In the 1960s, 1 farmer fed almost 26 people.

Today, 1 farmer feeds 155 people.

By 2050, the Earth may hold 10 billion people.

How will we feed them?
Unleashing the Innovation Ecosystem

by TIMOTHY D. SANDS

T hose of us who have spent time in American higher education know that there’s something slightly different, dare I say special, about land-grant universities. Advancing the boundaries of knowledge while closely wedded to job-creating initiatives, universities like Virginia Tech are at the center of the 21st-century “innovation ecosystem.”

Although we are generally considered Virginia’s leading economic development university, we have the potential to do still more. Our challenges here are not dissimilar from those of other land-grant universities, but I think we are in a better position to resolve them. Corporate America sometimes is frustrated, rightfully in my opinion, with higher education’s penchant to argue over intellectual property (IP) rights. Universities should and must engage in commercialization and entrepreneurship, and Virginia Tech is playing its part well. However, we must alter our approach.

In many cases, we should engage in commercialization not for the potential licensing revenue stream, but for the more important institutional and societal benefits. Sure, revenue is important to the institution. But moving ideas into the marketplace is more important in the long run. Developing a reputation as an institution that promotes the translation of discoveries into useful products and services will be critical to attracting faculty, staff, and student talent. An important aspect of building that reputation is lowering the barriers for corporate partnerships. Businesses will be more prone to hire our students, create internships, sponsor more research, and, hopefully, the barriers for corporate partnerships. Businesses will be more prone to hire our students, create internships, sponsor more research, and, hopefully, to seek and become prime customers of the technology and services our faculty create.

Closely related to this intellectual property discussion is the promotion and tenure culture. The three prongs of our mission—discovery, learning, and engagement—do not have to be reflected in equal proportions in the promotion and tenure process, but I believe we do need to recognize commercialization for its role in the broader engagement mission.

We also need to reflect on how commercialization aids scholarship, the foundation of all three mission elements at a research university. There is plenty of evidence to suggest that scholars who engage in commercialization can be more productive because of the new ideas and discoveries that arise from the process of testing economic value out of new knowledge.

Conversely, some of the most significant commercialization opportunities derive from serendipitous discoveries made while pursuing curiosity-driven research. We need to create an environment that will encourage our researchers to be opportunistic—to take a detour toward commercialization when the opportunity arises.

As I said in my last column, Virginia Tech has made great strides in the past decade or so and now ranks among the nation’s leading universities. But we have the potential for much more—particularly in shaping an environment right here in Virginia that will unleash our potential to become a global hub for entrepreneurship, innovation, and commercialization.

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All about the firsts

I enjoyed reading about firsts in Virginia Tech history in the summer magazine. I did not see the first veterinary class in 1984, of which my husband, Edward T. Knickeeman (D.V.M. ’84), is a member. He has fond memories and lasting friends from his four years in Blacksburg.

Carol Knickeeman
Jarrettsville, Maryland

I have a very distinct memory of the first Tech touchdown in Lane Stadium. William and Mary was leading 7-3; it was Tech’s ball and there was only time for one more play. Owens threw a hail mary to the end zone. The ball went through the hands of a Tech receiver and fell to the ground. The referee ruled a touchdown. Tech was lucky. W&Lee was robbed!

Bill Bodie ’58
Williamsburg, Virginia

When woman were admitted to the Corps of Cadets, they were segregated into a separate dormitory and into a separate unit, L Squadron. The corps was declining in number after the war in Vietnam. In fall 1977, my freshman class was the first to be larger than the previous class in several years, and the corps had about 320 cadets, including L Squadron.

The corps was growing, but the Class of 1980 still had very few men, and my unit, F Squadron, had only three senior men. In spring 1979, L Squadron was disbanded, women cadets were integrated into the rest of the corps, and F Squadron received three women members, more than any other unit.

So the first woman to command a gender-integrated company was Selena S. Daughtrey, commander of F Squadron in 1979-80. In those days before coed dorms and with limited visiting hours, she wasn’t even allowed in the company but for a few hours a day.

As always, thanks for keeping the Hokie spirit alive and interesting!

Reed A. Moore
(email engineering ’81)
Sylva, North Carolina

Correction

In the “firsts” cover story in the summer 2014 edition, several dates and facts were incorrect. According to the U.S. Army Center of Military History, Antoine A.M. Gajou, Class of 1901, earned the medal for actions at San Matro in the Philippines Islands on Dec. 19, 1899 (the award was issued in 1911), and Julian E. Gajou, Class of 1894, earned the medal for actions at Aqua Prieta, Mexico, on April 13, 1911 (the medal was issued in 1912). Also, Earle Gregory (electrical engineering ’23) was the first Virginia Tech to earn the Medal of Honor in World War I for actions on Oct. 8, 1918, north of Verdun, France. Lastly, Patricia Ann Miller (general home economics), was awarded a commission in the U.S. Army Women’s Medical Specialist Corps, unconnected to ROTC. Thank you to M. Cary Burton (business administration ’59) for bringing these matters to our attention.

In addition, this fall the Student Alumni Associates will celebrate their 40th reunion, not their 45th.
First female rector begins term

When Deborah Martin Petrine (business administration ’78) assumed the position of rector at the Virginia Tech Board of Visitors’ June meeting, she became the first woman to hold the position.

She is founder, president, and CEO of Commonwealth Care of Roanoke Inc., which owns and operates 11 long-term-care facilities in Virginia. In 2005, Petrine received the Virginia Health Care Association’s James G. Dutton Award for lifetime achievement in the long-term-care field. In 2009, she became president of Longleaf Senior Living LLC, which managed 32 assisted-living facilities in North Carolina. Petrine has served on advisory boards for the Pamplin College of Business management department and the Virginia Tech Center for Gerontology. In 2011, she received the Pamplin College Distinguished Alumnus Award.

Is it something we said?

On Aug. 20, the Hokie Nation gained some 6,400 new undergraduate students, including approximately 5,400 freshmen and 1,000 transfer students. Applications for undergraduate admission were received from 40 countries and every U.S. state ... except North Dakota and South Dakota. Surely it can’t be Blacksburg’s weather?

European facility renamed for Steger

Virginia Tech’s primary international facility, the Center for European Studies and Architecture, located in Riva San Vitale, Switzerland, has been renamed the Steger Center for International Scholarship in tribute to former Tech President Charles W. Steger’s vision of broadening the university’s global presence, a defining element of his tenure. More than $2.6 million in gifts made in Steger’s honor by major donors to the university enabled the center’s renovation and expansion.

“I was surprised, touched, and humbled to learn about this and am extremely honored,” said Steger, who, while serving as dean of Virginia Tech’s College of Architecture and Urban Studies, spearheaded efforts over several years to obtain approvals from the Swiss government for the Virginia Tech Foundation to buy the facility.

Steger, who also negotiated the purchase with the former owners of the property, said the success of the center’s programs was largely due to its founding director, Olivio Ferrari, and his widow, Lucy Ferrari, who formerly oversaw programs at the Swiss facility.

The power of the printed world

If you haven’t yet heard about 3-D printing, you soon will. Sto- ries that have covered the process, known inside the industry as additive manufacturing, typically focus on folks at home in front of a souped-up version of an ink-jet printer kicking out replacement parts for a broken valve cap or a homemade Jedi trinket for their fourth-grader obsessed with “Star Wars.” There’s even been talk of 3-D printed guns, both pro and con.

In Assistant Professor of Engineering Christopher Williams’ DREAMS laboratory—an acronym for Design, Research, and Education for Additive Manufacturing Systems—Hokie researchers are looking well beyond just the fizz in the soda. In fact, many believe that 3-D printing will revolutionize manufacturing, medicine, and the marketplace. Williams’ lab is helping to lead the charge.

On the drawing board and inside several of the 3-D printing processors, which range from the size of a coffee maker to a Honda civic, are plans for bendable wings that could unfold the way that small, unmanned aircraft are designed and built. And a 3-D printed sponge-like scaffold implant made of degradable material could quicken the recovery of anyone with a shattered bone.

Firsts in Virginia Tech history: Recycling on campus

Although Virginia Tech is now committed to a range of sustainability projects and research, such ecological achievements were relatively long in the coming. Volunteer efforts to organize campus recycling date back to at least the mid-1970s, but it wasn’t until 1989 that a new wave of environmentalism prompted faculty and staff volunteers to join with students from the YMCA-sponsored organization Ecocycle to promote campus-wide recycling of aluminum cans.

Around the same time, English instructor Larry Bechtel and fellow faculty members borrowed a hatted pickup truck from the Physical Plant and established a weekly paper collection service that quickly expanded from one stop at Williams Hall to stops at 20 other campus buildings. Soon, volunteers were hauling the paper by flatbed to a trailer parked by the Duck Pond.

To manage the program’s growth, Bechtel proposed in 1991 that the Physical Plant hire him part-time. Named the university’s first full-time recycling coordinator the next year, he effectively launched Virginia Tech Recycling. Despite encountering a number of bumps in the road over the next 25 years, the university’s efforts regularly win sustainability and green awards these days—and not just for recycling.

To learn about other firsts in Virginia Tech history, go to www.vtmag.vt.edu/firsts.
Virginia Tech's research laboratory in India unveiled

Four years in the making, Virginia Tech's research laboratory in India opened in mid-May. Then-Virginia Tech President Charles W. Steger presided over the ribbon-cutting ceremony for the built-to-specs laboratory.

Outfitted with equipment enabling researchers to harvest energy in new ways from waves, sun, and wind, as well as mechanical vibrations such as those produced by trains, the 6,000-square-foot lab will soon feature a state-of-the-art wind tunnel allowing researchers to develop high-efficiency wind turbines by optimizing their aerodynamic and structural performance.

“We are crossing continents to meet the global demand for new energy technology development,” said Virginia Gov. Terry McAuliffe. “The insights we gain and the technology we create all transfer back to Virginia, and we can apply those assets to build new industry, address U.S. energy challenges, and create a 21st-century Virginia economy.”

The campus in the state of Tamil Nadu in southeast India pairs Virginia Tech's high-tech research with its tradition of putting new ideas and inventions into practice. “Virginia Tech is setting a team to work that will refine and adapt windmills and solar panels for use in households in rural India. This work is vital to reducing poverty where hundreds of thousands of people live off the grid. Uplifting lives in India and elsewhere rests on the world's capacity to produce enough electricity for everyone.”

Timothy Sands to be formally installed as 16th president

The Virginia Tech community has rolled out the red carpet for the university's 16th president, Timothy Sands. Some of the events have been a bit more informal—such as his participation in Hokie Camp alongside incoming freshman students, and his arrival at new student orientation. Meanwhile, the formal welcome—the official installation—will take place on Friday, Oct. 17, in the Burruss Hall Auditorium. For ongoing coverage of the celebration and its assorted events on Oct. 17 and 18, visit www.president.vt.edu/ installation. By using the social media hashtag HokieVTandmand, alumni chapters, student organizations, and friends of the university can send Sands video greetings, photos wishing him well, or various tweets or posts. Photos by Logan Wallace.

Virginia Tech continues to accumulate accolades, evidence that our beloved university has always been so highly regarded has resurfaced. An Aug. 6 blog entry from The Chronicle of Higher Education recap's a national report, originally released by the U.S. Bureau of Education in 1911, ranking the country's colleges in four tiers.

Virginia Polytechnic Institute—today's Virginia Tech—was unceremoniously proclaimed a “Fourth Class” college, sharing the bottom rung with such institutions as Alabama Polytechnic Institute, Georgia School of Technology, Kansas State Agricultural College, and Texas Agricultural and Mechanical College.

What a difference a century makes.

In July, Virginia Tech was ranked among the country's top 50 colleges and 25 best public colleges on Money magazine’s list of best colleges, and the university made its first appearance among the top 25 public colleges as ranked by Forbes.

On Money's list, Virginia Tech ranked 42nd among all institutions, No. 5 for Happiest Students, and graduates' success. While Money evaluated colleges based on educational quality, affordability, and outcomes, Forbes measured student satisfaction, post-graduate success, graduation rates, and academic success to compile its rankings.

Beyond this recognition of its outstanding academics, Virginia Tech routinely earns high marks for its overall campus experience, particularly its dining. Once again, the university was named No. 1 in Princeton Review's Best Campus Food rankings for 2015.

23rd among public institutions and 117th among 650 national schools. Among the top 25 public colleges, which represent 16 states, three Virginia colleges appear.

The formula used for these most recent rankings placed high value on a college's "output," which includes graduation rates and graduates' success. While Money evaluated colleges based on educational quality, affordability, and outcomes, Forbes measured student satisfaction, post-graduate success, graduation rates, and academic success to compile its rankings.

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Among other impressive features, Goodwin Hall—formerly called the Signature Engineering Building—houses the Terrestrial Robotics Engineer-
ing and Controls (TREC) Lab (left), where sophomore Eric Hahn works on THOR, the Tactical Hazardous Operations Robot; and, suspended in the atrium (right), a Trent 1000 jet engine.

It’s opened … and it’s a beauty

The flagship building for the Virginia Tech College of Engi-
teering—the newly renamed Goodwin Hall, formerly called the Signature Engineering Building—hosted its first classes in August.

The name change honors the philanthropy of Bill (mechanical en-
gineering ’62) and Alice Goodwin, whose donation—the largest single gift in university history—helped fund construction of the 155,000-square-foot, $95.2 million facility.

Situated on Price’s Fork Road on the north side of campus, the Hokie Stone-clad building is home to 40 instructional and re-
search labs, eight classrooms, an auditorium, and 150 offices for several engineering departments.

Intriguingly, Goodwin Hall also incorporates a groundbreaking experiment to measure even the smallest vibrations made inside the building. Spearheaded by Department of Mechanical Engineer-
ing faculty members Pablo Tarazaga and Mary Kasarda and their Smart Infrastructure Laboratory, the project is designed as a test bed to track data related to building design and security, occupancy monitoring for emergency response, structural health monitoring, and more.

Some 240 accelerometers attached to 136 sensor mounts throughout the building’s ceilings detect information on where people are within the structure, measure normal structural set-
ting and wind loads, and track building movement resulting from earthquakes—an event that last struck Virginia in 2011. A sensor array mounted outside the building will measure external vibrations, such as wind, traffic on nearby roads, the thunder-
ous boom of the Skipper cannon, tens of thousands of Hokies celebrating a touchdown at Lane Stadium, and seismic activity.

More readily visible within the building is an imposing Trent 1000 jet engine—the cleanest, quietest, lightest, and most fuel-effi-
cient jet engine in aviation today—donated by Rolls-Royce, the global power-systems company. The engine, which hangs 15 feet above the lobby floor, was donated to inspire the next gen-
eration of engineers. Rolls-Royce also plans to outfit the lobby of the building with interactive kiosks containing information on engine design and advanced manufacturing to inform and excite students about careers in engineering.

The Goodwins, who initially made their gift anonymously, are charter members of the President’s Circle of the Ut Prosim Society, owners of WestView Com-
panies, a contractor based in Oilville, Virginia, are respon-
sible for building and installing the signage. The project represents a tre-
mondous upgrade for the cam-
pus’s physical space. While the university’s outdoors and 
grounds receive high marks, 
visitors often complain about the difficulty of navigating campus. Those with mobility impairments report trouble finding accessible pathways and 
entrances to buildings. Even 
first responders have difficulty 
“As beautiful as Virginia Tech is, 
it can be an intimidating 
place to navigate, especially 
for visitors and new students,”
said Frank Shushok Jr., senior 
associate vice president for 
student affairs. “This project is 
a major leap forward.”

Alumni-owned firm aiding campus navi-
gation

The installation of a new cam-
pus navigation system—in-
cluding building, interpretive, 
parking, street, trail, and other 
signs, along with information 
koios and banners—under way on campus, thanks to the work of an alumni-owned firm.

www.vtmag.vt.edu
Model a research park after the Virginia Tech Corporate Research Center (CRC).

Then add space to live, eat, shop, and exercise.

The result? The Tech Center at Oyster Point, a 100-acre, $250 million development including retail, residential, and commercial space and a technology and research center—all under construction in the heart of Newport News, Virginia.

Situated adjacent to Thomas Jefferson National Accelerator Facility, commonly called the Jefferson Lab, and within minutes of NASA’s Langley Research Center, Tech Center is primed to become a hub of entrepreneurial innovation in Newport News. Tenants will find themselves in the epicenter of a booming, high-tech business community bent on creating jobs, improving lives, and strengthening the economy.

Tech Center is modeled after the CRC adjacent to Virginia Tech’s Blacksburg campus. Home to some 150 companies and 2,700 employees and owned by the Virginia Tech Foundation, the CRC—named the 2010 Outstanding Research Park by the Association of University Research Parks—is a part of the university’s innovation ecosystem, an environment that nurtures and commercializes ideas to benefit society.

Creating such an environment is the motivation for the Tech Center partnership, which includes Newport News-based developer W.M. Jordan Co. and its president and CEO, John Lawson, former rector of the Virginia Tech Board of Visitors; Georgia-based retail developer S. J. Collins Enterprises; Virginia Tech; and the City of Newport News.

The sprawling mixed-use campus will offer luxury apartments, easy access to walking, biking, and exercising facilities, and healthy food choices, such as a Whole Foods store. The first research building is slated for completion in late 2015.
A new buzzword is "building physics," which means looking at how a structure's skin works, how moisture moves across it. Certifications such as LEED are becoming standard. It's incredible how smart technologies are moving forward. We study energy-efficient products, building technologies, and how the industry adopts new and innovative approaches. Increasingly, we are working with large data sets that help us identify a market's characteristics and how a new technology spreads through a market.

You call a product's movement through the market the "diffusion of innovation." It's incredible how smart technologies are moving forward. Smart-grid technologies and high-efficiency windows are more common. Certifications such as LEED are becoming standard. A new buzzword is "building physics," which means looking at how a structure's skin works, how moisture moves across materials, how the building breathes. The measurement of what our structures do has become so elevated, but I don't think people realize it. Builders are adapting and not building the way they did five years ago.

What have you learned recently about your field?

The residential construction industry is quite fragmented, from raw materials manufacturers to homebuyers, from one person working out of a truck to large companies building tens of thousands of homes per year. We've built a database with everything from the number of framing subcontractors in a location to the area's demographics to the presence of policies that incentivize building with certain technologies. The data allow us to identify market characteristics affecting products at a local level so we can help policymakers, manufacturers, and others.

What's new at the Virginia Center for Housing Research?

Founded by the commonwealth, the center has a central mission to tackle affordability in housing. We also help Virginia localities on the studies they need. We study energy-efficient products, building technologies, and how the industry adopts new and innovative approaches. Increasingly, we are working with large data sets that help us identify a market's characteristics and how a new technology spreads through a market.

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What should we know about the future of "smart" homes?

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What's the bell in your picture?

The bell belonged to my great-great-grandfather, John Crawford Hicks, who was a college professor in Tennessee in the late 1800s. He used the bell as a way of engaging all the news, along with video and audio extras. Download Virginia Tech Magazine's free app—available on the Mac App Store and Google Play—and receive a notification when a new edition is ready for download. Keep a library of your favorite editions. Bookmark your favorite stories. Share pages with your social networks.

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Wing Ng
Discovery Engine

by MADELEINE GORDON
photo by LOGAN WALLACE

Now in his 31st year at Tech, Wing Ng, the Christopher C. Kraft Endowed Professor in Engineering, received the 2014 William E. Wine Award, which “completely overwhelmed” him, he said. “It’s a career achievement. It made me feel that all the effort and extra time that goes into preparing the lectures and making the classes interesting is paying dividends because the students and the university really appreciate that extra effort.” Ng, who specializes in gas turbine engines, practices the mantra “work hard, play hard” with hobbies like fishing, golfing, rock climbing, and scuba diving.

Why did you decide to settle down in Blacksburg?

I was born and raised in Hong Kong—so was my wife—and then we went to school in Boston, so coming to Blacksburg was a culture shock. But what made us stay were the people and the environment. You cannot find a better place to raise a family than Blacksburg. … Tech has been such a great place to work; the environment allows me to do first-rate research. We are competing with the top universities in the country. Our students are very highly sought.

You teach classes in thermofluid science. Describe the last time you learned something new in the field.

In research, every project is different. Graduate students work on research that has never been done before. Period. By that I mean not by anyone in the world. That is why companies want to fund us, to discover new knowledge. … Teaching can also be a learning experience. Students ask questions sometimes that, despite the fact that I’ve taught for 30 years, I think, “How come no one has asked that question before?”

Your business, Techsburg, offers engineering services and precision manufacturing capabilities to NASA, the aerospace and gas turbine industries, and more. How does Techsburg aid your teaching?

Each semester, I spend one lecture specifically talking about career advising and what is expected of students, both in industry and graduate school. By running the company, I have a firsthand knowledge of what industry expects and how to perform in the industrial environment, which is different than a university’s research environment. Students always appreciate that particular lecture.

Many of the 100-plus master’s and doctoral students you’ve advised have earned substantial recognition. How does this affect you?

This makes me very proud. We are fortunate to have some very good students. I received my degree from the Massachusetts Institute of Technology, and I’ve seen some of the very best engineers, but our students here are top-notch. They are good engineers to begin with. I’m just providing some mentorship to make sure that when they finish here, they know how to solve problems—which is what engineers do—and know how to communicate and interact with people on a team. Those are things I emphasize when mentoring graduate students. As a result, they have gone on to industry and government labs and done well. [Their recognition is] a good testimony of the training they received at Virginia Tech.

Tell us about your Navy-funded project to reduce jet engine noise.

Assistant Professor Todd Lowe and I have been working on a project to reduce jet engine noise. The project is a testimony to teamwork, how colleagues with different expertise have allowed our turbine engine studies to become well recognized. From the measurements we’ve taken in the wind tunnel in Randolph Hall’s basement, we can do modeling, and we can help other researchers understand the physics. We are optimistic that this new data can help make jet engines quieter not only on aircraft carrier decks, but also in commercial planes.

Madeleine Gordon, a senior majoring in English and communication, was a Virginia Tech Magazine intern.

A DECADE OF SUCCESS SINCE 2004 THANKS TO OUR MEMBERS...

18 ACC TITLES 57 NCAA TEAM APPEARANCES

14 NCAA INDIVIDUAL CHAMPIONS 36 ACADEMIC ALL-AMERICANS

207 ALL-AMERICANS ... WE NEED YOU TO JOIN THE HOKIE CLUB TODAY AND BE PART OF OUR EXCITING FUTURE!

With your help, tomorrow’s leaders are being developed today!

What is the Hokie Club?
We are the fundraising unit for Virginia Tech Athletics and charged with the responsibility of raising support for scholarships, capital projects and programmatic needs of our 22 intercollegiate varsity sports comprised of 600 student-athletes.

How can I join?
Simply go to www.hokieclub.com or call 540-231-6618 to speak with our staff.

References “VT Buzz” in the online comments box when joining for a chance to win an autographed team basketball. Winner announced December 1.

One team—Virginia Tech

No one of us is as strong as all of us.

VT Athlete

To read more about the Navy project on jet-engine noise, visit www.vtmag.vt.edu.

Making noise:

Wing Ng's childhood hobby—building radio-controlled model World War II tanks and airplanes—has become a profession. Today, the mechanical engineering professor helps to build airplane engines.

Professor Q & A

Virginia Tech Magazine fall 2014
Waterways
Inside the Duck Pond

With its serene waters, roaming waterfowl, and thick, shady trees, the Duck Pond feels like one of the most natural sections of the Virginia Tech campus. In reality, that natural feel is backed up by a lot of engineering, landscaping, and maintenance. The end result, however, speaks for itself: The Duck Pond is one of the most popular sites at Virginia Tech.

Artificially created in the mid-’30s, the Duck Pond is home to a variety of wildlife species. Waterfowl include Canada geese, mallard ducks, and Muscovy ducks. The pond is inhabited by common carp, redbreast sunfish, mosquito fish, white suckers, black bullheads, and other fish released into it. Each spring, the College of Natural Resources and Environment stages an informal fishing tournament.

The gazebo is the focal point of the pedestrian trail that runs along the Duck Pond’s southern edge. Built to attract recreationalists and occasionally house an event, the structure adds an exclamation point to the landscaped southern shore.

The dam along Duck Pond Drive forms the pond’s western edge, with an outlet that leads to Strooubles Creek and eventually the New River.

Stephen Schoenholtz (second from left), director of the Virginia Water Resources Research Center and professor of forest hydrology and soils, works with students to gather samples from the Webb Branch of Strooubles Creek. Elsewhere, facilities staff check for sediment plumes at the pond’s inlets to gauge the severity of erosion and floods in places upstream. The longer the plume, the worse the erosion.

The Ice Pond, built in the winter of 1880-81, to provide ice to the college serves as the Duck Pond’s little sibling. 1898-99, the college began using a refrigerating plant.

Strobles Creek, which flows through the Duck Pond, originates from springs in northern Blacksburg. In the mid-’30s, when the Drillfield was enlarged, the springs were piped underground, and they now emerge by West Campus Drive. The creek’s upper reaches are inhabited by the Blacknose dace, a native minnow.

The large black willow tree that grows by the Main Branch of Strobles Creek near the point the branch enters the Duck Pond has become a favorite of students, alumni, and arborists statewide. The tree was included in Nancy Hugo and Robert Llewellyn’s 2008 book “Remarkable Trees of Virginia.”

A man-made wetland containing native vegetation, the stormwater basin south of the Holtzman Alumni Center is used to regulate runoff and improve water quality. During floods, it fills to slow the flow of rainwater.

Solitude, the house by the Duck Pond, is the oldest structure on campus. Believed to date back more than 200 years, Solitude served as the residence on a 250-acre farm that eventually became part of Virginia Agricultural and Mechanical College in 1872.

A sewer line along Strobles Creek carries wastewater to a treatment plant that discharges into the New River.

For a video from a Duck Pond turtle’s viewpoint and more, visit www.vtmag.vt.edu.
E"uropean settlers arrived in the Appalachian Mountains to find them covered by American chestnut and, to a lesser extent, Eastern and Carolina hemlock trees. Today, chestnut and hemlock trees are suffering due to pests introduced from Asia. Chestnut blight, caused by a bark fungus, has nearly wiped out the above-ground portion of mature American chestnuts, even as the trees’ root systems continue to survive underground.

The Eastern hemlock and Carolina hemlock similarly have been devastated by the hemlock woolly adelgid, a small sap-sucking insect. Like chestnuts, hemlock trees have fallen prey to a pest from Asia. The adelgid was introduced into the area around Rich- mond, Virginia, and expanded its range from there. By the 1960s, the adelgid was killing hemlocks and spreading rapidly, especially in the Appalachian Mountains.

Scott Salom, a professor of entomology in the College of Agriculture and Life Sciences, has spent years studying the adelgid and its natural predators in Asia.

“Approaching such a noble tree, you think it dark, almost black, because the needles on the upper side are indeed a lustrous deep blue-green,” Peattie wrote. “Yet when you lurch on the rock that is almost sure to be found at its feet, or settle your back into the buttresses of the bole and look up under the boughs, their shade seems silvery, since the underside of each needle is whitened by two lines. Soon even talk of the tree itself is silenced by it, and you fall to listening.”

Virginia Tech faculty, staff, and students are working to bring both species back. The Catawba Sustainability Center is using both approaches. In 2010, 50 pure American chestnut seeds from surviving chestnut trees in the Catawba Valley were planted to help maintain the seeds’ distinctive genetics.

The resulting mix “should look and act like American chestnut trees” while maintaining resistance to chestnut blight, said Catawba Sustainability Center Manager Josh Nease. “It’s a long-term project.”

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Efforts to control the woolly adelgid and restore hemlock populations will take a similar long time.

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The Eastern hemlock and Carolina hemlock similarly have been devastated by the hemlock woolly adelgid, a small sap-sucking insect. Like chestnuts, hemlock trees have fallen prey to a pest from Asia. The adelgid was introduced into the area around Richmond, Virginia, and expanded its range from there. By the 1960s, the adelgid was killing hemlocks and spreading rapidly, especially in the Appalachian Mountains.

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said Farley, noting that the team was sleeping in three-hour stretches, sometimes at night. “What they found at NuSpark wasn’t just the “bright lights to keep you up late at night,” Farley said. “We’re expecting to be in multiple major cities with deep penetration next year, with an $71 billion industry.

Farley and Corcoran spent the summer in Austin in the highly selective TechStars startup accelerator program, learning how to disrupt the trend of poor customer service in a $500 billion industry.

The co-founders of LawnStarter, an online platform connecting customers with lawncare providers, wanted to unveil their concept as soon as the grass started turning greener.

NuSpark became the perfect fertilizer. Launched in mid-April, LawnStarter now operates in Northern Virginia, Richmond, Virginia; Yorktown, Virginia; and Austin, Texas. Farley and Corcoran spent the summer in Austin in the highly selective TechStars startup accelerator program, learning how to disrupt the trend of poor customer service in a $71 billion industry.

“We’re expecting to be in multiple major cities with deep penetration next year, with the hope that NuSpark is and continues to be a farm team for the majors.”

Or as Lesko put it, “You can think of NuSpark as a farm team for the majors.”

Hands on: Card Isle, a startup company developing a greening-card kiosk, anchors a corner of NuSpark, a creative space adjacent to campus. From left to right: members pictured include chief operating officer David Henry (mechanical engineering ’12, M.S. industrial systems engineering ’12), chief technology officer Adam Donato, a Ph.D candidate in mechanical engineering, and chief marketing officer Stephan Sabo (mechanical engineering ’13).

The idea for NuSpark came from conversations among a handful of key players in the region’s ecosystem of innovation, and the space was cobbled together in a collaborative fashion that nearly prewired the cooperative environment NuSpark affords entrepreneurs. The venture is supported through the Virginia Tech Foundation, the Roanoke-Blacksburg Technology Council, the Roanoke Blackburg Innovation Network; Tech’s Corporate Research Center (CRC); VT KnowledgeWorks; Tech’s Institute for Creativity, Arts, and Technology (ICAT); and the National Science Foundation’s regional I-Corps program.

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Looking up: In August, cadets navigated new obstacles on the course on Smithfield Road.
A 2013 United Nations report projects that the world population will reach 9.6 billion by 2050. More food must be grown in a shrinking amount of space and more water will be needed for drinking, agriculture, manufacturing, and more.
A cow quietly lowered from the back of the barn as Chad Joines described the process of artificially inseminating a heifer to about 40 Virginia cattlemen and cattlwomen.

The group, ranging from youngsters who looked fresh out of high school to longtime farmers in their 70s, listened closely as Joines, an agricultural supervisor in the College of Agriculture and Life Sciences’ (CALS) Department of Animal and Poultry Sciences, ran through the basics of hormones, pregnancy, and managing a large herd of cows going into heat at roughly the same time.

A few minutes later, the group gathered around a monitor as Joines used ultrasound imaging of beef cattle field day at Kentland Farm, which serves as Virginia Tech’s experimental farm. Other recent field days have focused on new farming technology, cover crops, irrigation and chemigation for vegetables, development for increased yield and resistance durum wheat varieties. Those varieties, four hard red winter, and two winter barleys.

Griffey’s team has developed and released seven hulled and three hull-less barley varieties and 57 wheat varieties, including 50 soft red winter, one soft white winter, four hard red winter, and two winter durum wheat varieties. Those varieties, developed for increased yield and resistance to diseases such as powdery mildew, leaf rust, stem rust, fusarium head blight, and yellow-dwarf virus, have been marketed to and used by commercial growers in the nation’s breadbasket. In 2011, Griffey’s team has developed and released seven hulled and three hull-less barley varieties and 57 wheat varieties, including 50 soft red winter, one soft white winter, four hard red winter, and two winter durum wheat varieties. Those varieties, developed for increased yield and resistance to diseases such as powdery mildew, leaf rust, stem rust, fusarium head blight, and yellow-dwarf virus, have been marketed to and used by commercial growers in the nation’s breadbasket. In 2011, Griffey’s team has developed and released seven hulled and three hull-less barley varieties and 57 wheat varieties, including 50 soft red winter, one soft white winter, four hard red winter, and two winter durum wheat varieties. Those varieties, developed for increased yield and resistance to diseases such as powdery mildew, leaf rust, stem rust, fusarium head blight, and yellow-dwarf virus, have been marketed to and used by commercial growers in the nation’s breadbasket. In 2011, Griffey’s team has developed and released seven hulled and three hull-less barley varieties and 57 wheat varieties, including 50 soft red winter, one soft white winter, four hard red winter, and two winter durum wheat varieties. Those varieties, developed for increased yield and resistance to diseases such as powdery mildew, leaf rust, stem rust, fusarium head blight, and yellow-dwarf virus, have been marketed to and used by commercial growers in the nation’s breadbasket.

A United Nations report released in June 2013 projects that the global population will grow from roughly 7.2 billion today to 9.6 billion by 2050. Most estimates place the number between 10 billion and 15 billion within a hundred years. Such growth will lead to increased demand for nutritious food and clean water.

The growing population takes up more physical space, meaning less room for agricultural production—which, in turn, places more pressure on farmers to produce larger yields while combating disease, pests, and ever-changing weather patterns.

Similarly, a rapidly growing number of humans has boosted demand for water—not just for drinking, but as a crucial component in the supply chain for agriculture, manufactured goods, and even the mining of oil and natural gas.

As a research university with deep roots in agriculture, Virginia Tech is poised to help provide both food and water to the world’s growing billions.

“The land-grant university system effectively integrates the teaching, research, and Extension missions to serve society in many different ways,” said Alan Grant, CALS dean. “It’s really an ideal system to address the grand challenges that society will continue to face in the years to come.”

Researchers routinely develop new ways to increase yield and decrease food spoilage. Extension agents provide important training to workers in the agriculture industry and ensure that Virginia farmers are educated in best practices. The university’s graduates have grown increasingly interested in the science of food and water, and new undergraduate majors will further enable them to become tomorrow’s leaders in agriculture and beyond.

“Our students are the future leaders and innovators, and they are very interested in being immersed in a learning environment that provides a variety of experiential learning opportunities and hands-on experiences, especially related to these societal challenges,” Grant said. “Many want to use these experiences as a way to explore different disciplines and potential careers.”

Enrollment in food- and water-related degree programs, both at Virginia Tech and in similar colleges nationwide, is growing.

At CALS, the number of incoming freshmen grew from 412 in 2008 to 525 in 2014, with the biochemistry; animal and poultry sciences; and human nutrition, foods, and exercise departments experiencing some of the highest increases. Agricultural technology drew a record 70 incoming freshmen this fall. Those departments have attracted significant numbers of transfer students, too.

Starting in 2015, pending final approval by the State Council of Higher Education for Virginia, Tech plans to offer a new bachelor’s degree in water resources that incorporates water science, policy, law, economics, management, and social science. The program will have its academic home in the College of Natural Resources and Environment’s (CNRE) Department of Forest Resources and Environmental Conservation, but the colleges of Agricultural and Life Sciences, Architecture and Urban Studies, Engineering, and Science will serve as equal partners, emphasizing the interdisciplinary nature of the degree.

“The new degree is exactly the kind of program that incorporates the land-grant university system’s mission to provide both food and water to the world’s growing billions,” said Paul Winistorfer, CNRE dean.
Feeding the future: (From left to right) Sally Johnson (wearing white), an associate professor in the animal and poultry sciences department, works with a student in her lab; Percival Zhang, an associate professor in the biological systems engineering department, researches a process for turning plant biomass into food and fuel; and volunteers tend to a farm plot at the Catawba Sustainability Center.

Virginia Tech has taken a similarly comprehensive approach to supporting the world’s global population. From the development of small-scale organic farming techniques to studying crop genetics and pesticides, Virginia Tech actively partners with farmers on the other side of the planet, as well as those closer to home in Southwest Virginia.

In the Department of Biological Sciences, Associate Professor Dorothea Tholl is researching terpenoids, the organic chemicals that give carrots their taste, and how those chemicals are affected by climate change. Across the hall, Assistant Professor Zachary Nimchuk is looking at plants’ stem cell behavior of chickens and other poultry.

In the Department of Biological Systems Engineering, Professor Percival Zhang teaches classes while also making international headlines for his work with enzymes that break down wood chips, corn husks, and other inedible plant parts into a sweet-tasting starch that can be digested by humans.

Within the same department, Assistant Professor Leigh Anne Krometis focuses her work on water and public health, identifying population growth and resulting urbanization as risk factors for exposing people to contaminants.

Krometis and her graduate and undergraduate students partner with Virginia Cooperative Extension to test private wells and cisterns in rural Virginia. Homeowners voluntarily submit water samples to be tested, and Krometis and her team analyze the results, usually about 2,000 samples per year. They see extreme variation, with fluctuating pH levels, infectious diseases, and lead levels that would be unacceptable in municipal water supplies.

The team is working to develop a better grasp of the state’s water supplies while also helping to address problems they identify. They send results and recommendations back through Extension offices so homeowners can be notified, and the team works with the Southeast Rural Community Assistance Project, which offers grants and loans to remedy the problems.

Additionally, Krometis uses Kentland Farm test plots, filled with soil samples taken from around the state, to see how markers, including a gene found only in human feces and microbes found in toilet paper, react with organic matter and percolate through the ground.

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Partnersing for growth
The interaction between faculty researchers and the real world is typical of Virginia Tech’s efforts, especially around the commonwealth. The university supports Virginia’s massive agricultural industry, and vice versa, on a number of levels. “Interaction with industry is really important for our college,” Grant said. “These relationships are built largely by faculty and are important in developing and supporting our research programs and in providing opportunities for our students to engage with firms that offer challenging and rewarding internships and careers.”

About 23 percent of the sponsored research funding in CALS comes from private-sector industry, compared to the university’s average of about 14 percent and a national average of 9 percent, Grant said.

The center acts as a clearinghouse for information on water resources, as well as a home for research projects on everything from the effects of cellulosic biofuel production on hydrology to the effectiveness of restoration efforts for streams in Central Appalachia’s coalfields.

The interdisciplinary degree is facilitated in part by the Virginia Water Resources Research Center, which is housed at Virginia Tech. The center is one of 54 water resource programs established by Congress in 1964 and placed at land-grant universities across the nation. It was authorized as a state agency by the Virginia General Assembly in 1982.

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Virginia's economy was founded on agriculture, which remains the state's largest industry by far, presenting an annual economic impact of $52 billion and providing nearly 311,000 jobs, according to the Virginia Department of Agriculture and Consumer Services. According to the U.S. Department of Agriculture (USDA) 2012 Census of Agriculture, a five-year study released earlier this year, Virginia has more than 46,000 farms covering 8.3 million acres, or 33 percent of Virginia's total land area. Nearly 90 percent of those farms are owned and operated by individuals or families. The market value of Virginia agriculture products sold in 2012 was $33.75 billion.

There's potential for more growth given Virginia's central location. Between new trade agreements and the Panama Canal's plan to open a wider lane of locks in 2015, Virginia has well positioned to boost its exports to international markets.

To support this diverse, powerful industry, in continuing to innovate, grow, and find new markets, Virginia Tech operates a dozen Agriculture Research and Extension Centers (ARECs) spread across the commonwealth. Ranging from Virginia's mountains and valleys, through the rolling foothills of the Piedmont, and down to the eastern Tidewater region, the ARECs blend research and Extension work beneath the umbrella of Virginia Tech's motto Et Prosim (That I May Serve) to support regional farmers, fishermen, and others in the wide world.

Villalba says the center not only helps with research and experimentation that's necessary for Virginia to keep up with the larger world of agriculture. Still, the changes in the market have resulted in changes at the Southern Piedmont AREC. Over the last couple of decades, the center has opened new land for research on agroforestry, crop research, and livestock forage.

The ARECs provide a place for innovation and experimentation that's necessary for Virginia to keep up with the larger world of agriculture. An example from the USDA's Census of Agriculture in the 1960s, one farmer supplied food for 25.8 people in the U.S. and abroad. Today, one farmer supplies food for 155 people. Innovation helped make those gains in production possible, but more will be needed to feed a still-growing world population with a steadily shrinking amount of open, arable land.

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“The ARECs are located strategically to deal with regional issues important to urban and rural communities across Virginia,” said Grant, the CALS dean. Near the small town of Blackstone, located in the heart of Southside Virginia, researchers at the Southern Piedmont AREC still devote much of the center's 1,182 acres to tobacco, the crop that served as Virginia's biggest economic driver from its colonization in 1607 through the 20th century.

Business has declined as cigarette sales have dropped in the U.S. and around the world, but tobacco remains an important part of Virginia's agricultural industry. Still, the changes in the market have resulted in changes at the Southern Piedmont AREC. Over the last couple of decades, the center has opened new land for research on agroforestry, crop research, and livestock forage.

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Southern Piedmont AREC Director Carol Wilkinson said she sees the center partly as a test lab for new ideas and partly as a place to refine tried-and-true techniques with new applications.

“One thing from pie-in-the-sky [research] to the more immediate, practical applications.”

Virginia's east coast is home to some of the state's largest and most valuable aquaculture operations, including the Virginia Center for Aquaculture (VCA) in Saltville near the town of Blackstone. Flick Jr., in the Department of Food Science and Technology, founded the seafood AREC and the aquaculture Extension facility in Saltville, Virginia, giving the state a leg up in an industry with plenty of potential to grow.

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The seafood AREC is working to tilt that balance through research into increasing production and keeping the resulting product safe and saleable when it reaches markets. Additionally, the center offers business assistance and safety training for private-sector businesses.

For example, the center has worked closely with Blue Ridge Aquaculture Inc., a Martinsville, Virginia, business that is the world's largest producer of tilapia to use indoor recirculating aquaculture systems.

One day in July, AREC staff member Alex Squadrito and Hampton University undergraduate Malhe Breland studied small crustaceans called rotifers under a microscope. The rotifers feed on a highly concentrated algae blend and will eventually serve as feed for themselves for young black bass and other fish grown in indoor tanks. The idea is to develop better feed at lower cost, which in turn helps fish farmers better compete in a growing global market.

Seafood AREC Director Michael Jahnke held a red crab as he described research that will slow the development of black spots along the crab's legs. The black spots don't affect the taste of the crab, but they deter customers from purchasing those crabs with them. If scientists can slow down the growth of black spots, the crabs will enjoy a longer shelf life, businesses will benefit, and the amount of potential food going to waste will drop.

The seafood AREC's two Extension specialists allow the facility to deal even more directly with regional seafood businesses. Abigail Villalba holds regular training sessions on such topics as seafood handling, processing practices, and more. Because many workers in the regional industry speak only Spanish, Villalba often presents sessions in both English and Spanish. The training not only keeps regional workers up to date on new technologies but also teaches them about the consumers that purchase their products.
The harvest’s dockside value, both in public and in private oyster grounds, grew from $16.2 million in 2012 to $22.2 million in 2013.

One office over from Villalba’s, Extension specialist Daniel Kauffman works closely with Virginia’s oyster industry, which is surging. The state’s oyster harvest increased by 60 percent in 2012, and another 25 percent in 2013. The harvest’s dockside value, both in public and in private oyster grounds, grew from $16.2 million in 2012 to $22.2 million in 2013.

A relatively expensive luxury when compared to grains and vegetables, seafood still plays an important role for Virginia. Kauffman has worked with oyster farmers who cater to a high-end market of consumers whose sensitive taste palates can tell the difference between oysters grown in different parts of Virginia.

The coalition trained 528 beginning farmers and ranchers through seven regional programs last year, while an additional 445 participants benefited from webinars, workshops, and self-study with the program’s curriculum.

Some of those new farmers likely will show up at Kentland Farm and Virginia Tech’s ARECs for future field days and training sessions. They’ll contribute, too, to helping feed the growing population, in Virginia and beyond.

Just the beginning
That concept of assisting new farmers is one that Virginia Tech has fully embraced with a variety of business-support programs.

The Catawba Sustainability Center, located on 377 acres in Roanoke County, helps develop conservation land-management best practices. The center, which recently installed a silvipasture demonstration consisting of about 12 acres of trees planted with grazing livestock, has a business incubator program for small farms.

Perhaps the fullest expression of Virginia Tech’s support for new farmers, however, is the Virginia Beginning Farmer and Rancher Coalition, a partnership between Tech, Virginia State University, and nine programs around the state. The programs range in style and target demographics, reaching new farmers of all ages, races, and socioeconomic backgrounds, said program director Kim Niewolny.

“The Beginning Farmer program addresses food security. We need to have a viable food production system,” Niewolny said. “It’s not just [that] we need to grow new farmers—that’s important—but we need to have a diversity of farmers, moving them through the system and building their communities as they grow with their farms.”

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The coalition trained 528 beginning farmers and ranchers through seven regional programs last year, while an additional 445 participants benefited from webinars, workshops, and self-study with the program’s curriculum.

Some of those new farmers likely will show up at Kentland Farm and Virginia Tech’s ARECs for future field days and training sessions. They’ll contribute, too, to helping feed the growing population, in Virginia and beyond.

Just the beginning
That concept of assisting new farmers is one that Virginia Tech has fully embraced with a variety of business-support programs.

The Catawba Sustainability Center, located on 377 acres in Roanoke County, helps develop conservation land-management best practices. The center, which recently installed a silvipasture demonstration consisting of about 12 acres of trees planted with grazing livestock, has a business incubator program for small farms.

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A brief glance at some of the various "master" volunteer programs administered by Extension shows the diversity of its reach:

- **Master Food Volunteer**—trained in up-to-date, research-based knowledge on food preparation, nutrition, food safety, and physical activity;
- **Master Gardener**—trained to encourage and promote environmentally sound horticulture practices through sustainable landscape-management educational programs;
- **Master Financial Education Volunteer**—trained to help individuals and groups reconcile debts, set goals, budget their spending, save money, organize financial records, and learn sound money management skills;
- **Master Well Owner**—trained in the proper design, management, and maintenance of private water supply systems (springs, wells, and cisterns);
- **Master Naturalist**—trained to provide education, outreach, and service dedicated to the beneficial management of natural resources and natural areas within their communities;
- **Energy Master Volunteer**—trained to deliver community education and outreach programs in energy efficiency, weatherization, and water conservation techniques.

"If it weren’t for Extension, I’d be lost. They bring the education out to us and help us apply it," Davenport said. "Extension remains the go-between, bringing research and new developments to the field."

Perhaps no other component of Extension has greater impact than its 4-H programs for young people. Through hands-on experiences, youth discover and build their abilities to make good decisions, manage resources, work effectively, and communicate successfully.

"4-H has helped me gain leadership skills," said Kate Belcher, of Abingdon, Virginia, a second-year student majoring in animal and poultry sciences and agribusiness who has been involved with 4-H for 14 years and is a past president on the Virginia State 4-H Cabinet. "4-H has helped me develop teamwork skills and taught me how to work with different personalities to reach a common goal. I'm more open to others' suggestions and ideas, and I've learned how to take criticism and bring others to consensus."

Said Jones, "Educating youth is at Extension’s core. Our programs help prepare Virginia’s youth to face today’s challenges and contribute to their communities."

Those challenges will continue to get more complicated, Jones said, but through Extension’s access to new research and a network of more than 3,000 local offices, the organization will be able to find answers to issues and shape solutions.

Lori Greiner is the communications manager for Virginia Cooperative Extension.
The first three pages of Dr. Seuss’ classic, “Hop on Pop,” feature a playful puppy, a character recently brought to life at the Blacksburg library when 6-year-old Emma read “Hop on Pop” aloud.

The dog listening to Emma wasn’t a puppy but an adult golden retriever named Yogi, trained for just this sort of thing. The PAWS to Read program, a service function of the Virginia-Maryland College of Veterinary Medicine, uses dogs as a sounding board for children learning to read.

The reading program is just one of the outreach activities at the Center for Animal-Human Relationships and one of many ways—including an innovative project to film puppies in 3-D—in which canines take part in campus life at Virginia Tech.

The bond

When Yogi visits the library with his owner, Dr. Virginia Corrigan, a veterinarian and community practice resident in the vet med college, reading to him is simple: just sign up for a 10-minute time slot. Hui Li has noticed that the dog’s presence helps her 6-year-old, Ryan, concentrate, even though her son is usually hesitant around other dogs.

“He seems very relaxed today instead of nervous,” Li said after her son read “Oscar and the Frog” to the dog.

Said Corrigan, “Yogi makes them feel more comfortable. Yogi seems to respond to them, too. He knows his role for this. He gets really calm. He’s really sweet.”

An article on canine-assisted reading programs in the October 2013 edition of “The Reading Teacher,” the International Reading Association’s peer-reviewed journal, reported that the heart rate and blood pressure of children decreased when they were in contact with a dog while reading, and that the reading programs produce measurable improvements in reading fluency. In medical, therapeutic, and educational settings, well-trained dogs can produce, in humans, “emotional and social benefits such as quelling anxiety, facilitating coping, and reducing the perception of discomfort for a wide span of ages and populations,” according to the article.

In other words, the myriad benefits of the human-animal bond are on full display in PAWS to Read and CENTAUR, an academic center that promotes education, research, and service in the field. One of the center’s most visible efforts is VT Helping PAWS (Pet-Assisted Wellness Service), a therapy animal program that provides training and certification for vet med faculty, staff and students and their animals.

Approximately 20 owner-and-animals teams actively serve the community in nursing homes, assisted living centers, libraries, schools, and even at Tech’s Cook Counseling Center and the Women’s Center.

Five days a week, Trent Davis, a staff counselor at Cook, utilizes a trained dog—either his yellow Labrador, Moose, or Yogi—for counseling sessions. Of the 1,000 or so students he has counseled in the past few years, only three weren’t interested in the dog—and two of those simply thought they would be distracted.

“The students come to rely on the dog as a friend, a safe element in the room,” Davis said. “The dogs have a sense of when someone is struggling. They’ll nuzzle a person. I think it’s pretty clear that they can smell stress and understand fear.”

Davis said the presence of dogs is known to reduce cortisol (the stress hormone) and increase oxytocin (often called the bonding hormone) in humans. Sure enough, during finals week, Helping PAWS dogs lighten the moods of stressed-out students at Newman Library.
In addition to VT Helping PAWS, the center operates Caring for Canine Heroes, which benefits service and working dogs and their handlers in law enforcement and search-and-rescue to the region; and a pet loss support hotline. The center trains and advocates and cares for animals—not just dogs, but horses, cats, and more—that act as service animals (such as seeing-eye dogs), therapy animals (those employed in animal-assisted activities), and working animals (such as law enforcement and military animals).

**Puppies in 3-D**

Inside a circular fence and surrounded by multiple cameras, several puppies were immersed in a research project to produce benchmark data for canine socialization and movement ... which, to them, meant being puppies. "They're lively. They're cute. They're all over the place," said Thomas Tucker, associate professor of creative technologies in the School of Visual Arts. "One second they're gnawing their brother in the ear; the next second they're scratching. And the next second they're trying to climb out of the pen." Why all the cuteness in 3-D? The practical application is in analyzing how dogs move—and how owners can intervene with treatment when something goes wrong. Working dogs, for instance, tend to suffer from lower-back problems, where the hips and vertebrae connect, because the animals are often standing on their hind legs. Tucker used multiple cameras to capture three-dimensional movements on a dog's outer skin, while a Georgia Tech colleague wrote the algorithms and software to unite the visual data in a dense point cloud. A radiologist, meanwhile, took CT scans of dogs to produce skeletal readings that can be integrated with the point clouds.

Tucker worked this summer to combine the outer and inner data. Next, he and Pierce plan to seek federal funding to develop a larger, more portable, automated system with eight to 10 cameras that can be easily transported and then clipped in at exact angles, allowing researchers to collect data for a broad library of body types. A working canine can be quite an investment—the military spends $30,000 to $45,000 to train a dog, Tucker said—and such a system would allow trainers to more quickly identify health and socialization issues before the issues become problematic. As Pierce noted, the interdisciplinary project fits well with CENTAUR's mission of keeping dogs healthy so that they can serve their communities.

At the library, as Yogi patiently listened, Corrigan helped her with reading. Elsewhere on campus, members of BARC (Bonding with Animals through Recreation on Campus), a student-run club, help care for the vet med college’s animals. “I just see the stress melt away from their face,” said Dan Muehlhaup, a veterinary student who co-chairs VT Helping PAWS with fellow student Virginia Yarrington, under the guidance of Dr. Bess Pierce, associate professor of community practice in the Department of Small Animal Clinical Sciences and CENTAUR director. Said Muehlhaup, the impact of human-animal encounters is "usually very obvious, and it can be very dramatic."

At nursing homes, older people tend to tell stories about their dogs. Those who are disabled or mentally handicapped are equally enthralled with the animals. "Animals don't judge you. They're not looking at your inability," said Muehlhaup, a third-year student pursuing a doctorate of veterinary science under the guidance of Dr. Bess Pierce, as they practiced reading. Elsewhere on campus, members of BARC (Bonding with Animals through Recreation on Campus), a student-run club, help care for the vet med college’s animals.

“You'd think they'd be easy to train,” said Kevin Foust, police chief. “Boris was really a bridge between the police department and the students. They loved seeing him around campus.”

Boris was the model for the Virginia Police Canine Memorial, which stands outside the Virginia-Maryland College of Veterinary Medicine. The memorial honors police dogs that have been killed in the line of duty in Virginia. A slower life awaits Boris in retirement. He has been adopted into the family of his handler, officer Jared Reece. “He’s always been a part of our family,” Reece said. “Now it will become official.”

To read a story about Brooke Corson, ‘01, who founded Mutts with a Mission Inc. to provide service dogs to veterans and wounded warriors—and to watch a video about the 3-D puppy project—visit www.vtmag.vt.edu.
Employing kite aerial photography on Nikumaroro, an island in the western Pacific Ocean, Lonnie Schorer ’86 (left) helped to search for Amelia Earhart’s resting place. She was also a member of the TIGHAR (The International Group for Historic Aircraft Recovery) team.

Globestrotter: Employing kite aerial photography on Nikumaroro, an island in the western Pacific Ocean, Lonnie Schorer ’86 (left) helped to search for Amelia Earhart’s resting place. She was also a member of the TIGHAR (The International Group for Historic Aircraft Recovery) team.

The 73-year-old has lived around the world—in Thailand, Turkey, Italy, Norway, the former Soviet Union, and Blacksburg, where she pursued a master’s degree in architecture—all while raising three children with her husband, David. Living abroad for a total of 22 years as part of David’s career with the U.S. Department of State, Schorer learned more than five languages, including Russian, Turkish, Italian, Thai, and Norwegian, while engaged in efforts such as UNESCO World Heritage programs.

And then there are the experiences she can’t discuss, such as her early career with the CIA.

After Schorer watched on television as President John F. Kennedy briefed the nation on the Cuban missile crisis, the patriotic Connecticut College student switched her major from French to Russian. For the sake of appearances, Schorer searched for jobs before graduation—even though, by her junior year, a CIA position was already waiting for her.

As their careers progressed side by side, the Schorers found it challenging to raise their family with a sense of normalcy and balance amid extremism, military coups, and cultural biases and terrorist threats against Americans. “We made sure to not transmit any sense of danger to the kids, and we made sure every place we lived felt like home. We always lived in the neighborhood, not in an embassy complex,” said Schorer, who is now retired from the CIA.

Schorer’s family was populated with builders on her father’s side and artists and sculptors on her mother’s side. “When she sensed that the doors for women in architecture were beginning to open, she stepped through. ‘With architecture as the blending of construction and art, I had grown up with appreciation for both disciplines and was just waiting’ for an opportunity, she said. “The privilege of walking through the doors in Cowgill Hall as a grad student in 1981 was a special gift.”

Degree in hand, Schorer first worked for an Italian architect, documenting and drawing an entire medieval hilltown north of Rome. It was a “total immersion” project, she said, much like her government role. Later, in Norway, the architect was involved with housing and historic projects. In recent years, Schorer has worked with architectural firms in the Washington, D.C., area.

One of Schorer’s role models is Amelia Earhart, who disappeared in 1937 while attempting to become the first female to complete an around-the-world flight. “She encouraged women to not be afraid to try. Teachers say that students today, especially girls, have low self-esteem and are risk-averse,” said Schorer, who holds Air Single Engine Land and Air Single Engine Sea piloting licenses. “Amelia demonstrated many firsts.”

Schorer eagerly accepted the chance to test the theory that Earhart had landed and eventually died on Nikumaroro, an island in the western Pacific Ocean. In 1997, 2007, and 2010, she traveled to the island as a member of the International Group for Historic Aircraft Recovery (TIGHAR) team.

“IT’s fascinating to be part of history by participating in the present,” said Schorer, who learned the importance of preserving culture from her uncle, Deane Keller, one of the World War II Monuments Men featured in Robert Edsel’s book “Saving Italy.” (Edsel also wrote “Monuments Men,” the book on similar events in Europe that was made into a recent movie by the same name.)

Zest for life

Through TIGHAR, Schorer was asked to work with the National Oceanic and Atmospheric Administration’s (NOAA) Office of National Marine Sanctuaries as an archival researcher with NOAA’s Maritime Heritage program.

In one project, she was tasked with locating three U.S. Navy ships lost during the Battle of the Coral Sea in World War II in May 1942. The battle, which pitted the Japanese naval and aerial forces against those of the U.S., was the first between aircraft carriers.

Taking flight

As an adventurous toddler, Schorer once ran off with the family dog. In her childhood, she would often ask her father to take her to the airport to watch planes take off and land. As she grew older, she ventured off to be an American Field Service high school student in Istanbul and later joined the St. Michael’s Angels Skydiving Club.

While this lifestyle wouldn’t suit everyone, Schorer has never turned down an opportunity for learning and discovery. “There is a quote about a mind that is stretched never going back to its original dimension,” she said. “So as you stretch your capabilities and your mind, of course everything expands. The network of people you meet, the skills you have, and the knowledge you have all just grow and grow. You can’t know that if you say no. Humanity is naturally curious, seeking to know and understand. Perhaps I am just willing to be swept along in the wave.”

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Sequestered in the U.S. National Archives and the Washington Navy Yard, Schorer spent five months reconstructing the battle and identifying all the ships involved. Following a detailed search of deck logs, action reports, and images, she was able to triangulate the positions of the aircraft carrier USS Lexington, the battleship USS Sims, and an oiler, Neubu. As a result of her findings, Australia declared that region of the Pacific Ocean a historic area.

During her search, Schorer discovered a note from a U.S. Navy pilot that read, “Scratch one flattop.” He had just sunk a Japanese carrier. Said Schorer, “In disbelief, I was holding the original note a thousand feet underwater, in three-dimensional detail.

The greatest risk

Schorer is quite comfortable at sea. She served as the senior vice president of design and construction for decks 5-12 of The World of ResidenSea, the first-ever private residential community at sea, living in Oslo, Norway, and on the luxury ship under construction in Rissa, Norway, from 1997 to 2002. “I believe that The World is a prototype for learning to live in new environments, at sea or in space,” said Schorer, who was drawn to the project for its impact on the future of exploration. “Those going to live on the moon will have to rely on themselves, more than a thousand feet underwater, in three-dimensional detail.

Schorer authored a series of children’s books entitled “Kids to Space.” She hopes to inspire children, like her own four grandchildren, to test the boundaries and think about their future in space.

“Pushing to frontiers is the essence of greater knowledge and survival,” said Schorer, who returned from the 1996 Olympics in Atlanta. “She definitely has this sort of character and spirit in her that brings out the best in others.”

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Schorer said. “To be in the mix of it all is to be connected to these historic events and to bring them back to the present,” Schorer said. “To be in the mix of it all is very exciting and stimulating—to think that the piece of paper you are holding can bring the battle back. All of the torpedoes, the fires and the yelling and the chaos, it all recreates in your mind when you’re connected by participating in history in the present.”

In 2015, Schorer and a team will travel to the Coral Sea to try to locate the ships. She will serve as the battle historian and the co-identifiers of forensic aircraft parts. Another NOAA project involves the USS Macon, a dirigible aircraft carrier that crashed into the sea off Point Sur, California, in 1935, with four P3C Sparrowhawks on board. In early 2015, she will serve as an aquanaut and help crew a submarine that will map the site, more than a thousand feet underwater, in three-dimensional detail.

Final frontier: Lonne Schorer's design work for a luxury residential ship caught the attention of astronauts like the famed Buzz Aldrin (at left), who told her, “You’re encapsulating people’s environments in steel. We’re doing the same in space, but you’re ahead of us in designing for what the private sector will expect, versus what NASA and the military get.” said Schorer. The two friends formed a company to promote the idea of private citizens in space.

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“Pushing to frontiers is the essence of greater knowledge and survival,” said Schorer, who returned this summer from a cattle drive in Wyoming. “Otherwise, we will still in complacency and not advance as a civilization. Failing to risk, explore, and discover is the greatest risk of all.”

Schorer’s zest for life motivates those around her. “In the 20 years that I’ve known Lonne, there is no one that I have met that I would consider a mentor in my life (other than Lonne) as far as the way she carries herself and her innate desire for excellence,” said Holly Abernathy, who worked with Schorer during the 1996 Olympics in Atlanta. “She definitely has this sort of character and spirit in her that brings out the best in others.”

Schorer’s younger brother, Russ Jones, said his sister has an extraordinary mix of characteristics and experiences. “She has lived several lifetimes all packed into one, and she continues to do it. She is now in her seventies, and she is not showing any signs of slowing down or being less interested. She takes on new things all the time,” Jones said.

Enjoying life between Virginia and New Hampshire, Schorer has no plans to resign to a quieter life. “I know that when things become too still, quiet, and comfortable, that’s the very moment that I take on a new challenge.”

Madeleine Gordon, a senior majoring in English and communication, was a Virginia Tech Magazine intern.

Everybody knows that water is necessary for life. That’s why we’re adding a new Aquatic Center. With an inviting new heated indoor saltwater/therapy pool, we encourage you to take the plunge. Jump right into a lifestyle that’s focused on total wellness. This means body, mind and spirit. From scenic walking trails and challenging area golf courses to partnerships with local schools and The Glebe Scholar Program, life is overflowing with opportunities at The Glebe.

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The Glebe
Blue Ridge Living
540-627-5105
200 The Glebe Boulevard • Daleville, Virginia 24083 • www.TheGlebe.org
During the 2010 spring football game, players on the maroon squad beat their teammates on the white side, 16-0. Although the game was just a scrimmage, the biggest winner in Lane Stadium that day was arguably Scott Frank (civil engineering '00, M.S. '01). While former standout players were being introduced at halftime, he pulled out an engagement ring, got down on one knee, and asked for his girlfriend’s hand in marriage.

“Just as I [had] asked her to marry me and she said ‘yes,’ people started applauding for Michael Vick, but I told her it was for her, of course,” said Frank, who goes by the nickname “Ponch.”

His proposal came well after he and Mitzi Frank (psychology ‘97) had graduated, but the seeds of their relationship were planted long before, although the Franks never dated. “Dr. Torgersen said going from a top 100 to a top 50 university was a huge leap, but going from a top 50 to a top 20 was that was so influential to us and participate in a charity that felt natural.”

Ponch Frank said that back when he was a student, he would look for opportunities to stay in Blacksburg even when class was not in session. He participated in student government and was the male member-at-large for the Class of 2000. He was in the German Club. And, like his wife-to-be, he served as an orientation leader.

Mitzi Frank said that back when she was a student, she was far from members of her immediate family. “I was the orientation leader and literally the first girl he met at registration,” Mitzi Frank said. "Over the years we’ve both given to charities, but always felt like there was more we could do,” Mitzi Frank said. “When we were approached by the Graduate School, it felt like both our [philanthropic] needs were being met. We could give to a place that was so influential to us and participate in a charity that felt natural.”

Ponch Frank said one of his most memorable experiences at Virginia Tech was an engineering class taught by then-university President Paul Torgersen. While considering setting up a fellowship, he took into account something Torgersen once said. “Dr. Torgersen said going from a top 100 to a top 50 university was a huge leap, but going from a top 50 to a top 20 was something that was so influential to us and participate in a charity that felt natural.”

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Mitzi Frank said that as someone who has lived in various locations for work, being a Hokie helped her to meet many people, make friends, and feel at home even when she was far from members of her immediate family. Now that she has a family of her own, with a 1-year-old son she hopes will attend Virginia Tech in the future, she continues to find ways to feel connected to her university despite living far away.

One of those ways is by giving back to create a fellowship. Another is by getting back to Blacksburg when she can. And an additional opportunity came up when she and her husband got a chocolate Labrador several years ago. They named her “Lane,” in honor of the stadium, of course.

Albert Raboteau is the director of development communications.

Though the chance to join Morgan Stanley took her in another direction, Mitzi Frank said her experience working in the office of Virginia Tech’s dean of students, taking graduate courses in higher education, and working abroad helped prepare her for the internationally focused career she now enjoys.

Along with the facts that she met her husband at Virginia Tech and has a brother who earned his degree there in 2010, her past experiences brought the university to the front of her mind when she and her husband were considering making a significant charitable donation.

After learning about some of the programs under way at the Graduate School, they established the Ponch and Mitzi Frank Graduate Fellowship, structuring the gift so that it will support a master’s degree student in the College of Science in even-numbered years and a master’s degree student in the College of Engineering in odd-numbered years.

“Over the years we’ve both given to charities, but always felt like there was more we could do,” Mitzi Frank said. “When we were approached by the Graduate School, it felt like both our [philanthropic] needs were being met. We could give to a place that was so influential to us and participate in a charity that felt natural.”

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Although they occasionally ran into each other on campus, it was not until 2007 that they would reconnect and begin their romance. Eventually, Mitzi Frank, who worked for Morgan Stanley in London, relocated to Florida, where Ponch Frank worked for a major highway contractor, Ranger Construction Industries Inc.

Residents of Jupiter, Florida, they are still with those companies. She is an executive director, specializing in emerging markets. He is vice president of operations.

Graduate School Dean Karen DePauw said the Franks’ generosity is deeply appreciated. “Ponch and Mitzi’s enthusiasm for their university is infectious and inspiring,” she said. "I’m glad their undergraduate and graduate experiences made such an impression on them, and am extremely grateful that they’ve chosen to give back by creating a fellowship that will help us recruit extraordinary graduate students in science and engineering.”

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Alumni networking strengthens the Hokie Nation

For most of our Alumni Association’s nearly 140-year history, we have focused on creating networking opportunities for alumni, and that focus remains true today. Enabling alumni to connect in person and online is critical in today’s society—and highly valued by our alumni. Networking, particularly among those who share an alma mater, offers opportunities that otherwise might remain undiscovered. Apps, Google, and Twitter don’t seem to allow the benefits of more personal exchanges, on a particular profession or academic discipline. Our alumni chapters are committed to staging more of these opportunities around the country. To make sure you learn about upcoming events, please confirm that your address and email are current via the link at www.alumni.vt.edu. A list of chapters, which follows on page 50, can also be accessed online in an interactive map that links directly to chapter contact information.

On the Web, the Hokie Nation Network enables alumni to connect via a free online directory. On LinkedIn, where more than 120,000 Hokies are registered, there is a Virginia Tech-specific networking community. The association’s career resources program encourages networking through LinkedIn, including listing internship and job notices for Hokies. Throughout the year, career webinars showcase speakers who offer tips on job-searching, interviewing, marketing yourself, and more. Refer to the webinar schedule link on our website, where past programs are archived for your viewing. All of these resources are provided for free by the Alumni Association.

Networking with other dedicated and helpful alumni is among the most significant benefits of membership in the Hokie Nation. Virginia Tech graduates are frequently described as displaying uncommon school spirit and loyalty. “It may be hard to describe, but you know it when you see it” is a sentiment we often hear. Maybe it’s a shared work ethic. Maybe it’s the bond of Ut Prosim (That I May Serve). Maybe it’s recalling a special professor who mentored you and encouraged a particular career path. Or maybe it’s simply trusting a fellow Hokie whom you met while networking.

Tom Tillar ’69
Vice President for Alumni Relations
Alumni awards

Outstanding Recent Alumni awards

Kimberly Lane Tabor Kretlow
(Ph.D. entomology ‘04), College of Agriculture and Life Sciences

Steven A. Sanderson (industrial design ‘02), College of Architecture and Urban Studies

Thomas J. Fast (management and finance ‘08), Pamplin College of Business

Pardha Saradhi Pyla (M.S. computer engineering ‘02, Ph.D. computer science and application ‘07), College of Engineering

Atia Abawi Powell (communication ‘03), College of Liberal Arts and Human Sciences

Jeremy P. Stovall (Ph.D. forestry ’10), College of Natural Resources and Environment

Abhishek Roy (Ph.D. macromolecular science and engineering ’10), College of Science

Melinda G. McColl (D.V.M. ’04), Virginia-Maryland College of Veterinary Medicine

Chapter awards

Outstanding Chapter awards

Gold
Allegany Highlands, Atlanta, Baltimore, Charlotte, Denver, First State, Houston, Minnetonka, National Capital Region, Richmond, Roanoke Valley, San Antonio, Tidewater Silver
Central Florida, Chicago, Frederickburg, Kentuckiana, N.C. Triad, New River Valley, Palmetto

Bronze
Chattanooga, Columbia, Dallas-Fort Worth, East Tennessee, Emporia/Roanoke Rapids, Franklin County/Smith Mountain Lake, Grand Strand/Myrtle Beach, Jacksonville, Rockbridge, San Diego, Shenandsah, Tampa Bay, The Villages, Tidewater, Triangle, Williamsburg

Superlative awards

Outstanding Chapter Event: Baltimore - 46th annual Baltimore Hokies Crab Feast

Outstanding Community Service Project: Tidewater - The Big Event 2014

Outstanding Golf Tournament: Charlottesville - 15th annual Charlotte Virginia Tech Alumni Golf Classic

Outstanding Fundraising Event: San Diego - San Diego Hokies Raffle and Silent Auction

Outstanding Chapter Website: New River Valley - nvhokies.com

Innovation Award: North Alabama - An Evening with the Commandant

Broadening Alumni Engagement Award: Baltimore - Fun Run to Support Change

Most Improved Chapter: North Alabama

Outstanding New Chapter: Greenville, N.C.

Outstanding Chapter Volunteer: Jina Gaines (communication ‘03, M.A. ’05), Tidewater, and Yvette Johnson (business information technology ‘05, M.I.T. ’11), National Capital Region

Outstanding Chapter Officers: Debbie Baracasan-Fippoo (marketing management ’93), Denver

Hall of Fame Award: Richmond-Central Virginia Wine Festival

Outstanding Exploratory Award: 2013-14 annual report by the numbers

289 class reunions, college homecomings, convocation events, and alumni association events on campus

54 alumni chapters conducted 162 community service projects, enriching their communities in the spirit of Lt. Gen. Patton (that I may serve)

580 volunteers assisted alumni chapters and helped at reunions and other events

175 faculty members received Alumni Association awards for excellence and related stipends

415 alumni and students visited with Virginia legislators at the annual Hokies Day

4,400 total awards were presented to faculty, students, and alumni

322 alumni travels participated in 33 global and domestic tours

927 SlideShare and Drillfield Series events were held to engage alumni

27,000 alumni and friends participated in programs around the nation and abroad

1,000 members of Student Alumni Association helped with Alumni Association events

Awards for faculty excellence

Graduate academic advising: Sinirath Ekikad, mechanical engineering

Undergraduate academic advising: Rosemary C. Giss, apparel, housing, and resource management

Extension: Kelly J. Liddington, unit coordinator and senior Extension agent; Brian L. Benjamin, biological systems engineering

International education: Andrew S. Becker, foreign languages and literature; Trudy H. Becker, history

International outreach: LuAnn R. Gaskill, apparel, housing, and resource management

International research: Nancy G. McGehee, hospitality and tourism management

Outreach: Michael S. Rosenzweig, biological sciences

Outreach (team): Shaminidhi M. Arachchige, chemistry; Karen J. Brewer, chemistry

Research: Elizabeth Struthers Malbon, religion and culture, Shashank Prya, mechanical engineering

Teaching: Dana M. Hewey, biological sciences; Terry Lynn Clements, architecture and design

William E. Wine Awards in teaching: Elizabeth Struthers Malbon, religion and culture; Wing F. Ng, mechanical engineering; Donald J. Orth, fish and wildlife conservation

Graduate student teaching: Kelli Karcher, mathematics; Marwa K. Abdel Latif, chemistry; Paige H. Horst, curriculum and instruction (honorable mention); Stephanie Houston, biological systems engineering (honorable mention)

Graduate student service: Natasha Amanda Cox, human development
A message from Alumni Association President Matt Winston

The more things change, well, the more they change. This year, our alma mater has witnessed and embraced a great deal of change as we continue to grow. Of course, the most significant change is the transition of leadership as we welcome new president Tim Sands to the latter, and the student-athletes who represent us on and off the field is of high interest to our alumni. The work of these leaders, along with the entire athletic staff, continues to shine.

What will not change is our Alumni Association’s desire and ability to deliver strong programming and services that cater to Hokies of all eras. The work of these leaders, along with the entire athletic staff, continues to shine.

We also welcome two new leaders in the athletic program, Athletic Director Whit Babcock and men’s basketball head coach Buzz Williams. The success of the athletic enterprise and the student-athletes who represent us on and off the field is of high interest to our alumni. The work of these leaders, along with the entire athletic staff, continues to shine.

What will change is the future that we face. The year 2014 marks a turning point for Virginia Tech. The university is poised to move into a new era of growth and prosperity, one that will be marked by significant opportunities and challenges.

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AHI
May 2-10 • $2,495*

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Go Next, Oceania Cruises’ Nautica
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Go Next, Oceania Cruises’ Riviera
May 21-31 • $2,999* (air included)

Southern Culture and Civil War
Go Next, American Queen
May 14-23 • $4,699*

Sicily - Alumni Campus Abroad
AHI
May 15-24 • $2,795*

River Routes and Channel Crossings
Go Next, Oceania Cruises’ Marina
May 18-June 3 • $5,299*

Coastal Alaska
Go Next, Oceania Cruises’ Regatta
July 7-14 • $2,299*

Passage of Lewis and Clark Expedition
Go Next, American Steamboat Company’s American Empress
July 18-26 • $3,795*

Nordic Pathways
Hosted by Patricia A. Perillo, vice president for student affairs
Go Next, Oceania Cruises’ Marina
Aug. 1-14 • $5,499* (air included)

Baltic Marvels
Go Next, Oceania Cruises’ Nautica
Aug. 19-27 • $2,999* (air included)

Coastal Maine and New Brunswick
AHI
Aug. 26-Sept. 2 • $3,895*

Tuscany - Alumni Campus Abroad
AHI
Sept. 16-24 • $2,795*

Jewels of the Aegean and Holy Lands
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Sept. 16-27 • $4,299* (air included)

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Go Next, Oceania Cruises’ Marina
Oct. 23-Nov. 3 • $3,799* (air included)

Country Music
Go Next, American Steamboat Company’s American Empress
Oct. 24-Nov. 1 • $2,699*

Mediterranean Artistic Discoveries
Go Next, Oceania Cruises’ Riviera
Nov. 6-18 • $3,999* (air included)

* Dates and prices are subject to change. Pricing is based per person on double occupancy without air, except as noted. Free air is based from select North American gateway cities. The Alumni Association encourages all alumni to consider purchasing travel insurance.
It is fitting that the City of Big Shoulders once embraced a fire hydrant of a man as hero. ... Everything about Lewis “Hack” Wilson was too short—including his height, his career, and even his life. Everything, that is, except his legacy. Wilson’s 191 RBI in 1930 is still the MLB record, and it appears he’s about to be toppled. ...
Alumni, we want to hear what you’ve been doing. Mail career, wedding, birth, and death news to Class Notes, Virginia Tech Alumni Association, Holtzman Alumni Center (SO10), 301 Procurs Rd., Blacksburg, VA 24061; email this news to news@vtmag.vt.edu; or submit the news online at www.vtmag.vt.edu/alumn-classnotes.php, where photos may also be uploaded for consideration.

Alumni mailing addresses may be viewed online at alumni.vt.eduid by logging in with your Virginia Tech PID and password. For assistance, call 540-231-6261.

**Class Notes**

**career accomplishments**

**weddings**

**births and adoptions**

**deceased**

**Alumni guides Mars rover**

Like many who grew up in the dawn of space exploration, Dave Lavery always wanted to be an astronaut. Despite challenges that didn’t allow him to go into space, he never let his childhood dream die.

“I found out my eyesight was so bad that I was never going to be able to qualify,” said Lavery. “So I figured that if I can’t go myself, then I’m going to work on the machines that can go into space and let them be my proxies.”

Lavery (computer science ’81) began working in NASA’s Telecommunications Research Technology Program, which led to involvement on flight missions and flying robots in space. Now a NASA program executive for solar system exploration, Lavery leads the ongoing Curiosity rover mission on Mars.

The rover landed in August 2012, and soon completed its objective: finding evidence that the planet once had an environment that could have supported life. The rover located the likely site of an ancient riverbed where water had flowed for a long period of time.

These findings have rewritten the textbooks on Mars and earned Lavery and his Mars Science Laboratory Team the prestigious 2013 Samuel J. Heyman Service to America Award, presented by President Barack Obama, on behalf of the team in October 2013.

“It was a huge effort with over 6,000 people involved,” Lavery said. “We knew, in our community, that this was important... but to have the government and the rest of the country recognize that as well was an enormous validation of what we were doing.”

Lavery is looking forward to Curiosity’s future discoveries on the red planet. Staying inspired is easy, he said. “It gives you challenges that didn’t allow him to go into space, he never let his childhood dream die.”
VIRGINIA TECH COLLEGE OF ENGINEERING news

Hokies develop SEALs sub

The Navy awarded Teledyne Brown Engineering (TBE) Inc., located in Huntsville, Alabama, the contract to design the Shallow Water Combat Submersible (SWCS). The first prototype is due to be delivered by years end. While attending their own view presentation at TBE, Short spotted a fleck of maroon and orange. “It’s not when somebody community and [knows] that they are a part of something bigger, and it’s important that we communicate that back,” Short said. “It’s important, for me, for the kids to realize, ‘You know what? There is a whole world out there and the things you can do [are incredible] if you believe in yourself.’”

Although a few decades separate Short and Gilmer, they found they shared many friends and similar childhood experiences. Both were able to break the mold of the “small town mentality” by pursuing higher education and working their way up to projects like the SWCS.

People [in small towns] are sometimes told, ‘You’re a just country bumpkin, and not as smart as other people in cities,’” Short said. “But there is nothing special about myself or Charles: We just stepped out and went into a different world.”

The reunion of the two Hokies quickly turned into pride for their origins and accomplishments. “It makes me proud of where we come from. We’re just two country boys,” Gilmer said. The reunion of the two Hokies quickly turned into pride for their origins and accomplishments. “It makes me proud of where we come from. We’re just two country boys,” Gilmer said.

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As a member of environmental clubs in high school, Anna McAuley developed an awareness of the importance of forests to the Earth’s environment. As a senior in Virginia Tech’s College of Natural Resources and Environment, she’s accumulating the knowledge, skills, and experiences it will take to succeed in her preferred field: urban forestry.

Thanks to assistance from her college, including the Herman William Gabriel Endowed Scholarship, Anna has been able to maximize her education by studying in Ireland, volunteering at a farm near campus, and participating in student organizations such as the Natural Resources Recreation Society—experiences she expects to draw upon in her career.

To learn more about how scholarship donations and other types of philanthropy help students like Anna, or to make your own gift to Virginia Tech, visit www.givingto.vt.edu.

Reforming language instruction in Japan

Many Americans spend a couple of years in martial arts classes before moving on to other hobbies, but for Matthew Cook (human nutrition, foods, and exercise ‘02), the hobby became a lifelong pursuit that ultimately led him to become the first foreigner in Japanese history to work as a government civil servant.

After graduation, Cook, who was born in New Jersey but grew up in Danville, Virginia, took over his former grandfather’s dojo in Charlotte, North Carolina. He discovered a love of teaching and decided that to truly understand martial arts, he must travel to Japan. He found that opportunity through the Japan Exchange and Teaching program, which placed him in a classroom in a socioeconomically disadvantaged area in the Osaka prefecture.

After a year, he moved to another school, where the administrator gave him more freedom to teach classes and use technology the way he saw fit. Cook soon was chosen as a member of the Osaka prefecture’s project team to reform English language instruction. (Cook since has been elected as chairman of the National Association for Japan Exchange and Teaching.)

Today, he works to reform the teaching of English in the Osaka prefecture, which includes roughly 1 million students. It’s the second most populous district in Japan; the only U.S. school system comparable in size is New York City.

“The failure of Japanese education in the past has been this focus on teaching foreign language as a math or science—something that can be figured out,” Cook said. “The entire test is based on a little bit of listening and mostly reading comprehension. There’s no spoken or written out put, much less an integrated test.”

He’s worked to change that in Osaka through a shift in instruction techniques as well as a pilot project involving the use of iPad technology. In doing so, Cook hopes to prepare Japan’s students for an economy that transcends borders and languages.

“In a global society the students need to be able to interact via email or Skype calls,” Cook said. “This is going to benefit anyone, even if they are in Japan and never meet face to face with another foreigner.”

Matthew Cook ’02

Virginia Tech

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architecture firm.
joined the Rule Joy Trammel + Rubio architecture from Clemson University and Atlanta, Ga., earned a master of archi-Danielle M. Jakubowski collaborative computing solutions unit.
burg, Va., is director of Virginia Tech’s Marcus T . DeBonis (IT), Christians
’11 Elizabeth Derise Abernethy
obituaries
faculty/staff
Alan E. Bayer, professor emeritus of sociology and founding director of the university’s Center for Survey Research, died May 30. A member of the Virginia Tech community from 1982 until he retired in 2006, Bayer made significant research contributions in the sociology of education. He published five books and more than 125 articles, chapters, and technical reports. He also served as head of the Department of Sociology for seven years.
Christa Thomas, retired graduate program coordinator for the Department of Physics, died June 15. She joined the university in 1975 as a clerk typist, moving on to become an accountant in 1981, an executive secretary in 1990, and a program support technician in 1995 before becoming an administrative assistant in 1997. In April, she received the Staff Career Achievement Award and in 2009 she earned the President’s Award for Excellence.
Donvontae Walton, a newly hired residential learning coordinator in Pritchard Hall, died in early July.

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