decade earlier in 1972, Congress passed Title IX, which mandated that women have the same access to educational opportunities as their male peers. That same year, Frank Shorter won Olympic gold while competing in the marathon, setting off the nation’s running boom. Bra manufacturers were quick to offer women garments to meet the growing demand, but most failed to incorporate biometric data into designs or focused on competitive athletes who tend to have smaller chests. The average woman was left out of the equation. Until Lawson’s study, the science on the matter broke into two camps: small biomechanical



The one-size-fits-all T-shirt

only really fits one size—

why would sports bras be any different?



studies, and “debate over whether specially designed sports bras are necessary,” Lawson wrote in her thesis.

She recruited 59 women and filmed them jogging on a treadmill nude and in eight different sports bras using a 16 mm camera to determine breast displacement while exercising and to evaluate how well the bras performed across, and within, various bra cup sizes.

“I’m still amazed that we got funded,” Lawson says.

She credits USU administrators for seeing the project’s value even if it wasn’t clear to government watchdogs who gave the researchers a golden fleece award, arguing it was a waste of taxpayer dollars.

But as Lawson learned, size matters. So does breast density, shape, and the type of sport a woman plays. Running requires a different bra than ballet. The one-size-fits-all T-shirt only really fits one size—why would sports bras be any different?

“There was a great sense of relief that someone was finally doing something,” Lawson recalls when talking about recruiting participants.

Her investigation identified common manufacturing pitfalls such as using the same design for larger cup sizes rather than creating additional support styles to meet women’s various needs. Straps can chafe, underwire can stab, materials can overheat. A sports bra is one of the most intimate garments a woman can purchase, Lawson says, and yet, there was no one really looking into ways to improve it. And it’s a design problem she has continued tweaking for the last 35 years.

Perhaps sports bra research seems trivial. But women often don’t want to draw unwanted attention to their chests when they exercise. This anxiety can create a psychological barrier to exercise—and that is a health problem.

“Many women don’t care,” Lawson says. “But many women do want to be modest. They want to have control over who has access to information about their breasts.”

When padded sports bras first hit the market, she wondered why women were interested in wearing a heavier, hotter product. An athlete training for the Olympics told Lawson she wears padded bras so that spectators focus only on her finishing times.

“I had to recalibrate,” she says.

Now in her lab, Lawson has women test various products and queries them about factors such as fit, style, comfort, and modesty.

Her work continues to evolve as the body positivity movement gains traction. The increase in numbers of women, regardless of their size, claiming their space in yoga studios and on the treadmill at the gym has given Lawson a new design problem to solve. But her initial work in this arena was slow-going. It took six months to get the first plus-sized participant in the lab and 18 months to get enough people to participate in a focus group.

“I want you to know you’re the first person to see me run without a shirt on,” one woman told Lawson.

It was an important glimpse behind the curtain.

Lawson holds a doctorate in exercise science and understands the complexity behind the global obesity epidemic. There’s not one factor or one lever that needs to be pulled to solve it.


“Ensuring a woman has what she needs to get moving—the physical, emotional, and mental benefits of exercise—that’s my part,” Lawson says. “I’m happy to be part of the solution.” **A**



DOING GOOD *WELL*

by Jeff Hunter '96

Since co-founding Malouf Fine Linens more than 16 years ago, USU graduates Sam and Kacie Malouf have seen their company experience immense growth. In turn, the couple is involved with numerous philanthropic endeavors, including hosting the annual Art for CAPSA event each autumn at Malouf headquarters in Cache Valley.



MALOUF IS PRACTICALLY SYNONYMOUS WITH LUXURY.

However, there was a time—not all that long ago—when those wonderfully comfortable bed sheets were housed in a small warehouse space on the west side of Logan.

And luxurious it was not.

Sam and Kacie Malouf opted to keep the industrial heater off, even in the winter. That meant that while fulfilling increasingly large orders for bedding, Sam could often be found typing away on his laptop sporting fingerless gloves.

“But we were always profitable, and I think part of the reason is because there were very controllable internal factors,” Sam explains. “And I knew it would cost an extra 500 bucks a month to turn the heat on.”

“And that was groceries for the family, so we weren’t going to do that,” Kacie adds.

But heat wasn’t the only “luxury” missing in the early days of the multi-million-dollar company that now employs hundreds of people across the country. A decade-and-a-half ago, the

president, CEO and co-founder of Malouf had to make do without restroom facilities on the premises, which, therefore, required Sam to make a half-mile trip to LW’s Truck Stop several times a day.

“This company started in a very scrappy way,” Sam declares.

“It was like, we needed to just find a way to make a thousand bucks a month,” says Kacie, the other co-founder in the Malouf success story. “There definitely wasn’t a vision from the beginning that we were going to build a bedding empire.”

Clearly feeling that “bedding empire” might have been too bold of a statement, Kacie quickly adds, “Not that we’ve done that.”

After a brief pause, she smiles and continues, “Well, I guess we kind of have.”

IT WASN’T all that long ago that terms like “thread count” and “Egyptian cotton” meant absolutely nothing to Sam Malouf.

Born in Logan, Sam spent his formative years in eastern Kansas and Vernal, Utah, before coming back to Cache Valley to attend Utah State University. And while working on dual bachelor degrees in accounting and marketing, he was perfectly content to sleep on an air mattress covered with sheets he purchased at a garage sale in Mexico.

But while at USU, Sam met Layton native Kacie Hess, the cousin of a roommate who was studying music therapy. The couple graduated and got married in 2003, which led to a trip to a higher-end

retail outlet in search of bedding, and the genesis of a business idea that would abruptly change the direction of their lives.

“We were shopping at one of those places that’s kind of pricey, and I was like, ‘Holy crap!’ when I saw that bed sheets were like 200 bucks,” Kacie recalls. “It just seemed like they shouldn’t cost that much.”

Sam is quick to credit Kacie with the initial idea to look deeper into why there appeared to be such a high markup on sheets while he was on the lookout for “market gaps.”

The couple started to do some research on bed sheets while Sam was completing a master’s in accounting and Kacie labored at a local restaurant. Working out of their two-bedroom apartment, Sam and Kacie traced some sourcing back to Europe, then started purchasing overstock of high-quality sheets with credit cards and selling them online at a reasonable price.

Soon, the Maloufs were making that \$1,000 a month they needed for rent and utilities, allowing Kacie to quit her job and focus on selling sheets. The couple briefly moved to Portland, Oregon, so Sam could pursue an opportunity selling real estate with some friends, but with bedding sales going so well they came to a “crossroads.”

They decided to go “all-in and move back to Logan, because we thought this would be a great place to build a business,” Sam recalls.

“So, we came back in 2006, and we’ve been here ever since,” Kacie adds.

“There definitely wasn’t a vision from the beginning that we were going to build a bedding empire.”

— Kacie Malouf

OF COURSE, “here” isn’t really just “here,” anymore.

Malouf Fine Linens quickly outgrew that first warehouse, allowing them to move into a larger one (with a bath-room!), and soon after, hire their first full-time employee. The company branched out into selling pillows, mattress covers, and bed frames, which led to more employees and acquiring more buildings, until the company purchased a 28-acre parcel of land in Nibley and started construction on its corporate headquarters. That stunning, two-story facility officially opened its doors in the summer of 2016, complete with Italian marble floors, tropical trees, basketball court, weight room, and commercial-size kitchen and dining area.

But Malouf HQ is like an iceberg: there’s far more to Malouf than what people in Cache Valley may see. While a few products may come and go, much of the warehouse and showroom space in the building has been gobbled up to ac-

commodate employee work stations, and Malouf now has far larger distribution centers in North Carolina, Ohio, and Texas, as well as in nearby Tremonton.

“We’re at about 3.5 million square-feet of warehouse space now,” Sam says. “We’re having products made in 55 factories in 14 different countries, so we’re trying to buy about a million square-feet of warehouse space a year to keep meeting the demand.”

Malouf is nearing completion of an expansion to its headquarters, while also preparing to start construction on a building at its compound in Nibley. As of the fall of 2019, the company employed more than 460 people.

“The growth is very rapid,” says Brian Blotter, director of human resources and a 1998 graduate of USU. “I’ve been here three years, and we’ve added 120 people every year since I’ve been here.”

MALOUF currently finds itself in the enviable position of not only needing

to hire more and more people due to its phenomenal success, but people also want to work at Malouf. A lot of people.

“We go to the two job fairs they have at Utah State every year, and this last time we had to bring an additional person to help because there’s usually a line of 10 or 12 people to meet with all three of us,” Blotter says.

Recently, the job and recruiting website, Glassdoor, ranked Malouf as the eighth-best place to work among the nation’s small and medium-sized companies. And it’s not hard to figure out why, starting with a free lunch provided for employees that is prepared from scratch. The 13-person kitchen staff even grows a lot of its own food in a nearby garden, while also flying in fresh fish from Hawaii.

“Before we moved into this building, Sam realized that having lunch together was a great opportunity for everyone to get to know each other, which leads to better collaboration when it comes to

work,” says Leah Anderson, a graphic designer who graduated from USU in 2017.

Malouf also boasts an on-site barbershop/salon, as well as the weight room/gymnasium and free breakfast items in the mornings. The company is also known for hosting great parties during the holidays, and, possibly most importantly, paying 100 percent of their employees’ health-care premiums.

Blotter says that after Sam first brought up the idea, he talked to some insurance brokers who quickly advised Malouf against it because they had witnessed other companies fail while trying to provide free benefits.

“So, I took that to Sam, and I said, “These are their concerns,”



Named the 8th Best Place to Work in the country by Glassdoor in 2019, Malouf has a strong reputation for accommodating their employees, whether it’s free lunches and haircuts, or access to a weight room and gymnasium.



DARE MIGHTY THINGS

The partnership between the Huntsman School of Business, the Malouf Foundation, and Operation Underground Railroad provides USU students the opportunity to teach the basics of creating and running a business to victims of human trafficking to set them on a path toward independence. Just another example of Aggies making a difference.



JON M.
HUNTSMAN
SCHOOL OF BUSINESS
UtahStateUniversity.

“The minute the bottom line becomes more important than our employees, that’s when I don’t want to be a part of this company.” — Sam Malouf

Blotter recalls. “And he said, ‘Blotter, let me tell you, the minute the bottom line becomes more important than our employees, that’s when I don’t want to be a part of this company.’”

“And that’s just the kind of guy Sam is,” Blotter continues. “When they were going to build this building, they looked all over, but Sam and Kacie were like, ‘Let’s build it in Logan, Utah.’ We went to school here, and it seems like everybody that goes to school leaves and then fights the rest of their lives to find a job to come back to Logan. Let’s build a great company here where people can stay and work and thrive.”

BLOTTER says he first knew things were different at Malouf when he went for a job interview at the company’s former complex and saw employees skateboarding between buildings. Malouf’s annual Christmas video from 2018 featured the children of employees working in the role of their parents, and last April Fools’ Day, the company released a press release suggesting that its new headquarters would be a 13-story structure designed to resemble their popular lavender-infused pillow.

But there’s also a serious and socially conscious side to Sam and Kacie Malouf that’s as much a part of their company’s culture as the annual Mad Max Bike Race.

Last fall, Malouf was recognized as a benefit corporation, meaning that while the company still has a goal to make money, it also strives to balance profit-seeking with environmental protection and social responsibility. Malouf HQ in Nibley is a “net-zero” building that creates more power through its solar panels than it uses, and the company has aided local



In an effort to help others in their own community, as well as around the world, Sam and Kacie Malouf created the Malouf Foundation in 2016. Employees are also encouraged to volunteer for various causes, and the company pays them up to 24 hours a year for working with charitable entities.

charity organizations nearly since it first became solvent.

But in an effort to expand their charitable reach, Sam and Kacie started the Malouf Foundation in 2016. The parents of five children, the Maloufs already donated money and bedding to Cache Valley groups like Citizens Against Physical and Sexual Abuse (CAPSA) and The Family Place, but since 2017, the foundation has added working with Operation Underground to battle child sex trafficking and exploitation.

“When you meet a survivor, in the flesh, and hear stories that really pull at the heart strings, it becomes impossible not to help,” says Kacie, who now focuses most of her professional time on running the Malouf Foundation.

In addition, the company sponsors “Charity Time Off,” a program that allows employees to get paid for up to two hours a month when they volunteer with a charitable organization.

“There’s a lot of great things about working here, but invariably people will

say one of the best is the foundation, and I think it will soon be some of the B-corp stuff,” Sam says. “A lot of employees don’t have anything to do with the foundation on a day-to-day basis, but at the base level, they know they’re connected to a group that does something they respect and value.”

Sixteen years removed from overloading credit cards to purchase sheets from places he’s still never visited, Sam Malouf now finds himself using terms like “global strategizing” while also reminding himself to text “Happy Birthday” greetings to his employees.

He admits he didn’t have any management experience when he and Kacie started the company, and after hiring that first employee, found himself wondering if he should even have added another person, “Because I can do it all faster and better, than having to spend my time training somebody.”

“But I ended up learning a great lesson, and that is that if you invest some time in people, things can really take off,” Sam says. **A**

WANDERING

QUINN GROVER wasn't exactly studious in college. He often skipped class to go fly fishing up Logan Canyon in search of wild spaces. It was a different kind of education than one finds on a syllabus.

"What was I looking for, and did I even know it when I found it?" Grover '00 MS '08 writes in *Wilderness of Hope: Fly Fishing and Public Lands in the American West*. "While I searched for the "why" of my identity as a fly fisherman, I instead stumbled on the "how" of that identity: I was a fly fisherman—at least in part—because public lands and access to the great trout waters of the West made such an existence possible."

The fly-fishing canon is long and storied, but Grover forges new ground in his essays by using the sport as means to wade into the country's public land debate. His perspective of the middle-class suburban angler is perhaps more common and less vocal than the voices of ranchers and environmentalists often heard shouting across the divide.

"Given my socioeconomic status, without public lands I would not have been able to fish and become the fisherman I am today without them," Grover says between classes where he teaches writing at BYU-Idaho. Only in the American West, he says, you just need a tank of gas and some fishing gear.

"I can't imagine doing that in places like England where much of the land is private and to fish you often need to join a fishing club."

In *Wilderness of Hope*, Grover shows how fly fishing allows humankind to participate in wild spaces and to learn from them. Because fly fishing is ultimately a learning endeavor. Through observation and adjustment, one learns about individual ecosystems and fish preferences. And with enough observation and adjustment, we can learn about ourselves, too. — KM



I remember the stinging cold of that first morning.

Fog and steam ghosted off the mirrored surface of a farm reservoir that was rumored to hold large rainbow trout. Every so often a black trout's back broke the glass surface and rolled over in one smooth motion, adding substance to the myth. The sight of such a fish would spread a mass of warm adrenaline through my cold-stung appendages, and I would cast a fly in the fish's general direction, let the fly sink, begin to strip, and hope the line went tight. It wouldn't go tight; the cold would settle back into my toes.

It was a lifeless, sunny cold. The sky was terribly bright—a harsh, pale, cloudless blue so bright it seemed to be blunting the earth. The mammoth sun didn't seem to be working at all. It provided no warmth, just blinding brightness, hovering low over the brown foothill horizon.

Packer and I were 17 and loose on spring break. Perhaps some of our friends had traveled to exotic locales. Certainly most of them were warmer than we were that morning. We left school behind for a week in search of new knowledge. Our research topic was roads—the sheer length of them, the unique nature of each one, the way that some took you to places no different than the places you wanted to get away from, and the way others took you deep into the woods and then had the good sense to just end. We were learning that those roads—the ones that started among a crisscross of other roads bordered by cookie-cutter houses and strip malls but sped away from the gray cities and climbed switchbacks and hugged ridges and ended way off by themselves in a grove of trees where a grassless patch of earth served as a parking space—those were our favorite roads.

Packer drove a white 1986 Toyota Celica. It had two doors and a stereo that didn't work. The faded blue fake leather upholstery cracked

and peeled, freeing the yellow padding through rips and holes. We stuck a boom box in the back seat, bought a twelve-pack of D batteries, and drove south from Salt Lake City in search of perfect roads that led to trout. We knew nothing about fishing in southern Utah. If the internet was happening then, we didn't know it. We planned our itinerary using a worn copy of the Utah 1992 Fishing Regulations. We picked our waters based on one criterion: Could we fish for trout? The regulations book wasn't always clear on that question, so in some cases we guessed. Our gear splayed beneath the hatchback sun, Packer gunned the Celica south on I-15 with a dog-eared map folded rectangular between the front seats. The boom box in the backseat alternated a paradox of Run DMC and Paul Simon until we had pulled into the campground of this farm lake in the middle of the night and erected a tent by headlight.

We fished all morning, caught nothing, and eventually warmed up. Undeterred, we broke camp, climbed back in Packer's Celica, and headed farther south.

Somewhere near Cedar City we began to climb out of the rocky desert into mountain country. Trusting the map, we exited the highway and began a circuitous path through farm hills and the occasional stand of trees. We turned right, then left. The road climbed, and patches of snow and muddy puddles began to show on the sides of the road. Man-made structures mostly disappeared, except gray wooden fence posts tied together with barbed wire. We took another left onto a dirt road, figuring we were probably lost. It was there we encountered the bull.

He was large and black and snorting, drinking from a puddle of muddy snow-melt pooled in a low spot in the road. Off to the right, a cedar tree shadowed the puddle and the beast. The bull's head broke into the sunlight as he looked up from his refreshment, clearly annoyed. He looked at us through the windshield—his eyelids half closed—then lowered his head and drank.

Packer honked the horn. The bull was unmoved.

Packer had rigged a speaker under the hood of his car and connected it to a CB radio. The speaker and CB existed so that we could easily shout at people as we drove by, something that seemed important to our seventeen-year-old sensibilities. So I pulled the Talk trigger on the CB and politely asked the bull to step aside. The bull was still unmoved. I shouted into the handset: "C'mon, Bull, we're going fishing and you're blocking the road!"

It wasn't a particularly compelling argument.

The animal looked up again and we saw something new in his eyes, something unsettling and unmistakably dangerous. Packer reminded me casually that buffalo attacks are not particularly uncommon in Yellowstone, and although this was technically a domesticated animal, somewhere deep inside lay the genetics of a grassland-roaming beast that symbolized the beauty and the peril of wildness itself. To put it another way, this bull might put his head through the windshield. The animal eyeballed us for another moment, then went casually back to the water.

"I think I can get around him." Packer offered us a lifeline.

We edged out around the animal, the passenger tire embarking onto a patch of muddy grass. As we pulled even, the bull looked up and leaned back a little, his nose flaring in surprise.

We passed on the right, so Packer was eye to eye with the beast. Looking across him I saw a mix of fear and that same unsettling danger in the animal's eyes. I realized I wasn't terribly disappointed that Packer had unwittingly put himself between me and that bull.

The animal groaned angrily at us and feinted a half-hearted charge as Packer hit the gas and we sped off, the tires spitting grass and mud behind us, the bull shrinking defiantly in the rear-view mirror.

We stayed silent for a few moments. The knowledge seeped in (perhaps for the first time) that we were uniquely vulner-

able. Having traveled to this place hours from our homes and the parents who had protected us our entire lives, we could have been ended by an angry bull on a dirt road west of Cedar City. I felt weak for a moment and unsure of my place in the world. Three minutes earlier I was sure I would live forever. Now I was not.

This was a new lesson about roads: they take you places where anything can happen. Before our meeting with the bull, whenever I heard the phrase "anything can happen," my mind began cataloging lists of all the good anythings that might happen. I began to imagine ways to realize long-held dreams. But now "anything" also meant a pissed-off bull might charge your best friend's Toyota. And I knew that "anything" could also mean a lot of terrible things. It could mean drowning in a trout river or freezing to death in your sleep. I started to look at the patches of snow along the road a bit differently. My mind began to catalog all the ways the land out here might kill me.

Then Packer reached into the back and turned up the knob on the boom box. Public Enemy shouted through the speakers, and I soon felt invincibly young again.

A year later I had a similar revelation, another lesson taught by a road not far from where we had encountered the bull. This was the next spring break. Traveling north after fishing the Colorado River near Lees Ferry in Arizona, Packer, my brother Justin, and I began the drive up a canyon toward Cedar City and ran broadside into a heavy spring snowstorm. We still had Packer's Celica, and the headlights shone right into the sideways snow, lighting up the precipitation more than the road. It got bad enough that Packer turned off the headlights and left on only the parking lights. I stuck my head intermittently out the passenger window to verify that we were still on the roadway by identifying the white line, and Justin did the same on the driver's side from the backseat. Somehow we arrived in Cedar City and found a place to buy a burger.

The illusion of our control had been exposed. This was a sobering realization. The only difference between staying on the road and tipping over the rail and barreling to the bottom of that ravine was something outside of ourselves, something we could do nothing about. Something as ephemeral as fate or randomness, statistical noise or God's will. Something we couldn't see or touch. Something we weren't even sure existed.

But in the midst of it—with those streaks of white bearing into us, plastering the windshield, the roadway filling with wet snow—I realized that we were driving blind. It was entirely possible we would veer into the canyon wall on one side or into and over the guardrail on the other. The painted center and side lines—the breadcrumbs of the highway system—were generally lost to us. We strained our eyes for the reflectors on the roadsides and managed to spot just enough to keep us centered. Even though we eventually arrived in the small college town, our teenage invincibility was no longer something we could believe in. Our safe arrival was due either to luck or divine guidance. Either way, during those thirty minutes we fought the storm up that winding canyon, we were not really in control; control had been wrested from us. Or—more accurately—the illusion of our control had been exposed. This was a sobering realization. The only difference between staying on the road and tipping over the rail and barreling to the bottom of that ravine was something outside of ourselves, something we could do nothing about. Something as ephemeral as fate or randomness, statistical noise or God’s will. Something we couldn’t see or touch. Something we weren’t even sure existed.

This was the point in my life when I began to think about the fact that the combined forces of weather and wild country are no respecter of people. They don’t care if we live or die. I always knew this logically, but now I was beginning to understand it emotionally. And that was a feeling I was not altogether prepared for.

After Packer and I

left the bull to finish his afternoon cocktail, we drove that dirt road until it ended. The route took us through more ranch country and over foothills until we climbed a couple of switchback turns, entered public land, and parked on the shore of a small lake whose name I have long forgotten. Nestled in among brown rocky hills and mostly leafless aspen trees, the lake was free from wind and people. We set up camp with one eye on the

glassy water looking for rising trout. We saw none.

We fished for an hour and caught nothing, saw no trout surface. We hiked the rock-strewn bank circling the lake, fished more, caught nothing, wondered about where we were, and laughed a lot. Evening dulled the light and we decided this was a pretty good place, even if the lake was barren. As we were readying ourselves for a marathon campfire, we spotted the signature rings of a rising fish, pulsing like a beacon. We scrambled along the shore rocks into range and cast toward the riser, though now the rings were gone and we couldn’t be sure if this was the spot, couldn’t be sure if we had seen a fish at all there in the hazy last breaths of dusk. Still we fished on with renewed vigor, this little lake offering us something we might have lost in the standoff with the bull. We fished into the darkness. Stars lit up the blackness in a trillion unique patterns. We caught nothing. We didn’t care.

We had found the opposite of that fear we saw flaming in the bull’s eye; we had found the hope of roads. We knew then and have never forgotten that those two ideas—hope and fear—are inexorably linked. Those places that can kill us can also show us things we cannot find elsewhere—things that will lift us and hold us in the mystery of a moment, awe us through the sheer size of a bottomless geography. We sat talking beneath that trillion-star sky and watched the flame of our campfire flicker unnamed shapes into the darkness.

The next afternoon found us at a lake near St. George, Utah. Our fishing regulations implied there were plenty of trout here, the slot limit hinting that a few big fish might exist. We had just started fishing, working our way out onto a peninsula of red rock gravel and boulders. The water was shallow and clear, the sun generating heat in a way it had failed to that first morning. It felt to us very much like the birth of a new season. We had a long drive home still to make. We felt older, more experienced, but also

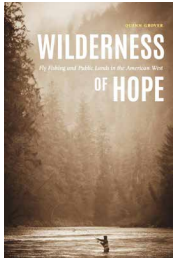
more aware of all the things we couldn’t comprehend, hadn’t identified in our limited suburban knowledge. We were becoming slightly aware of the eternity of things we didn’t know, the first of which was that such things existed at all. We wondered what else was out there to surprise us.

This was a desert reservoir. A bowl of rocks in an arid country that was filled with water only because the U.S. government (with some help from the locals) had decided to build a concrete dam at one end of it. The most common foliage was sagebrush, and the rocks were dusty red and plentiful. Occasional trees dotted the shoreline. In all reality, this was a water skier’s place, though we didn’t see any skiers that March day.

Instead we saw a trout.

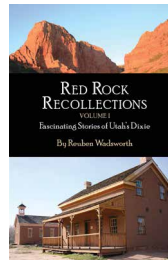
It was a single fish, cruising a few feet off the bank, swimming in some strange and beautiful pattern that took it farther along the shore on a road that only a trout or two fresh-faced teenagers could understand. The pink stripe unique to rainbow trout was clear in the shallow water. I remember it being a large fish, but that might be time and memory and hope itself fooling me. We hadn’t caught a fish the entire trip. The trout meandered but seemed intent on something. It seemed to have purpose but no destination. We cast to it a dozen times, following it down the shoreline and trying to get out in front of its nomadic path. But it never moved for our flies. It never wavered. It just disappeared down the shoreline, looking for a road that took it to a place worth going, eschewing straight lines. This fish was a wanderer. Not lost—looking for something, somewhere that felt right, content that the act of traveling without sure knowledge was an end in itself. **A**

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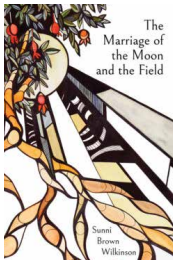
Wilderness of Hope: Fly Fishing and Public Lands in the American West
By Quinn Grover '00, MS '08

University of Nebraska Press,
September 2019



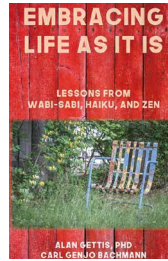
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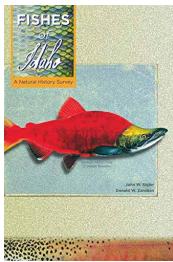
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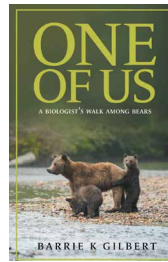
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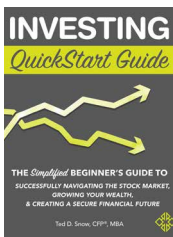
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By John W. Sigler BS '69 MS '72

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One of Us: A Biologist's Walk Among Bears
By Barrie Gilbert

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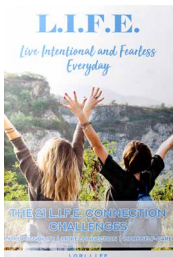
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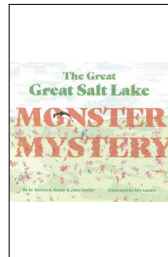
The Five-Minute Time In: Effectively Re-Engaging with Your Child(ren) in Just Five Minutes a Day
By Brittney Smart '03

Independently published,
September 2019



L.I.F.E.: Living Intentional & Fearless Everyday – 21 LIFE Connection Challenges
By Lori J. Lee '94, MS '15

Independently published,
February 2019



The Great Salt Lake Monster Mystery
By Jaimi Butler '00 and Dr. Bonnie K. Baxter

GSL Salty Sirens, March 2019

O (my) Pioneers!

By John DeVilbiss

When photographing Nadene LeCheminant, there was the usual joking about “making me look good,” but then she made an unexpected request: “Don’t Photoshop out my gray hair.” LeCheminant, who graduated from Utah State University with degrees in history and art in ’84 and ’97, was on campus for a day to talk about her new book, *The Gates of Eden*, a historical novel that chronicles one of the first Mormon handcart parties. She says her three years of research about these early converts to the Church of Jesus Christ of Latter-day Saints gave her a new appreciation for what it meant to be a pioneer—scars, wrinkles, gray hair and all.

What made you want to write this book?

Nadene LeCheminant: I was always intrigued by the colorful stories of my ancestors. For example, one ancestor was romanced by Joseph Smith. But the story of my great-great-grandmother, Mary Ann Barton Allen, was the most intriguing. She was an English girl who pulled a handcart to Utah and ended up as the child bride of a much older polygamist. And although my novel doesn’t follow the arc of her life, it was her story of hope and survival that inspired me.

What do you think motivated these colonizers to risk everything to settle in what was nothing but a barren desert at the time?

NL: Many handcart pioneers had been impoverished. They were teetering on the edge of survival in the slums of Victorian England, and I think they wanted an anchor. They wanted some sense of security, and they found that in their faith. But many were suffering from hunger and I think they also were attracted by promises of abundance—the Promised Land. We don’t think of Charles Dickens and the Utah handcart pioneers in the same breath, but perhaps we should.

You say that in researching this book you walked portions of the Mormon Trail. What portion stood out?

NL: I remember the scene at Hogsback Summit, near Henefer, Utah. The pioneers had already walked more than 1,200 miles, and they thought they were almost there. When I came up over the crest of a hill, following the handcart ruts, I could see the jagged peaks of the Wasatch Mountains jutting up into the sky across this expansive horizon. You can’t see a pass, and there’s snow on the mountains and autumn is coming on. Historians dub this spot Heartbreak Ridge because so many pioneers just broke down and wept.

What was it like for you?

NL: It was profoundly moving to follow her footsteps. I felt a small sense of her lived experience, although I can’t imagine going through some of her hardships. I think people in Utah sometimes mythologize the handcart pioneers. They are larger-than-life characters. But if we lose our ability to understand them as humans, if we lose the nuance, we lose our ability to be astonished at what they did, to feel awe, and to be moved to tears by their courage. So I wanted to bring them down out of the clouds and make them real people. And in my novel not all Saints were saints, but I didn’t want to have any characters who were villains. I wanted everyone to have a backstory.

Including the Latter-day Saints involved in the massacre at Mountain Meadows?

NL: Yes. When you talk about the Mountain Meadows massacre, you can never excuse what happened, but I wanted readers to understand that these were men who had been chased from state to state to state. They had their homes and orchards burned, their women violated, their family members killed. They were formed in a

cauldron of violence, and they responded with violence. People are complicated creatures, and I think when we look at history we need to look more at the gray, in-between places, rather than the black and white. I didn’t want to cast judgment. I wanted to write with honesty, but also with compassion.

In your story, Josephine, whose character is based on your great-great-grandmother, is cared for by a family from Cedar City. Within months she is married to the man of the house who says he was commanded to take her as his second plural wife, even though she was only 16. It was difficult to read that, in part, because of her dubious consent.

NL: She wasn’t forced, but she also didn’t have a lot of options. When I began to write, I didn’t know where this story would lead, so I just followed my fictional characters. I read hundreds of pioneer journals and 19th-century newspapers and letters, and also imagined my great-great-grandmother’s life. I think a lot of times people talk about polygamy as a sacred covenant, but we don’t follow people into the parlor. We don’t follow them into the bedroom. And I wanted to show real people trying to grapple with this. It was not an easy life.

Was it the same for your great-great-grandmother?

NL: Well, she was 15. She was looking for a home. She says that she was standing on the street in Salt Lake City after she arrived, waiting for someone to ask her home with them. She was looking for security, and in that shuffle for security, she ended up as a second plural wife within several months.

Your characters are fictional, with the exception of several historical

Nadene LeCheminant loves her pioneer ancestors as much for their ordinary and all-too-human characteristics as she does their extraordinary feats.

individuals, including Brigham Young. Most of your characters are also multi-faceted. Would you call him a complicated person?

NL: Yes! One thing that amazed me when I was doing my research was the organizational genius of Brigham Young. He was a paradox—a folksy, affable man who also could be crude and callous and vengeful. But above all, he was an incredible visionary. Fewer than one in 10 million individuals could have led tens of thousands of mostly poor people across an ocean, over the Rocky Mountains on foot or by wagon, and across a desert to one of the most remote places on Earth. He settled them in a wilderness where there was absolutely no infrastructure and told them to start digging irrigation ditches and planting corn. His genius was the foundation for all these now flourishing communities, including Logan.

What surprised you most from your research?

NL: When we think of the Westward Expansion and the settlement of the West, we often have visions of rugged individualism—young men striking out on their own in search of gold or farm families headed to Oregon. They banded together in wagon trains for protection, kind of like traveling forts, but it was essentially an individual or small-scale enterprise. I was surprised at how different the Mormon Exodus was. Their westward migration was a massive community effort. They planted crops and established ferries to help those who came after them, and settlers in Utah loaned wagons and ox teams to help bring new immigrants west. The Latter-day Saint pioneers were a uniquely cohesive group, which contributed to their emotional resilience. They were sometimes heartbroken, they sometimes doubted, they were traumatized by harsh experiences, but above all, they were resilient. **A**

Learn more about The Gates of Eden at www.nadenelecheminant.com.



“ When we look at history we need to look more at the gray, in-between places, rather than the black and white. I didn’t want to cast judgment. I wanted to *write with honesty, but also with compassion.* **”**

—Nadene LeCheminant



Unlocking the Secrets of Native Plants

by Lynnette Harris '88

When *Bill Varga* read a book about Jim Bridger back in third grade, he didn't know he was setting himself on a path that would add a layer of meaning to his future career as a plant scientist and fuel a passion for studying and reliving the mountain man life, even if only for a few days at a time. Like other boys at St. Richards Catholic School in North Olmstead, Ohio, Varga was enamored by stories of the American West.

"It was the 1950s, the time of Fess Parker as Davy Crockett, and every boy wanted to be Davy Crockett or Roy Rogers," he recalls. "The mountain men are the glamour part of pioneering and exploring the West, but in order to survive, the people we think of as pioneers had to do what the mountain men did."

Often, what those who survived in unfamiliar and unforgiving places did was learn from Native Americans who had passed on knowledge for generations about plants and other resources that sustained life, healed wounds, and cured illness. Varga BS '72 MS '74, a retired USU horticulturist and Extension faculty member, and namesake of the Varga Arboretum at the USU Botanical Center, continues to bring plants that are native or well-adapted to various parts of Utah to the nursery industry. It is rewarding but frustrating work and the challenges illustrate misperceptions people have about native plants: just because something grows wild doesn't mean it will transplant to your yard or can be propagated in a greenhouse and sold at your local garden center.

He and plant scientists Larry Rupp and John Carman memorably learned that lesson when they tried to grow sego lily in a lab, greenhouse, or research plot. "We thought we had figured out the technology to propagate them and produce thousands of plants, but once we moved them into pots they died," Varga says. "Nurseries wanted them, but we couldn't do it. Segolily is quirky and that's not a great trait if you want to grow them in a greenhouse or rely on them for food."

Generations ago people were keenly aware of seasonality and life was inextricably connected to nature's cycles, especially on the frontier. Because chemical compounds in plants change over time, native people moved to follow prized vegetation,

like camas. Bulbs of blue camas were an important food for Native Americans, mountain men, and pioneers—important enough that wars were fought over access to camas prairies. The bulbs must be harvested in the spring when the plants are in bloom because amid the blue camas are toxic white camas, also known as death camas. The flowers were the only way for people to make an important distinction between food and poison.

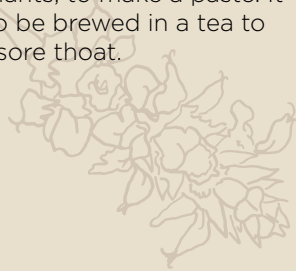
"People now don't notice the Indian potato that blooms as early as February because it is so tiny," Varga says. "But to me, there is a spiritual connection to that little plant because finding it meant you had made it through the winter." **A**

What They Used

Varga selected a few examples of edible, medicinal, and useful plants in Utah that would have been prized by early people in the region.

M E D I C I N A L

All-heal (*Prunella vulgaris* var. *lanceolata*) gets its common name because of its wide medicinal use. The flowers and leaves are crushed, usually blended with other plants, to make a paste. It can also be brewed in a tea to treat a sore throat.

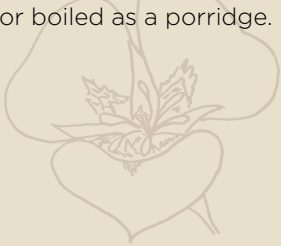


Common yarrow (*Achillea millefolium*) grows in many regions and is widely used as a pain reliever. It is chewed to treat toothaches, steeped to make a tea to ease head colds or earaches, and crushed to make a poultice for burns and wounds.

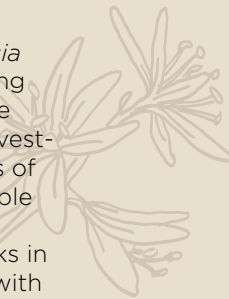


E D I B L E

Sego lily (*Calochortus nuttallii*) is Utah's state flower and credited with saving Mormon pioneers from starvation. Although sego lily fed many people before the pioneers arrived, Varga says, its popularity is boosted because it is beautiful. Its starchy bulbs were eaten roasted or boiled as a porridge.



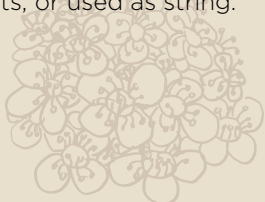
Small Camas (*Camassia quamash*) blooms in spring and camas prairies, where many bulbs could be harvested at once, were the sites of camas bakes. Native people would dig broad pits and put a layer of heated rocks in the bottom, cover them with layers of damp grasses and camas bulbs, and cover the whole thing in order to steam the camas. Then the bulbs were eaten or mashed into a paste and patted into thin "tortillas" that were dried and eaten months later.



Miners lettuce or Indian lettuce (*Montia perfoliata*) is in the purslane family and has a beautiful round leaf with a tiny white flower at its center so it is easy to identify. Varga says it is "wonderful to eat fresh as it's picked, but a little blue cheese dressing is a great addition."

U S E F U L

Mountain ninebark (*Physocarpus malvaceus*) stems can be stripped of their leaves and the bark peeled away. Then twisting the stem separates it into long fibers that are used for fishing line, woven into nets, or used as string.



Yucca (*Yucca harrimaniae*) is native to Utah, Nevada, Colorado, northern parts of Arizona, and New Mexico. Nearly every part of the yucca was used by early people in the West. It contains high levels of saponins, a group of chemical compounds used as shampoo and surfactants. Yucca fruit and roots were eaten, the stem fibers used as fiberscords, and the tough leaves used to make sandals.



E D I B L E & M E D I C I N A L

Yampah (*Perideridia gairdneri*) is sometimes called wild carrot. The stalks mimic tall grass until its cluster of tiny white flowers bloom. Yampah roots are about the size of an adult's little finger and are crunchy, resembling the texture of water chestnuts. It grows at high elevations and blooms in summer. Uncooked roots are a gentle laxative. Baked or steamed roots contain carbohydrates and were eaten for high energy.



ONE

GIANTS

LEAP

by Kristen Munson





JULIE ROBINSON deftly steps through the squat doorways of the International Space Station in kitten heels. They click against the glass floor, the only noise in the otherwise empty chamber. The facility at the Johnson Space Center is a medium-fidelity mockup of the laboratory orbiting 250 miles above the Earth at more than 17,500 mph.

Here there is no microgravity,

no trace of the hundreds of ongoing experiments aboard the International Space Station (ISS). This is where astronauts train for emergency evacuations. And it's the closest most of us will ever get to experiencing a day in space.

At least, for now. But the road to Mars begins on the ISS.

The National Aeronautics and Space Administration (NASA) considers space the next frontier for exploration and expansion. SpaceX, Blue Origin, and Boeing do, too. They are just a few of the companies jockeying to be the first to put humans on Mars. NASA's own plan to send a mission to Mars isn't targeted until the 2030s and the race to colonize the red planet has opened the door to advances in space tourism. Innovations in the private sector stimulate people's imagination, says Robinson '89, ISS chief scientist, while standing in the node connecting the Japanese, European, and American modules.

"Lower Earth orbit might really become part of the economic sector," she says. "The same way you can buy an airline ticket, maybe you can buy a space

ticket and spend a few days there on vacation. Mars won't be quite like that for a long time, but the fact that lower Earth orbit could be like that soon is really amazing."

Robinson was just a baby when the Apollo 11 crew planted an American flag on the lunar surface July 20, 1969.

As Neil Armstrong observed the ground from the ladder of the spacecraft, he remarked that the soil was so fine it was "almost like a powder." The astronauts collected samples for analysis back on Earth, took photographs, and conducted a handful of experiments. About three hours later they returned to the spacecraft, concluding man's first visit to the moon. American astronauts haven't been back since 1972.

Scientists today are eager to return to explore the poles and establish a sustainable presence that will serve as testing ground for the next horizon: Mars. Last March, Vice President Mike Pence announced that NASA's newest program Artemis (Apollo's twin sister in Greek mythology) will continue what Apollo started 50 years ago. In 2024, NASA will

land "the first woman and the next man" on the moon.

"The original Apollo missions didn't allow women to be part of that overall process," Robinson says. "We actually identified women that could have, and then we didn't let them be part of those early missions. It is a great next step."

As a kid in Pocatello, Idaho, Robinson recalls her father, a civil and geotechnical engineer spotting empty parking lots and following his curiosity.

"We would pull over at abandoned shopping malls to see why the foundations had collapsed," she says. "I grew up pulling over and looking at things. I just fell in love with asking questions and looking at data and my dad definitely taught me that."

But where he pursued engineering, she wanted something of her own. A biology teacher in high school introduced her to the life sciences—a path Robinson followed throughout her undergraduate years at Utah State University. Robinson first learned DNA sequencing in the late Joseph K-K Li's lab.

"Back then it was this massive undertaking," she says. "People would spend

More than 2,000 experiments have been conducted aboard the International Space Station since its launch in 1998. Photo courtesy of NASA.

their whole Ph.D sequencing one virus, which would take you half a day now. And you could do it in your kitchen with some of the equipment we're using on the space station."

She also worked in a chemistry lab. Both experiences taught her how research questions worked, but it was the USU Honors program that sealed her fate. By the final semester Robinson was burnt out and frustrated when she met with

Joseph Morse, then head of the Honors Program. He asked what her plans were after graduation and mentioned that she was considering not going to graduate school and becoming a teacher.

"He looked at me and he said, 'If you become a teacher, you'll have a great impact on a lot of kids' lives, and you will be a total waste to science,'" she recalls. "'Please go to graduate school.'"

It was a jarring moment.

"Back then in '89-90 there wasn't a lot of encouragement for women to go into science," Robinson says. "In fact, there was a lot of discouragement ... even in my family which was very conservative, I don't think it ever occurred to my dad that getting an education was anything but a backup plan to being a mother. When I did go to get a Ph.D I remember him saying 'Wow, I didn't know you wanted to do that!' And I'm like 'Why wouldn't I? You had a Ph.D. I wanted to be Dr. Robinson, too.' If that moment with Joe Morse hadn't happened, I would have been on a very different path."

Across the road

from the Johnson Space Center a freshwater inlet empties into the feeder waters of Galveston Bay. An alligator cruises where a half-drowned chain-link fence guards an empty strip of pavement. Lizards disappear into the folds of palmettos. A man uses a Coke can wrapped with fishing wire to compete with a statuesque Great Blue Heron across the way. The water is teeming with life.

This is what first attracted Robinson to Houston in 1997. She came for a postdoc to study what happens to the wetlands when big storm tides come in and the salt marsh disappears. "What I was interested in was what happens to all the salt marsh sparrows? What happens to the rodents that live in the marshes?" she says.

Robinson thought her future was as a professor. Then she met people at NASA who were looking for an ecologist to help train astronauts preparing to go to MIR, the now retired Russian space station. They wanted someone who could help astronauts understand the world that they were going to see, Robinson says. "Because for the first time, instead of just being up for two weeks for a quick shuttle mission, they were going to be up long enough to see seasonal changes and floods and droughts and compare what they saw to what it used to look like."

NASA astronaut Scott Kelly posted this picture of the Bahamas taken from the International Space Station on Twitter on July 19, 2015 as part of his year in space. Photo courtesy of NASA.



Julie Robinson is NASA's chief scientist for the International Space Station. Photo by Jeremy Jensen.

These days astronauts spend about six months aboard the ISS. That figure will grow as NASA ramps up plans to send astronauts on multi-year missions to places like Mars. In 2016, NASA's Scott Kelly and Cosmonaut Mikhail Kornienko of the Russian Federal Space Agency spent a year in space to test the effects of long exposures to microgravity on the body.

Kelly spent much of the days watching the ever-changing canvas of the Earth. He witnessed the blizzard of 2016 frost the East Coast below, conducted experiments on himself, and tended the first flower grown in space—a bright smear of orange amidst the vacuum of space he Instagrammed with the caption “Yes, there are other life forms in space!”

The space station is an engineering and diplomatic feat. Since its launch in 1998, five space agencies including Russia, Japan, Canada, Europe, and NASA share responsibility for the ISS and have collaborated on more than 2,000 experiments. The names of the various components built by each agency reflect the lofty goals of the project: Hope, Columbus, Destiny, Harmony, Unity. The ISS is a place where things can be different than politics on the ground.

“We all have to work together to keep the crew alive, to keep the crew healthy and keep the work going,” Robinson says.

Some of that work will help propel humankind the farthest we've ever been from home.

This is a really old concept, Robinson says, pointing to a vertical wall of plants encased behind glass. “We don't have anything like that on orbit now. But as scientists consider what type of food system will be needed to send a crew to Mars, the vision of a vertical greenhouse is not so far-fetched.”

Much of the original work of growing plants in space focused on getting

them to grow in microgravity. It shifted to studying if produce grown on the ISS was safe to consume. The question now, Robinson explains, is what should we be growing? “If you saw the movie *The Martian* and they're growing all those potatoes. I'm an Idaho girl, but you do not want to be living off of potatoes. You are going to be malnourished if that's your major source of food.”

Calculations suggest it may take about one year to travel to Mars from Earth and certain nutrients won't survive the journey in readymade meals. Designing a sustainable food system that can provide

vital micronutrients and vitamins is a critical part of keeping crews healthy because the MRE style packaged foods consumed by astronauts on the ISS today won't cut it. NASA will test a potential food system for Mars on the ISS for several years before a crew deploys.

“We have to figure out what do we have to produce along the way and then what's the technology that we need that we can reliably use to produce that food?” Robinson says. “The space station is really fundamental to proving that something could work for long enough that it could be part of the critical food



"HUMANS WANT LIFE



AROUND US.

That is a really important part of what being human is.” — JULIE ROBINSON

system. If the food system fails, the crew could get really sick on the way to Mars. Just like sailors got scurvy in the days of the great sailing vessels because they didn't know about vitamin C.”

But a balanced diet is just one aspect of crew health. What about the effects of radiation? How much exercise does the crew need to prevent bone loss?

These are questions scientists are exploring because human beings will be sent to Mars. Human beings are complex organisms with feelings and desires and fears. Ensuring astronauts stay mentally healthy is also important. That's why isolation and confinement studies are also tested on the ISS. Understanding crew dynamics and how to support astronauts when they are far from home will become increasingly important on long duration missions when communications blackouts are expected and stepping out

for a walk to blow off steam is not an option.

“How do you make sure they have meaningful work?” Robinson asks. “On the space station we have tons of meaningful work because we have got all of this research. But when you go to Mars you are going to be so mass limited. You are going to really have to strip it down to what you need to survive. And so then how do you make sure the crew has meaningful work? Is it cooking? Is it growing food?”

Growing plants may supply the crew with needed micronutrients and also fulfill another purpose—they remind astronauts of home.

“When crew members have flown when we didn't have a greenhouse some of them still figured out how to grow things,” Robinson says, describing how Don Pettit sprouted seeds in a pair of

socks when he was on the ISS. “Humans want life around us. That is a really important part of what being human is, and something we have to think about when we go on these missions.”

A row of white spacesuits—

relics of a time before digital cameras and satellite phones—flank Robinson as she walks out of the test facility and into the warm, humid air of a Houston afternoon. She drives to the Human Health and Performance Laboratory to meet with Sarah Wallace, a NASA microbiologist whose lab monitors the air, water, and surfaces of the ISS so the crew and craft stay healthy. As she leads the way to the microbiology lab Robinson praises Wallace's innovative drive and greets her with a hug and wide smile.

NASA Expedition 46 Commander Scott Kelly tended zinnias during his year aboard the ISS. On Jan. 16, 2016, he posted a series of photos of the first flowers grown in space. Photo courtesy of NASA.

In many ways Robinson is an ideal messenger for space station science. The majority of the workforce at the Johnson Space Center are engineers and Robinson credits her dad with helping her speak engineer early in life. But as a former science researcher, Robinson appears genuinely pleased to talk about the work she oversees. Her blue eyes flicker with excitement whether she's talking about research on the ISS potentially helping to streamline drug testing or possibly improving models for cancer growth.

The way we have been monitoring microbes on the ISS, really since back to Apollo, was using culture-based approaches, which is really the gold-standard for microbiology, Wallace says. "What my work has been trying to do, is move us past that."

A pile of augur plates sealed in packages rests on a workbench.

"This is not okay," Robinson says holding one up. "You are culturing things in space that are bad for you. Why would you want to culture those in a closed environment? Number two, this is a lot of mass. Then you have to bring it home to Earth to figure out what the heck it is and you can't do that on the way to Mars. So, it's just a huge amount of mass and wasted effort. The other thing I don't like about it is you're not culturing everything."

Wallace tracks innovations in technology on the ground and determines how to adapt them for space. For instance, new instrumentation allows scientists to take a single swab of something, like the soil, and find all of the bacteria that are in the sample.

"This guy does the same thing," Wallace says displaying a tiny device called the min-ION in her palm.

The sequencer doesn't just detect DNA, but also RNA. It can detect anything such as nucleic acids that we aren't really familiar with yet, Wallace explains. "We say things a lot like 'Oh, this is game changing,' but I really think because not only will it help

me with the here and today with the microbiology questions we have, but it can help ... in the future as we look for life beyond Earth."

The methods will also allow astronauts to do more than sequence in real time.

When you put something alive in space it changes, Wallace says. Some genes turn on and off to better survive in space. Usually the changes that occur are in the RNA, not the DNA, as far as we know, she continues. "We suspect there may be heritable changes happening in the DNA."

Scientists are conducting a long-term experiment with a bacteria cell line to test if mutations are actually happening in its genome and at what rate. But the ability to swab and sequence in real-time goes beyond microbial monitoring on the ISS. It could help detect manmade changes to the environment.

"We were so worried if we found life in the lunar soil, did we put it there?" Wallace says. "It's going to be the exact same thing with Mars—only worse. Could we contaminate a planet with Earth things and then either one, lose our ability to find something that was there native to Mars, or two, kind of ruin Mars?"

Not all research on the ISS is so outward looking. About half of the research focuses on improving life on Earth. Hurricane prediction tools, advances in water purification, and drugs to treat osteoporosis—all have been tested on the ISS. But it took a while to get the space station fully functioning as a lab.

"For the first 50 years of space flight, if it didn't work, you were usually out of luck because it was so hard to get access," Robinson says. "We've turned that corner. We [now] have enough facilities, enough cargo flights, we have

enough crew members on orbit that can do the work ... so we are actually operating like a real lab now, but it took a long time because space is really hard."

When Robinson took over as chief scientist in 2006, NASA was undergoing a period of reinvention.

After the 2003 Columbia accident where seven astronauts were killed during re-entry, it forced a public questioning of the shuttle program and whether humans should be in space, or not. The shuttle program was retired and funding for scientific investigation was slashed. Part of Robinson's job has been rebuilding the threads of research that were lost. Nearly 15 years later, she is helping NASA scientists lay the groundwork for the operational and scientific experiences crews will need to establish human outposts on the moon and Mars.

"Even in high school we were talking about how fragile the Earth is, how vulnerable the Earth could be to some catastrophic event," she says. "Throughout human history there have been times when humans made these amazing leaps and got to a different continent, got to a different island chain. That nature of humans as explorers is one of the reasons that we have survived so well as a species. It also may be the thing that saves us someday."

"I think of how we need to take care of the Earth we've got," she says. "We are many generations away from having any other alternatives—real alternatives for real numbers of people. But I also believe that being a multi-planet species is a really good insurance policy."

And the next giant leap. **A**



Mary Cleave flew two shuttle missions—STS-61B (1985) and STS-30 (1989). She worked with NASA Goddard in the 1990s and eventually as Associate Administrator for Science at NASA Headquarters. Here she is during her 1985 training on the “vomit comet.” Images courtesy of NASA.

FOLLOWING
HER NOSE

TO THE STARS

by John DeVilbiss

Mary Cleave's moment of panic did not come during the 17,000 mph catapult into space, rather it was when she briefly struggled to pick out her navigational stars shortly after the Atlantis Space Shuttle began its six-day orbit on Nov. 26, 1985.

“WHAT YOU SEE is so incredibly overwhelming because there is so much more of it than you’ve ever seen before,” she says during a phone call from her home in Maryland. Once above the Earth’s atmosphere, there is no light pollution, no atmosphere to filter everything out. That meant a few anxious moments of not knowing exactly where she was before her eyes could “dark-adapt” to space. “There’s so much other stuff out there,” she says. “But after a minor moment of going, ‘oh, my god!’ I found them.”

A good thing, too, because as the flight engineer, she needed to know her positioning just in case the ship’s star trackers failed and she would be forced to do a manual coax calibration. “You’ve got to find your nav stars before you need them,” she says. “If you’re in a spaceship and your survival depends on getting home, you better figure out how to do it without a computer too.”

That is when it begins to sink in.

“It’s what you use when you’re out at sea trying to find your way around,” she says. “It’s the same in a spaceship. I mean they’re ships too, right?”

Right, which means you, Dr. Cleave, are not terribly different from the voyagers of old—explorers who sailed uncharted seas and looked to the very same stars for orientation. That means you—Utah State University’s first, and only, female astronaut—are among an elite group of

planetary pioneers, and part of an even more specialized cohort of 40 American female space explorers—40 among billions of Earth inhabitants. You are only the 10th woman to fly in space, including two space shuttle missions. You mingled with moonwalkers, chummed with John Glenn, the first American man to orbit Earth, and worked closely with Sally Ride, the first American woman in space.

Cleave never set out to do any of these things for the sake of being first or best. “I didn’t even think about it,” she says.

“I was just doing what I wanted to do. I mean, my parents had to be very understanding people because I was a very strange little girl.”

She preferred playing with model airplanes over dolls. By the time she was 17, she earned her pilot’s license, even before getting her driver’s. She also preferred to fly fast, especially high performance T-38’s, the world’s first supersonic jet trainers with a 2,500-pound engine thrust and spine-tingling afterburner. It would be nearly 15 years from the time Cleave first started flying these speedsters in 1980 before Jeannie Flynn would train on them to become the Air Force’s first female mission-qualified fighter pilot in 1994. Cleave would not wait.

She was working at USU’s Utah Water Research Laboratory as a microbiologist in 1979 when a colleague pointed out a NASA advertisement that he saw hanging in the Logan Post Office next to an FBI Most Wanted poster. NASA was seeking engineers and scientists to work on its expanding space shuttle program. “Mary, you know this sounds like you’re the only engineer working here who is nuts enough to want to do something like that,” he told her. On a whim, she applied, mostly because those in the astronaut corps were required to maintain currency in T-38s—male and female. “That was my avenue,” she says. By May 1980, she became an official NASA astronaut, among only the second class of shuttle astronauts hired. “It was a great job. Yeah, good time!”

Good timing, too, thanks, in part to the 1972 passage of Title IX. Its passage not only gave women athletes opportunities to compete, but also gave women co-equal educational opportunities leading to jobs like with NASA. “I was extremely lucky, because I was just on the leading edge of things



Mary Cleave says it was disappointing to be too small to fit into space-suits for space walking. On the other hand, having to remain in the orbiter allowed her to become a flight engineer. “I went from being too short to be an airline stewardess when I graduated from undergraduate school, to become a flight engineer on the space shuttle.”

changing for women,” she says. But not before being turned down by Cornell after graduating high school in the mid ’60s with a full-Regents scholarship.

She loved animals and thought she would like to become a veterinarian. Cornell told her that they would accept her for any major other than pre-vet because they could not risk giving those slots to women. There was a shortage of vets at that time, and “women will just get married and won’t practice veterinary medicine,” they told her.

She went to Colorado State instead, where she finished her pre-vet training, graduating in 1969 with a degree in biological sciences. Despite good grades, she still could not get into Cornell’s veterinary school due to her gender, she says. It was while she was preparing for graduate school that she chanced upon USU. She first thought about attending the University of Utah and drove to Salt Lake City

Her crew members were so grateful that they
presented her with a plaque afterwards that read:

The best man for a job may be

THE WOMAN. ”

to visit a professor. Having grown up in Southampton, near New York City, it seemed like just another large city, so she thought about Bozeman instead. “I was literally going up to Montana State when I dropped into Cache Valley,” she says. “It was June. There was snow on the mountains, and the valley was green. And as I was driving past Utah State University, I thought, ooh, this looks great.” She pulled in and made a beeline to the botany building where she ran into Herman Wiebe, a faculty member in plant physiology. “And I ended up living there for a decade,” she says. “I mean, you know, follow your nose.”

In the process, Cleave became one of the first women, if not the first, to earn a doctorate in Civil and Environmental Engineering from USU. This came after some prodding by Joe Middlebrooks, dean of the College of Engineering at the time, who told her she was too impatient to be a good scientist. “And I told him he was out of his mind because there weren’t women in the College of Engineering graduate program then,” she says. “But he was absolutely right. Every 10 years I’ve got to change what I’m doing, and, you know, not just on an academic level, but on a personal level too.”

Which is why, at 72, despite her official retirement from NASA in 2007, she is still at work, choosing the research projects she wants and the people with whom she wants to work. That includes her current OPAL project with USU’s Space Dynamics Laboratory mapping global thermospheric temperature variability. It also includes some very down-to-earth volunteer work she is doing with organizations such as the League of Women Voters helping to organize candidate debates in her county. “I’m paying back, because they are the ones that got Title IX passed,” she says. “These women have been basically working on this for years and years, and they’re not giving up.”

Her own female heroes were the “cowgirls” from Colorado State who lived in her dorm. “They were tough broads!” she says. “I had never been around women that were tough

before, and it had a huge impact on me. Huge.”

Apparently, enough for her willingly to be strapped to a pair of solid propellant rocket boosters on two occasions propelling her nearly 4 million miles through space. Her sister inherited the anxiety genes in her family, she says. “I don’t worry about stuff. I just think, ooh, that’d be neat.”

It is this sense of wonder, combined with trusting her instincts, that led her to USU and her advanced science and engineering degrees. Her comprehensive plant-life measurements of Earth from space, the first of its kind, was “a perfect match” with her research at USU. Research such as her studies of carbon uptake in cryptogamic crusts of western deserts, as part of her master’s, to establishing the effects of oil shale leachate on phytoplankton in the Colorado River, for her Ph.D. She even put her water lab expertise to good use by solving a potable water issue while orbiting the Earth, and relied upon her engineering skills to fix a broken shuttle toilet. Her crewmembers were so grateful that they presented her with a plaque afterwards that read: “The best man for a job may be the woman.”

While opportunities for women in male-dominated fields, such as spaceflight, are increasing, it “doesn’t happen rapidly,” she says. “What happens is that you make progress, and you drop back, you make progress, and you drop back....overall, forward progress comes with the ups and downs.”

And whether up in space or down on Earth, exploration of both are of equal importance to her. “I don’t differentiate between the two,” she says. “As I see it, you got to understand your neighborhood, or you’re going to get into trouble.”

On her second shuttle flight in 1989, she helped deploy Magellan, one of the most successful planetary missions ever launched. Since arriving at Venus in 1990, it went on to map 95 percent of what was once a wet surface, which is why Enceladus, the sixth-largest moon of Saturn covered by fresh ice is where Cleave wants to explore next. “You know, I’m a water quality guy, so follow the water.” **A**

Detecting Life on MARS

by Kristen Munson

IN SIX MONTHS, NASA's newest rover will launch from Cape Canaveral Air Force Station to the Jezero Crater, a dry lakebed on Mars 30 miles in diameter that scientists believe is one of the most promising sites to discover if life ever existed on the red planet. The rover will roam windswept sand dunes and ancient rock beds collecting samples for a future mission to bring to Earth. But what if the rover had a tool that could analyze the samples on site? The following is a conversation with senior bioengineering students Lindsey Bach, Michael Einreinhof, and Bailey McFarland who devised a sonicating device aimed to do just that.

How will this device work to find life on Mars?

Bailey McFarland: When you are trying to detect life on Mars you are primarily looking at things that are in a dry state because there is not much moisture on Mars. But it's very hard to detect some of the signs of life like amino acids with just dry chemistry. So we are trying to work with NASA to develop a way to take soil samples, hydrate them, and to have them be integrated with the systems that they already have as a way to perform some of the wet chemistry analysis on Mars.

Lindsey Bach: We are working on a small mechanical portion of it. Unfortunately, we won't even get to the soil science part of it because this project could take, realistically, 15 years. The novelty of it is that it's going to be in one unit—the collection, the extraction, the analyzing. If a sample from Mars were brought back for analysis, it could risk a lot of the integrity of the sample and introduce extraterrestrial material to Earth. The main idea is to contain it all in one unit.

How did you wind up on this project?

Michael Einreinhof: Two years ago I was trying to get an internship with

NASA and reached out to see if there were any researchers at NASA Ames with projects that they would like to have free labor on. One came back that we are using as our senior design project.

LB: Our senior capstone design project is a partnership with industry usually fostered by our professors' connections. This is the first year our department has worked with NASA, thanks to Michael.

BM: Biological engineers aren't often seen as the type that would be designing a device, but we have backgrounds that line up nicely with this project. Michael has experience with electrical engineering and programming, Lindsey has done DNA extractions, and I have done a lot of mechanical design.

NASA isn't planning to send a crew to Mars until the 2030s. You have some time.

ME: [laughs] We have until December.

What are some of the tests you are performing on it?

LB: I'm doing a vibrational analysis to see where the pressure points will be on Earth conditions. Obviously long-term you would have to analyze for Martian conditions because there is going to be extreme pressure and temperature differentials

and it will take a toll on the mechanical design of it.

BM: We want to test the efficiency of recovering the soil samples from the drill bits. We 3D printed them so we have the actual dimensions of the part and are testing with soil samples that are as close to Mars soils that we can get. We are trying to integrate with the system that will recover samples from that drill bit because that is one of the hardest parts. Mars can be very cold, but there is some moisture and if you are going to try to get core samples in conditions like polar deserts, it could end up freezing onto the drill bit.

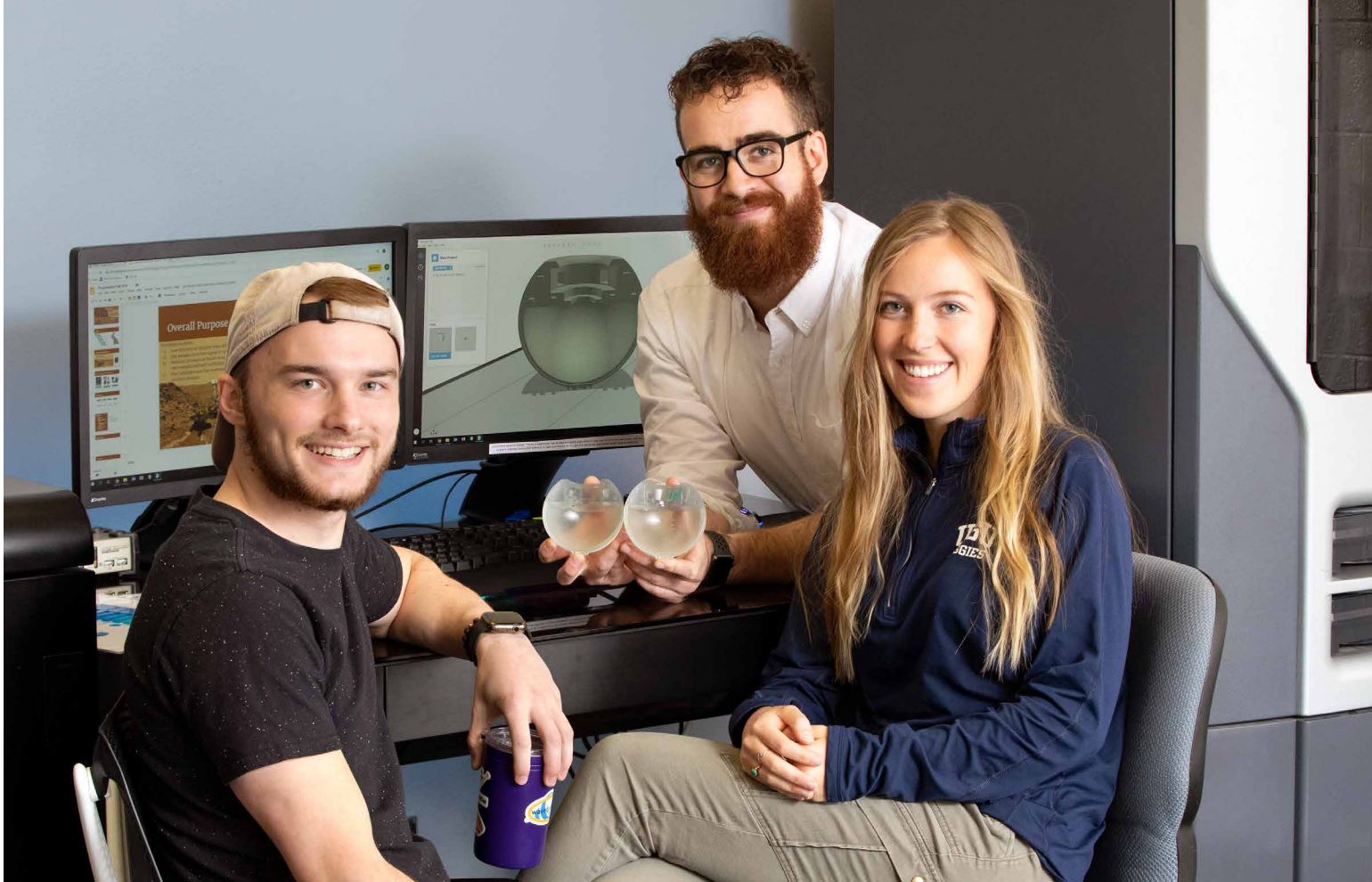
Is it going to work?

BM: I'm confident it will work. How many iterations it takes before it works the way we want it to, is going to be interesting.

Did you envision working on a project for NASA?

ME: It was always my goal.

BM: It's kind of surreal to know I am working on a project to try to help detect signs of life on other planets. While Mars is the most immediate target, there are a couple of other moons of Saturn that are perspective options for this.



Bionengineering students (left to right) Michael Einreinhof, Bailey McFarland, and Lindsey Bach show off the Autonomous Life Chemistry Extraction Mechanism and Integrated Sampling Tool (ALCHEMIST) device they designed for NASA to help detect life on Mars.

ME: Titan, Europa ...

BM: If you have a good drill system for core samples and a way to get a liquid extract reliably off that, this applies to any mission where you are trying to analyze the composition of soils or ice or anything you can drill into. So even if we are just a small part of this ...

ME: Our role in this is crucial since we are the upstream device where our device feeds everything else that will analyze the sample. It's crucial that it works. Our main challenge throughout this is having a budget of zero dollars. But throughout that, we have managed to get by. We are actually soaring.

BM: With a project like this that is very design based, we have the resources on campus to be able to sit down at a computer and create something that solves a problem, do 3D prints, and get any of the physical parts we need.

What led you all to study bioengineering?

ME: My childhood goal was to augment humans to better survive space.

You were thinking about this as a kid?

ME: I was always into the game Halo—augmented humans that are super soldiers—and I want to morph that into a real-life thing. Even if I don't succeed at it, just getting the ball rolling. Because I see us traveling to different planets within the next 1,000 to 2,000 years and we can't survive space well. We get bone degradation. We get muscle atrophy. We are exposed to radiation due to the radiation in space. That's what attracted me to bioengineering.

BM: I really like the fact that we find things in nature that we cannot do. I came to Utah State specifically because of the spider silk lab. I started doing research there my first

week on campus. When you look at biology and look at what life has already done, you see some of the most amazing things. And to try and use that to try and solve problems is really why I got into biological engineering.

LB: I started in environmental engineering, but I switched over to biological because you have that option with going environmental. For instance, last summer I worked at a water treatment company. I liked the idea of being able to benefit humanity whether it is having clean water or by working for a biomedical company.

BM: A lot of the problems in biological are more wide reaching.

ME: Because everything deals with biology. **A**



She walks in beauty, as do all who find themselves on the Logan campus. For Brian Daines, USU landscaper and flower guru, he is always thinking about colors and getting just the right combination of petal flourishes.



Landscape Artistry

By John DeVilbiss

Right now, on campus, there is a place where pineapples are growing and goldfish are swimming. Right now, where Brian Daines is hanging out and thinking about flowers—50,000 of them that he plants and tends every year. He is a landscaper by title, but landscape artist by trade. And if one considers the Logan campus landscape, with its famous flora and fauna, to be the face of the university, he is a makeup artist too, for his job is to accentuate the beauty—a blush of begonias here, a highlight of marigolds there. A Trip Advisor reviewer says he was initially skeptical of all the superlatives about the campus grounds. “Well I was wrong,” he wrote in his Aug. 2, 2019 review. “The Utah State University campus lives up to these reviews, and then some. It is one of the most lovely college campuses and looks like something that Disney would create if Disney built a college.”

Zip-a-dee-ooh-ah!

The heart of the magic kingdom lies in the central greenhouse north of Maverik stadium where Daines is prepping for the coming season. It is on the campus equator where ferns thrive, bananas grow, and peace lilies ponder. It is a good place to get him in the mood to be thinking about flowers, for soon enough, the long rows of greenhouse beds, not far from his desk and swimming goldfish, will burst into colors.

He especially loves the salvias—his go-to plants—but it is the thousands of pansies, with their yellow, white and purple sunny-faced petals, that announce to students the return of spring. It is an impressive feat considering that Daines accomplishes most of this with a slim crew of six part-time students planting, weeding, mulching, thinning, pruning, culling, fixing, and fussing from early spring to late fall. You have to drive to USU’s botanical gardens in Kaysville and on to Temple Square in Salt Lake City to see an equivalent of colorful blooms. It is the Temple Square gardens, famously designed by Peter Lassig, that gives Daines his inspiration. That, and plenty of Mountain Dew, especially in the spring, he says. He is content to let the flowers garner all the attention while he remains behind the scene. It was while he was in high school that he began working on the grounds crew. He has seen a lot crews—and flowers—come and go since. What remains is his love of place and the students he thinks about with every seed he plants. They may not notice him, but he is there, crouching with trowel in hand among the blossoms of daffodils, bluebells, and forget-me-nots.



These pansies (top) started off in this greenhouse just north of Maverik stadium before being put to bed for the winter in one of the dozens of flowerbeds across campus. They are some of the first flowers to watch for when the snow begins to retreat.



It is early fall, but for Brian Daines, it is spring that he cradles in his arm as he prepares campus beds in October for their April blossoming. He plans the flowers he will use based on colors and how much care they require. For that reason, he likes blue salvias, but marigolds and petunias are his main flowers of choice.



A crew of six part-time students helps plant some 50,000 flowers across campus each year.



These crown imperials (top) add a little regalia to the campus scene. Pollinators also abound, like this little bee on a bitter sneezeweed.



Remembering a Champion

by Janelle Hyatt

Words can't outline the exact architecture of a great heart. A kind heart.

But one can picture a kitchen table, with a worn chair tilted just enough to welcome.

And one can see a girl, tall, dark haired and pleased with herself, who can run faster than all the boys. Who can swiftly climb a tree, but then decide to stay hidden among the leaves.

But what about grief?

Even the image of a sandy-haired man killed in an accident won't do. Or the image of his still untested wife who'd known her husband for five brief years.

Words do tell us, however, that grief gives up to struggle.

Imagine a somewhat sterner woman with long hair swept up into a tidy circular braid. One can see through the austereness of black and white that her eyes are gentle.

Picture a woman, now middle-aged, whose ability to speak is lost to a stroke.

See her manipulating small wooden pieces in her mouth to exercise her tongue.

The images are in color now, and one can now see this woman, her hair now faded but still pulled up, driving so fast that she unnerves her passengers, sidling right up to cars who don't understand her purpose.

Ione Bennion was born in 1908 and died in 1997, long enough to learn that life was unfair, but more unfair to some of us.

Even at the university where she contributed so much, most people don't know her name. How could this heart, so strong and expansive, ever be diminished by something as quirky as time? Those of us who never knew her feel the loss.

Why isn't Ione remembered? History shows that humans, as a race, suffer from memory loss, says Ross Peterson, a professor emeritus of history. Universities perhaps more so than most institutions. Students come and go, as do administrations.

Still, says Julia Gossard, an assistant professor of history, who is tasked with managing a workshop Ione created more than 20 years ago, "We need to bring her back into the conversation."



Ione Bennion put others first. Her legacy lives on at the university through the Wayne and Ione Bennion Teacher's Workshop for the Perpetuation of Democracy she endowed. Images courtesy of USU Special Collections and Archives.

Ross Peterson met Ione when he came to the university as an assistant professor in 1972. Twenty years later, after he founded USU's Mountain West Center for Regional Studies, Peterson worked with Ione to establish the Wayne and Ione Bennion Teacher's Workshop for the Perpetuation of Democracy. This annual summer program is housed in the center, and invites secondary teachers for a week-long intensive workshop on the core values of our nation.

Ione endowed the workshop when she had already passed 80, believing that our principles of democracy are best learned in a public classroom. It remains the only place on campus that still carries her name.

Julia Gossard was startled by Ione's kindness and clarity of purpose.

"She was so progressive in so many ways, especially for her period," Goddard says now. "She really made it so that women could access education."

Ione's introduction to Utah State was in 1947.

She earned her degree at the University of Utah, met and married Wayne Bennion in 1937, and started into a teaching career. In the midst of World War II, Wayne was supervising volunteers at Defense Depot Ogden, a massive mid-country stop for trains hauling war materials. He was killed when a stack of containers toppled on top of him. Ione's response was to head to graduate school, and she was accepted to Stanford University. Then the Utah Agricultural College called, and she returned to Utah as the university's dean of women.

In the 1948 *Buzzer* yearbook, Ione is slender, straight shouldered. She also likely noted a profile in the same yearbook of a young woman voted into student government. Hopefully, this "career girl," the text stated, will possess "the peculiar talent to combine the intellectual ability of a student representative with the frilly chores of a wife."

The next year's *Buzzer* reports the new dean "injected new ideas into old things and inspired campus coeds (or 'dorm daughters') to greater heights than even they thought they could achieve."

The post-war years presented another inequality. Crowds of G.I.s came home from war and headed back to school with funding from the G.I. bill. Women, on the other hand, "were just supposed to get married to (the G.I.s) and support their education," says Peterson. "She just had a different vision of what the future should be for them. Anybody who seemed to not have a high opinion of their future, that's who she championed."

In 1947, Ione married a forestry professor, Theodore (Ted) Daniel. He was a "gruff old guy," remembers Peterson, but he wasn't threatened by Ione's fearless ability to speak her mind. Other men were. "She questioned everything. She'd challenge you, but in a very, very nice way."

She eventually ticked off the wrong man, Utah Gov. J. Bracken Lee.

A nepotism law that hadn't been used since the 1930s was resurrected, and suddenly Ione was out of a job. The policy prohibited a wife to work at the university at the same time her husband did.

Ione fought the sheer unfairness of her termination. "She was very, very popular," says Peterson. But there was no bitterness, he says. "That just wasn't part of her makeup."

She began teaching at Logan High and noted when a bright student just up and stopped coming to class. Ione was appalled when she learned the reason: High school girls who became pregnant were suspended from school. Her response was what Thad Box said was a very Ione thing to do. She used inheritance money to purchase an older home near Logan High and remodeled it into a school for unmarried teenage mothers to earn their diplomas.

Box met Ione when he was hired in 1971 as dean of the School of Natural Resources. Ione, he remembers, just swept up he and his wife Jenny into her many advocacy pursuits. Ione had other close friends who joined her, including Alison Thorne, a pioneering scholar in



her field of economics.

Her friends speculated there wasn't a cause in Cache Valley she didn't speak for. Her work with young mothers inspired her significant role in bringing Planned Parenthood to Logan and supporting the women's center at USU.

The cause, however, that was the root from which all sprang was her belief that all Americans should be able to vote, and that women in particular were guaranteed a role in democracy. Later in life, she'd repeat what her mother told her as they attended a meeting 1920 regarding the 19th Amendment allowing women to vote: "Perhaps in your lifetime, Ione, you will see the time when women will have all the same rights as men."

In her mid-50s, she pushed legislation that resulted in the Utah Voting Rights Act of 1966.

And when the Equal Rights Amendment to the U.S. Constitution was introduced in 1972, Ione was a vocal supporter in Utah's (ultimately unsuccessful) fight.

Box chuckles as he remembers Ione. She championed many causes that he suspects upset members of the Church of Jesus Christ of Latter-day Saints, of which Ione was a faithful member. "She was just strong and willing to take on tough problems that other people thought she shouldn't be involved in," he says.

Ione had a much better relationship with another Utah governor, Scott Matheson. From him, in 1978, she received state recognition for her volunteerism—a poor word to describe Ione's life. That was just one of a number of awards that, if listed, would fill a page—single space. **A**

1940s

Alene M. Allen (Morrill) '49, Oct. 20, UT
Max Lee Archibald '49, '54MS, Nov. 13, UT
Vernon S. Barney '48, Aug. 13, UT
Clarissa M. Beutler (McAlister) '46, Oct. 11, UT
Betty T. Emerson (Turnbull) '42, Aug. 10, TX
Weldon J. Griffiths '48, Oct. 25, ID
Kathleen M. Lloyd (Mabey) '41, Oct. 25, CA
Alice Maughan Neilson '46, Oct. 7, UT
Kathleen G. Newey '47, Oct. 9, UT
Halcyon Robins (Larsen) '47, Oct. 24, UT
Carol Cowley Tribe '47, '61MS, Sept. 6, UT
Lois Weston (Carver) '46, Sept. 11, UT

1950s

Blythe Ahlstrom '58, Aug. 28, UT
Carolyn Marston Andersen '59, Nov. 1, UT
Jay M. Bagley '52, '53MS, Nov. 15, UT
Lester D. Baker '54, Aug. 19, UT
Sherma C. Ballif (Craven) '58, Jul. 27, UT
Glen Lee Baron '58, Aug. 20, UT
Vira B. Bartholomew '53, Oct. 26, UT
Valena Meyrick Berntson (Meyrick) '55, '56MS,
Oct. 31, UT
Lewis D. Berry '59, Sept. 30, UT
Rulon D. Bickmore '52, Nov. 18, UT
Helen L. Blood '57, Oct. 11, UT
Lawrence Dean Bruesch '50, Oct. 15, MT
Betty J. Carlson (Hurst) '50, Aug. 13, UT
Richard L. Carter '56, '69MS, Sept. 24, UT
Bob Cutter '59, Oct. 7, IL
Dennis Warren Dallin '51, Oct. 5, UT
R. Keith Dillard '56, Nov. 6, UT
Richard J. Drake '52, Sept. 19, GA
Leo M. Ducharme '59, Aug. 20, MN
Arden W. Edwards '57, Aug. 24, UT
D. Clayton Fairbourn '53, Oct. 30, UT
Saeed M. Farhat '51, Sept. 21, MI
Harold L. Fornoff '51, Aug. 16, UT
Berneda R. Gibson '50, Aug. 6, UT
Earl A. Gillies '55, Sept. 17, UT
Oris D. Goodey '53, '60MS, Aug. 2, WA
Ronald K. Hansen '58, Aug. 15, CA
Emil O. Hanson '59, Aug. 29, UT
Lawrence B. Henderson '59, '64MS, Sept. 20, ID
Robin F. Hood '51, Aug. 29, UT
Judith Karen Hurd (Bush) '57, Sept. 1, ID
Glen A. Israelsen '55, Oct. 5, UT
Charles B. Jackson '55, Nov. 9, UT
Gilbert W. Jensen '54, Sept. 5, UT
Richard M. Jensen '52, '59MS, '84EDD,
Aug. 18, UT
David F. Keddy '59, Nov. 11, UT
Ralph Keller '54, Nov. 5, WA
Joan Kersey (Harrison) '50, Aug. 6, VT
Walter J. Kochan '50, '53MS, Oct. 19, ID
Dean L. Larsen '50, Oct. 28, UT
Emery M. Larson '50, Aug. 30, UT
Ray Longhurst '54, Oct. 20, IL
Beverly Schultz Loop '57, Aug. 17, UT
Milton B. Lunt '59, Aug. 17, UT
Arol L. Maughan '56, Sept. 27, UT
Reed L. Mickelson '53, Sept. 9, UT
David E. Miller '50, Oct. 22, WA
Lawrence G. Morrill '55, '56MS, Aug. 24, UT
Arlan K. Nielson '52, '56MS, Aug. 26, OR
Robert Eldred Nilsson '53, Nov. 2, UT
Milton Olsen '55, Sept. 20, UT
Sharon J. Pedersen (Jacobson) '56, Nov. 17, CO
Charles D. Randall '58, Oct. 30, UT
Vera L. Redd (Thurgood) '53, Aug. 11, UT
Joseph W. Reynolds '55, Aug. 13, UT
Shirley Larsen Robinson '54, Sept. 13, UT
Gerald B. Robison '53, '65MED, Oct. 9, UT
John Lynn Shawcroft '54, Oct. 3, AZ
Beth H. Shade '50, Aug. 20, UT
Richard C. Snow '56, Jul. 26, UT
Bryan G. Sorenson '50, Oct. 22, UT
Robert Stanley '54, Aug. 29, UT
Jean Terhune (Hoelscher) '55, Aug. 17, OR
Jean M. Tieller (Heywood) '52, Aug. 14, UT
William W. White '51, Oct. 17, UT

1960s

Stephen L. Adamson '67, Sept. 26, UT
DeVerl C. Baxter '65, '73MED, Nov. 8, ID
Kenneth D. Bischoff '65, Sept. 28, UT
Thomas John Broberg '66, '77MS, Oct. 8, UT
Ned Cyril Budge '62, Sept. 6, UT
Ray A. Burrows '62, Oct. 18, UT
Richard Dell Bush '64, Oct. 2, UT
DeAnn Clark (Jensen) '64, Sept. 4, UT
Acie J. Clements '64, Nov. 18, ID
Dorothy Toone Cook '63, '86MED, Nov. 17, UT
Sandra DeeAnn Davis '62, Oct. 7, UT
Glen Lyman Edwards '62, '76MFA, Aug. 3, UT
Alice E. Elmer '62, Nov. 15, UT

Doris Esplin '61, Jul. 26, UT
Ted Garrett '65, Nov. 14, UT
Cleo G. Geddes '63, '70MS, Aug. 3, ID
Allen Godfrey '60, Oct. 7, UT
Doris Jane Howard Hall '66, Aug. 2, ID
Judith A. Hall '62, Sept. 22, UT
Maggie K. Hanohano '68, Oct. 14, MN
Stephen R. Hansen '68, Sept. 3, UT
James C. Harmon '67, Sept. 13, UT
Jimmie R. Hill '62, Aug. 28, UT
Darrel C. Hintze '64, '85MSS, Aug. 10, UT
Orvil G. Hunsaker '60, Oct. 21, UT
Merrilee Hunter '69, Aug. 1, UT
Darla F. Isackson (Larsen) '68, Aug. 21, UT
Elaine A. Jarrett '69, Aug. 14, UT
Ned W. Jefferies '62MS, Aug. 23, CO
Floyd A. Johnson '62, Oct. 10, UT
Emily Carolyn Kimball Leeper (Kimball) '66,
Oct. 2, UT
Kathleen T. Kynaston '67, Oct. 31, ID
Thomas Low '62, '69MS, Oct. 31, UT
Florence Jean Mace '66, Oct. 13, UT
William D. Mair '60, Nov. 3, UT
Laverne Marcum '68EDD, Aug. 5, HI
J'Wayne McArthur '61, '63MS, Jul. 27, UT
Raymond H. Neville '63, '67MS, Oct. 14, UT
Margaret D. Palmer (Deleuw) '63, Sept. 11, UT
James S. Parkinson '63, Sept. 13, UT
Robert D. Pead '67, Oct. 27, UT
Carolyn Petersen (Poole) '66, Sept. 30, UT
Rodger A. Pond '62, Nov. 18, UT
Stanley J. Poulsen '63, Sept. 17, UT
Alton Maurice Pugh '64, Oct. 11, UT
Mary Reynolds (Murdock) '61, Jul. 31, ID
Dennis L. Richards '62, Sept. 12, UT
Lynn J. Stoker '64, Nov. 3, UT
Victor Kay Takao '67, Aug. 27, ID
T. Peter Thomas '68, Nov. 16, CA
Hugh M. Thomson '69ME, Oct. 30, UT
Wayne G. Thorpe '65, Sept. 26, AZ
Roger M. Waterfall '65MFA, Aug. 20, UT
Stanley R. Wright '60, Aug. 7, UT

1970s

Judy Gaskill Armstrong '77, '89 MS, Nov. 13, UT
Bruce Brighton '76, Nov. 13, UT
Joseph A. Caliendo '78MS, '87PHD, Aug. 15, UT
Harold Cunningham '77, Sept. 23, UT
Kendell Thomas Ewell '76MIE, Oct. 2, UT
Elizabeth S. Franchina '72, '84, Aug. 20, AZ
Kathy Rockwood Glatfili '77, Aug. 20, UT
Larry R. Greenwood '75, Sept. 16, UT
Kelly Jay Hadfield '77, Aug. 10, UT
Pamela O. Kipper (Obroy) '79, Nov. 13, UT
Richard D. Menlove '70, Oct. 10, UT
David Earl Morse '74MS, Nov. 16, UT
John I. Mosher '72PHD, Oct. 21, NY
Spencer P. Nebeker '70, Aug. 5, ID
Lynette F. Pearse '78, Oct. 15, IN
Thomas J. Petko '76, Jul. 30, UT
Charles W. Robbins '72MS, '79PHD, Sept. 14, UT
Dean L. Roberts, Jr. '73, '77, Sept. 28, ID
Julianne D. Smith '71, Sept. 27, UT
William J. Stuart '79, Nov. 13, UT
Nadyn W. Sundberg '70, Nov. 6, ID
Wesley R. Tingey '72, Oct. 27, UT
John Warburton '77, '88MS, Oct. 1, ID

1980s

Laurel Braithwaite '82 MED, Aug. 13, UT
Ronald Jay Carver '89, '90, Sept. 16, UT
Kenneth D. Coon '81, Sept. 22, UT
Roy Don Edwards '82, Sept. 10, UT
Scott David Fasken '81MS, Oct. 7, CO
Michael H. Godfrey '86, Aug. 19, UT
Laura Grady (Wagner) '82, '85MBA, Sept. 29, FL
Dan W. Haynie '89, Aug. 2, UT
Michael Houser '84, Nov. 13, UT
Carol Marra (Oliverto) '85, '85, Oct. 31, UT
Mary Mata (Gallegos) '80MS, Nov. 9, UT
Darren D. Menlove '85, '86MBA, Nov. 7, UT
Tricia A. More '82, Jul. 30, CO
Marlene Morris (Ward) '88, Aug. 2, ID
Lois B. Patterson '80, Aug. 20, UT
Kevin L. Porter '86MED, Oct. 31, UT
Larry Ernest Reber '84, Oct. 8, UT
Lila F. Reeves (McDaniel) '88, Sept. 28, UT
Daniel Roberts '82, Aug. 11, UT
David L. Taylor '86, Oct. 1, ID

1990s

Sylvia K. Carrell '95, Aug. 27, UT
Nevah E. Bracken '96, Nov. 10, UT
Sylvia K. Carrell '95, Aug. 27, UT
Alisa Clayton '93, Nov. 18, UT
Robert C. Davis '91, Sept. 7, UT

Andrea Marcia Denton '90MAC, Nov. 3, UT
Roger Brian Graves '91MS, '94PHD, Aug. 30, AK
Marvin R. Larson '95, Oct. 23, ID
Dave W. Lay '93, Jul. 29, UT
John L. Skiff, Jr. '99, '06, Oct. 17, UT
Charles W. Smith '90MS, Aug. 21, UT
Nickolas A. Velis '90MA, Sept. 6, UT

2000s

Shane Brian Foulon '07, Aug. 2, UT
Theodore T. Frahm '02, Oct. 8, OR
Aaron J. Gale '07, Aug. 25, UT
Michelle George (Smith) '08, Oct. 23, UT
Jared M. Hanks '05, Oct. 28, WA
Jeffrey T. Klein '02, Nov. 20, UT
Brian Francis Laws '04, Nov. 15, UT
Gloria Lewis (Allen) '05, Nov. 19, UT
Agnes U. Marino '00, Sept. 17, UT
Werner V. Nielson '05, Oct. 29, UT
Terressa A. Rees '04, Aug. 24, UT

2010s

Kara Knighton (Searle) '13, Nov. 16, UT
Alexandra Katherine Limburg '18, Nov. 4, UT

ATTENDERS

Arnold R. Adair Att, Oct. 21, UT
Arnold R. Adair Oct. 21, UT
Sterling M. Adair Aug. 26, NV
Gwen Q. Ajax (Quilico) Jul. 29, UT
Brady J. Allred Sept. 22, UT
Sarah Allred (Tillotson) Aug. 16, UT
Lynn C. Andersen Oct. 12, ID
John N. Anderson Sept. 10, AK
Dustin Bruce Ard Aug. 29, ID
Virginia Kathleen Badertscher Oct. 15, UT
Jack R. Barham Aug. 1, FL
Roy Ray Barnett Aug. 12, UT
Judy J. Barton Nov. 11, UT
Chris H. Basso Sept. 20, CO
John T. Benson Nov. 14, CA
Yale Avery Benson Oct. 20, UT
Lester Blackham Sept. 30, NM
David H. Bouwhuis Aug. 1, UT
Joseph H. Bowcutt III Aug. 31, UT
Douglas R. Brown Sept. 18, ID
Hettie G. Brown Oct. 10, ID
Dan A. Campbell Nov. 5, CA
Joseph Albert Castillo Oct. 13, NM
Zella Chloe Ceniceros Oct. 30, UT
A. J. Christensen Oct. 27, UT
Mac Christensen Oct. 11, UT
Robert Boyd Clark Sept. 10, UT
Marianne P. Conover (Patterick) Oct. 24, UT
Melvyn L. Cook Sept. 1, UT
Alice H. Cowan (Hansen) Aug. 22, UT
Lynn Cox Sept. 4, UT
Richard A. Cox Aug. 30, UT
Thomas E. Dickerson Oct. 4, UT
Karen Dufur Nov. 19, UT
Donna W. Dye Aug. 25, UT
George Norman Edwards Aug. 10, UT
Burr Eldredge Sept. 29, UT
Harry S. Erskine Sept. 19, UT
Quinn M. Eskelsen Sept. 10, UT
Madelon Fallows (Besso) Aug. 15, UT
Tony Jay Federico Jul. 31, UT
Poppy Ford Aug. 10, ID
Stewart B. Foster Sept. 10, UT
Ona M. Frandsen (Mortensen) Sept. 4, UT
Ruth Galvarro (Wilhan) Aug. 27, TN
Ricardo Francis Garcia Sept. 8, CA
Robert H. Garside Aug. 13, UT
Shannon M. Gee (McDonald) Aug. 14, UT
Inge A. Gilbert Sept. 7, NV
Norman Gittins Aug. 19, UT
Marcellino Gonzales Oct. 22, UT
Joy Lenore Goodsell Aug. 22, UT
Dale Goodwin Sept. 11, UT
Bonnie Grant Nov. 15, UT
Donald L. Grimaud Jul. 29, UT
Glade L. Hall Oct. 27, UT
Dee J. Hammon Oct. 12, UT
Laura Hammond (Adams) Aug. 17, UT
Glen Hansen Sept. 15, UT
Susie Hansen (Bagley) Oct. 23, ID
Robert Burnell Haws Sept. 30, UT
Max E. Heino Oct. 25, UT
Carol Hendry Oct. 4, UT
Margaret Henrie Aug. 30, UT
Weston G. Henrie Oct. 22, UT
Michael A. Hohosh Sept. 17, UT
Joy L. Hunt (Allen) Oct. 15, OR
Heidi Jackson (Stillman) Jul. 30, UT
Chad Warren Johnson Oct. 11, UT
Roy E. Keck Sept. 7, UT

Baxter F. King Oct. 23, UT
Allen Knapp Aug. 10, UT
Ila Kofoed (Hendricks) Aug. 28, ID
Craig S. Lambert Nov. 7, UT
Dorothy Leany Aug. 23, UT
Aileen Lee (Winn) Aug. 9, UT
Kenneth Raymond Lofland Nov. 5, UT
Wesley H. Loveland Sept. 4, ID
Leona H. Lundstrom (Harrison) Aug. 10, UT
David E. Maestas Sept. 16, UT
Skyler Mair Aug. 18, UT
David K. Manning Nov. 7, UT
Linda Mariotti Nov. 8, UT
Carol Sue L. Martinez Sept. 19, UT
Marshall P. Maughan Oct. 22, UT
Darris McFarland Nov. 10, ID
Roger K. McKinnon Oct. 20, UT
Daniel W. Mellender Sept. 22, IL
Edward K. Mills Aug. 10, UT
John D. Mitchell Nov. 16, UT
Kevin B. Mitchell Sept. 7, UT
Karoly J. Mortensen Oct. 31, UT
Marvin Mutz Aug. 8, UT
James R. Neill Nov. 7, UT
Baylan Nelson Sept. 13, UT
Barry Norton Sept. 26, AZ
Jon J. Olearain Aug. 21, WA
Ralene C. Overson (Cramer) Oct. 2, UT
Leroy D. Oviatt Aug. 29, CO
Seeny Owens (Bigler) Aug. 6, UT
Julie Palfreyman (Chugg) Sept. 24, UT
Fred M. Pannunzio Oct. 24, UT
Frederick J. Patterson Sept. 3, ID
Tyler Brandon Peacock Aug. 17, UT
Merle Petersen Nov. 20, UT
Lorraine M. Ranzenberger Aug. 17, UT
Lois East Richins Oct. 31, UT
Bruce Roberts Aug. 27, UT
William Keith Robinson Nov. 5, CA
Owen A. Romrell Nov. 17, ID
Arthur L. Sanchez Oct. 27, UT
Joanna Sarani Aug. 30, UT
Salome Sealey (Walch) Sept. 28, UT
William J. Simmonds Oct. 18, UT
Neldon R. Slough Sept. 7, UT
John F. Smith Aug. 17, UT
Laura Lee Smolka, Talbot Nov. 4, UT
Randall K. Sommers Jul. 26, OH
Shirley H. Spence (Hughes) Oct. 31, UT
Barbara B. Steele Oct. 22, UT
Alice Steorts (Moser) Aug. 1, UT
Anthony E. Stoiber Nov. 14, UT
Heddy Sutton (Ricks) Sept. 1, ID
Dee A. Thomas Sept. 28, UT
Earl G. Thompson Aug. 12
Marjorie M. Tomsic (Mangum) Sept. 13, UT
Christopher Robert Toth Aug. 1, UT
Harry Turner Sept. 5, ID
John Urbanik Nov. 4, CO
Joseph E. Valentine Oct. 21, MO
Sandra Dean Walk Sept. 17, UT
Warren Jensen Walters Nov. 9, ID
Eda Rae Watkins Nov. 4, UT
James K. Watt Aug. 19, UT
Carol S. White Aug. 13, UT
Judy Williams (Ward) Jul. 29, UT
William D. Wintle Nov. 1, UT

USU EDUCATORS

Glen Lee Baron Aug. 20, UT
Joseph A. Caliendo Aug. 15, UT
J'Wayne McArthur Jul. 27, UT
Glen Lyman Edwards Aug. 3, UT
Halcyon Robins Oct. 24, UT
Jay M. Bagley Nov. 15, UT
Blythe Ahlstrom Aug. 28, UT
Earl K. Jackson Sept. 14, UT
Mary Eliason Sept. 14, UT
Philip Swensen Aug. 30, UT
Randy L. Jones Nov. 15, UT
Sharece Cox Nov. 10, NV
Virginia Lynn Poulsen Eggen Sept. 12, UT
Alexandra Katherine Limburg Nov. 4, UT
James B. Demoux Oct. 4, UT

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Giving is Personal



Sometimes, seemingly insignificant connections with people can have a profound effect on our lives. When USU lecturer Carrie Madden met student Lisa for the first time, the interaction was ordinary. But as Carrie would find out, Lisa's struggle to get back to USU was extraordinary.

USU's "A Day of Giving Campaign," geared towards raising money for the Student Emergency Hardship Fund, was the help that enabled Lisa and other students to return to school.

Realizing the full physical and emotional challenges Lisa faced, Carrie made an online gift. But for her, the gift felt even more personal, because it was helping someone like Lisa.

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