



INSTITUTE REPORT

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FTX Puts Citizen-Soldiers in the Community

By Chris Floyd

The Corps put the ideals of the citizen-soldier into action during FTX weekend, as non-commissioning cadets dispersed throughout the community to work with various nonprofit groups. Perhaps the highlight of the weekend, however, was the 15th annual VMI Special Olympics Games.

"This is one of my favorite events that we host here at VMI," said Maj. Chris Perry '05 as the assistant commandant for cadet life made his opening remarks to the gathering of athletes on post April 1.

And he was not alone in feeling that way. The Special Olympics event always seems to bring out the best in those involved, not just the athletes.

"There's nothing that can compare to it," said Rachel Kroner '17, the cadet in charge of the Special Olympics. "We do a lot of training in other areas, but these athletes teach us things about



Cadet volunteers referee the basketball tournament held in Cameron Hall during the Special Olympics. – VMI Photo by Kelly Nye.

See Community FTX, page 17

Research Aims to Provide Affordable Prosthetics

By Mary Price

A project underway in the mechanical engineering lab at VMI may someday help amputees in developing countries.

Maj. Joyce Blandino, assistant professor of mechanical engineering, has led a group of three cadets in her capstone class, mechanical engineering design, in their quest to develop a low-cost prosthetic for below-the-knee amputees.

Blandino explained that she's had an interest in prosthetics since graduate school, but until she and Col. Mike Krackow, professor of physical education, teamed up two



Spencer Jefferson '17 and Philip Jewett '17 fit the prosthetic leg they constructed as part of their capstone project onto a volunteer subject. – VMI Photo by Kelly Nye.

years ago on a biomechanics project, she had no way of testing her ideas.

Their 2015 receipt of a Jackson-Hope Fund grant to purchase a force plate and an electromyography machine, which records electrical activity produced by muscles, provided Blandino with the equipment she'd need to test the forces acting upon an artificial leg.

"I don't want to just design and build," said Blandino. "I want to be able to test it. You can design and build

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Header photo on page 1 by Kelly Nye

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New Leadership Revives Pistol Team

By Kelly Nye

After a one-year hiatus, the pistol team is back on the range and under new leadership.

The club sport, which competes against schools including the Citadel, West Point, and the Naval Academy, lost its coach a year ago when he moved out of the area. Not until former Rockbridge County 4-H director and former VMI security officer Reese McCormick took over as coach this past fall did the team experience a revitalization.

But by then many of the cadets on the team had switched to other shooting sports such as three-gun, trap and skeet, or the rifle team. It wasn't until the latter part of this year that interest in the sport began to grow again.

"After breakout we held tryouts and we had 16 rats show up," said McCormick, "And we retained eight out of the 16. ...Being able to have a solid base to keep the team running, that was the main fear when we started doing this was – we weren't very sure we were going to be able to have enough people that would be interested and it just worked out."

Cadets who had been on the team in previous years were excited to see their sport come to life again at VMI. Captain of team, Malcolm Thomas '17, has played an instrumental role in assisting McCormick.

"For the most part this is a new team," said Thomas. "I believe we had three returning."

And though McCormick has experience in competitive shooting sports from his years in 4-H, coaching pistol is new to him. Pistol is a niche field in the world of shooting sports. McCormick gleaned as much as he could from other coaches, and from the returning cadets.

"The people and the coaches who are good at coaching this sport are already doing it," explained Thomas.

But McCormick understands that, like any shooting sport, once the physical stance and movement are mastered the rest is in your head.

"These cadets are capable of getting all 60 shots in the black... once you get to a certain point, it is all mental," he said.

And with 11 cadets returning to the team next year, there is plenty of time for getting to that point.

For example Spencer Geiss '19 grew up shooting rifles and decided to try pistol once he broke out as a rat, but the team never materialized that year. Now he is on the team



Spencer Geiss '19, a member of the club pistol team, practices his stance in the Kilbourne Hall rifle range. – VMI Photo by Kelly Nye.

and learning the differences between shooting long firearms and handguns. He finds the best way to learn is through practice.

"With pistol there is always room for improvement, but I've come along with my shooting capabilities – a lot more in the black," he said.

Thanks to McCormick the team has a newfound stability, making future success possible.

Thomas has high hopes for his teammates after he is gone, "In the next couple of years I really think we're going to have people competing at the national level." 🦋

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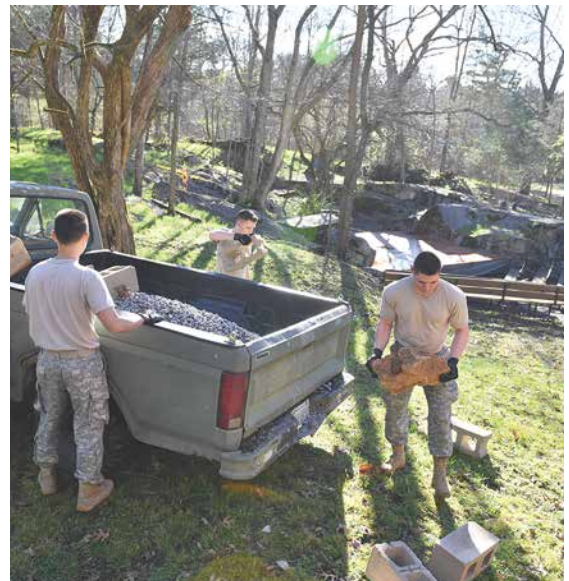
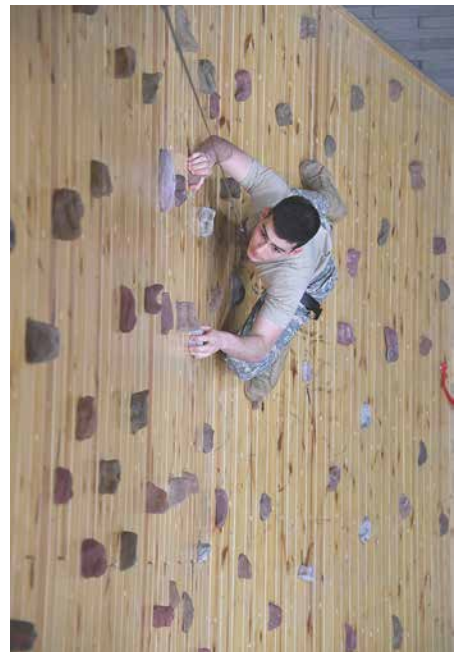
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Community FTX

Cadets volunteer at community organizations, including Lime Kiln Theater, Rockbridge Area Hospice, Waddell Elementary School, and Yellow Brick Road Early Learning Center, during Spring FTX. The five-day event included the community service projects as well as hosting Special Olympics on Saturday April 1. Naval and Air Force ROTC activities included training in the Corps Physical Training Facility. – VMI Photos by Kelly Nye and H. Lockwood McLaughlin.



Honors Thesis Explores Population Dynamics

By Mary Price

Drew Borinstein '17 has spent much of the past year digging into a real-world problem that's likely to have serious implications in the decades ahead – the declining U.S. birthrate.

Borinstein, an applied math major who plans to commission in the Marine Corps, recently presented his honors thesis, “A quantitative examination of the effects of declining birthrates on the U.S. population and their respective implications,” during Honors Week, held March 27-31.

Borinstein's interest in the topic of population dynamics was sparked when he received an audio book, *The Next 100 Years: a Forecast for the 21st Century*, as a Christmas present in December 2015. The book's author, George Friedman, discusses population trends and predicts that by the middle of this century, the U.S. government will be paying people to move here because current birthrates cannot supply the population needed to support the projected workforce.

Working with Lt. Col. Meagan Herald, associate professor of applied mathematics, Borenstein developed a research proposal to explore the impact of the falling U.S. birthrate. Along the way, he received help from not only Herald, but also Col. Troy Siemers, professor of mathematics, and Col. Sam Allen, professor of economics and business.

In his honors week presentation, Borinstein explained that in order for a population to remain stable, each woman needs to give birth to 2.1 children. However, the current U.S. birthrate is only 1.86 children per woman. In 1911, by contrast, the birthrate was just below 3.5 children per woman.

“[This trend] poses a threat to the U.S. economy and workforce,” noted Borinstein. He added that ultimately, if nothing is done, a labor gap will emerge, in which there are not enough workers to fill available jobs.

To study this trend, and possible remedies for it, Borinstein used a modeling tool called a Leslie matrix. “The matrix predicts the total number in each of the age classes in the future,” Borinstein stated. “The Leslie matrix, when you just multiply it times the initial population, it tells us what that population is going to look like in 10 years.”

Thanks to the Leslie matrix, Borinstein found that while populations have for centuries been represented by a pyramid, with the greatest number of people in the youngest category and the smallest in the oldest age category, the U.S. population is currently in a block shape, with roughly equal age distributions.

Eventually, as the younger generations shrink, there will not be enough workers to support the projected number of retirees, threatening Social Security, Medicare, and other government programs.

In his work, Borinstein explored four possible remedies for this looming crisis: increasing the retirement age, relying more on technology to make labor more productive, using economic incentives to encourage more births, and incentivizing immigration.

“Realistically, I think it's going to be a combination of the four,” said Borinstein. “None of them work independently.”

Of those four, though, immigration – though a hot-button issue in the current political climate – offers the most hope for real change, Borinstein acknowledged, as immigrants tend to have more children. “If we bring in an extra 10 million immigrants like we did in the



Drew Borinstein '17 presents his honors thesis in the Turman room of the Preston Library on the effects of declining birthrates in the U.S. on March 28. – VMI Photo by H. Lockwood McLaughlin.

decade of the 2000s, we could easily fill the projected labor gap that we'll have,” he stated.

Shortly after Borinstein's honors thesis presentation, he and Herald traveled to Asheville, North Carolina, where Borinstein presented his research at the Southern Regional Honors Conference. “Drew did an excellent job among the other presenters,” noted Herald.

“I enjoyed it a lot,” said Borinstein of his presentation at the conference. “They wanted me to condense it down to 15 minutes, and I had to sort of rush toward the end, but I got a very good response from the audience – a lot of compliments and a lot of questions.”

Herald had high praise for Borinstein's work.

“He's done really, really well,” she said. “Research has its ups and downs, and he recovered very well from the downs – very quickly, very efficiently. He's learned to change and adapt and move on.” 🌟

Bayliss Scholarship Presented

On March 23, at a ceremony in Preston Library, Tristan L. Silverstorf '18 received the Capt. (USAF) Paul M. Bayliss 1960 Memorial Scholarship. The scholarship honors Paul M. Bayliss '60, an Air Force pilot who was killed in action in November 1966 while serving in Southeast Asia. It is presented annually to a cadet pursuing an Air Force commission who has been chosen to be a pilot or combat systems officer. This is the third award of the scholarship. In addition to Cadet Silverstorf, those attending the ceremony included (left) Bayliss' widow, Reba Bayliss, and (right) his son, Patrick. – VMI Foundation Photo by Micalyn Miller.



EVA Offers Faculty, Cadets Engagement

By Mary Price

Now in its 28th year, the Environment Virginia Symposium is a fixture on the Institute calendar each spring, offering not only networking and learning opportunities for participants from academia, government, and industry, but also plentiful opportunities for faculty and cadet engagement.

This year, Lt. Col. Wakeel Idewu, associate professor of civil engineering, and Theerachat Suvannachote '18 chose the Environment Virginia symposium as a venue to present "An Analysis of Localized Air Pollutants and an Analysis of the MOVES model."

The presentation was an outgrowth of Suvannachote's work on this topic last summer as part of the Summer Undergraduate Research Institute, as he sought to find out what influences air quality in a local area.

"The thought was vehicles would [influence air quality the most], but what we found is that vehicles didn't have as much of an effect on the local pollutants that may be in the air as much as we thought it would," Idewu explained. He added that weather conditions seem to play a larger role in local air quality than do vehicles.

To begin their research, Idewu and Suvannachote set up a traffic recorder (rubber strips across the road) on North Main Street near the pedestrian bridge that leads to Foster Stadium and an air quality monitor in the nearby ticket office. The air quality monitor was capable of detecting four gases – nitrogen oxide, sulfur dioxide, carbon monoxide, and carbon dioxide. Weather data came from an already existing weather station set up in the press box in Foster Stadium.

With their equipment in place, Idewu and Suvannachote collected 200 hours of data before attempting to analyze it via the Environmental Protection Agency's MOVES model, which can be used to estimate emissions in a particular area. They quickly found, though, that the Lexington area doesn't have enough data to make the MOVES model as accurate as it would be in a larger, more metropolitan area.

They thus moved on to creating their own model, but found that the lack of heavy truck volume in Lexington made it difficult to get reliable results.



Lt. Col. Wakeel Idewu and Theerachat Suvannachote '18 discuss their findings about localized air pollutants during the Environment Virginia Symposium. – VMI Photo by H. Lockwood McLaughlin.



Gov. Terry McAuliffe answers a question from an audience member after his keynote address on April 5. – VMI Photo by Kelly Nye.

"Of the four [gases] we looked at, we only got a really good response from the carbon dioxide," Idewu noted. "With the other three, we weren't able to get enough data to come up with a response or a model that we can trust."

Presenting at the Environment Virginia Symposium, though, may have helped Idewu and Suvannachote move forward with their work.

"Right after the presentation we got some good feedback on how to improve the model that we have," said Idewu. "[Suvannachote] was elated. He was so excited. When we left he was high-fiving me. That's what I wanted, for him to have a good experience doing it."

Also attending the Environment Virginia Symposium, and for the third time in his four-year term, was Virginia Gov. Terry McAuliffe, who used the occasion to highlight the progress the commonwealth has made on environmental issues under his leadership.

"You cannot grow an economy without protecting your natural assets," the governor declared, adding that tourism is a \$23 billion business each year in Virginia while unemployment claims are at a 44-year low.

"We in Virginia are sending a message that we are going to protect our environment," he said. "We're leaning in."

The symposium, "Virginia's Environment: Shaping a Sustainable Future," also featured panel discussions, a 5K in VMI's new Corps Physical Training Facility, an address by Future 500 CEO Bill Shireman about his work mediating between environmental groups and large corporations, and breakout sessions with leaders in the government, business, and nonprofit sectors. Approximately 600 people attended this year's event. 🌿

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Framing a Community

Timber Framers Continue to Build as Col. Grigg Mullen Jr. '76 Retires

By Mary Price

For two decades, the VMI chapter of the Timber Framers Guild has been contributing hand-built wooden structures not only to the Rockbridge area but also the wider Commonwealth, and this spring, that effort took another step forward with the construction of a pavilion at Parry McCluer High School in nearby Buena Vista.

But while the project itself wasn't unusual for the VMI Timber Framers, who've built more than 24 structures since the chapter's inception in the spring of 1997, the Parry McCluer pavilion represents a watershed of sorts. Col. Grigg Mullen Jr. '76, professor of civil and environmental engineering and faculty adviser to the Timber Framers, will retire from the VMI faculty this spring after 25 years of teaching.

Mullen is "an absolute blessing" to the Timber Framers, said Seth Hinton '17, cadet in charge of the Timber Framers and organizer of the build at PMHS. "[Mullen is] by far my favorite professor."

Hinton recalled that on the day of the build, he was busier than he'd anticipated as he worked to organize the crew of 42 cadets – the largest ever on a VMI Timber Framers project. At one point, he felt a tap on the shoulder. It was Mullen, offering some advice: "Seth, you need to learn how to delegate. Give that work out to other people."

It's advice that Mullen has been following himself in recent years. More and more, he's turned over the on-site management of the Timber Framers to his son, Grigg Mullen III '08, who's a lab mechanic in the Department of Physics and Astronomy. And while the elder Mullen isn't entirely sure he'll step down as head of the Timber Framers, thinking that an adjunct teaching position would allow him continued involvement, he's ready to turn much of the work over to others.

Like many engineers, Mullen fell in love with building things at a young age – by his recollection, he's been working with wood since

he was 5 years old. However, his path to service learning with cadets on Timber Framers projects has been one of twists and turns.

In 1987, as he was beginning his work toward a doctorate in civil engineering at Virginia Tech, Mullen stumbled across a book, *Timber Frame Construction*, that would serve as a guide to his life's work. "Here was a combination of woodworking and my engineering, all in one package," Mullen commented.

Soon, Mullen joined the Timber Framers Guild, a nonprofit educational association dedicated to the ancient craft of construction joinery. The VMI chapter, though, got its start not with a house, a shed, or any other dwelling for humans or animals. Rather, it began in the spring of 1997 with the construction of a trebuchet, a medieval weapon used as a siege engine. A visiting professor in the history department had an interest in medieval weaponry, and he convinced Mullen to build the trebuchet.

"That was the gestation of [the Timber Framers]," said Mullen.

Just one year later, the group transitioned to community service with the construction of a gazebo at Effinger Elementary School.

A year later, Mullen and the cadets built Lisa's House, Lexington's shelter for women suffering domestic violence, and that was the start of a longstanding relationship with the dwelling's owner, Project Horizon, an organization dedicated to combating domestic abuse and sexual violence in the Rockbridge area. Over the years, cadet members of the VMI Timber Framers have built sheds, play houses, and even an English cottage frame to be auctioned off as fundraisers for Project Horizon.

Mullen's favorite project, though, had family ties. In the spring of 2009, the VMI Timber Framers built a picnic shelter in Goshen Pass to replace a 1930s-era structure that had gotten run down as the years went by.

"My grandfather, as chief engineer for the highway department, got that [original] shelter built," said Mullen. His grandfather was Claree Sutton Mullen, VMI Class of 1903 and the second of the family to attend VMI. Mullen's great-great uncle, Wesley Peyton Grigg, had graduated from the Institute in 1863. Mullen's father, Wesley Grigg Mullen, graduated in 1944.

Other memorable projects over the years have included the Rotary picnic shelter at Jordans Point in Lexington; the Great Oak Pavilion at Ferry Farm, George Washington's birthplace; and a shade shelter at the Lexington City Pool.

And while the structures themselves have been important, they're also been a vehicle for teaching life lessons – and connecting with cadets who may be less than well served by the traditional, classroom-based educational system. It's been Mullen's lifelong mission to reach what he calls the "2.0-and-go"



The timber frame of Parry McCluer High School's pavilion stands assembled at its location in Buena Vista. – Photo courtesy of Col. Grigg Mullen Jr. '76.

cadet—one who struggles academically yet has gifts the world desperately needs.

“We get a lot of kids in civil engineering who are hands-on, visual learners,” said Mullen. “We lose too many good kids who don’t connect to the formal educational process.”

There’s a connection to the wider world off post, too, with the Timber Framers. “This is a chance to get the cadets out into the community,” Mullen stated. “It’s a community-building thing.”

For Hinton, now completing his third project with the Timber Framers, the group has provided an even closer form of community. “It’s like a family,” he stated. “It really is. It’s your family away from family.”

And as with most families, reunions will take place. Already, a number of VMI alumni come back for Timber Framers projects.

“They’ll come back and help teach the current cadets,” said Mullen of the alumni. “That’s fun.”

Will Hinton be one of them someday? “There is no doubt in my mind,” Hinton said. “No doubt at all.” ❀



Cadets help assemble a timber frame shelter at Goshen Pass during the spring 2009 FTX project. – Photo courtesy of Col. Grigg Mullen Jr. '76.

‘Rugby Adventure’ Brings out Team’s Potential

By Chris Floyd

During spring break, students flocked all over to enjoy a respite from the grind of second semester, but not many of them traveled as far as the VMI rugby team.

The club logged over 5,000 miles during the break, traveling all the way to Argentina for what coach Wayne Howe deemed “the best rugby adventure ever undertaken at VMI.”

The Keydets played three games on that trip, winning one against some very stiff competition, and returned to Lexington a better team. Howe explained that his team received a “monumental amount of learning both on and off the field” during the team’s three days in Buenos Aires and four in Mar Del Plata.

On the field, VMI played games against the Argentine Naval Academy and a pair of club squads. The Keydets won the second of the three matches, but perhaps more importantly, they found out a great deal about themselves as a club.

“To say we got a lesson doesn’t even come close to the amount of schooling we got, both about how the game should be played and even more impressively about what we are capable of when we are challenged,” said Howe. “Leaving Argentina with our heads held high, this coach returned to the



The rugby team competes against the Argentine Naval Academy’s team over spring break. – Photo courtesy of Wayne Howe.

Institute a very tired individual but with a greater enthusiasm and belief for what our team is capable of should they continue to play to the level they displayed on tour.”

The Argentina trip came on the heels of a strong season for the VMI rugby club, which was knocked out of the final tournament in the round of 32. But with very few casualties because of graduation, Howe has high expectations for next season.

He also issued a sincere thank you to the folks who made the trip to South America possible.

“A huge thanks must be given out to those who made this trip possible,” Howe said. “Without the alumni and parents, this tour would not have been possible, and I am eternally grateful for all of those who support our school and our rugby program both financially and emotionally.”

The trip, Howe concluded, was an opportunity “for these

young men to grow not only as rugby players but as human beings, and you just can’t put a price on that.” ❀



The rugby team pauses for a photo with members of the Argentine Naval Academy’s squad. – Photo courtesy of Wayne Howe.

'Go in There, Give Everything, and Win a Title'

Six Keydet Boxers Win USIBA National Titles in VMI's Cocke Hall

By Chris Floyd

It wasn't quite a full house at Cocke Hall Saturday, March 25. But it sure did sound like it.

Boxing clubs from around the country descended on VMI for the United States Intercollegiate Boxing Association National Championships that weekend, and whenever a VMI fighter climbed into the ring, the place, renovations and all, shook with the exuberance of the cadets who gathered around the balcony high above.

"It was an electric atmosphere," head coach Larry Hinojosa said. "The whole Corps was chanting. The crowd, the cheering can be motivational to the fighters and help them fight to their highest potential."

"I think I overheard one of the other teams talking about our school and how much VMI supported us," said Jeremiah Sokol '18, one of the VMI contingent to reach the championship finals. "They had never seen a school with that big of a crowd, that excited of a crowd. It's really cool to be able to fight for a school that's willing to fight for you."

The VMI crowd left with a mix of emotions, pleased that six of their own finished the three-day tournament with individual championships. At the same time, many were disappointed that the team placed second.

"Of course we really wanted to get first place in the tournament," said Hinojosa, whose team has competed in four of the five national tournaments and placed at

least third in all four of those, including the national championship in 2015. "But every boxer that came out there, they did the very best they could. In some cases, to win the fight."

But of the six VMI boxers who competed in Saturday's finals, five of them left the ring with championship belts. Included among that number was Chealsea Sias '17, who won the title in the 152-pound beginner class to become the first female boxer at VMI to win a national title. Joining her

atop the podium Saturday were team captain Nathan Miller '17, who won the title in the 141 novice division; Ryan Freiwald '18 (165 beginner); Michael Marta '17 (178 beginner); and Sivaatasi Mathias '17 (201 beginner). Sam Shaffer '18 drew a bye during the early rounds and won the title in the 189 beginner class during Friday's round.

Sias had one of the toughest roads to the finals, having to win two matches to reach the championship round. In the final, she went toe-to-toe with Miami's Kyle Kennedy, but a couple of big right hands in the opening round and Sias held on for a majority decision.

The history of her victory was not lost on her.

"I tried to just ignore it," said Sias, talking about her mental preparations.

But during her championship match, her thinking changed.

"After the second round," she continued, "I was thinking why not just go in there, give everything, and win a title, give all these future female rats something to work towards. They're not

starting from scratch anymore; they have something to look at and say I want that one day, too."

In other matches Saturday, Miller scored a majority decision over Michigan's Michael Henry, and Freiwald defeated previously unbeaten Clarence Cochran of Michigan by unanimous decision. Marta stopped Miami's James Cunningham when the referee stopped the fight early in the third round, while Mathias claimed his belt over Michigan's George Lancaster with a stoppage in the third round.

The other contested championship bout involving a VMI boxer saw Sokol fall to Jarred La Chance of Olivet.

In all, the Keydets won 19 of their 29 fights during the three-day tournament, with the men settling for second place in the team standings. Michigan, which fielded boxers in every weight class, won the team title, and Olivet took third.

On the women's side, Michigan claimed that crown as well. Maryland and Georgetown tied for second place.

"I'm so proud of the team," Hinojosa said of the VMI boxers. "What they did was really amazing against the competition they had. And the significance of what the tournament was, I would think that what they did was probably one of the greatest things in VMI sports history."

"We've got a pretty good program," said assistant coach Joe Shafer. "These guys put in a ton of work. They've got to feel good."



Chealsea Sias '17, head coach Larry Hinojosa, Nathan Miller '17, Sam Shaffer '18, and assistant coach Joe Shafer pose for a photo with cadet boxers after Miller's victory against Mike Henry. - VMI Photo by Stephen Hanes.



Chealsea Sias '17 fights University of Miami's Kyle Kennedy during the final day of the USIBA championships in Cocke Hall March 25. - VMI Photo by Stephen Hanes.

anything you want, but without testing, there's no meaning."

Blandino's prosthetics research began with last spring's capstone class, which developed a basic prosthetic, but with a rigid ankle that greatly limited the user's mobility on inclines. This year's cadets – Cody Ellis '17, Spencer Jefferson '17, and Philip Jewett '17 – were tasked with taking last year's design and improving it.

The three cadets took separate directions to reach that goal. Ellis used RecurDyn, which is computer-aided engineering software, to produce a walking gait simulation – and he also did an honors thesis on his research. Jefferson and Jewett, meanwhile, focused their efforts on making the design more dynamic for a greater range of motion.

"This year our purpose was to create a design that would allow the ankle to flex and create greater mobility on inclines," explained Jefferson. "It's definitely been a challenge, but it's been a great project to work on."

Jewett, meanwhile, said that he'd found that patience and the willingness to

experiment were key in developing the flexible ankle.

"Your initial ideas aren't necessarily what come to fruition," he commented. "Just knowing that 'simple is usually better' applies."

Simple is a word well used to describe this year's model, as the primary building materials are PVC pipe and steel. "We're trying to approach it in a very quantitative way," said Blandino. "We want to make a low-cost [prosthetic]."

Like Blandino, Jewett stressed that prosthetics, especially the higher-end ones, aren't cheap.

"Part of the goal of this is to come up with a low-cost prosthetic for third-world countries," he stated. "A lot of times prosthetics will be thousands of dollars. Our test subject is looking at ones that cost \$10,000."

In the future, Blandino would like to focus research on improving the fit of the upper part of the prosthetic, where the amputee's stump attaches.

"You want to develop something that's comfortable for the user." 🌱



The prosthetic leg is made from low-cost PVC pipe and steel to make it more affordable. – VMI
Photo by Kelly Nye.

Leader in Residence

Retired U.S. Army Lt. Gen. Michael Oates spent two weeks visiting post as VMI's 2017 leader in residence. Oates, who served as the director of the Joint Improvised Explosive Device Defeat Organization, familiarized himself with VMI by attending events such as the Cadet Advisory Board meeting, the Economics and Business banquet, and breakfast roll call. He met with several groups of cadets including Army ROTC and offered them insight into his experience as a leader and Army officer. – VMI Photos by Kelly Nye and H. Lockwood McLaughlin.



VMI Engineers Team with USDA to Fight Ticks

By Mary Price

The tick rover, a project underway in VMI's electrical engineering labs for over a decade, has a new role to play this year: helping the U.S. Department of Agriculture eradicate cattle ticks from herds in Texas threatened by the aggressive, blood-sucking pests.

As it was originally conceived, the tick rover's purpose was to comb through yards, collecting and killing ticks so as to lessen the threat of Lyme disease. The rover, a small robot, emitted carbon dioxide to attract the ticks, who would perceive that the gas came from a living being, and used strips of cloth covered with insecticide to kill them.

This early version of the rover demonstrated "fantastic successes" against ticks carrying diseases dangerous to humans and animals, explained Col. Jim Squire, professor of electrical and computer engineering and one of three VMI professors, along with Col. Dave Livingston and Col. Jay Sullivan, involved with the tick rover project. However, when funding couldn't be found for it, the three inventors began to look for other applications of the technology.

Help came from one of the early collaborators on the project, Dr. Daniel Sonenshine, a tick expert who is now professor emeritus

at Old Dominion University in Norfolk. One of Sonenshine's former students is now a division director at the USDA. Through that connection, Old Dominion got a contract to fight cattle ticks in Texas and VMI was able to obtain a subcontract to supply the tick rover.

Cattle ticks, Squire explained, are different from the ticks that plague other animals and humans in that they live their entire life cycle on the cow, never dropping off. When enough ticks attach themselves to a cow, the animal can become anemic and even die from the loss of blood. This problem has intensified since the late 1990s as more and more of the cattle ticks, which are native to Mexico, have spread north of the Rio Grande, thus drawing the attention of the USDA.

To combat this problem, five cadets in Squire's electromechanical design class have built a new tick rover from the ground up this semester. Unlike previous versions of the instrument, this one is much larger and more rugged.

"Texas is a lot bigger than most people's yards," Squire observed.

Another difference comes from the fact that this rover is not self-driving but rather radio controlled. And instead of using carbon dioxide to attract the ticks, the cattle tick rover uses denim wings attached to the sides of the vehicle. The wings allow the robot to take advantage of a natural tick behavior called questing, in which the tick uses four of its eight legs to grab onto a potential host. When the rover goes by, ticks emerging from a larval mass on



Electrical and computer engineering cadets Ellana Avery '17, Ashley McManus '17, and Franklin Smith '17 make adjustments to the tick rover on the Parade Ground. – VMI Photo by Maj. John Robertson IV.

the ground will use questing to attach themselves to the robot, as they would instinctively attach themselves to a cow.

Serving as project lead this semester, and traveling to Texas with Squire and Sullivan last month for initial testing of the new rover, has been Edward Olbrych '18. Once on the ground in Texas, Olbrych found that the rover would need some modifications in order to work well. It turned out that assuming the rover would travel cattle trails in a linear fashion was incorrect, as oftentimes ticks gather in areas where cattle like to sleep.

"We had to rove around this area and find objects to brush up against where ticks might be," he explained. "We have to build and program a robot to wander around this area that's not well defined and has a lot of shrubbery, brushes, trees, tall grass."

In addition to learning about navigation in a cow pasture, Olbrych said he's learned much about perseverance from this semester's project.

"It's so different when you try to build something in the real world because things break or they don't work," said Olbrych. "You have to repurpose or redesign. You have to go back and almost build it from the ground up sometimes. ... You keep trying until you succeed."

With one more year to go at VMI, Olbrych is looking forward to continuing the tick rover work. The 2017-18 project, he and Squire explained, will involve creating a semi-autonomous rover that can be programmed to



Cadets take the tick rover out on the Parade Ground before sending it to Texas for its first trial run. – VMI Photo by Kelly Nye.

cover a certain area on its own, rather than being radio controlled.

“That would make it easier for a researcher to control this thing,” Olbrych stated. “They wouldn’t have to be on it 24/7.”

Like Olbrych, Ellana Avery ’17 finds the tick rover work difficult but rewarding. “I love the whole electromechanical design aspect—building something and making it move—but my experience is pretty much with the programming,” she said.

Over the past few months, she’s been using Arduino, an open-source electronics platform, coupled with the computer programming languages C and C++, to program the robot’s four sensors. These sensors enable

the rover to navigate around obstacles that include rocks, clumps of grass, and yes, cows.

“Making it as versatile as possible is the biggest challenge,” said Avery. “We thought we were going to be navigating through these giant, thick grass walls and now we’re going to be navigating through more of an open field with grass patches.”

Since Squire, Sullivan and Olbrych returned from Texas, Avery has been working to tweak the sensors so they will operate better in the pasture.

On April 30, Squire and the cadets will deliver their finished rover to Dr. Holly Gaff, a mathematical biologist who is an associate professor at Old Dominion University. Gaff

will then train her graduate students on how to use the machine, and, like Squire, keep an anxious eye on the federal budget for the USDA.

While aware that budget cuts could imperil the entire project, Squire is hopeful that even in lean times, funding will be found for the rover.

“The strong belief is that regardless of the budget cuts, this is such a critical problem that can threaten our beef supply that they’ll get their funding,” Squire said.

In addition to Olbrych and Avery, other cadets working on the tick rover this semester have been Joshua Kuzel ’17, Ashley McManus ’17, and Franklin Smith ’17. 🌿

Tick Rover Recovered

When Col. Jim Squire sent the tick rover, a robot that attracts ticks, to Texas last month, he was trying to help the U.S. Department of Agriculture with a pest control problem.

Squire, professor of electrical and computer engineering, never once guessed that the tick rover would play a role in helping a major shipping company catch a thieving employee – but that’s exactly what happened.

“Moving this has always been a problem,” Squire admitted. Over the years, he and others involved in the tick rover project have taken turns driving the robot to various sites for testing, but when the USDA requested that the rover be sent to western Texas, Squire had a problem on his hands.

“Nobody wanted to drive out to Texas,” he said. And so, for the first time ever, the tick rover was entrusted to a commercial carrier. The shipment cost was approximately \$1,000 each way, with \$5,000 of insurance.

In early March, the tick rover was shipped to Texas, where it arrived with only a few loose wires. Trouble struck, though, on the return trip. Two boxes were shipped from Texas back to Lexington, but only one arrived. When the second package was a week overdue, Squire called the shipping company, which put a tracer on it.

A few days later, he received a phone call, saying that the rover, the product of hundreds of hours of work by cadets in Squire’s electromechanical design class, had been stolen. The caller told Squire that the employee in question, who worked in the company’s Dallas hub, had been under suspicion for other package disappearances in the past, and the tick rover’s absence had prompted the company to call the authorities.

Next, Squire heard from Dr. Holly Gaff at Old Dominion University, one of his collaborators on the tick rover project, that the rover had been found at a home in Mesquite, Texas. At that point, he didn’t think he’d see the rover again, or if he did, it would be missing so many parts as to be unrecognizable.

“I was really amazed when they said it was going to be shipped again,” he commented. But it was shipped – out of Salt Lake City, Utah, for reasons unknown – and Squire carefully followed its progress online. Then, he received a notice that the package had been rejected for delivery at VMI. When Squire asked if the package could be delivered to his home,

the answer was “no,” because it was considered too sensitive.

The next time Squire heard anything was when he received a phone call that the package was at a nearby truck stop, and he’d need to come pick it up. One rainy evening, Squire found himself driving north on U.S. 11, not sure what, if anything, he’d find.

“It’s a feeling so bizarre driving up and seeing this lone truck parked there in sheets of rain,” he commented. With no great ado, and without asking for identification, the truck driver handed Squire a very large and heavy package. At that point, Squire turned around and drove back to VMI, where he opened the box with trepidation.

“Everything, amazingly enough, that we had shipped was in there,” he stated. There was a great deal of breakage, and as of mid-April, Squire was still working with an insurance company to determine payment for the damages.

The roving rover was home – and its first trip by commercial carrier will be its last.

“It’ll be hand-carried, always, from now on,” said Squire.

– Mary Price



The tick rover features an array of sensors and instruments and is the product of hundreds of hours of work. – VMI Photo by Kelly Nye.

Spring Sports in Swing, Water Polo Season Best Ever

By Chris Floyd

With the Mid-Atlantic Athletic Conference tournament looming at the end of April, VMI's water polo team positioned itself as one of the favorites with a pair of MAAC wins, 13-8 over St. Francis and 16-11 over Villanova, Saturday, April 8, in New York.

And, in the process, the Keydets continued to obliterate the record books, improving to 20-5 this season, 9-2 in conference play. VMI had never won more than 12 games in a season prior to this year and had never posted a winning record.



Natalie Rivas '18 passes the ball during the water polo match against Iona College on April 2 in Clark-King Pool. – Photo courtesy of VMI Athletic Communications.

Shelby Barkley '18 scored nine goals in the two games, breaking the school record for career tallies. In just her third year, Barkley now has 193 goals in her career, including 72 this season as she eyes the record of 93 set in 2013.

Bailey Huddleston '17 scored five goals in the two contests in New York recently, while Isabel French '20 recorded 12 total saves, including eight against Villanova, to pick up two victories in goal.

Three games remained in the regular season at press time before the Keydets traveled to Poughkeepsie, New York, for their first MAAC tournament April 29-30.

Kerisha Goode '18 placed in three events to lead the VMI women's track and field team at the George Mason Invite Saturday, April 8, in Fairfax.

Individually, Goode placed third in the 100-meter dash, and she also finished fourth in the 200. She then teamed up with Yaa Agyepong-Wiafe '18, Bria Anderson '18, and Mia McClain '18 to place third in the 4 x 100 relay. The team set a school record with a time of 47.21 seconds.

Agyepong-Wiafe added a second-place finish in the 100 hurdles to the VMI tally, while Anderson took fifth in the long jump.

Lee Warren '18 was the top finisher for the VMI men, sprinting to a sixth-place finish in the 110 hurdles.

VMI saw its four-game winning streak on the baseball diamond come to an end with a 13-3 loss to Wofford Sunday, April 9, but with eight victories in their last 11 games, including two of three from the Terriers during the weekend series in Spartanburg, S.C., the Keydets climbed over the .500 mark at 17-16 overall.

In the series opener against Wofford, the Keydets, who are now 4-5 against Southern Conference foes, rallied from a 2-0 deficit, and pitchers Josh Winder '19 and Ryan Bennett '17 worked around five errors to preserve the 4-3 victory. The duo did not allow an earned run in the game, with Winder going six innings to earn the win and Bennett tossing the last three innings for the save.

Offensively, the Keydets were led by Matt Dunlevy '18, who went 2-for-4 and drove in two runs, and Peyton Maddox '18, who also contributed two hits and picked up an RBI. Collin Fleischer '18 slammed his fifth home run of the season in the contest.

VMI struck for three runs in the third inning and added another three-spot in the fourth to take control of the second game with the Terriers and cruised to the 8-1 victory.

Matthew Eagle '18 went six innings on the mound to pick up the win, allowing just one run and three hits while striking out six. Fleischer led the offensive attack, pounding out a pair of hits, including a home run, while scoring three runs and driving in three.

The lacrosse team picked up its second win of the season April 1 in Hampton, scoring a season-high 14 goals to cruise past Hampton, 14-1.

Twelve different players scored for the Keydets, led by Hunter Duford '20, who notched three goals in the contest. Wesley Sanders '18 extended his streak of scoring at least one point to 24 straight games, tallying a goal against Hampton and firing home five in a 16-10 loss to Jacksonville April 8 in Lexington. John Daniel recorded five assist in the victory over Hampton. 🍀



Jacob Jaye '18 swings to hit a home run in the bottom of the first inning during the April 13 game against Mercer College. – VMI Photo by Kelly Nye.

VMI Rifle Succeeds in SoCon

By Kelly Nye

The VMI men's rifle team took second place overall in the first Southern Conference rifle championship held since 1985. Three cadets earned conference titles for individual events: Andrew Hickey '17, first place air rifle; Hunter Jacob '20, third place air rifle; and Samantha Alexander '18, eighth place air rifle.

The event, hosted in the Citadel's Inouye Marksmanship Center, took place on March 4-5. The University of North Georgia won the overall aggregate team score with 4564

out of a possible 4800. VMI was close behind with an aggregate score of 4513.

"They worked hard this season. Both the men's and women's teams were phenomenal," said Lt. Col. Bill Bither, the team's coach.

Up until this year the team had been shooting in the Mid-Atlantic Rifle Conference against schools as far away as the Massachusetts Institute of Technology.

"We were driving vans from Lexington to MIT which is probably over 13 hours. It was

brutal," said Bither. "Our furthest match now is eight to nine hours – a day's drive."

Doing well in the Southern Conference, especially in its inaugural year for rifle, proves that the team has found its place. And though the team is losing four 1st Class cadets this year, Bither sees nothing but potential in the returning team members.

"We've got some really strong freshman who are returning next year as thirds," he said. "I hope we can continue this roll and have another great year." ❄



Members of the rifle team pace themselves between shots during a competition against the Citadel earlier this fall. – VMI File Photo by Kelly Nye.



Gen. J.H. Binford Peay III '62 congratulates the rifle team members on their success in the Southern Conference championship. – VMI Photo by Kelly Nye.

VMI Band Performs Special Events

Forty cadets perform in the St. Patrick's Day Parade in the Villages, Florida, March 17, in which they were the featured band. VMI superintendent General J.H. Peay III '62 was the featured speaker at the alumni chapter gala that night, and Col. Walt Chalkley '72 arranged the band's trip. On March 24, the Institute Brass traveled to Montreal, Canada, for a series of performances, including a performance in the Basilica of Notre Dame. The band and its component units have performed over 75 times this year, and the pipe band has become a regular part in opening VMI's boxing matches, including the national championships held on post in March. – VMI Photo by Stephen Hanes and courtesy of Col. John Brodie '92.



VMI Foundation Conducts First Thank-a-Giver Day

By Scott Belliveau '83

On March 28, the VMI Foundation, working with the Philanthropy Club, held its first Thank-a-Giver Day.

The event was initiated by the staff adviser, Denise Koch, and the leaders of the new Philanthropy Club – its president, James Callahan '17, and its vice president, Zachary Reagan '17 – as part of the club's efforts to educate the Corps of Cadets about why it's important to support VMI.

"The Club decided that its first event should focus on the impact that private support has on cadets' lives (such as scholarships, programs, and equipment) and thanking donors for providing that support," said Koch, assistant director of annual and reunion giving.

In Crozet Hall, club members and members of the Foundation's annual and reunion giving team, including Koch and Franklin van Valkenburg '13, set up displays that showed what philanthropy does for the Institute and cadets in particular. Cadets also were given the opportunity to answer questions about philanthropy at VMI for a chance to win five gift cards to local establishments.

"The event was mainly about gratitude," said Koch. "We provided notecards and pens so the cadets could write notes thanking

the people whose generosity enriches their experiences at VMI." All told, 52 cadets wrote a note. The notes were not addressed to any specific donors; however, they have been distributed to randomly selected donors.

When asked why he wrote a thank-you note, Shu-Hao Yang '17 cited his experience with a group in which private support helped support his participation in a program in Bolivia. "Our facilities, our clubs, so much comes from donations," he explained. "These people create more opportunities for cadets."

Benjamin Marsh '20 was even more straightforward in his explanation as to why he penned a note. "I wanted to thank these alumni and friends for all that they do for cadets and for the school," he said.

The event, according to Koch, represented another step in the process of instilling an appreciation among cadets for the indispensable role that philanthropy plays in the lives of cadets. "We are making them aware



Cadets write notes of thanks to donors during the Foundation's first Thank-a-Giver Day. – VMI Foundation Photo by Micalyn Miller.

that there isn't much they'll do as cadets that somehow doesn't involve private money, as well as making them aware of its source – our generous alumni as well as family and friends," she said.

"When these young men and women leave barracks," Koch continued, "they will be following the examples of success and service that our alumni provide. Through this process, we are giving them another example to emulate: the generosity of donors to VMI." ✱

Undergraduate Research Symposium

Michael Will '18 and Elijah Dean '18 participate in the Undergraduate Research Symposium poster session on April 13 in Marshall Hall. Faculty members judged the sessions that morning and cadets received awards later that afternoon for first, second, and third place in each department. Ashley McManus '17 represented her group in receiving third place for an oral presentation in engineering from Brig. Gen. Jeffrey Smith Jr. '79. – VMI Photos by H. Lockwood McLaughlin and Kelly Nye.



Model UN Makes an Impression

By Kelly Nye

VMI's Model UN team has had official club status for only a year, but it is already making an impression among teams at other schools with much longer experience.

After participating in the United States Military Academy's Model UN conference in late February this year, Chase Antony '18 received honorable delegate award, third place, and Emmanuel Ocampo '19 received fourth place.

Placing against academically accomplished schools like Georgetown and Princeton University produced a new level of confidence among the team.

"We definitely punched above our weight," said Ryan Nagatoshi '18, president and head delegate of the club.

Going into the event with a competitive attitude and a strong background in the event topic, the Pacific Command, helped.

"It was in the forefront of everyone's mind," said Antony. "Number one: make sure we represent ourselves well, make sure we're treating everyone with respect... but also show everyone that we're here to be serious competitors."

The team members practiced twice a week for a month leading up to the event by role playing and thinking of possible scenarios that might be presented. They were already familiar with problems in the South China Sea, so they were aware of some of the issues that might come up.

Dr. Vera Heuer mentors the group, and she has found that VMI cadets also have an advantage that students from other schools don't have.

"I've noticed that cadets at VMI don't need to be told how to speak up and hold their ground. That is pretty much natural for them," she said, "which means that we can focus more on getting the background information for them."

Model UN conferences are also social events as much as they are academic.

The host school decides which competitors deliver the best arguments. That can be based on presentation as well as engagement and personality of the presenters.

The cadets stayed at West Point during the trip, which they found to be a "parallel universe," but the rest of the attendees were from the civilian world, most of whom will probably never serve in the armed forces.

April 2017



Chase Antony '18 accepts his award for 3rd place at the Model UN conference at the U.S. Military Academy. – VMI Photo courtesy of Ryan Nagatoshi '18.

Both Nagatoshi and Antony plan to commission when they graduate, and most of their peers on the team are committed to serving their country in some way.

"People from a school like Georgetown, Princeton, or Harvard are probably going to be the ones writing the policy," said Nagatoshi. "We're the people going out and implementing that policy."

Mixing the two perspectives was good for both sides. So good that Georgetown University invited the VMI team to their conference in October 2017.

"The plan for next year is we're doing two conferences, one per semester," said Nagatoshi, hoping that they can participate in both Georgetown's conference and West Point's conference again.

Whether or not they can go will

depend on how much funding the team has. Last year's trip to William and Mary was funded entirely by the International Studies department, but this year, since they were registered as a club, the dean's office was also able to help fund them.

"Our long-term goal would be [to host a conference at VMI]," said Heuer. "But if we can keep the club going and always have enough interest, that would be ideal." ✪



Ryan Nagatoshi '18 represents the VMI Model UN team during the competition at the U.S. Military Academy. – VMI Photo courtesy of Ryan Nagatoshi '18.

Marsh Honored at New Market

By H. Lockwood McLaughlin

The American Battle Monuments Commission honored Secretary John O. Marsh Jr. March 29 with its Distinguished Public Service Medal. The award was presented at the Virginia Museum of the Civil War in New Market in the company of family and acquaintances.

The ABMC is a federal agency charged with administering and maintaining military cemeteries and memorials. The commission's secretary, Robert Dalessandro, spoke on the occasion.

"Time will not dim the glory of their deeds.' That's our core mission statement, and that's the core mission statement of this facility, of the Virginia Military Institute," said Dalessandro.

He went on to express the significance of recognizing "the citizen-soldier – that person who stands up in their community and serves the community, both at home and in the military."

"I can't say enough about a man who has spent time keeping our Army and our nation mindful of the importance of the citizen-soldier," continued Dalessandro.

The plaque presented by the ABMC sums up the message: "Secretary Marsh embodies the finest ideals of public service. His efforts touched and profoundly improved countless lives."

The venue for the presentation also held a particular significance. "Even before it's founding, when it was still a working, operating farm," said the director of the VMI museum system, Col. Keith Gibson, "this gentleman was a part of this place."

When Marsh was a child, he got to know the Bushong family and remembers staying in the Bushong house and hearing the stories about the Battle of New Market. When he and his mother visited in 1935, Marsh signed the guest book, which the museum keeps to this day.

"Mr. Marsh has been a longtime supporter of both VMI and the New Market Battlefield," said Lt. Col. Troy Marshall, the site director of the Virginia Museum of the Civil War.

When Marsh was shown the old Bushong guestbook "he smiled and reminisced about those days on the farm and where they played and slept," said Marshall. "It was true living history."

"I think this is a good place to have an event like this because this is a classroom in life and that's what this should be. People should come here and learn about their country and learn about the valor and courage of those who took part here," said Marsh "The lessons of New Market can become the lessons of America."

After enlisting in the Army in 1944, Marsh attended officer candidate school and served with the Army of Occupation in Germany from 1946-1947. In the following years, he was a member of the Army Reserve and the Army National Guard, attaining the rank of lieutenant colonel.

After graduating from Washington and Lee University, Marsh practiced law and served as a town judge in Strasburg, Virginia, and as a town attorney in New Market. After that, beginning in 1963, he

served in the House of Representatives. While still a congressman, he volunteered to serve in the Vietnam War. In 1973, he became assistant secretary of defense and later became a professor, teaching at William & Mary, George Mason, and VMI.

Perhaps his best-known role was that of Secretary of the Army from 1981 to 1989 under President Ronald Reagan. He also served as national security adviser and later counselor to the president under Gerald Ford.

Exemplifying his humble nature, Marsh consistently made references to others in his acceptance speech, putting a heavy emphasis on the importance of knowing and understanding history.

"Human history is the dominoes of life. And relationships that you have in school and in the military and with people are the interconnectors that produce your life", said Marsh during his speech.

He made references to leaders, including President Abraham Lincoln, Gen. George C. Marshall, and Gen. Douglas MacArthur.

"Those lessons of the battlefield are the lessons of life," said Marsh. 🌟



The American Battle Monuments Commission awarded Marsh the Distinguished Public Service Medal March 29. – VMI Photo by H. Lockwood McLaughlin.



Secretary of the American Battle Monuments Commission, Robert Dalessandro, presents former Secretary of the Army John Marsh with the Distinguished Public Service award during a ceremony at the Virginia Museum of the Civil War on March 29. – VMI Photo by H. Lockwood McLaughlin.

ourselves. They are so joyous and bring so much life to VMI. They just light up the whole campus.”

The athletes poured onto post to participate in four competitions: basketball, basketball skills, track and field, and aquatics. Kroner and her team of cadet volunteers were on hand to make sure everything ran smoothly, and, as expected, the Games were a rousing success.

“They are the key component to all of this,” said Kroner of the team she recruited for the event. “We have such great cadets.”

“We definitely need them for every aspect, from set up to tear-down to running the events, everything,” added Perry. “We wouldn’t be able to do it without them.”

FTX weekend was originally designed for cadets who will be commissioning into the military to have an opportunity for training with their respective military branches. Soon enough it became apparent that those who would not be going on to military careers needed their own projects. Thus, the community service idea was hatched.

“Military service is a selfless service to our country,” deputy commandant Col. Mitchell H. Fridley ’89 said. “So for the cadets who don’t choose to go that route, we’re instilling selfless service through giving back to the community, working hard, doing good things, not getting paid for four days.”

As the officer in charge of FTX, a position he has held for the last three years, Fridley solicits requests for help from non-profit organizations in the community. Based on the response he gets, he creates a schedule and sends his cadets out to their respective assignments.



Cadet volunteers cheer on special olympic athletes as they run during the track event in the Corps Physical Training Facility on April 1. – VMI Photo by Kelly Nye.

This year, around 400 cadets traveled all over to help out communities, either at home or in the Lexington area. Projects ranged from the Special Olympics to Yellow Brick Road Early Learning Center; from Roots and Shoots, a vegetable garden at Waddell Elementary School, to Spirit Horse Shenandoah Valley, an equestrian program in Raphine that caters to children with special needs; and any number of worthy projects in between.

“This weekend is all about giving back to the community,” said Andrew Bradshaw ’17, the cadet in charge of FTX. “We

have a plethora of nonprofit organizations that seek our help and are always so excited that we’re able to get out there and help them.

“Just giving back means so much,” Bradshaw continued. “Service is something that VMI really builds. Community service is really important to cadets.”

More often than not, the cadets get just as much out of the FTX weekend as the groups that benefit from their service. Fridley said that he often has cadets come back to him and tell him about their own rewards.

“Sometimes they come back and I hear, ‘That was awesome,’” the colonel noted. “I hear from cadets all of the time about what a good time [they had] and how much they learned during their FTX experience.”

“VMI is always about extending yourself and helping other people,” Kroner added. “Not only are we getting to help other people, but we’re able to show that we’re not just concerned about service through the services. We’re also concerned about helping people locally, right here.” 🌸

An Uncommon Purpose Hits \$319 Million

By Scott Belliveau ’83

On VMI’s calendar, the last two months of the academic year are crammed with many events. This spring, however, there is one additional noteworthy event: the closing phase of *An Uncommon Purpose: A Glorious Past, A Brilliant Future: The Campaign for VMI*, which as of March 31 had received \$319 million in gifts and commitments from more than 15,000 alumni and friends.

According to Donald M. Wilkinson ’61, campaign chairman, although the success of *An Uncommon Purpose* is impressive, no one within the VMI family should expect the

campaign to reduce its efforts in these final weeks. “This campaign has never been about the numbers,” said Wilkinson. “It is about what they mean, the values they represent, what they translate into – specifically, a stronger VMI, which as it has for more than 175 years, will keep punching well above its weight in terms of providing purposeful, capable, and honorable citizen-soldiers to our great nation.”

To track the progress of *An Uncommon Purpose*, visit the campaign’s website at vmi.edu/campaign. 🌸



Donald M. Wilkinson speaks at the Institute Society Dinner. – VMI Photo by Kelly Nye.

Olmsted Trip Gives Commissioning Cadets Perspective

By Mary Price

Eight members of the VMI Class of 2017 got a taste of life outside the English-speaking world recently when they traveled to Germany and Poland over spring furlough. Their trip was sponsored largely by the Olmsted Foundation, an organization that provides cultural immersion opportunities for cadets planning careers in the military.

"The idea is to provide commissioning cadets who have not had the opportunity to study abroad with an experience in a non-English speaking country," said Maj. Houston Johnson, assistant professor of history. Johnson has now led three Olmsted-sponsored trips for VMI, all to Europe, and is now planning a 2018 trip to Israel.

This year, the focus of the trip was on U.S. policy vis-à-vis the Holocaust and the nation's later dealings with Germany during the Cold War. The journey thus began in

Berlin, where cadets visited the Reichstag, the Brandenburg Gate, and the Jewish History Museum, among other sites. Thanks to the efforts of Maj. Jochen Arndt, assistant professor of history, who also went on the trip, the cadets had a chance to meet a German naval officer.

"What he did was offer a perspective from the German military on current issues," said Jake Hyde '17. "You can't get that from American analysts. Actually having a native German who's had a career in the military gives you a true German perspective on things that you don't get from reading articles."

While in Berlin, the cadets also took a tour of the DDR Museum, which shows what life was like in East Berlin under communist rule. Their tour guide had grown up in East Berlin himself in the days before the fall of the Berlin Wall.

"[The guide] talked a lot about problems," said Brian Colitti '17. "If you didn't do something, there would be problems. You'd be investigated and thrown into a prison for 10 months, and no one would know where you went."

The group also visited Potsdam, the site of the historic 1945 conference where Soviet Premier Joseph Stalin, British Prime Minister Winston Churchill, and U.S. President Harry Truman mapped out plans for postwar Europe.

"It was very interesting to be in the rooms where they collaborated and did the work," said Hyde. "Everything was set up just as it was when they were there ... It actually gave you a new perspective because when you read it in the history books it almost feels like fantasy. It doesn't feel real. When you're there and you're trying to imagine making the same decisions they made, it's almost unfathomable."

In Poland, the group traveled to one of the most infamous concentration camps – Auschwitz – and its smaller neighbor, Auschwitz II-Birkenau.

"They were combination labor camps and death camps," said Colitti. "We got to see the crematoriums, the smoke stacks, the historic train tracks."



Participants in the Olmsted-sponsored trip to Europe pause at the top of the Reichstag March 13. – Photo courtesy of Maj. Houston Johnson V.

Perhaps not surprisingly, Colitti had a hard time finding the words to express the feeling of being at the camps. "You really don't want to talk about it," he said. "You want to take it all in. You want to take your time. You're trying to figure out in your head what happened 60 or 70 years ago. It's difficult to do with so much information and history."

Hyde likewise struggled to convey the feeling of the concentration camps. "It's very sobering," he remarked. "It leaves you almost speechless. You get a feeling and don't have ... words for it. It made the reality of everything sink in. ... It was pretty quiet going through."

Away from the camps, the cadets saw the sights in Krakow, one of the oldest cities in Poland and a former national capital. They also visited a salt mine that's now been turned into a museum and learned just how important salt used to be.

"That's how Krakow got put on the map was through this salt mine," Colitti explained. "When Krakow got started, under the Polish kingdom, salt was worth more than gold."

As he prepares for flight training as a pilot in the Air Force, now just months away, Colitti has found himself pondering the historical lessons of the Holocaust and World War II.

"When you go back to the World War II stuff and the Holocaust, it makes you think about, 'We never want this to happen again,'" he said.

"On the smaller scale, it's thinking about constantly questioning your actions and the actions of others," Colitti continued. "You might think you're doing the right thing all of the time, but you should always be looking out for a better way to do things or, 'Is this wrong? Is this ethical?' That's the Holocaust side of things."

In addition to Colitti and Hyde, other cadets traveling on this year's Olmsted trip were Tim Davison, Luke Phillips, Austin Bajc, Drew Borinstein, Andrew Kelly, and Brandon White. Traveling with them was Col. Dave Gray, director of VMI's Center for Leadership and Ethics. 🌿

Markets and Morality Colloquium

VMI hosted a colloquium on "Markets and Morality" March 25 in the Center for Leadership and Ethics. The event was organized by Col. Atin Basuchoudhary, professor of economics and business along with Dr. Tom Duncan, assistant professor of economics at Radford University. The professors facilitated an in-depth exploration of the questions and challenges raised by a set of readings on the topic of markets and morality. The participants included cadets from VMI, students from Radford and Washington and Lee University, and faculty from Roanoke College and Washington and Lee University. The colloquium was sponsored by the Institute for Humane Studies and the Charles Koch Foundation with support from the John Templeton Foundation.

– VMI Photo by Maj. John Robertson IV.



Heat Plant Crew Focuses on Efficiency

By Kelly Nye

The capital improvement project set to begin upgrading the post-wide infrastructure this summer will include upgrades to the Institute's heating system, but the efforts of the heat plant staff have made it unnecessary to replace the three fire tube boilers that serve most of post.

"The heat plant crew does an excellent job, they break the boilers down each summer and clean out the tubes. They get rid of any build up of material that would reduce the heat transfer, and they just do a great job of day-to-day maintenance," said Maj. Brendan Perry, interim energy manager and staff engineer of the Physical Plant.

Even though the boilers are 25 to 30 years old, they are capable of operating at 80-percent efficiency, according to Perry. Continuing the effort to reach that benchmark is Scottie Swisher, heat plant supervisor, and his team.

There have been improvements, though. Ten years ago new combustion controls were added to allow the boilers – which run on natural gas – to burn more efficiently. With the new controls the boilers can modulate to meet the actual load and not produce more steam than is necessary.

"One boiler was installed in the mid-80's and the other two boilers were installed in the mid-90's. The technology really hasn't changed very much since that time," Perry explained.

Other factors also matter in maintaining efficiency, such as water chemistry. Water must be treated to limit lime build up inside the tubes, especially in the limestone rich Rockbridge County region. VMI also contracts to have the boilers serviced once a year. A contractor probes the flue and does a gas analysis to make sure the boiler is running efficiently.

But Perry would like to increase that analysis to twice a year. "It's most advantageous to do it seasonally," he said. "They're going to burn differently in cold weather than they are in hot."

Though the boilers will not be replaced, the capital improvement plan does include replacing the piping system. Perry has found drawings for the current piping system that date back to the 1920's.

"Over the course of the last year, year and a half, we've gone out into the system and found steam leaks. Steam leaks out in your system are going to be the largest impact on your efficiency. If you produce steam and you send it out to your building and you don't get it back then you're just losing that heat down the drain" he said.

The heat plant serves most of VMI including all of the buildings on academic row, barracks, and Crozet Hall. ❄️



The three boilers in the heat plant create enough steam to heat most of the buildings on post. – VMI Photo by Kelly Nye.

Azalea Festival

VMI cadets escort the Queen's Court during the North Carolina Azalea Festival in Wilmington, North Carolina. Nine cadets attended the event, in which VMI and Citadel cadets have participated over the 70-year history of the event. This year's Queen's Court are beauty pageant contestants in the upcoming Miss North Carolina pageant and were the entourage of the Azalea Queen, 2015 Miss America Kira Kazantsev. The cadets escorted the women to locations, including a children's hospital, an elementary school, and to their introduction in the festival during their visit from April 5-9. – Photo Courtesy of Cindy Bither.



'This Unique Education': Glenda Dudley

By Scott Belliveau '83

Many people who work on post can claim to have met every member of every new class during Matriculation Week. Far fewer, however, can claim to meet and interact with every cadet during the entire course of their cadetships. Among them are the people who staff VMI's barber shop, including its manager, Glenda Dudley.

Dudley came to the Institute by a somewhat circuitous route. A barber and stylist for more than 30 years (she also is a certified instructor and holds a license in cosmetology), at one time she owned a barber shop just outside the gate of Fort Rucker, Alabama. But after marrying an Army helicopter instructor, her business priorities changed. For the rest of her husband's career in the Army, Dudley would move several times.

"We were in the Army 23 years, and I continued to cut hair at each duty station," she said. When her husband retired from the Army, they moved to Rockbridge County, his home. Not long after they arrived, she learned that VMI was looking for someone to manage its barber shop. Dudley saw it then – and sees it now – as "a good fit for my hair cutting skills." So too, did VMI, and she began work on May 1, 2012.

Although getting to VMI might have taken her a relatively long time, Dudley said she was instantly impressed by the Corps of Cadets. From that experience, she came to appreciate the Institute's approach to education.

"After coming here and getting to know these fine young people from the time they matriculate until they graduate, it made me believe in the VMI process for producing graduates who are quality young men and women and will serve our communities."

Her deep belief in the purpose of the Institute prompted her to become a donor to the VMI Faculty Merit Scholarship and the Keydet Club Scholarship Fund. The reason for this choice is simple. "If we give, someone will have the opportunity to come to VMI for this unique education." 🌟



Barber shop manager Glenda Dudley cuts a new cadet's hair during matriculation day. – VMI File Photo by H. Lockwood McLaughlin.