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**FIRST WORDS**
Some lucky duck at your holiday table? **IN SEASON**

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**CLASS NOTES**
WASHINGTON STATE MAGAZINE WINTER 2015
Forgotten fruits. Around the beginning of the twentieth century, William Jasper Spillman, one of Washington State’s first faculty members, recognized that eastern Washington farmers were committed to lucrative wheat as their primary crop. Spillman experimented by crossing wheat varieties to find traits desirable for the Inland Northwest.

Variations didn’t appear in the first generation, but Spillman soon observed that the second generation of plants had combinations of the parents’ traits. He then applied a mathematical formula to predict inherited traits, to the benefit of the wheat farmers. Many of us know the basics of this research from high school science: Gregor Mendel’s laws of inheritance, published in 1866. However, the practical significance of Mendel’s work was not recognized until Spillman and other scientists independently found and applied those genetic principles 40 years later.

Spillman did not find something completely novel, but that does not diminish the importance of his research. By applying knowledge that had been ignored or misunderstood, thousands of farmers who used Spillman’s research changed the face of the state. Over half a million acres in Washington were planted with Spillman varieties by 1911, writes historian Laurie Carlson ’04 PhD.

Like Mendel’s genetic studies, knowledge and other discoveries can sit in plain sight, forgotten or ignored, until a new use is found. Apple trees in old backyard orchards—some with varieties of fruit thought to have vanished—could provide new genetic material for WSU tree fruit scientists. Ancient corn and millet found by WSU archaeologists might help subsistence farmers in drought-stricken places in the world. American appetites are bringing back hard cider, the drink on which the country was founded. Spillman was acknowledged for his work, moving on to the U.S. Department of Agriculture after just six years of successful research and service at Washington Agricultural College. The profound importance of Mendel’s studies of pea plants, on the other hand, didn’t receive recognition until Spillman and European scientists verified the findings decades after Mendel documented them. Perhaps other research, medicinal plants in forests, or even practical skills of our ancestors, await rediscovery, when they can be applied to our modern problems.
Refreshback

Thank you for continuing to publish Washington State Magazine at such a high level. I read the Fall 2015 issue from cover to cover and rate it as outstanding in every respect. The redesign of the magazine with sustainability in mind is commendable. Mostly, however, the content was what gave me the feeling that I am still connected to WSU almost 50 years after I graduated.

As it happens, there were also multiple articles that connected with me personally. I took an ecology course from Rexford Daubenmire and continued to refer to his classic texts on ecology and synonymy during my 40-year teaching career in plant science. Although I did not meet Leonas Public Martinez, the knowledge that he and I were on campus at the same time is special. John Olerud’s recollections of Bobby Brayton brought back many weekends to various ecological areas in the Pacific Northwest. After each trip, he asked us to write down what we had learned. I believe his semester grades were based mostly on what we had written. I learned more about plant ecology from this one course than from all the other botanical classes I had taken, both as an undergrad and in graduate school.

We had tea with Jackie

The article about the tea was very interesting, but let me put one rumor to rest.

Jackie Kennedy did not come to Pullman with her husband in 1960. I know because my father, Vern L. Johnson, the Whitman County Democratic Party chairman at the time, was the host for Kennedy’s visit. He met JFK at the Pullman-Moscow airport, and then escorted him to Bryan Hall for a talk to an overflow crowd, which I attended while a Pullman High School freshman.

Politics was a hobby for my dad. His full-time job was associate professor in the WSU College of Veterinary Medicine. He died on a Saturday morning in December 1964 in Pullman.

Owen V. Johnson ’68
Associate professor emeritus, SI, Jouzakken Indiana University

Studying with Daubenmire

I enjoyed the article “Traveling ecologist Rexford F. Daubenmire” by Adam M. Sowards. I was a graduate student, botany major, at WSU from 1953 to 1957. The very best class I took there (or anywhere else, for that matter) was Dr. Daubenmire’s class, “Field Ecology.” Besides classroom activities, he led us on field trips many weekends to various ecological areas in the Pacific Northwest. After each trip, he asked us to write down what we had learned. I believe his semester grades were based mostly on what we had written. I learned more about plant ecology from this one course than from all the other botanical classes I had taken, both as an undergrad and in graduate school.

F. Douglas Wilson
Tempe, Arizona

Forgotten fruit

The ‘lost’ apples of the Palouse entice a detective to sleuth for their rediscovery

Dave Benscoter’s obsession began innocently—as a favor to a neighbor, Elinor, a retired missionary. Resettled near Chattaroy, and now beset with complications from childhood polio, she asked Benscoter to harvest some apples for her from the old orchard above her house.

“Every apple was too high for me to pick,” he says of his initial effort.

“One of the trees was 40 to 50 feet high. The trunk was split, and I couldn’t get my arms around either trunk.”

Determined to deliver Elinor’s apples at some point, he started prunings to encourage new growth lower down. Meanwhile, the old orchard had infected Benscoter with that most persistent of apple bugs—the need to know the names of apple varieties. And who planted them?

Fortunately, Benscoter had the chops to crack the mystery. Following a career with the FBI and the IRS Criminal Division, those mystery apples whetted his investigative skills.

He started modestly, with a Google search. What first popped up was Arcadia Orchard, the “largest orchard in the world,” located in nearby Deer Park.

Arcadia founders bought thousands of acres of land in the early 1900s and marketed orchard plots nationwide. Promotional materials claimed that by 1916, 7,000 acres were planted to orchard.

Arcadia was only part of the area’s orchards. In his 1905 Washington Agricultural Experiment Station Bulletin, “The Wormy Apple,” A.L. Melander introduced his strategy against the codling moth with his observation on the regional industry: “It is asserted that 1,500 carloads of apples, valued at $600,000, were carried last year from the Inland Empire.”

Historian John Fahey writes that by 1914, Whitman County had nearly 240,000 apple trees. Spokane and Stevens counties had nearly a million. Whitman County had three commercial nurseries.

Benscoter was rediscovering what has been repeatedly forgotten—that before it finally coalesced around Wenatchee and Yakima, the apple industry further east was enormous and diverse.
Both orchards and nurseries were charmed by the apple’s diversity. The Hanford Nursery in Oakesdale listed 64 varieties on its advertising flyer. The Inland Empire was a true garden of apple diversity and bounty. But soon, it all started to disappear. Ultimately, the Inland Empire could not compete with the irrigated orchards to the west.

Although the large orchards are long gone, remnants, and scores of homestead orchards, are scattered throughout the area.

Early in his investigation, Benscoter made some key discoveries. One was that every year the Colfax Gazette would publish a list of the prizewinning apples at the county fair. From 1900 to 1910, over 110 varieties were entered. Though many of the names are familiar, others had disappeared, and Benscoter was determined to find them.

Benscoter tapped the efforts of other apple detectives across the country. He studied Lee Calhoun’s Old Southern Apples, a large part of which is devoted to forgotten apples.

Benscoter combed Calhoun’s descriptions and noted a number of “extinct” apples that appeared in the Gazette. He narrowed his investigation: Arkansas Beauty, Babbitt, Cornel’s Fancy, Dickinson, Isham Sweet, Lankford, Nero, Pyles Red Winter, Scarlett Cranberry, Walbridge, and Whitman.

On an August morning, Benscoter and I plod down a long draw on Steptoe Butte through dry grass and wild roses toward a dense grove that someone told him was an orchard.

Fruit is sparse this year, following last year’s bumper crop, frosts, and intense heat early in the summer. Even so, fruit speckles many of the trees, beckoning explorers in search of lost tastes.

Indeed, when we reach the grove, it is filled with apple trees, maybe 200 of several, as yet unidentified, varieties. But why seek out these forgotten apples?

Some of it is simply wonder at the diversity of apples. Apple detective Dan Bussey estimates 17,000 named varieties in the United States since Europeans first arrived.

Rediscovered apples could also produce benefits such as genes for disease resistance or flavor. Indeed, Amit Dhingra’s WSU genome lab is intrigued by Benscoter’s efforts and is nurturing tissue culture of one of his “extinct” discoveries, the Nero.

One might hope to restore diversity to a market defined first by the Red Delicious and now by the Honeycrisp-type apple, all mouthfeel and initial burst of sweet-tart, delightful indeed, but with none of many older apples’ subtlety and sophisticated complexity.

But none of this seems to be Benscoter’s primary motivation, which has more to do with his professional drive to identify all the elements of an investigation, to find what was lost.

It is the satisfaction of matching unidentified apples to the USDA’s stunning collection of apple watercolors, of interpreting plat maps, connecting family histories, and recovering human drama—of Robert and “Mecie” Burns, for example, who planted exuberantly on Steptoe, but misjudged their apples’ marketability, thus losing their farm in 1899.

“I got to...walk in the orchard,” says Benscoter, “and see and taste the fruit of the trees Robert Burns planted.”
Ancients among us

SAFEGUARDING OUR FUTURE

The arid soil on the mile-high Hopi Mesa trickles through clenched fingers like sand. If you visit this isolated corner of northeastern Arizona, you might find it hard to believe it is home to one of the oldest civilizations in the Americas.

For more than 2,000 years, the Hopi and their ancestors have carved a living out of the rough terrain. They survived drought, famine, war, and a fluctuating climate that drove many of their ancient southwestern neighbors elsewhere in search of more fertile lands.

One key to the Hopi’s longevity is a variety of drought-tolerant corn they have adapted over the centuries to prosper in the poor soil. That corn and other traditional crops like Tibetan millet could be crucial for survival in places around the world impacted by global climate change.

Washington State University postdoctoral anthropologist Kyle Bocinsky thinks those crops could help Ethiopian farmers survive a warmer, drier future. He is working with WSU archaeologist Jade d’Alpoim Guedes to scour the globe for little-used or in some cases completely forgotten crops that were bred to survive warmer weather, drought, and disease. With the help of sophisticated climate and crop-niche modeling, they are able to determine how these crops grew well in the past and where they might be useful today.

“Four millennia, the Hopi cultivated their corn to grow in a high-elevation, low-rainfall terrain. It is more adapted to these types of areas than many genetically modified strains,” says Bocinsky. “The thought struck me that if this ancestral corn variety has grown so well on the Hopi Mesa, what other places in the world would it prosper?”

In Ethiopia, subsistence farmers have been growing ensete ventricosum, the Ethiopian banana, for centuries. A staple food for over 12 million people in the southern highlands of the country, the crops have recently been affected by emerging pests, disease, and blights of intense heat. Many Ethiopian farmers switched to growing varieties of corn cultivated in the midwestern United States. But Iowa corn is not suited to the drought prone high elevations.

Bocinsky and Guedes decided to see if their modeling could help identify a better alternative.

“Our models showed Hopi corn would grow extremely well in the Ethiopian highlands,” says Bocinsky. “The real benefit is that it is rain-fed and can grow in natural conditions without expensive irrigation, fertilizers, and genetic modifications that the vast majority of these farmers can’t afford.”

In the United States and other wealthy nations, farmers have access to genetically tailored crops, pesticides, and advanced irrigation systems to help ensure their wheat or corn harvest during a bad growing season. Because of this, the variety of crops grown now is a lot smaller than it once was. For most of early history, humans relied on a wide variety of grains to feed themselves. If a millet crop was struck by blight, farmers would still have three or four other options to fall back on. Today, the vast majority of commercial agricultural production is focused on five high-yield crops—wheat, sugarcane, corn, barley, and rice.

In areas where farmers don’t have access to modern technology, growing one or two strains of the “big five crops” can be incredibly risky for subsistence farmers who depend on their harvest for food.

“If you are relying on only a few varieties of crops, you have very little genetic diversity. If you are unlucky and one year the type of fungus to which your crop has no resistance enters your farm, your probability of losing your entire harvest is a lot higher,” says Guedes. “If you are a subsistence farmer in a marginal area, who relies on his harvest to feed the family, it can be catastrophic.”

One such area is the Tibetan Plateau where temperatures have been creeping up to six degrees Celsius higher than they were 200 years ago. Rapid temperature increase is making it difficult for the region’s inhabitants to carry out a key facet of their traditional lifestyle: yak pastoralism.

Two possible alternatives are foxtail and proso millet which farmers stopped cultivating on the Tibetan Plateau around 4,000 years ago as global temperatures grew colder.

“These millets are on the verge of becoming forgotten crops,” says Guedes. “But due to their heat tolerance and high nutritional value, and very low rainfall requirements, they may once again be useful resources for a warmer future.”

Washington State University offers a solid educational foundation for many healthcare professions as well as the advanced degrees needed to get you to your goals. Get the basics on the Pullman campus and go for the finish in Spokane, where you will learn from experienced faculty who welcome the evolutionary changes bright students can offer for improving our healthcare system. You can make a difference at WSU Spokane.
Emerging disease: A case study

HUNDREDS OF PEOPLE, CATS, DOGS, PORPOISES, BIRDS, AND OTHER ANIMALS ON VANCOUVER ISLAND, BRITISH COLUMBIA, HAVE BEEN DIAGNOSED WITH AN INCURABLE, DEADLY FUNGAL INFECTION CALLED Cryptococcus gattii. Most troubling is that officials were alarmed by a case reported in 2000 by Finding Dead Wildlife, a newsletter published by the University of Washington’s Department of Veterinary Population Medicine. The report detailed a case of a creature that appeared to be a plant, which turned out to be a fungal infection called Cryptococcus gattii. The organism was first described in 1993, and its discovery marked the beginning of a new era in fungal disease research.

The first case of Cryptococcus gattii in North America was reported in 1999 in British Columbia. Since then, the fungus has spread across the continent, with cases reported in Washington, Oregon, California, and other states. The disease is particularly deadly for immunocompromised individuals, and it has been linked to a number of deaths in the Pacific Northwest.

Cryptococcus gattii is a dimorphic fungus, meaning it can exist in both yeast and mold forms. In its yeast form, it can infect the lungs, brain, and other organs, leading to severe illness and death. The mold form is found in soil and water, and it is spread by airborne spores. People are infected by inhaling these spores into their lungs, where they can become systemic, spreading to other organs.

The fungus is particularly deadly because it is highly virulent, and it is often difficult to treat with antifungal medications. Cryptococcus gattii is also able to evade the immune system, making it even more deadly. As a result, the disease is often fatal, with a mortality rate of over 50%.

Though physicians and public health officials were alarmed by the discovery of Cryptococcus gattii, the fungus was considered a tropical disease found only in places like Australia. But growing evidence suggested that the fungus was spreading north, and that it might be more widespread than previously thought.

In 2000, a case study was published in the journal Emerging Infectious Diseases, which described a case of Cryptococcus gattii infection in a cat. The case was reported by a veterinarian in British Columbia, who had seen a cat with symptoms of Cryptococcus gattii. The case marked the first report of Cryptococcus gattii in North America.

Since then, many more cases have been reported, and the fungus has spread across the continent. The disease is now considered a public health threat, and it is monitored closely by health officials.

The fungus is particularly deadly because it is highly virulent, and it is often difficult to treat with antifungal medications. Cryptococcus gattii is also able to evade the immune system, making it even more deadly. As a result, the disease is often fatal, with a mortality rate of over 50%.

The primary symptom of Cryptococcus gattii infection is a headache, but other symptoms include fever, cough, and shortness of breath. In severe cases, the fungus can spread to the brain, leading to meningitis and death.

Despite the deadly nature of Cryptococcus gattii, the disease is preventable. People can reduce their risk of infection by avoiding contact with the fungus, which is found in soil and water. This can be done by wearing gloves and using disinfectants when handling soil or water.

Cryptococcus gattii is a serious threat to public health, and it is important to continue monitoring and researching the fungus to better understand its spread and develop new treatments.
Black Spokane

Dwayne Mack was, to say the least, skeptical when his faculty mentor at Washington State University, LeRoy Ashby, suggested he write his doctoral dissertation on Spokane's black history.

“I thought to myself, ‘Wow, every time we pay a visit to Spokane, we rarely even see black people,’” recalls Mack, who was brought up in Brooklyn and received his master’s degree from a historically black college, North Carolina Central University. “There couldn’t be enough black people to do a study.”

Then he started researching Spokane’s African-American history and realized he had “struck gold.” Spokane’s African-American community was small—historically averaging between 1 and 2 percent of Spokane’s population—but it had a rich and compelling story, stuffed with strong personalities “who were very potent in their approach to civil rights and justice.”

The result was a dissertation that earned Mack his doctorate in history at WSU in 2002 and which eventually formed the basis for Mack’s 2014 book, Black Spokane: The Civil Rights Struggle in the Inland Northwest (University of Oklahoma Press), which immediately became the definitive work on the African-American history of the region. “Most people say there’s strength in numbers, but the black population was so small that this small band of black folk, they stuck together, and they were committed to a cause, along with their white allies,” says Mack, who is now the Carter C. Woodson Chair in African-American History at Berea College in Kentucky.

Their story stretches back to Spokane’s roots. In the 1850s and 1860s, black people were migrating out of the South and spreading across the United States. Hundreds arrived in eastern Washington to work on the railroads, to work in the mines, to work as teamsmen, and, in some cases, as entrepreneur barbers. Peter Barrow Sr. arrived in 1889 from Mississippi, established an irrigated apple orchard north of Spokane, and hired more than 100 African-American workers. He then helped establish Calvary Baptist Church, the city’s first African-American Baptist church, and became its pastor. In 1888, Emmett Hercules Holmes brought his family to Spokane from Mississippi and found work as a railroad conductor, bullwhip, and butler—and eventually became Spokane County’s deputy treasurer. In 1899, he established the Bethel African Methodist Episcopal Church. These two churches would become the twin centers of Spokane’s small black community, and their pastors would become the community’s earliest activists. When a business put up a “No Colored Patronage Solicited” sign, the signs were the ones who would pay a visit and respectfully request its removal. Sometimes they got results, sometimes they didn’t.

Spokane had a West Coast form of Jim Crow, but it wasn’t as blatant as Jim Crow in the South. “Here, you didn’t have lynchings or people being chased out by the Klan,” says Mack. “But you did have store owners who put signs on the windows and shop-owners who wouldn’t let them try on clothes, and barbers who would not cut black hair.” The black community’s options were especially limited in labor and housing. “For the most part, blacks found menial labor positions. You had black entrepreneurs, a handful, but for the most part, blacks worked as domestics and chauffeurs and butlers.”

No true “black ghetto” emerged in Spokane as it did in cities such as Los Angeles and Oakland. Black residents were restricted by covenant and custom from the South Hill, the most posh part of Spokane, but for the most part, black residents were scattered around the city. “Because they were not real threat, blacks were able to survive and coexist with white people,” says Mack. “We had no Rosenwald schools. We had no Jim Crow.”

No, but “it was not small,” says Mack. “It not only mediated and protected the rights of blacks in Spokane, but it also protected the rights of black people throughout the Inland Northwest region, which was socially and culturally isolated,” says Mack.

“So if something was happening at a base in Walla Walla in 1943 with black soldiers who were being discriminated against, the NAACP in Spokane would come to their rescue…East of the Cascade Mountains, Spokane was the only organization you could trust to come to your assistance.”

Spokane’s black population picked up in the decades following World War II and a new set of community leaders emerged. These leaders form the compelling core of Spokane’s black history. Here’s a look at a few of them:

Carl Maxey

Brought up in a Spokane orphanage, Maxey became an NCAA boxing champion at Gonzaga University and the first African American to pass the bar exam in eastern Washington in 1951. He launched a controversial career as one of Washington’s most effective civil rights attorneys and civic gadflies. Many confronted restaurants, hotels, social clubs, and real estate organizations with white people, “to push them to end blatant discrimination. He spent the violent Freedom Summer of 1964 in Mississippi as a volunteer lawyer. He also made national news in many high-profile cases, including one known as the “Hainsworth Uproar,” in which a Gonzaga University student from Liberia was refused service at a barber shop. “The eyes of the world are on Spokane and a small barber shop,” thundered Maxey. “But the issue is not small. ‘He won that case, and many other civil rights cases. Mack calls Maxey the ‘Inland Northwest’ version of Martin Luther King Jr.—a true advocate for civil rights.”

James and Eleanor Chase

When Spokane elected James Chase as its mayor in 1981, his supporters called it “a night of history.” Indeed it was, says Mack. “Nine years before Norm Rice was elected mayor of Seattle, you had James Chase, with just a high school diploma, elected mayor of this conservative city. It was a remarkable and amazing accomplishment.” Ebony magazine came to Spokane to do a feature story, in which it noted “there is a black man who became mayor of a sizable city with little fanfare, no rancor.” Chase arrived in Spokane on a boxcar in 1934, built up an auto repair business, and became the president of the Spokane NAACP. He and his wife Eleanor Chase became deeply involved in civic affairs. After his landslide mayoral victory, he proved to be an exceptionally popular mayor and would easily be reelected to a second term if he hadn’t dropped out because of terminal illness. Mack calls Chase’s tenure a “watershed moment in the history of Black Spokane.”

James and Lydia Sims

James Sims arrived from New Jersey in 1955 and became pastor of New Hope Baptist Church. He and his wife Lydia soon became two of Spokane’s most influential advocates for civil rights. James Sims was elected the Spokane NAACP president in 1956 and Lydia Sims became the first woman to be elected as the chapter’s president in 1957. She had already served as the city’s first affirmative action officer.
Triple Shanghai

Alex Kuo’s writing confronts censorship both explicit and hidden.

IN A POINT OF VIEW: Moment from Alex Kuo’s new novel Shanghai Shanghai. Shanghai, several Chinese card players watch a team of Americans publicly disagree. George W. Bush’s administration in front of an international audience. Stuck by the brazen criticism, a pickpocket known as Bodega Man questions how such anti-government opinions could ever be voiced openly. He contends that political dissent in China cannot be voiced publicly. His writing often explores the entangled roles of citizens, states, money, and memory. His 2002 Lipstick and Other Stories won the American Book Award for fiction.

Throughout his career with WSU’s English and Comparative Ethnic Studies departments, Kuo traveled back to China to teach each year. He retired from WSU in 2012, but still holds an appointment at the Beijing Forestry University’s School of Foreign Languages.

Kuo’s novel, which he refers to as “Triple Shanghai,” is brief, but complex. The book that seemingly slips between the Tiananmen Square protests, and modern China. Scrambling historical touchstones, often within the same sentence, creates a dreamlike fluidity in many of the early chapters. Inspired by Faulkner, Kuo likens the book’s time structure to an “anti-chronology” or Möbius loop. He retells history against revision, tyranny against absurdity, and culture against commodification. Artists paint propaganda. Journalists write narratives. The capacity to change minds, incite revolutions, and the different should be challenging, infuriating at times, and requires work.

But that is the power of literature—the ability to provoke and shape critical thought. “I'm not sure which is worse,” she says. “Kindness or cruelty,” he adds. “Kindness is better, obviously.”

Kuo sets history against revision, tyranny against absurdity, and culture against commodification. Artists paint propaganda. Journalists write narratives. Kuo’s novel about an unusual subject that is simultaneously simple and profound. It is a novel about the power of literature to provoke and shape critical thought. It is a novel about the power of literature to provoke and shape critical thought.

“We have censorship in this country, but it’s self-imposed,” he says. “The worst kind of censorship is nobody reads. That’s self-censorship.”

Kuo will launch the book tour for “Triple Shanghai” with a public reading at 5:30 p.m. on November 16 in Goertzen Hall on WSU’s Pullman campus. He also has a new poetry collection in Chinese and English. Meeting Words at the Gate, published this fall.

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The silence is unnerving. Not another car in sight as I drive through the desolate Hanford nuclear area. The road unfolds in an eerie lacework of tarred concrete until finally I see gleaming in the distance—the Laser Interferometer Gravitational Wave Observatory (LIGO.)

LIGO is home to Earth’s most sensitive optical instrument, uniquely designed to intercept gravity waves. These elusive cosmic waves—ripples in space-time—are so minuscule that Einstein thought them impossible to view and measure. And so far, he’s been right. Yet if detected, gravitational waves could transform our fundamental understanding of the universe.

They also, incidentally, play a starring role in the hit film Interstellar—a science fiction thriller replete with black holes, time travel, and ultimately, the quest to harness gravity.

A bit of that movie magic imbues LIGO, which was co-founded in 1983 by theoretical physicist Kip Thorne. Thorne wrote the initial story concept for Interstellar and was also executive producer on the film. At LIGO, Thorne and other descendants of the Einstein legacy are pushing science to extreme limits. How astrophysicists fine-tune the newly updated instrument for its maiden run, confident of spotting gravity waves 250 million light years into their galactic journey.

I pull into the LIGO parking lot and step out into blanching sunlight. To the west, I catch a glimpse of the L-shaped interferometer whose concrete arms stretch two and a half miles into the distance. Fred Raab ushers me into the air-conditioned main office.

Raab is head of LIGO Hanford and an adjunct professor in astronomy and physics at Washington State University. He is also a member of the NSF Relativity Group led by physics professor Sukanta Bose. Thorne personally recruited Raab in 1988 to help build LIGO, which is funded by the National Science Foundation and operated by its California Institute of Technology and Massachusetts Institute of Technology. Raab was handed the reins in 1994.

“I’ve spent the last 25 years focused on designing and invention technologies to get the first gravity wave detection,” says Raab. “I knew it would take a long time.”

The concept of gravitational waves originated with Einstein’s general theory of relativity in 1915. Among other things, his hypothesis states that space and time are linked, creating a type of “fabric” comprising our universe. Like bowling balls on a trampoline, the sun and other massive celestial bodies stretch this space-time fabric. As smaller objects pass by, they follow the curving fabric downward in what we know as gravity. Planets, moons, and asteroids become trapped in these gravitational channels and orbit like little balls in a roulette wheel.

A catastrophic event can also shake space-time fabric, generating “gravitational waves.” The violent forces of a supernova or the formation of a black hole can flip the fabric like a sheet causing waves to flow out in ripples. These waves then travel the universe at lightspeed for eons before gradually losing intensity.

In 2001, Initial LIGO was launched to try to observe these ripples. Although it failed to detect a gravitational wave, Raab says they have since updated and improved the instrument’s sensitivity and call it Advanced LIGO. The inaugural run began with high hopes in September.

Thorne had intended that Initial LIGO detect the gravitational anomalies prompting Interstellar’s adventures. Director Christopher Nolan eventually cut the Hanford scene but still permitted gravity, with its ability to travel back and forth in time, to claim the spotlight.

Raab leads me to a bridge overlooking LIGO’s long, pipe-like arms. He points out the control station, which houses the interferometer.

During the instrument’s operation, a laser beam is split, directing light down giant vacuum tubes in each arm. The light is reflected back to a detector by polished mirrors delicately suspended on wires. Since the two arms are identical in length, light naturally cancels out at the detector.

Should a gravity wave pass by, relativity says it will cause space to stretch and space make one arm appear momentarily longer and the other shorter. Then the pattern reverses. In this case, laser light reaches the detector, signaling a possible hit.

A duplicate LIGO observatory is also listening in rural Louisiana. A two-hour drive northward, another 13 miles, and LIGO scientists say they can’t wait. Everything we know about the universe is based on observations made with electromagnetic waves—light, radio, x-rays, gamma rays. Gravitational waves are altogether different, promising breakthroughs in a wide range of areas including nuclear matter, quantum mechanics, and relativity.

If all goes well, history may place LIGO alongside the first telescope and microscope, says Raab—celebrated as the “primitive” instrument that laid bare mysteries of time, space, and gravity.
The lasting impact of Tom Foley

BY MARY HAWKINS

Thomas S. Foley was a political gentleman. The Speaker of the House lived and worked from principles that defined his political career: civility, honesty, and integrity. Even though he lost his seat in Congress, Foley’s legacy continues to encourage many others to follow his path, through his namesake institute at Washington State University.

No one on the reelection team was emotionally prepared for Foley’s defeat in 1994. A sitting Speaker had not been defeated since the Civil War era. John Pierce remembers Foley as “sad, stunned about the election results, but not vindictive.” Pierce had been a congressional fellow with Foley before beginning a 24-year career at WSU, eventually as chair of political science and then dean of humanities and social sciences.

Just days after Foley’s defeat, Pierce, WSU government relations director Beverly Lingle, and WSU archivist John Guido met with Heather and Tom Foley in the Speaker’s office in Washington, D.C. The usually bustling office was almost empty of staff. “The Speaker’s office had eight phone lines. Usually it was difficult to carry on a conversation there. On that day, the phone didn’t ring once,” says Lingle.

It was in this somber atmosphere that the idea of an institute at WSU had evolved from discussions between WSU President Sam Smith, Pierce, and the Foleys. “We wanted Tom’s congressional papers and had discussed housing them for quite some time. The institute concept evolved very quickly and came together over the course of weeks,” says Smith.

Guido immediately started working with staff on gathering materials. “I remember that when we arrived, staff were throwing things away,” Lingle recalls with a laugh. “John Guido quickly put a stop to that and implemented a system to prepare Tom’s papers for travel. Staff members were extremely cooperative, and the archives had no restrictions.” Within weeks, large moving vans appeared at Johnson Tower and at Holland Library’s Manuscripts, Archives, and Special Collections.

“We quickly set about researching other, similar institutions, seeking funding, and defining the scope of the institute,” says Pierce. By mid-November 1994, initial plans were in place, and the institute had a name: The Thomas S. Foley Institute for Public Policy and Public Service.

Twenty years later, Foley’s “living, breathing place” resides in Bryan Hall, where it hosts guest lecturers and researchers. It also sends many students on internships to encourage public service careers.

“Political engagement by students is critical because it is so immensely empowering,” says Cornell Clayton, director of the Foley Institute and political science professor. “I’m proud to say we’ve expanded internships significantly. Internships in Olympia and D.C. used to be almost an afterthought. Now they are a key part of our work.” Foley interns work in local, county, state, and national government, diplomacy, law enforcement, courts, political action groups, and at research organizations. The institute has also hosted dozens of significant and diverse speakers, such as John Ashcroft, Angela Davis, Seymour Hersh, and Christopher Hitchens. It has fostered informed public policy debate by organizing formal and informal political gatherings, multidisciplinary symposia, and citizen forums, including an ambitious conference in 2011 on civility and American democracy.

Rachel Ellenwood discovered a world of possibilities at Washington State University. Here the pre-nursing student was inspired to excel in the classroom, immerse herself in extracurricular activities, and mentor classmates. Last spring, the future nurse practitioner and Nez Perce tribal member became the first WSU student ever selected as a national Udall Scholar because of her commitment to serving the health care needs of her community.

A bold approach? Definitely. But, after all, you’ve counted on us for creative solutions to the state’s needs since 1890. And you always can.

125 YEARS, AND COUNTING.

WSU125 EST 1890
WSC banged, smashed, bulled, and pounded their way to a 14–0 victory that started a storied football tradition.

**First '16 Rose Bowl**

WASHINGTON STATE SUPPORTERS WONDERED, SOMETIMES ALOUD, IF PRESIDENT E. A. BRYAN HAD MADE A GRIEVOUS MISTAKE IN ENTRUSTING THE FOOTBALL PROGRAM TO WILLIAM “LONE STAR” DIETZ SHORTLY AFTER THE SHARP-DRESSED MAN ARRIVED ON SEPTEMBER 1, 1915.

Dietz emphasized conditioning over running plays, then a radical approach. He inherited eight experienced players and three teams of untested candidates, none of whom were familiar with the single- or double-wing formations Dietz—as Pop Warner’s protégé—brought with him from Carlisle Indian School. Hopes sank when the varsity squeaked by the alumni 3 to 2. Captain Asa “Ace” Clark wasn’t convinced the new approach would succeed but he accepted Dietz’s request to shift to tackle. Hoping for Washington State College’s first winning season since 1909, Lone Star then moved Clarence Zimmerman to end, “Hack” Applequist to guard, and plugged some holes with new men.

The season opener against the tough Oregon eleven changed some minds. The Evergreen editorial, “Vindication for Dietz,” praised both coach and players in their 28 to 3 victory. Four more convincing wins earned an invitation from the Pasadena Tournament of Roses Association to a postseason game on New Year’s Day against Brown University. Quelling “Gloomy” G DeFabi’s assertions that his unbeaten Washington team should represent the West, Dietz’s charges pummeled Gonzaga 48-0.

On December 21, after a fancy sendoff dinner at Spokane’s Davenport Hotel, the Washington State contingent boarded the Spokane-Portland Flyer train. They arrived in Smackdown Christmas morning to a surprise from Coach Dietz: they were to become movie stars. Dietz had arranged for his players to portray the football team in Tom Brown at Harvard and wrangled a small part for himself. Dick Hanley recalled, “Each player was making around $100 for fourteen days of work, and while that wasn’t hard to take we always figured the movie was strictly a camouflage idea to make us forget Dietz was getting away with twice-a-day drills.”

That wasn’t the only trick Dietz pulled. He took his players aside individually, saying WSC’s only chance was to stop future College and Pro Football Hall-of-Famer Fritz Pollard, “and I’m counting on you to do the job!” He swore each to secrecy ostensibly to keep the others unaware.

On December 30, Mother Nature dumped two to three inches of snow on Southern California. On New Year’s Day the weather was thigh-deep wet snow. To complete the mess, game organizers scheduled a donkey polo game for Tournament Park that morning. Fritz Pollard almost drowned when he was tackled in a mud puddle. People observed Lone Star Dietz’s white suit was splattered with mud in the first quarter.

Dietz’s team normally ran a wide open offense but field conditions rendered tricky ball handling inadvisable. He shifted to cautious line bucks against the heavy Bruin line. Brown had the best of it early but WSC’s defense rose to the occasion. Archie Durham intercepted a pass on his own 10-yard line and they sacked the Brown quarterback on fourth down at the WSC six.

The second half was a different story. Ralph Boone, “Bing” Bangs, and “Red” Dietz (no relation to Coach Dietz) smashed the ball down the field. Boone bullied the ball from four yards out for the first score. In the fourth quarter, Red Dietz pounded the ball in from the two. Quarterback Arthur “Bull” Durham dropkicked both extra points. Two other scores escaped when they fumbled the wet, slippery ball near the goal line.

It wasn’t just offense that won the game. WSC’s defense smothered Pollard from making substantial gains, preventing any scores for the Brown Bruins.

WSC’s 14–0 victory established West Coast football as the equal of the Eastern variety and started the New Year’s Day football tradition and the series of games today known as the Rose Bowl.
In a small northeast Washington field, a flock of 34 Ancona ducks—a white breed with distinct, mottled feathers—quack vividly as they waddle around Rebecca Cahill Kemmer’s farm. Sometimes they drop eggs while they follow their guardian goose and gobble up old apples and remnants of summer squash.

Cahill Kemmer and her husband Eric Kemmer started their Pend Oreille County farm, in Fertile Valley just north of Spokane County, in 2013, with education and assistance from WSU Extension's small farms team. When they chose livestock, ducks were a natural choice.

“They’re very hardy,” says Cahill Kemmer. “Last winter, they liked to sit out in the snow instead of their shelter. And it’s harder to find duck eggs and meat in the store.”

Cahill Kemmer’s flock is not an exception—Adaptable and tough, ducks range from the Arctic tundra to tropical rainforests, isolated cold stands off Antarctica to suburban ponds. They’re omnivorous in the broadest sense, eating almost anything and earning the nickname “pigs of the bird world.” Their bills act as extremely effective sieves with horny plates to filter food and sensitive taste buds to determine if it is edible, even in mud and cloudy water. They also have a field of vision of nearly 340 degrees, can simultaneously see both near and far, and can see in color.

As waterfowl, ducks depend on a second layer of feathers to stay warm. They also resist cold with their webbed feet, which lack nerves or blood vessels. To dry off, ducks preen in a ritual to remove grime while also spreading a waterproof oil from their uropygial gland. Another distinguishing characteristic is size. Like boxers, ducks can range from heavyweight down to bantamweight. Cahill Kemmer’s flock of Anconas are mediumweight, smaller than common Pekin ducks but they grow faster. Duck expert Dave Holderread writes that Anconas are also prolific egg layers and excellent foragers.

Ducks have worked their way into our diets—sitting duck, lame duck, ducks in a row—and our pop culture—Donald Duck, Howard the Duck, The Simpsons, even another Pac-12 mascot. They haven’t established themselves on the modern American plate, however.

Jamie Callison, WSU executive chef and author of The Crimson Spoon, encourages people to try cooking duck, maybe for the holidays, and not be intimidated. “You have to cook without fear. Try something unique, think about serving duck with some glazed carrots with a bit of honey, and you’ll get rewarded.”

Cahill Kemmer says cost can be a problem, increased by processing. “A USDA processor is required and it’s an hour and a half to the nearest processor,” she says. They sell on the farm and at farmers markets.

Unlike the United States, people in other countries regularly consume duck meat and eggs. They used to be more common in the country as well, WSU Extension bulletin from the early twentieth century offer instruction on raising the birds, recipes to smoke or cook duck, and tips on hunting.

Cahill Kemmer points out that wild ducks do tend to taste gamier, since they eat more worms and slugs. A well-rounded diet for a pastured duck improves the flavor, and the meat is still richer than other poultry. Cahill Kemmer even feeds fermented grains to her ducks for probiotic benefits.

Her family, including her five-year-old daughter Juliana, loves the large, rich eggs from the ducks. Higher in protein, iron, and Omega-3 fat than chicken eggs, duck eggs are also a preferred ingredient for pastries and desserts. Callison says duck cooked low and slow, with something acidic like a citrus sauce or fresh ground black pepper, in four lines about 3/4 inch apart. Score each duck breast by running the tip of a knife into the skin, but not into the meat, in five minutes, turn and repeat process. Preheat oven to 350°F.

Remove duck from marinade, pat dry with paper towels. Cook duck breasts skin side down in a skillet pan lightly coated with vegetable spray until skin is golden brown and crisp, about 5 minutes, turn and repeat process.

Transfer duck, skin side up, to a baking pan and bake until cooked through, about 5 minutes, turn and repeat process.

Serve with Hazelnut Forbidden Rice, Julienne Minted Carrots, and Orange Balsamic Glaze (recipes online at magazine.wsu.edu/extra/duck-recipes).
Dick Spink ’85 never intended to hunt for Amelia Earhart’s airplane. He specializes in boats. He put himself through Washington State University designing and fabricating aluminum boats. He now holds on to a day job teaching at Mount Vernon High School, but he’s also a naval architect and licensed master. He sells boat kits all over the world, and he’s also a naval architect and licensed master. He sells boat kits all over the world, from Singapore to Africa, and often builds clients’ boats on site. Which is how he found himself in the north Pacific, in the Marshall Islands, and deep into a quest to solve the most enduring of aviation mysteries.

“Right now, to think I’m a leading researcher on Amelia Earhart? A farmer’s kid and school teacher from Mount Vernon? Unbelievable,” says Spink, a broad smile across his boyish face. He wears a brown fedora, a la Indiana Jones, and a brown leather aviator jacket with a Boeing logo embroidered on the front. Spink says he received the coat when he told his Earhart story to a fascinated group of Boeing Company executives in February.

The story begins at a celebration with his Marshallese hosts. At the feast, an older man—a king of one of the islands—told the guests about Earhart and her navigator crashing on a nearby atoll in 1937. He said his uncle had watched over Earhart for two days. Spink imprudently laughed, and his close friend Ramsay Reimers chided him for disrespecting the elder man. “You don’t laugh at a king,” says Spink. After several apologies from Spink, Reimers and others explained that the Earhart crash was well-known throughout the islands, and that Spink could meet many locals who had heard the recollection of their parents and grandparents.

The Earhart tale grabbed Spink’s imagination. “I’ve been through just about every scenario they talk about. I’ve read every Earhart book I can get my hands on,” he says. “I started taking my movie camera down and started recording these conversations.” Spink got more than stories. He came home with aluminum parts that could well be from Earhart’s Lockheed Electra.

Amelia Earhart started flying airplanes in 1921, drawn to the daring world of early pilots. In just seven years she became the first woman to fly across the Atlantic, first with a crew, then solo. Her fame grew, and ticker tape parades welcomed her home from her exploits.

Earhart chalked up one aviation accomplishment after another: first person to fly the Atlantic twice; first woman to receive the Distinguished Flying Cross; first woman to fly nonstop across the United States; and a number of speed records.

Her flying exploits weren’t the only way Earhart increased her visibility and fame. The charismatic pilot wrote two books, a regular aviation column for Cosmopolitan magazine, articles, and essays. She even promoted a line of clothes based on her distinctive attire.

Earhart’s husband, publisher George P. Putnam, helped market the aviatrix, and she became “Lady Lindy,” an internationally-recognized celebrity who drew crowds of hundreds.

In late 1936, at age 39, Earhart set out to be the first woman to fly around the world. She chose a heavily customized Lockheed Electra 10e, the first twin-engine, all-metal passenger airliner built by Lockheed. Earhart’s ground crew ripped out the passenger seats, added more fuel tanks, and covered most of the portholes. Her first attempt failed with a crash in Honolulu after flying over from Oakland, California.

The second attempt worked much better, at first. Heading east, Earhart flew the Electra with top navigator Fred Noonan on board. They departed Miami on June 1, 1937, and traveled through South America, Africa, India, and southeast Asia before arriving at Lae, New Guinea, on June 29. They were set to begin the final stage of the circumnavigation. They took off on July 2, destined for remote Howland Island, one of the Pacific islands under U.S. control by League of Nations mandate. A rugged airstrip was built there specifically for Earhart’s flight.

The U.S. Coast Guard cutter Itasca was dispatched to communicate with and guide Earhart’s plane. Through a series of radio miscommunications, it became clear to the Itasca crew that the Electra was not finding its way to Howland. Earhart reported overcast skies and indicated she was barely receiving the signals from the Itasca.

“We must be on you, but we cannot see you. Fuel is running low. Been unable to reach you by radio.”

… "We must be on you, but we cannot see you. Fuel is running low. Been unable to reach you by radio." ...
The Itasca heard one last ambiguous message—that the aviators were traveling north-south—before the plane disappeared.

The U.S. Navy and Coast Guard spent $4 million and sent an aircraft carrier and other ships to search for some trace of the plane or crew, to no avail. They eventually declared Earhart and Noonan lost at sea. Putnam also sent ships on a futile search.

Theories contradicting the official explanation of her disappearance soon began to pop up and increased with the end of World War II, when Pacific Islanders began to tell of a woman and man captured by the Japanese after their plane crashed on an island in 1937. It was one of these eyewitness reports that led CBS radio journalist Fred Goerner to pursue the Earhart disappearance. His 1966 book, The Search for Amelia Earhart, chronicles a six-year quest he and others undertook to determine the facts about Earhart. He gathered a number of reports of U.S. soldiers and island natives who saw evidence or heard testimony of Earhart and Noonan in captivity on Saipan. Goerner even exhumed remains and had them analyzed to determine if they were the aviators. They weren’t.

One discredited theory said Earhart returned to the United States under a false name, Irene Bolam. An unproven rumor claimed Earhart was Tokyo Rose. Another prevailing theory is the Mili Atoll crash. Mili Atoll is a group of islands and reefs in the Marshall Islands, ringing a lagoon formed by the caldera of a collapsed volcano. Near a three-acre island there in 1937, Marshallese natives Lajuan and Jororo said they saw the Lockheed Electra crash. The two were fishing in the lagoon of the atoll when they heard the engine and saw the silver plane glide onto the rocks of the reef, tearing off the landing gear and a wing.

The two men subsequently said that a Caucasian woman and man emerged from the plane, the man injured and the woman with short hair and long pants. The fishermen tried to help but couldn’t understand the pair’s language.

The islands were part of the mandated Japanese territory, and a number of Marshallese witnesses later said the Japanese eventually came and took both the fliers and the airplane. Postage stamps from the Marshall Islands even show the airplane being transported away on the Japanese trawler Koso Maru.

“Generations of Marshallese people have known since 1937 that the famous fliers didn’t just disappear in the ocean,” Marshall Islands President Christopher Loeak told news agency Agence France-Presse this January. “The airplane landed on a small atoll in the Marshall Islands and (Earhart and Noonan) survived.”

The theory contends that the pilot and navigator were treated at a hospital in the Marshall Islands and then taken to Saipan, where they remained in captivity until they died. The airplane was taken to Saipan as well, the theory claims, and was destroyed after World War II.

SPINK’S BOATBUILDING COMPANY Dynatrax took him to the Marshall Islands in 2006. He became enamored with the people and culture, visiting several more times for business and vacation, and eventually becoming an honorary Marshall Islands citizen.

On one of those trips he learned about the Amelia Earhart story and Mili Atoll. Later Spink interviewed Shikaro Lajuan, a United Church of Christ minister on the Marshall Islands, who grew up hearing the story from his father, one of the original fishermen.

When Spink first heard the story about Earhart’s plane, people were pretty confident about the location of the crash site. “I talked more and more with Ramsay and my friend Tony deBrum about organizing the first expedition, which we did just two years ago.”
Federal Aviation Administration and National Transportation Safety Board.

Hayton recognized an aluminum rectangular piece as the cover plate for an auxiliary power unit off an airplane. The plugs under the plate would have been used to jumpstart an airplane when the batteries failed. The plate was the right size for a Lockheed Electra.

The corroded red paint on the piece caught Hayton’s attention as well. In areas where the paint came off, he could see yellow zinc chromate primer underneath, the kind used on exterior metal surfaces back in the 1930s and 40s. Spink points out that Earhart had the wings of her plane painted red, just like the cover plate. There were no other known Lockheed Electras with red trim like that.

The round piece surprised Hayton even more. Despite the bent and stressed metal, he knew the part was the dust cover hubcap of an unusual wheel. He says it came off a Goodyear Airehew, .36 inches diameter by .15 inches wide, built for Lockheed Model 10 planes, like Earhart’s.

“It was very soft, had low pressure, to land on a beach or unimproved runway over big rocks,” says Hayton. “It was very soft; it had low pressure.”

Aluminum is totally different, he says. “We’re not going to get on a plane and figure out what it was before we’ve got Alcoa and their own labs to try to certify the hash,” says Spink.

Hayton has testi...
The drink that built a nation

BUBBLING A REVOLUTION IN WASHINGTON STATE

It’s canning day at Tieton Cider Works in Yakima. Tall, red cans of Rambling Route cider pass through a pasteurizing unit as they come off the conveyor belt of the mobile canning truck. Sold in four packs, the company’s first canned product is intended to reach the masses, perhaps even enticing craft beer drinkers with a moderately-priced, portable cider.

The label on a can of Rambling Route cider describes the journey apples made across the country to Washington: “When it reached the land that would be called Washington, the apple knew.” It knew it had found a home in the soils and climate of the Pacific Northwest. Today, cider has found a welcoming home here as well.

From new cideries and orchards around the state to cider science at Washington State University, the fermented beverage has come back in a big way.

CIDER IS ARGUABLY THE DRINK THAT BUILT THIS NATION.

Not beer, not wine. Once upon a time, nearly every family in colonial America had a small cider press for making their own because cider was considered safer to drink than water. Wherever John Chapman, aka Johnny Appleseed, went he left a trail of trees that would serve as homestead orchards for making cider. Cider prevailed as the beverage of choice in early America until the early temperance movement and then prohibition drove the final nails in its coffin.

The current cider boom began only nine years ago, says British beer writer Pete Brown. “It’s as if a cidery shock wave went around the world,” he writes, “a psychic pulse hitting the minds of discerning drinkers everywhere, and making them think, ‘Hmm. I want some cider.’”

Cider has soared to the top as the fastest growing alcoholic beverage in the nation. Although cider accounts for less than 1 percent of the entire beer category, even the popular craft beer movement has not grown as fast. Compare craft beer’s growth of roughly 20 percent annually with cider’s steeper curve of 65 percent annually.

But as with craft beer, Washington state is at the leading edge of the cider revolution that is sweeping the nation—both in production and consumption. With upwards of 30 cideries, Washington boasts the most in the United States.
BUT THERE’S A HITCH IN THE CIDER REVOLUTION. Washington leads the nation in apple production. It’s chock full of apple orchards, but few contain cider apple varieties.

Cider apples, often referred to as “spitters” for the sour or bitter tannins they contain, are categorized as sweets, sharps, bittersharp, and bittersweets. New Jersey-based cider writer Chris Lehault says this about the experience of eating one: “In essence, eating a bitter-sharp apple is a bit like sucking on a black tea bag soaked in lemon juice.”

Once pressed into juice, fermented, and blended just so, cider apples impart flavors unparalleled by everyday eating apples, or dessert apples—the predominant source of most ciders today in the United States. Cider makers who want to produce an authentic, artisanal cider that appeals to an increasingly sophisticated palette can’t get enough locally grown cider apples.

PLANTING A NEW BUSINESS

In 2008, Craig Campbell ’73 and his wife Sharon felt the “cidery shock wave” surface in their eastern Washington orchards. They began experimenting with making cider from dessert apples grown in their 400-acre commercial fruit orchards. Despite naysayers who warned that cider apples required a maritime climate, Craig also planted a two-acre test orchard with 22 varieties of cider apples.

“Everyone told me you can’t grow cider apples in eastern Washington, in the Yakima Valley,” he says. “I just thought, this is crazy. I can grow every other kind of fruit.”

Now the Campbells grow cider apples to supply their own commercial cider, Tieton Cider Works. They’re leading the way in modern cider apple orchard management, and partnering with WSU researchers to help the industry meet the demand for a nation thirsty for local craft cider.

Their two-acre experiment expanded into Cider View, a 30-acre “high-density” cider orchard. With additional blocks of both apple and pear trees for cider, Cider View has become the largest cider orchard in the state. In fact, with 55 acres of cider apples and pears altogether, it’s one of the largest in the country. This year, Tieton Cider Works is producing the equivalent of 100,000 cases (160,000 gallons) in kegs, bottles, and cans, but the Yakima facility has room to grow to 500,000 cases annually.

“We were in early on this wave, but we had no notion about this thing taking off,” Sharon says. “We just wanted to try it. We thought if we could make 1,000 cases and sell it that would be our business model. We blew past that in year three.”

RAISING STICKS AT CIDER VIEW

Craig Campbell, a third-generation farmer and a third-generation WSU alumnus, grew up on his grandfather’s farm, the land he now farms near Tieton, Washington. After graduating with a degree in horticulture, his father encouraged him to leave the farm.

“He urged me to go out and learn more about the whole fruit business,” he says. “He’s the one that really pushed me. Thank God he did that.”

Craig headed to California where his father’s wisdom paid off in two life-changing ways. The first was the start of his still successful fruit distribution business, a handy background for understanding cider distribution. The second was a blind date with the woman who would become his wife.

“When I brought Sharon to see one of our family’s orchards near Pasco, she says, ‘Oh my God, we’re raising sticks.’” What looked to Sharon like simply sticks in the ground was Craig’s passion—newly planted trees. The phrase stuck and became Craig’s license plate RAZNSTX.

The Campbells’ cider orchard is the latest manifestation of Craig’s passion. The 30-acre block of cider apple trees sits on a plateau above the Naches River, a tributary to the Yakima River. Tightly planted rows of trees with names like Golden Russet, Harry Master Jersey, and Yarlington Mill enjoy sweeping views of the river valley and mountains.

In the spring of their third year, the trees are nearly in full bloom—more than mere sticks in the ground. In this modern, high-tech orchard the young trees are planted three feet apart and trellised to support a 12-foot high central leader. The arrangement maximizes yield per acre. The uniform rows are wide enough for a tractor to roll through, carrying workers on a platform to prune or harvest without having to climb up and down ladders. Come fall 2016, Cider View will bear its first load of fruit, which must be harvested by hand. But the orchard is designed to accommodate mechanical harvesting, once the technology is available.
Mechanical harvesting of cider apples is one of many cider research projects at the WSU Northwest Research and Extension Center (NWREC) in Mount Vernon. The ochard-to-glass research program led by horticulturalist Carol Miles is one of only five university-based programs in the United States. Though small compared to beer and wine science, Miles says WSU’s cider research program is the largest in the country.

With most of Washington’s apples growing in places like Yakima and Wenatchee, western Washington may seem like an unlikely place for apple research. But Miles is quick to point out, “The San Juan Islands were the first place apples were grown in the state in the 1800s—long before irrigation water came to central Washington.”

Cider research at WSU began in the maritime climate of Mount Vernon in 1979 when Bob Norton planted six cider apple varieties at NWREC. Today, under the direction of Miles, a newly-planted research orchard includes 64 English, French, and old American varieties of cider apples. The research spans all aspects of orchard management as well as cider making, including sensory evaluation, marketing, and economic analysis in collaboration with specialists at the Pullman campus.

Besides research, NWREC also offers cider education. Many Washington cider makers, including Sharon Campbell, have taken a cider-making course taught by British expert Peter Mitchell, offered by NWREC in partnership with the Northwest Agricultural Business Center and the Northwest Cider Association. Sharon Campbell, incidentally, helped start the association in 2010, and was president until last year.

The NWREC program also produced a first of its kind manual for cider production and orchard management in the Pacific Northwest, written by Gary Moulton, former WSU tree fruit specialist and cider program leader.

At Tieton Cider Works, head cider maker Marcus Robert, a fourth-generation orchardist who hails from the winemaking industry, prefers to hire people with a wine science background. He worries that people who are eager to jump in to the cider industry won’t take the time to learn the art and science of it and risk producing bad ciders that could turn off uninformed drinkers for good.

“It’s really important that people know what they’re doing and are not just crossing their fingers,” Robert says. “It’s a scientific field and it’s a scientific process that you have to repeat.”

As part of a national research team including Virginia Tech, Cornell, Michigan State University, and the University of Vermont, Miles is hopeful that the U.S. Department of Agriculture will fund a robust proposal to boost orchard-to-glass cider research across the country. She also sees cider production as economic opportunity for agriculture in the state.

“Many cider makers are currently importing cider apples from Europe and New Zealand. This is a lost opportunity for the United States,” she says. “I see no reason why Washington shouldn’t be a leading cider apple grower in the country.”

Miles anticipates a day when cider apple varieties are grown in every part of the state. And in Tieton, the Campbells are proving that cider apples don’t require a maritime climate.

Wherever cider apples are cultivated, they are ushering in the return of hard cider to the United States. And this time, cider could be here to stay.
She’s eager to instill that same hope to the kids attending her schools. Chief Leschi Schools, operated by the Puyallup Tribe, is one of the largest Bureau of Indian Education schools in the nation. That she even became superintendent took support of her own teachers.

As a child, her hopes were slim. Her dreams, muted. Her father died when she was three. Her mother was an X-ray technician but spent most of her time in preschools, mentoring children. This was in the Hilltop neighborhood of Tacoma. This wasn’t a neighborhood for a child. There was gang violence, crack dealing, gunfire, and sirens at all hours.

“As a teenager,” she recalls, “I didn’t think I’d live to be 20, so ‘growing up to be something’ never entered my thoughts.”

She was surviving. She dropped out of school. She bounced around foster homes. She was lost. “The only thing I knew for sure was that if—and that was a big if—I made it, I would listen and be the voice of the voiceless because I never felt as though I had one.”

But educators saw something in her and heard the voiceless tribal girl from Hilltop. Like Mr. Johnson, a teacher and gymnastics coach who believed in her. Like former Leschi superintendent Linda Rudolph who suggested Eveskcige go to college. Like former Vashon superintendent Monte Bridges who appreciated, as she did, social justice programs and integrated curriculum.

When the superintendent position opened at Chief Leschi and she got the job, Eveskcige couldn’t imagine being anywhere else. “My journey took many twists and turns, but it led me back home. It is my home, the future of my child and her children. My actions today will impact seven generations into the future.”

“I want to provide a place of cultural relevance and identity, where it is okay to be a Native youth while striving to be the best in whatever field they choose,” says Eveskcige.

Perhaps a generation from now, or two, or seven, a child will go into education because of her. “My greatest reward each day is to see the smile that is accompanied with the knowledge that it was a direct result of their awareness of their own accomplishments.”
Take to the sea

Four years ago, at a wedding in Spokane, Cathy Simon ’71 was seated across from a woman named Kay LeClair. Like Simon, LeClair was in her 60s. Unlike Simon, she had recently climbed to the 29,035-foot summit of Mount Everest.

It made Simon think, “I’m not done. I need to do something more.”

A sailor, she started exploring her options and hit upon the World Cruising Club’s World Atlantic Rally for Cruisers, a 26,000-mile circumnavigation of the earth. Speaking to her husband, Charles Simon ’89 MS, she said, “We’re going to need a new boat.”

This May, the couple sailed their 58-foot sailboat into Rodney Bay, St. Lucia, crossing their outgoing path of 15 months earlier and completing one of the most singular accomplishments on the planet.

“What were we going to do otherwise?” says Cathy, 67. “We needed to do something that was an equivalent to climbing Mount Everest. You realize you can do these things.”

The Simons first met in 1978 on a flight to Hawaii and first sailed on their return when Charles, the great-grandson of a ship owner, took them out on San Francisco Bay. She was a banker; he was busily running a software startup. To get him out of the office at least one day a week, she bought him a 33-foot Ranger 33. That led to a 46-foot Beneteau, which they twice cruised to Alaska.

For the circumnavigation, they bought a Taswell 58. After a trip to Nova Scotia, they filled 14 pages with things they wanted to change: adding solar panels that could run a fridge and autopilot, replacing sails, getting bigger anchors, replacing electronics.

“The hard part of the trip was getting the boat ready to go for a year and a half,” says Cathy. “Actually doing the trip seemed a lot easier.”

The Simons had to tough it out through several stretches in which they took turns at six-hour watches. But their route through the Panama Canal and following the trade winds made for mostly smooth sailing, as did timing the journey to avoid stormy seasons. They hit squalls but never a storm, and some big but largely tolerable seas.

“Cathy and I have sailed a bunch and after a while you learn that it becomes really, really uncomfortable long before it gets dangerous,” says Charles. “It gets uncomfortable and then it gets really unpleasant and I don’t think we hit seriously unpleasant.”

“We could always have soup,” he adds.

Want You to Join Them (and Us).

Last spring, the WSU Alumni Association exceeded 30,000 members for the first time, ever! Members joined because of the amazing events, exclusive programs, special services, and fantastic discounts. When Cougs get together, the more the better. Become a member and help us reach 40,000—because it’s Cougs like you who make the difference. Find us online at alumni.wsu.edu/join or call 1-800-ALUM-WSU.
NEWmedia

Ozette: Excavating a Makah Whaling Village

RUTH KIRK
UNIVERSITY OF WASHINGTON PRESS: 2015

Although the professional literature in rich and extensive, not enough had been written for the public on the extraordinary archaeological exploration at Ozette, the ancient whaling village on the Olympic coast between Neah Bay and La Push. There is History of the Whale, by Northwest chronicler Ruth Kirk, written for young readers in 1974 when the expedition was barely half finished. Archaeology of Washington, coauthored by Kirk and WSU archaeologist Richard Daugherty, included a section on Ozette, but these works by Kirk on every interest in Ozette has long waited for.

Ozette had been occupied by the Makah, probably continuously for at least two thousand years, until the 1920s. Makah oral history recalls centuries of a rich whale-hunting culture centered at the village. They had no choice but to abandon their ancient home when the federal government insisted that children at the site must enroll in school.

Following his identification of the site as the most significant in a coastal survey of archaeological sites about to be inundated by rising waters behind the Snake River Dam. But in 1970, a winter storm uncovered a house at Ozette, and waves and hucksters were making off with artifacts. Tribal chief Ed Claplanhoo ’56 asked Daugherty to assess the situation.

Daugherty immediately drove ten hours to the coast to begin a remarkable 11-year recovery of Makah history and culture, one in which the Makahs themselves participated and would establish that the Makahs were indeed longshore whalehunters, confirming the memories and stories of their elders. Ozette would result in nine doctoral dissertations and ten master’s theses, on subjects as basketry, stone tools, woodworking, ethnohistory, and the use of fish at the site.

Ozette is a beautiful and profound book, depicting the beauty and profundity of Makah culture. And Ruth Kirk is uniquely qualified as its author. In addition to her being widely respected as a scholar and captivating storyteller of Pacific Northwest natural history and archaeology, as Makah cultural leader Meredith Parker writes in her foreword, “There is no one better suited or trusted to tell this story than our friend Ruth Kirk. She was at Ozette, she was at Neah Bay, she was at our weddings, baby showers, and funerals.”

Also, after a decades-long professional relationship, Kirk and Daugherty married as a longhouse at Neah Bay, and spent his last seven years together.

—Tim Storrie

Still Time

JEAN HEGLAND ’79
ARCADE PUBLISHING: 2015

Still Time, a new novel by Jean Hegland, explores dementia through the eyes of aging Shakespearean scholar John Wilson. Unsettled by life in a residential care facility and a surprise visit from his estranged daughter, Wilson finds solace and structure in the plays and poetry that so captivated his life. Hegland, who shares poetry at a memory care center near her home in California, says she was inspired by her own responses to the Bard of Avon. “At attending a performance of one of Shakespeare’s plays, I am haunted by a collage of lines and phrases that echo through my mind for hours afterward,” she writes.

So too, does Professor Wilson evoke the witty, brash, or contemplative words of Shakespeare as he navigates the condition of Alzheimer’s disease. Retreat into “green worlds”—scenes often played out in a fantastical environment away from day-to-day life—Wilson regains a bit of clarity. The interplay is especially poignant as father and daughter struggle with forgiveness and reconciliation.

“The interplay is especially poignant as father and daughter struggle with forgiveness and reconciliation.”

—Rebecca Phillips

The Adderall Empire: A Life with ADHD and the Medications’ Drug of Choice

ANDREW K. SMITH ’14
BOOKFRORE 2015

Smith’s memoir, The Adderall Empire, gives you a look into his life and struggle with ADHD (attention deficit hyperactivity disorder). Diagnosed in late high school, Smith was prescribed Adderall and was catapulted into what he calls the “Adderall Empire.” This empire is a world in which Smith believes people lose their creative minds to treat ADHD.

“This empire is a world in which Smith believes people lose their creative minds to treat ADHD.”

—Ainslie Kellas

Not As Briefed From the Doolittle Raid to a German Staling

G. RAY SULLIVAN JR. ’73
IRISH ACADEMIC PRESS: 2015

For students at the state college in Pullman, campus spirit and involvement—whether in music, sports, politics, or dance—became an essential part of learning. Faculty Spirit traces WSU’s early decades.

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![](image1)

Not As Briefed From the Doolittle Raid to a German Staling

Col. G. Ray Sullivan

Compiled and edited by Dorothy Griffith and Karen Morgan Dinwiddie

WSU fine arts graduate Rose Gunning plated a $25 in the Doolittle Raid, was shot down over Italy, escaped from a POW train, and ended up as a German enemy. His memoir and paintings provide an exceptional record of World War II action.

Paperback • $31.95
Volunteers drive the Cougar Nation (really)

Organizing a trip to a Major League Soccer game for 100 people could intimidate anyone. Not to mention a community garden, a networking meeting for young alumni, or even a WSU football viewing party. Fortunately, there’s an engine that drives the Cougar nation and its events volunteers.

Ashley MacMillan ’01, president of the Oregon Chapter of the WSU Alumni Association, has seen that engine work. “We have so many people here who are passionate about being involved with other Cougs, we’ve been able to diversify our events,” she says. That includes the hottest ticket sport in Portland: MLS soccer team the Timbers, which is one of the chapter’s family-friendly events. Her chapter also partners with the southwest Washington chapter on everything from Cougar football viewing parties at Tom’s Pizza and Sports Pub to regional wine tours.

One volunteer, Jenna Newcomb ’03, has taken on annual wine tours as her project. “She’s taken the engine and shown us exactly how to get that done,” MacMillan says. “She’s learned the logistics, so every year she has the venues planned.”

Kim Mueller ’91, director of alumni engagement at the WSU Alumni Association, says that MacMillan mastered the conference also imparts ideas for how to plan and promote events, and how to bring in more volunteers. “The ‘training has been wonderful in expanding our chapter,” says MacMillan. “We’re really learning how to seek out new volunteers and how to plan for the coming years.”

Mueller loves how she’s learned the events: “I get chills from seeing pictures of community service projects, from Habitat for Humanity to a garden for a food bank.”

MacMillan says everybody can help, no matter how much time they can give. “I don’t think everyone has to do the same thing that I do. There’s so many different areas within the association where people can volunteer to help us.”

If you would like to volunteer with the Alumni Association, or would just like to learn more about the opportunities, you can email volunteers@wsu.edu or visit alumni.wsu.edu/planenetworking.
TOM MONROE ‘80, RICHARD WAGNER ‘81, and I started first grade together in Okanogan, ninety miles north of Wenatchee and thirty miles south of the Canoe McDonald’s Maternity Home since there was no hospital then. We three boys began a lifelong friendship together at Grainger Elementary School while America was still battling World War II.

We all became Cougars in the fall of 1957. At first we were “Inde-pendents.” Tom and Richard romored at Krasel Hall, me at Simmons Hall. Tom and Richard became “TKES” (Tom Kappa Epsilon Satyrs) in their sophomore year, but I was a hardcore loner, staying on to be elected Junior Independent Man of the student body. Tom and Richard maintained their respective spouses as juniors and moved into University mobile homes. Associated with influential people has always been part of the Cougar experience: I took a speech class at Grainger Elementary School while America was thirty miles south and miles north of Wenatchee.

After graduating, we went on separate professional ways, but never lost touch with each other. Richard worked in engineering, ultimately as research engineer for Weyerhaeuser Company. He is also on the Auburn City Council—1989 to present—and was deputy mayor 2013-2014. Tom stayed in business management and added computer expertise, eventually working as computer programer for the Seattle Seahawks. I served as university professor for a few years and then went into theatre directing, professional fundraising, gambling management, and writing and photography.

Now, as we pass our seventy-fifth birthdays, you can look back on a lifetime of achievements and careers catapulted from the small town of Okanogan by an outstanding education at WSU.

BY JIM ROCKLEY ’63

Read Tom, and Richard’s full story and see their portraits through the years at magazine.wsu.edu/ctce/Okanogan-Coug.
A gift for the most loyal of fans.

Founded by Cougs for Cougs, as part of our CougarGood campaigns, we give $2 from each bath towel purchased to a WSU scholarship. Your custom-designed towel is crafted using fair labor and a Coug conscience.

Meaningful Living Essentials

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CREATE A LEGACY, SUPPORT EXCELLENCE
Something very special is happening at the College of Pharmacy, and this is your chance to be part of it.

The opening of our new building on the WSU Health Sciences Spokane campus has created a rare opportunity for you to have a permanent legacy in the College of Pharmacy. This is your chance to be part of it.

Something very special is happening. The Pharmaceutical and Biomedical Sciences Building has been created a gathering area, or laboratory in the dean’s conference room the “John Oftebro Room.”


John Oftebro contributed to name the dean’s conference room the “John Oftebro Room.”

Our new building on the WSU Health Sciences Spokane campus has created a rare opportunity for you to have a permanent legacy in the College of Pharmacy.

John Oftebro ‘65
COLLEGE OF PHARMACY
PARTNER HIGHLIGHT
JOHN OFTEBRO ‘65
“I have chosen to give back to a program that provided me with a foundation for creating a wonderfully rewarding professional practice. I am extremely grateful for the financial aid I received during my undergraduate years, and am glad to now assist our students. Go Cougs!”


MICHAEL THOMAS COLLINS (70 Fin., Phi Delta Theta), 67, July 27, 2015, Spokane. EUGENE C. DOLPHIN (70), 67, June 1, 2015, San Diego, California.


GEORGE LANCE WEDINICH (71 Arch., Phi Eta, 22 Ed.), 68, 2015, Edmonds. GORDON D. BARKER (72 Pharm.), 69, August 1, 2015, Bend, Oregon.

RONALD ELDON HERMANSON (72 Ag Eng.), 82, August 21, 2015, Pullman. ROBERT S. MARSHALL (72 Ed.), 72, August 3, 2015, Walla Walla.

ADOLPH JOHN FERO JR. (74 Phi Teach.), 73, March 25, 2015, Ridgefield. GUY F. HUESTIS (73 Arch.), 64, June 6, 2015, Great Falls, Montana.


KURT G. WAGNER (58 MED, ‘97 ED), 55, April 13, 2012, Port Orchard.


ARIC MATTHEW KLEPPIN (13 Spanish), 26, May 10, 2015, Pullman.

FACULTY AND STAFF


KURT G. WAGNER (58 MED, ‘97 ED), 55, April 13, 2012, Port Orchard.


ARIC MATTHEW KLEPPIN (13 Spanish), 26, May 10, 2015, Pullman.
MILESTONES

A billion reasons to celebrate

WSU’s fundraising efforts reach a lofty goal

BY LARRY CLARK

WSU student Selena Alvarado is leading to Costa Rica, but it isn’t for a vacation. As part of the Backpack Journalism program in the Edward R. Murrow College of Communication, she will investigate issues that face Costa Rica, then send back videos and print stories for Pacific Northwest media outlets. The hands-on program wouldn’t exist without scholarships and support from a number of donors.

At the WSU Tree Fruit Research Station in Wenatchee, apple breeder Kate Evans and her research team identify traits that can improve Washington’s signature fruit. Using genetic markers and research orchards, they seek an apple that tastes great and keeps well. Evans’s research will move forward with help from a historic $27 million gift from the Washington tree fruit industry.

Alvarado’s on-the-ground training as a journalist and Evans’s apple research represent just two of many efforts made possible by the recently concluded Campaign for Washington State University: Because the World Needs Big Ideas. The campaign brought in over $1.06 billion, which will make a significant difference in student success, research, and WSU’s ability to serve the state. Just as impressive is the number of donors: 286,259 donors made over 800,000 contributions.

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Cougar Wine Connections

Headed to Pullman for the next football game?
November 7 Merry Cellars
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Join us before each WSU home football game for wine tastings from a featured Cougar-connected winery. Visit www.visitor.wsu.edu for event start times. Tasting tickets $5 each and include a commemorative glass. Apply the cost of your tasting ticket to your purchase of a bottle of wine.

Limit of 2 tasting tickets per person. Must be 21 years of age or older to participate in the wine tasting.

Brelsford WSU Visitor Center
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Since it began in 2006, The Campaign for Washington State University: Because the World Needs Big Ideas created opportunities for thousands of WSU students and advanced the teaching, research, and outreach mission of Washington State University. To everyone who contributed to The Campaign for WSU, thank you for empowering big ideas and for inspiring tomorrow’s Washington State University.

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Thanks for your support!
WHY DO BEES MAKE HEXAGONS IN THEIR HIVES? WHY NOT ANY OTHER SHAPE?

—Aditya, 10, New Delhi, India

Dear Aditya,

When bees make hexagons in their hives, the six-sided shapes fit together perfectly. In fact, we’ve actually never seen bees make any other shape. That’s what I found out when I visited my friend Sue Cobey, a bee researcher at Washington State University.

Cobey showed me some honeycombs where the female bees live and work. Hexagons are useful shapes. They can hold the queen bee’s eggs and store the pollen and honey the worker bees bring to the hive.

When you think about it, making circles wouldn’t work too well. It would leave gaps in the honeycomb. The worker bees could use triangles or squares for storage. Those wouldn’t leave gaps. But the hexagon is the strongest, most useful shape.

Don’t just ask the bees. Cobey explained that humans have recently used math to find out why hexagons make the most sense.

“The geometry of this shape uses the least amount of material to hold the most weight,” she said.

It takes the bees quite a bit of work to make the honeycomb. The wax comes from glands on the bees’ bellies, or abdomens. Honeybees have to make and eat about two tablespoons of honey to make one ounce of wax. Then they can add this wax to the comb as they build.

The hexagon might just save bees some time and energy. They can use the energy to do another really important job: carry pollen from flower to flower that allows new plants to grow. It’s my cat instinct to swat at a bee, but I try not to because bees are really important. They make it possible for us to eat food.

“The honey bee is an amazing animal, really fun to work with,” Cobey said. “And she is responsible for pollinating your fruits, vegetables, and nuts.”

Having a sturdy and useful hive can help bees get the job done.

Not too long ago, some scientists wondered how exactly the bees build these hexagons. They found certain bees would start out making circles in the wax using their body as a tool. Scientists don’t really know why it happens, but the bees seem to be using their body heat to melt the wax from a circle shape into a hexagon shape.

Hexagons and honeycomb shapes are also useful for building things humans use, too, like bridges, airplanes, and cars. It gives materials extra strength.

For having never done a day of math homework in their lives, bees sure seem to use some creative geometry and engineering to build their headquarters.

Sincerely,

DR. UNIVERSE

WASHINGTON STATE MAGAZINE WINTER 2015