



INSTITUTE REPORT

VIRGINIA MILITARY INSTITUTE

Volume 48, Number 3, November 2019

Return of the Shako

By H. Lockwood McLaughlin

Eager for another win, the VMI football team traveled to Charleston, South Carolina, Oct. 5 to face the Citadel Bulldogs in the “Military Classic of the South.” A large VMI contingent, including rats and other cadets, joined the sellout crowd of more than 12,000 at Johnson Hagood Stadium. In a hard-fought game, VMI emerged victorious with a 34-21 win, earning the right to bring home the coveted Silver Shako trophy for the first time since 2002.

“It is a validation of a belief that if a team stays true to their core values of grit, brotherhood, and purpose, they have the ability to make history and accomplish goals others doubted they could,” said VMI’s head football coach, Scott Wachenheim.

The Bulldogs acquired an early 7-0 lead on their opening 75-yard drive, but a turnover later in the

quarter forced by linebacker Brett Howell ’22 and recovered by redshirt freshman linebacker Liam Kauthen ’22 led to a scoring drive to tie the game. By the early part of the third quarter, VMI

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Gen. Glenn Walters, Citadel president, hands the Silver Shako trophy over to Gen. J.H. Binford Peay III '62 after the Keydets defeated the Bulldogs 34-21 in Johnson Hagood Stadium, Charleston, South Carolina Oct. 5.—Photo courtesy of Chuck Steenburgh '86, VMI Athletic Communications.

Chemistry Professor Searches for Clues to Life’s Mysteries

By Mary Price

“Chemistry can answer a lot of questions.”

So says Maj. Kevin Braun, who was still in college when he discovered that a career in chemistry could allow him to deepen his interests in archaeology, anthropology, and forensics.

Now in his second year of teaching at VMI, Braun, assistant professor of chemistry, is still mixing and melding those interests as he invites cadets to share in his research, most of which centers around chemical archaeology and forensic chemistry.

One such cadet—Noelle Heilpern ’23—is only in her rat year, yet she’s working on analysis of lipid (fat and oil) residues found within archaeological pottery samples from a settlement of the Arikara, a

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Construction Advancing Steadily Through the Fall

By Mary Price

This fall, visitors to post are likely to observe that construction workers seem almost as numerous as cadets, as work continues on several projects simultaneously. And while some of the projects will affect cadets and visitors minimally, others will have a much more direct impact.

One project that will influence access to post is the upcoming closure of Anderson Drive, which is the road that descends from the Marshall Hall parking lot to the housing that overlooks Gray-Minor Stadium. The goal of the \$5.5 million project is to widen Anderson Drive to make its entire length a two-lane road, and to replace the one-lane bridge spanning Woods Creek with a two-lane bridge. As part of this project, a retaining wall and street lights will be added.

"It'll put in two full traffic lanes and add a sidewalk all the way down the hill so pedestrians can safely walk to Gray-Minor Stadium or further down to North Post and the drill fields," explained Col. Keith Jarvis '82, director of construction.

Jarvis added that once the Anderson Drive project is complete, the road will curve more gently as motorists exit main post and head toward Jordan's Point. Turning off the current, one-lane bridge requires a 90-degree turn, but the new bridge will have an easier turn to navigate.

The closure of Anderson Drive will



Construction continues on Scott Shipp Hall as of Oct. 15 from Letcher Ave.—VMI Photo by Kelly Nye.

begin at the end of November or beginning of December, once the football season has concluded. During the spring 2020 baseball season, fans will be able to either enter post through Jordan's Point and park near Gray-Minor Stadium or park in the Marshall Hall parking lot and walk down the hill.

Work on the Anderson Drive project should be completed by mid-August 2020, in time for matriculation.

Ongoing throughout this academic year will be the renovation of Preston Library, which is on track for an October 2020 completion. Currently, much of the building is

encased in a protective screening, which both shields the stucco work from the elements and protects pedestrians from falling stucco.

New windows are soon to be installed—and if they look like the ones in Third Barracks or Nichols Engineering Building, it's no coincidence—the new windows for the library are coming from the same manufacturer.

"The new windows are historically accurate," Jarvis noted. "They're newer,

double-glazed energy efficient windows. But they'll look very similar to the historical windows."

The Scott Shipp Hall project, scheduled for completion in the late summer or early fall of 2021, is likewise on schedule, despite a problem encountered there this fall.

Jarvis explained that workers attempting to put in footers for a planned addition to the building ran into a seemingly impossible problem familiar to anyone who's tried to build anything locally: rock, and lots of it. A hoe ram was unsuccessful at breaking up the rock, and blasting wasn't an option due to the presence of so many buildings nearby.

A third option, though, saved the day: expansive demolition grout, also known as expansive mortar. Jarvis explained that when this substance is mixed with water, it expands slowly over time but at an enormous pressure of approximately 18,000 pounds per square inch. Under that pressure, rock will crack and can then be removed.

Yet another project underway is construction of a more modern and secure home for the VMI Post Police. That \$5.5 million undertaking is scheduled for completion in May of 2020.



A W.M. Jordan crew member works to replace the windows in Preston Library.—VMI Photo by Stephen Hanes.

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VMI Institute Report

INSTITUTE REPORT

Volume 48, Number 3, November 2019

The Institute Report, VMI's monthly newsletter, publishes eight issues during each academic year. Inquiries, suggestions, news items, and address changes should be directed to Editor, Institute Report, VMI Communications and Marketing, Lexington, VA 24450-0304; (540) 464-7207; or VMIReport@vmi.edu. © 2019 Virginia Military Institute.

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Header photo on page 1 by
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Coming up on the horizon are numerous projects, among them a replacement of the South River pedestrian bridge on the Chessie Nature Trail. The original bridge was washed away 16 years ago by Hurricane Isabel, and since then trail users have had to detour onto Stuartsburg Road.

Now, the design work for the new bridge is approximately 80 percent complete, according to Jarvis, with construction set to begin in the spring of 2020 and completion expected later that year. A grant from the Eastern Federal Lands Access Program is paying for the design and construction of the bridge.

Also commencing in 2020 will be construction of a new parking lot at Lackey Park, adjacent to Hinty Hall near Rockbridge County High School. The lot will serve as dedicated parking for all cadet

vehicles, so VMI will no longer have to pay to rent spaces in the former Kmart parking lot off U.S. 60 east of Lexington. Jarvis said that construction of the new lot will take about a year to finish, with cadets likely traveling to and from Lackey Park via shuttle once the lot is operational.

Next year will also see renovations begin at the Turman House, also known as Stono. The house, which dates to 1818, was built as the home of prominent Lexingtonian John Jordan, for whom Jordan's Point is named. Renovations to the Turman House are expected to begin in the spring of 2020 and take approximately one year to complete.

Once the Turman House has been renovated, renovations to the Superintendent's Quarters will begin, although no timetable has been set for that work. ❀



Representatives of the Virginia Department of Historic Resources and Glavé & Holmes Architecture visit the Turman House, also known as Stono, Oct. 4 as it is prepared for renovations. The house, which was built in 1818 as the home of prominent Lexingtonian John Jordan and is now owned by VMI, is one of the earliest known examples of Roman revival architecture west of the Blue Ridge.—VMI Photos by Mary Price.

Correction

The funding that made the Anatomege Table possible was reported incorrectly in the October issue. The table, used by anatomy classes to do virtual dissections, was paid for using funds from the Gottwald Academic Excellence Endowment.

'An Engaging and Exciting Middle Ground'

English Fieldwork Partners Cadets with Student Writers

By Mary Price

This fall, two cadets majoring in English have found themselves in an unlikely place—back in high school.

Grace McDonald '21 and Kirk Ring '21 are making weekly trips to Rockbridge County High School, where they assist Annie Knepper, chair of the RCHS English department, with marketing, publicity, and tutoring support at the school's fledgling writing center. Their work at RCHS fulfills the fieldwork requirement for the VMI English major.

Fieldwork, a concept borrowed from the sciences which is meant to provide an applied learning experience, has been part of the curriculum in VMI's English department since the department rolled out a new curriculum in the fall of 2013. Over the years, cadets have participated in a number of projects, including designing a new website for the Friends of the Chessie Trail and creating a community memoir with input from residents from a local retirement community and students at a local middle school.

The partnership with RCHS, though, is new this year. It is part of a larger effort to move fieldwork away from a service-learning emphasis and toward community-based learning, which includes community members as partners.

"Community-based learning moves beyond a service approach to allow for cadets to not only apply their learning in ERHS outside the classroom, but also collaboratively engage and learn with expert partners through community internships and projects for a variety of social purposes," explained Maj. Stephanie Hodde, assistant professor of English, who serves as fieldwork coordinator for the department.

On a smaller scale, McDonald and Ring are learning how to support learners who seek help with their writing.

"This is introducing them to the theory and practice of working with

student writers," explained Col. Christina McDonald, professor of English, who is supervising the cadets' work.

Grace McDonald, herself a 2017 graduate of RCHS, sees her work there as a way of giving back to her alma mater. "I thought it was a really good way to give back to the school that I attended, and I knew it was a good way to improve the experience of the students," she commented.

Ring, who helped to start a writing center at his high school in Smithfield, Virginia, said he chose to come to RCHS because he enjoys the type of interaction that working in

work for us as far as marketing and surveying students to see what they need."

The small age gap between the cadets and high school students doesn't hurt, either—nor does the natural curiosity that high schoolers have about college life. "That's an engaging and exciting middle ground between peer and expert," said Knepper.

Fieldwork such as this, Christina McDonald noted, fits well with VMI's mission of creating citizen-soldiers.

"Part of the experience in the English major is to make a connection between the classroom and the community, and that's

what fieldwork does," she stated.

This spring, Hodde has more ambitious plans to link cadets with K-12 learners. Working with teachers and administrators from Rockbridge County Public Schools, she's developing a course in expeditionary learning and teaching, in which cadets will partner with teachers to develop and implement a project-based learning



Kirk Ring '21 and Grace McDonald '21 address students in Annie Knepper's class at Rockbridge County High School.—VMI Photo by Mary Price.

a writing center provides. "It sounded very interesting because it's really fun helping others with writing," he commented.

The RCHS writing center, though, doesn't see much traffic—so Grace McDonald and Ring have been working to find out why. They've developed and administered a survey asking students what they know about the writing center, and they've also developed some promotional materials to spread awareness so usage of the center might increase.

"It's been wonderful for Grace and Kirk to come in through their fieldwork," said Knepper. "They're able to do some of the

initiative in that teacher's classroom.

The course in expeditionary learning and teaching will be open to cadets of any major, with the goal of encouraging cross-disciplinary learning.

"Fieldwork can be a gateway to interdisciplinary work in other majors," Hodde stated.

Christina McDonald noted that since the English major was restructured with an emphasis on applied learning, interest in the department has increased substantially. In May of 2013, just prior to the introduction of the new curriculum, the department had 43 majors; by May 2019, that number had grown to 63. ❁

POST BRIEFS

VMI Endorses Growth4VA Campaign

VMI is showing its support for Growth4VA, a campaign aiming to help grow the Virginia economy, expand access to education and job opportunities, and regain Virginia's No. 1 ranking for business. The campaign, backed by a partnership of higher education and business leaders, brings practical policies and creative ideas to match educational programs with

workforce needs, as well as enhances access to higher education for low-and middle-income Virginia students. Growth4VA is a campaign of the Virginia Business Higher Education Council and has been endorsed by all 15 of Virginia's public higher education institutions and the Virginia Community College System. To learn more, visit www.Growth4VA.com.

Professor Publishes Results of Sports Supplement Study

Maj. Dan Baur, assistant professor of physical education, is the author of a recently published paper in the *European Journal of Applied Physiology*. The paper features the results of a study on the effects of a beverage supplement containing maltodextrin-fructose hydrogel on trained cyclists. Baur widened the pool of test subjects by beginning the study while teaching

at Elon University and collaborating with professors from James Madison University and physical education instructor Capt. Katie Baur. Though the results showed it had no effect on the athletic performance relative to a traditional carbohydrate beverage like Gatorade, Kenyan runner Eliud Kipchoge drank it while running the world's first sub two-hour marathon.

Street Renamed in Honor of Fallen Alumnus

On Friday, Sept. 27, the bus loop at Midlothian High School in Chesterfield County, Virginia, was renamed in honor of U.S. Air Force Maj. Charles A. Ransom '01, who was killed in Kabul, Afghanistan, while serving in Operation Enduring Freedom in April 2011. Ransom, whose awards

include the Bronze Star, Purple Heart, and Meritorious Service Medal, was a 1997 graduate of Midlothian High School. His name is included on the Chesterfield County Veteran's Memorial Wall and the Virginia War Memorial. ❀

A Fresh Addition Brings Variety to Dining Options

By H. Lockwood McLaughlin

On Matriculation Day, August 17, 2019, Freshens Fresh Food Studio opened for business in the Post Exchange.

"The decision to go forward with a Freshens Fresh Food Studio was relatively easy," said Col. Dave Williams, director of Auxiliary Services. "James Madison University extended an invitation to VMI to visit their franchise. A variety of menu selections were tested, and a go-ahead for the remodeling of the PX was issued to Parkhurst Dining. Freshens met the vast majority of the input from cadets concerning menu selections they desired."

Being in the PX and part of the barracks structure, the eatery offers cadets a convenient option for getting a quick, satisfying meal. The menu includes a variety of salads, wraps, flatbreads, artisan melts, and smoothies.

"It's really good, very fresh," said Keegan Jones '23. "They're pretty efficient at making sandwiches, subs, and rice bowls, and whatnot. And it's also a good time to get away from Crozet. That food



Customers wait in line at the Freshens in the PX during Parents Weekend Oct. 12.—VMI Photo by H. Lockwood McLaughlin.

can get a little redundant sometimes, and it's nice to get a fresh, warm meal from Freshens."

A company that is more than 30 years old, Freshens is headquartered in Atlanta, Georgia, but its far-flung stores include locations at approximately 30 airports and 300 colleges and universities. As the name suggests, one of the main focuses is on the freshness of the food they provide.

"There's a lot to Freshens because everything has to be chopped and cut. We do our tomatoes. We do our carrots," said Francine Carter, who works at the store on post. "We usually chop or dice it by hand."

"All the berries for the smoothies are [readied] as soon as they're picked," said VMI Freshens store lead supervisor Jessica Clark.

In addition to its quality food offerings, the company provides a well-structured operation. "It is a tight-knit group," said Clark. "I like the fact that if we have any problem with anything, we can contact our adviser right then. We have his number. He can come if we need him or anything like that."

At Freshens, an organized and helpful staff is ready to meet the demands of hungry cadets and also cater to post visitors. ❀

British Exchange Students 'Fully Engaged'

By Mary Price

Two British exchange students are enrolled at VMI this fall—and both spent the first month of the semester adjusting not only to one of the hottest Virginia Septembers in recent memory, but also to the VMI way of doing things.

Sam Berry, a fusilier, or private, in the Royal Welsh Army, a regiment of the British Army, and his longtime friend Oliver Flack, an officer cadet who will also enter the British

Army, came to VMI from the University of Salford, Manchester, U.K.

Both Berry and Flack are enrolled in the University Officers Training Course, which is the British equivalent of ROTC. Salford has no military affiliation, so Berry and Flack take their UOTC training at a military barracks site away from the university.

"You have university life, and you have military life, and they're kind of separate," explained Flack. Coming to VMI, he noted, was a way for him and Berry to integrate the military and academic portions of their lives.

"Since we're both at a civilian college or university, it kind of made sense to come to a more military-focused environment," explained Flack. "You can work on some skills while studying."

For his part, Berry noted that the British Army expects its officers to be "cultured, well-rounded people" and that with this goal in mind, travel is encouraged.

While at VMI, both are training with the Army ROTC, and both have found the transition rather seamless.

"It just seems like I fit," noted Berry. "It seems like back home." This summer, before arriving at VMI, he joined a U.S. Army unit training in Michigan, and likewise found the training well in line with his expectations. NATO member nations, he



Oliver Flack and Sam Berry, both students at the University of Salford, Manchester, United Kingdom, are studying at VMI this fall.—VMI Photo by Kelly Nye.

commented, seem to have more similarities than differences in their military training.

Academics, though, have been a big surprise. Both Berry and Flack explained that under the British university system, there is no homework. Students are expected to keep up with the reading for each class during the semester, but no one is checking to make sure they do so. There's one essay required per class and one exam.

"The onus is on yourself," noted Berry. "Here, it feels that you're forced to study."

In Britain, those without the self-discipline and motivation to study often drop out of universities around Christmastime, he added.

Flack, too, senses a cultural difference between the British university system and VMI.

"Here, between the [VMI] Honor Code and the help received statement, everyone's fully engaged all of the time," said Flack.

As of late September, with daytime temperatures still in the low 90's, both exchange students were ready for cooler temperatures. "The one thing that's got me is the no air conditioning," Flack commented. "It's been pretty brutal especially coming from a country where it's maybe 50, 55 Fahrenheit all of the time."

Berry confirmed, "The heat here is killing me. I'll have three fans on me at any one

time, and I'm right next to the window. It's open 24/7."

Both enjoy their roommates, all of whom are 1st Class cadets, but Flack had an observation about barracks life that alumni may well relate to. "The décor and the furniture of the room are quite ancient," he commented. "I'm not sure when the beds are from—maybe the 1920s?"

On a more positive note, the strength of the VMI Honor Code has made a very favorable impression on both. Salford, they noted, has no honor code, and cheating and stealing are common at many British universities. At VMI, both Berry and Flack have accidentally left items behind in public locations and come back hours later to find the items exactly where they'd left them.

"It's quite admirable," said Berry. "I do admire their honesty."

Both have been shocked by the intensity and expectations of the Rat Line. Berry commented that "everything's done a lot quieter" in the British Army. "There's not screaming all of the time. You don't get made to strain."

Flack agreed, saying, "We don't have anything like that back home. I'd heard of the Rat Line, but I didn't know how extreme it was."

He added, though, that he's seen the positive side of the VMI's stringent system for first-year cadets: pride of accomplishment on the part of those who've successfully passed its many tests.

"Speaking to some of the upperclassmen, you can see the sense of pride it instills in them," Flack commented. "And honestly, if I were an American citizen, I'd love to come to a place like this because you can see these guys are proud of Breakout."

Berry will only be at VMI for the fall semester, while Flack will stay for the entire academic year. Each has plans to see a bit more of the United States before he returns to Britain, with Berry planning a Christmas trip to New York City with his sister, who will be traveling from Australia to meet him there. Flack, who had not been to the United States prior to arriving at VMI, is eager to

go skiing—a sport he can't enjoy in his home country—and maybe even take a trip to the Caribbean over spring furlough.

Here on post, though, both Berry and Flack have been enjoying American

hospitality and a chance to make new friends. "I've been very warmly welcomed by both [cadets] and staff," said Berry.

In addition to Berry and Flack, other foreign exchange students at VMI this

fall are Nick Esser and Laura Berger, both from the German Armed Forces Academy in Hamburg, Germany, and Jean-Baptiste Larivé, from the Ecole Speciale Militaire de Saint-Cyr, France. ❀

A Surprise Find at Bushong House

By Mary Price

This spring, exterior renovations at the Bushong house, located at the New Market Battlefield State Historical Park, revealed a very surprising finding—battle damage that hadn't been discovered since the Civil War battle of New Market on May 15, 1864.

The Bushong house, a classic Shenandoah Valley farmhouse dating to 1818, was home to the Jacob Bushong family during the Civil War years. Seven family members hid in the basement while a fiercely fought battle between Union forces, led by Maj. Gen. Franz Sigel, and Confederates, under Gen. John C. Breckinridge, raged around them. On the day of the battle, the Bushong family's once peaceful dwelling was at the center of the fight for control of the Shenandoah Valley.

Those who fought in the Battle of New Market recalled the ferocity of the battle near the house and adjacent orchard. Writing a first person account of the fighting that was published in the *Lexington Gazette* on May 25, 1864, Captain Frank Preston, son of VMI founder Col. J.T.L. Preston, wrote, "At the time we passed the house, the Federals were directing their fire upon us, and the house was made a sounding-board by the striking of the missiles upon its sides."

One of those missiles, a round iron shot from a 3-inch Hotchkiss canister round, landed in the north wall of the Bushong house, and stayed there undiscovered until exterior renovations began in April of this year. When weatherboarding from a 1960s renovation was removed, Lt. Col. Troy Marshall, site director at the battlefield, walked around the house to inspect it—and that's when he discovered the impacted ordnance. To the best of Marshall's knowledge, no one had seen or documented it in the 155 years that have passed since the battle.

"The real irony, in my mind, is that the construction guys [in the 1960s] either didn't see it or didn't know what they were looking at," Marshall commented.

Based on the location of the shot, Marshall suspects that the ordnance came from Union troops under the leadership of Capt. John Carlin, who commanded Battery D of the 1st West Virginia Light Artillery.

"We've left [the ordnance] in situ," said Marshall, adding that interpretive signage will soon be placed near the spot. "It was a very exciting discovery." ❀



Lt. Col. Troy Marshall inspects the Bushong house for damage during exterior renovations this spring.—Photo courtesy of Lt. Col. Troy Marshall.



Ordnance from the May 15, 1864, battle of New Market was recently found lodged in a wall of the Bushong house.—Photo courtesy of Lt. Col. Troy Marshall.



The Bushong farm was a thriving agricultural enterprise at the time of the Civil War.—Image courtesy of Lt. Col. Troy Marshall.

'Totally Transparent'

Open Houses Allow Prospective Cadets, Parents to Explore All of VMI

By Mary Price

It's a familiar sight to members of the VMI community: rows upon rows of cars parked on the Parade Ground, and high schoolers and their parents seemingly everywhere. Open house weekends, in which prospective cadets and their families come to learn all they can about the Institute, swell the population on post six times a year.

Open houses at colleges are nothing new, of course, nor are visits by prospective students. Those happen at every college or university. But at VMI, prospective cadets attending an open house aren't just given a quick tour of post by a hand-picked, model cadet. They eat meals in Crozet Hall and spend the night in barracks, thus giving them as much of the VMI experience as can be packed into just over 24 hours on post.

The entire experience, from the moment prospective cadets and their parents arrive until the moment they depart, is designed to help teenagers answer a simple question: "Is [VMI] for me or not?" explained Col. Neil Whitmore '90, associate director of admissions.

It's an extremely popular program. During the 2018-19 academic year, just under 750 prospective cadets attended the open houses, and of the 515 new cadets who signed the matriculation book in August 2019, nearly 60 percent had attended an open house.

Open houses begin on a Friday morning, with registration in Lejeune Hall. Then



Parker Davis '21 and Emily Hattman '22 lead a tour of post for prospective cadets and their families during an Admissions Open House Weekend Oct. 18.—VMI Photo by Kelly Nye.

it's off to Marshall Hall, where Gen. J.H. Binford Peay III '62, superintendent, gives a welcoming address.

Next up on the agenda are remarks by Brig. Gen. Robert W. "Bob" Moreschi, deputy superintendent for academics and dean of the faculty, and Col. Keith Gibson '77, director of the VMI Museum System. Moreschi, not surprisingly, gives an overview of the Institute's academic program, while Gibson discusses the history and traditions of VMI.

Lunch ensues—and it's an opportunity for more than food. "The commandant's staff

works with us—we have some cadets down there that try to sit at each table," explained Maj. Chase Perry '07, assistant director of admissions. "That's one of the most popular things in our feedback from the surveys we get. The one thing they want is time with cadets. That's one way to do that."

After lunch, prospective cadets and their parents return to Marshall Hall for a major fair, in which they're given the opportunity to go from table to table, meeting with faculty from each of VMI's academic departments. For teenagers

who may not be sure of their interests and strengths yet, it's a way of showing them the possibilities.

"We want to obviously help students choose VMI, but also help them choose their major while they're here," said Perry. Some prospective cadets even come to a second open house, he added, with the goal of choosing a major and perhaps an ROTC unit, after having decided on a first visit that VMI is right for them.

Later in the afternoon, but before time for the parade, there are ROTC presenta-

tions and breakout sessions in which prospective cadets and parents can visit two academic departments for a more in-depth look at those majors.

After the parade, parents head back to Marshall Hall for a reception with members of the VMI Parents Council and representatives of the entire VMI community, from athletics to ROTC to each of the academic departments. Staff from the admissions office and financial aid are there, too—but according to Perry, getting



A prospective cadet registers for the October Open House, which includes a night in barracks.—VMI Photo by Kelly Nye.

Continued on next page

a chance to talk to parents of current cadets is the biggest draw.

Prospective cadets and their overnight hosts, meanwhile, eat supper and then take a quick tour of the Corps Physical Training Facility. That evening, cadet panels help the teen visitors get their questions about life at the Institute answered.

The next morning, Col. William "Bill" Wanovich '87 gives prospective cadets and their parents a briefing on the Rat Line and other aspects of the first-year experience at the Institute. Next, the presidents of the Honor Court and the General Committee,

plus the regimental commander, talk about how cadets administer many of the key systems at the Institute. Rounding out the morning are videos on athletics and Rat Challenge, in addition to a cadet panel, with a wide cross-section of the Corps represented.

Attendance at the open houses varies, Chase and Whitmore reported, with 140 to 150 prospective cadets as a typical number. In an ideal world, Whitmore commented, all visits would take place in the fall, so prospective cadets could get a real-life look at the Rat Line, but since many teens play fall

sports, the spring open houses are often the only time families can make it to post.

But in a way, it's not a bad problem to have. "We want that well-rounded student who's balancing a lot of things," said Whitmore. "It's hard to get them here."

For many young visitors, an open house is the key factor that makes them realize the Institute is their first college choice. For others, it's a realization that VMI isn't right for them—and that's how it's supposed to be.

"We're totally transparent," said Whitmore. "There is nothing we want to keep as a mystery." ❄

Shako *continued from page 1*

topped the Bulldogs 24-7 with touchdowns by running back Alex Ramsey '20 and wide receiver Javeon Lara '20 and a 22-yard field goal by placekicker Grant Clemons '21. From there, a back-and-forth scoring match ensued, but VMI was able to maintain the lead.

VMI defense only allowed 78 yards rushing, and VMI's offense delivered their third zero-turnover game this season. VMI quarterback Reece Udinski '21 no doubt played a part in that, as he has now earned a new SoCon record for his 252 consecutive passes without an interception.

Wide receiver Jakob Herres '22 tied his then eight-catch career high and had 175 yards receiving, which includes his momentous 61-yard touchdown run late in the fourth quarter. Ramsey rushed for 97 all-purpose yards on 27 carries. Linebackers

Elliott Brewster '20 and Liam Kauthen '22 had 11 total tackles, and defensive back Tyriq Trotman '20 had six solo tackles.

"Winning the Silver Shako is very special because it means so much to so many," said Wachenheim. "I will never forget the smile on General Peay's face, the texts of congratulations from VMI alumni, and most importantly, the look of accomplishment in our players' eyes. Having it on post serves as a reminder that the rewards of victory are worth the price you paid to earn it."

The Silver Shako is currently on display in the visitors' center outside the Post Exchange.

The following Saturday, during Parents Weekend, the Keydet football team faced off against another pack of Bulldogs, these hailing from Samford University, and

walked away with yet another win in a dramatic overtime finish. The 48-41 score made for the team's fourth win of the season and the first win of the seven matchups VMI has ever had with Samford University. The win marks the first four-win season in 11 years.

Among the many highlights of the game was Clemons' 56-yard field goal that tied things up

and sent the game into overtime. It was the second-longest field goal ever in VMI football history. The game-winning touchdown was on a 25-yard rush by Ramsey, which was his sixth rushing touchdown of the game and a VMI record. And Herres, once again, broke his previous career-high number of receptions, bumping it up from the previous week to 10.

"I can't say enough of how proud I am of this team," said Wachenheim. "I just love the way this team truly is a brotherhood, and they really do represent the spirit of VMI." ❄



Sawaar Canady '20, Rohan Martin '20, and Brett Howell '22 hold the Silver Shako high after the Keydets' win over the Citadel Oct. 5.—Photo courtesy of Micalyn Miller, VMI Alumni Agencies.



The Silver Shako trophy is on display in the PX.—VMI Photo by H. Lockwood McLaughlin.

Investigating the Success of the COW

By Mary Price

For more than three decades, the College Orientation Workshop (COW), a program meant to encourage high school-age minority males to attend college, has been held on the VMI post each summer, though it is not affiliated with the Institute. Led by Gene Williams '74, the first African-American to serve on the VMI Board of Visitors, the program consists of four weeks of mental and physical challenges in a structured environment.

There's plenty of anecdotal evidence COW boosts achievement.

Many former participants have gone on to earn college degrees, some from VMI, and the program is supported from donations alone, many from COW alumni and their families. But does COW really have a measurable effect on participants' future achievement?

Up until recently, no one had done the research to find out. But for the past three years, three members of the psychology department faculty—Col. Scott Frein, Col. Keith Kline, and Maj. Sara Whipple—have joined forces to study COW participants and attempt to quantify the impact of the program.

The idea to study COW came about as Frein and Kline were talking about how they wanted their research to have a more applied focus, as opposed to being purely theoretical. When they decided to investigate the COW program, they invited Whipple to join them, as her specialty is developmental psychology.

In the summer of 2017, the three professors asked COW participants to take pre- and post-tests in which they answered questions having to do with how they felt about themselves.

"The first year we kind of considered it a pilot project—get a better feel for what the program is about and how we could be involved in it," said Frein.

"So really, we were looking at the effects of the COW program on psychological and then later physical well-being," added Kline.

The next year, COW participants were once again asked to take pre- and post-tests designed to measure factors such as self-esteem, self-efficacy, life satisfaction, and more. This time, though, the researchers added physical health measurements such as blood pressure and heart rate, both measured at the beginning and the end of the program.

Kline explained that when the program began, the mean systolic (upper number) blood pressure reading for COW participants was near the upper end of normal for adults. Four weeks later, at the end of the program, it had fallen to the normal range for adolescents.

"We saw significant decreases in blood pressure and heart rate from pre to post," said Kline, who studies health psychology, or the influence of mental health on physical health.

It would be easy to speculate that increased physical fitness through COW's plentiful opportunities for sit-ups and running would be the reason for the decreases in blood pressure and heart rate, but Kline was quick to note that the data didn't support that correlation.

"Their fitness scores were not correlated with their blood pressure and heart rate reductions, but some of the psychological variables were," he stated.

Coming into the current year, the trio of researchers decided to measure the same variables, but also attempt to answer another question—what is the long-term effect of COW participation?

To find out, the three went online to find a control group of young men who had not been through COW. They then arranged for all of the study participants, both COW and non-COW, to take follow-up psychological assessments at the three month, six month, and one year marks, with gift cards offered as a reward for survey completion.

"What we're trying to do with the year-three program is, here are the COW participants and we're seeing these changes," explained



Participants in the College Orientation Workshop (COW) program work on their physical fitness in Cormack Hall.—VMI File Photo by Kelly Nye.

Class of 2009 Presents Reunion Gift

Gen. J.H. Binford Peay III '62, superintendent, far right, and Steve Maconi, VMI Alumni Agencies chief executive officer, far left, accept the initial proceeds of the Class of 2009's 10th reunion campaign, which totaled \$77,409.09 on Sept. 21.—Photo courtesy of Micalyn Miller, VMI Alumni Agencies.



Frein. "Here's another group who did not do the COW program. Are we seeing any changes in them?"

But the three professors haven't been just using the COW participants as guinea pigs in an experiment. They've also made an effort to help them build skills that can lead to healthier responses to stress in an unpredictable world.

"[Williams] has been wonderfully supportive of the research and has even invited us to create some workshops for the young men," explained Whipple.

The workshops, centering on topics such as willpower, self-control, and emotional regulation, have all been taught by Frein, who strives to let participants know that they have more control over their lives than they might think.

"We can't control what other people do, but we can control how we think," Frein commented. "Events happen, but we can choose how we react to those events."

For his part, Williams is grateful to the psychology professors for all they've done to support COW. "By helping the [participants] understand how they can better harness their willpower, they can make far better decisions," Williams commented. "That alone is worth far more than a pound of gold."

Future plans call for Frein, Kline, and Whipple to continue to work with COW participants each summer. They've also presented the results of their research at two conferences and have submitted a paper about their work to a peer-reviewed journal. ❁



Helping Raise Awareness

Col. Jay Sullivan, professor of mechanical engineering, and Nathan Baier '23 weld the finishing touches on a 16-foot whale in Nichols Engineering Building Oct. 7. Once finished, the whale will be covered in chicken wire and filled with plastic. The environmental advocacy group Shenandoah Green plans to display the plastic whale in various locations around Augusta County to raise awareness about ocean pollution.—VMI Photo by Kelly Nye.



STEM Conference

Approximately 130 teachers of students in grades three through eight from across the state attend the eighth annual VMI STEM Education Conference, held Sept. 30 and Oct. 1 in Marshall Hall. Highlights included a talk by former NASA scientist Kantis Simmons, and an open discussion led by Virginia Department of Education representatives Dr. Tina Manglicmot, director of STEM, and Charles English, STEM coordinator for the Science Museum of Virginia.—VMI Photos by H. Lockwood McLaughlin.

Bither: Pulling Double Duty

By Molly Rolon

Unique among VMI's NCAA coaches, the head rifle coach is also a member of the commandant's staff. Since 2011, Lt. Col. Bill Bither has been serving in the dual roles of coach of VMI's NCAA Division I men's and women's rifle teams and director of Corps marksmanship.

The sport he coaches is also unique. Unlike the classic images of NCAA Division I athletes straining, striving, and sweating their ways toward goals, baskets, runs, and finish lines, control is the name of the game for rifle athletes.

Rifle competition sounds deceptively simple: Pick up the firearm, aim, fire. There is, however, much more to the discipline than meets the eye. Bither begins with the essentials. "I could probably write a two- or three-page list of things you need to do before you squeeze the shot," he said, going on to explain that the first things he teaches "are the fundamentals of good marksmanship."

These fundamentals involve significant patience and control on the athlete's part. They include breath control, trigger control, aiming—which is really twofold: sight alignment and sight picture—hold control, and follow through. The last step, follow through, is essentially holding the same shooting position for a few seconds after squeezing the trigger. If the athlete doesn't continue holding the firing position for those few seconds, the shot has a good chance of going astray.

Bither's athletes initially spend more time practicing fundamentals without their firearms than with them. "If you start out wrong, you're



Lt. Col. Bill Bither on the air rifle range in Kilbourne Hall. He serves as both the NCAA men's and women's rifle team coach and on the commandant's staff as the director of Corps marksmanship.—Photo courtesy of Molly Rolon, VMI Alumni Agencies.

just reinforcing bad habits," he said. By practicing the basics without the firearm, he can weed out any incorrect positioning and tendencies before they become routine.

A well-trained rifle athlete can calmly combine all the fundamentals, squeezing the two-stage trigger and taking up the initial slack, then timing the final trigger squeeze with sight alignment and sight picture, finally breaking the shot "in a perfect timing sequence."

While rifle athletes benefit from physical training regimens, particularly core exercises, Bither feels that every bit of the allowed practice time is best spent practicing fundamentals and actually shooting. "We depend on the Corps and the ROTC [physical training time]," he said, noting that he's not concerned about physical training for his rifle athletes "because they're getting smoked every day."



The rifle teams opened the 2019 season beating the Citadel at their home range in Kilbourne Hall Sept. 21. Bither, left, checks scores on the Megalink screen during the smallbore portion of the match.—Photo courtesy of Molly Rolon, VMI Alumni Agencies.

NCAA rifle competitors can use two types of weapons—smallbore and air rifles—both of which are single shot weapons. For beginners, Bither encourages picking one type of weapon and getting comfortable with it for a year or two. Experienced athletes generally shoot both types of rifles in competition. After a 15-minute warm-up period, when athletes shoot as many practice rounds, or "sighters," as desired, the timed competition begins. For smallbore, competitors have one hour and 45 minutes to shoot 20 rounds each from three positions: kneeling, prone, and standing. For air rifle competition, each athlete has one hour and 15 minutes to fire 60 rounds—all from a standing position.

Rifle matches are calm events. At the first match of the 2019 season—a win over the Citadel—cadets, parents, and coaches quietly conversed in the hallways outside the Kilbourne Hall range. Inside the range, everything happens in muffled tones. Cadets shooting were in their lanes, intensely concentrated on their targets and positions.

Bither's influence is felt in every aspect of the rifle team, said Andrea Doehler, mother of team member Cadet Ben

Doehler '21. "Coach Bither goes to great lengths to foster an environment that ensures his shooters feel at home on the rifle range. He goes to similar lengths to make sure that visiting rifle teams and their friends and families feel just as welcome when they are at VMI," she said.

Per NCAA regulations, VMI's rifle program is allowed 3.6 grants, or scholarship equivalencies, per team. The teams are not currently fully funded, but Bither said he's "grateful for every penny and dime we get." He uses a merit-based system to award available funds to athletes who are competitive, earn good grades, and have longevity on the team. Many rifle athletes are also ROTC scholarship cadets who go on to commission into the military following graduation.

ROTC brought Bither to VMI initially as an Army ROTC instructor from 1996-99. He then served a repeat tour in Army ROTC as the executive officer from 2001-05. Following his retirement, he worked as a government contractor until his current position opened. 🌟

Army 10-Miler

Cadets pose for a photo before the start of this year's Army 10-miler Oct. 13. The Institute entered an open female team, which placed third out of 13 teams, and two ROTC teams, which finished 12th and 19th out of 103 teams. —Photo courtesy of Sean Cook.



D-Day Visit

The rat mass of 2020+3 visits the National D-Day Memorial in Bedford, Virginia, on Sept. 29 to learn about the sacrifices made by Allied soldiers during the invasion of Normandy on June 6, 1944. While there, rats heard the story of the invasion and about the loss of life, which especially impacted the small community of Bedford, and they participated in a wreath-laying ceremony. —VMI Photos by Mary Price.



Science Fair

Local elementary and middle school students participate in the Lexington Science Festival and Maker Faire Oct. 13 in Cormack Hall. The event included activities ranging from earthquake simulations to 3D printer projects. Cadets and faculty in the VMI physical education department talked to participants about the importance of nutrition and physical fitness. —VMI

Photos by Kelly Nye.



Native American tribe that made its home in the Dakotas. Members of the tribe cultivated the “three sisters” crops of corn, squash, and beans, and supplemented their diets with meat from bison and other animals.

Analysis of the pots the Arikara used to cook food, Braun explained, could provide clues to learning more about their diet and how they lived—and unglazed pottery often holds residues of the fats and oils from foods the pottery once contained. The sherds, or fragments, of such pottery now line a shelf of Braun's lab, each placed in a numbered plastic bag.

“I'm doing lipid analysis on these pottery sherds to determine what kind of materials and food products were used in [them], to see what the indigenous peoples were going to be using the pottery for, to determine what kind of fatty acids and other lipids are detected in the pottery,” said Heilpern.

Braun explained that beginning in the late 18th century, the Arikara were forced to move north into what is now North Dakota—a region with a much shorter growing season than their native South Dakota.



Maj. Kevin Braun and Tom Wiltshire '22 discuss Wiltshire's forensic analysis of pen inks.—VMI Photo by Kelly Nye.

“The archaeologist on this project is really interested in figuring out how [the Arikara] adapted to being in a new environment,” said Braun. “It's not clear how they adapted to being in that climate zone, so hopefully the residue analysis will be able to kind of help put some pieces together.”

The ultimate goal of the work, Braun commented, is to determine if contact with Europeans, such as Spanish traders



Maj. Kevin Braun watches as Noelle Heilpern '23 prepares a pottery sherd for analysis.—VMI Photo by Kelly Nye.

traveling up the Missouri River, decreased the dietary diversity of the Arikara.

Heilpern noted that she's grateful to have a chance to do independent research very early in her college career.

“I like the chemical methodology behind it,” said Heilpern. “I like learning new

techniques. As a rat, I'm not very well-versed in chemistry yet, so being able to try out all of these different techniques and tools, it kind of puts me ahead of the curve.”

Braun added that he's applied for a National Geographic Society grant that, if awarded to him, would be used to fund a trip to Peru, where he and cadets could analyze pre-Incan pots found in the Peruvian High Andes.

Also working in Braun's lab this fall is Tom Wiltshire '22, who is analyzing pen inks to detect possible forgeries. “My research is using a method called capillary electrophoresis to identify different types of pen inks,” said Wiltshire.

Capillary electrophoresis, explained Braun, is a way of separating molecules based on their interaction with an electrical field.

Among the many applications of this technology is the detection of forged or altered checks. Currency, said Braun, is now much harder to forge than it once was, but checks are still vulnerable to fraud.

“A lot of what we're looking at is when some-

one has written a check, and then someone goes back and modifies the check,” Braun commented. “What would be a \$1,000 check becomes a \$9,000 check.”

For now, Braun and Wiltshire are dealing with fresh inks, but they have plans to change that strategy down the road.

“My future research is going to deal with ink degradation over time,” said Wiltshire. “A lot of past research has included perfect samples that are created in the lab. I want to test what happens if it's exposed to sunlight or water, what happens if you carry a check around in your pocket.”

Another upcoming change has to do with including the analysis of printer inks. “Right now it's only pen inks,” Wiltshire commented. “I'd like to transfer it to printer inks because a lot of times now we have really high-tech printers that can take high-tech pictures of bus tickets and game tickets, and they can be used as fakes.”

Wiltshire began working in Braun's lab at the end of his 4th Class year. “From the start, I was captivated,” he said. “You see it on TV—all of these crime shows. It's so popular on Netflix.” He added that his research gives him a lot to talk about with his mother, who works for the Department of the Treasury.

“I'm so privileged, as only a sophomore in college, to be doing such high-level research,” said Wiltshire. “It's really giving me insight into what graduate school might be like, and possibly careers in the field of chemistry.” ❁

Chemistry Cadets Test for Arsenic at VMI Museum

Who would have thought that a long-dead horse, plus his saddle and riding blanket, might contain a highly toxic element?

It sounds unreal, but it's true: thanks to the past usage of arsenic as a preservative on both taxidermy specimens and organic materials kept in museums, some museum exhibits can have dangerous levels of the element. While there is no danger to museum visitors, thanks to glass cases enclosing the specimens, museum workers need to know which items should be handled with special precautions.

That's why Maj. Kevin Braun, assistant professor of chemistry, and the cadets in his chemical archaeology class, have come to the VMI Museum—to measure arsenic levels in the hide of Gen. Thomas J. "Stonewall" Jackson's horse, Little Sorrel, which has been preserved and mounted on a wooden form. Also tested were the saddle and riding blanket that Jackson used on the animal.

"The art of preservation requires you to prevent things from growing or chewing on your artifacts," explained Braun, an archaeological chemist who is now in his second year of teaching at VMI. Braun noted that up until the 1980s, taxidermists routinely used arsenic to preserve specimens. Likewise, it was once common practice for museum curators to spray or paint any organic items such as leather and cloth with arsenic, mercury, and even strychnine to keep rodents and insects from damaging them.

"Arsenic, over time, can become transferable, and that's where the real danger is," said Braun. He explained that when specimens are not kept in a climate-controlled environment, as was the case before museums began employing modern technology to control humidity, the arsenic inside the specimens can migrate to the surface and potentially cause health problems for museum employees.

It's a problem that no one was really aware of until 1990, when Congress passed the Native American Graves Protection and Repatriation Act (NAGPRA), which stated that museums must return

certain Native American artifacts to the indigenous peoples from which they came. When museums complied with the act, Braun noted, the people who worked with the items began getting sick.

"NAGPRA was a huge, huge wake-up call for museums," said Braun.

When he arrived at VMI last fall, Braun got in touch with Col. Keith Gibson '77, director of the VMI Museum System, seeking permission to test Little Sorrel and the

riding gear associated with the animal. With Gibson's blessing, Braun and a number of cadets visited the museum in the fall of 2018 to test for arsenic.

They didn't find arsenic on the horse, but Braun thinks that is likely the result of Little Sorrel having recently had a bath, courtesy of workers from the Smithsonian Institution, who took the specimen outside and washed it.



Caitryn Bell '20 tests for arsenic on the saddle that Gen. Thomas J. "Stonewall" Jackson used on Little Sorrel.—Photo courtesy of Maj. Kevin Braun.



Testing Little Sorrel for arsenic are Andrew Monckton '20, Chris Webber '19, and Sean Walker '19.—Photo courtesy of Maj. Kevin Braun.

"That doesn't mean [the arsenic's] not there," said Braun. "It just means it's below detection limits."

The cadets did, though, find arsenic on the saddle and riding blanket. As of early October, Braun was planning a second museum visit for later in the month, during which he and the cadets would conduct more extensive testing of those items.

The goal, he explained, would be to test for arsenic on both sides of the items. If levels on the side exposed to the horse are higher, that would suggest the arsenic migrated up from the animal onto the saddle and riding blanket. If the levels are high all over, it is more likely that the items had arsenic applied to them as a preservative.

For Braun, the museum field trip is a way to get cadets involved in hands-on projects using chemical analysis.

"One of my projects has been to make labs more engaging by taking current research topics and putting them into undergraduate research laboratories," he stated.

— Mary Price



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Parents Weekend

Friends and family members join cadets on post for Parents Weekend Oct. 11-13. Activities included parades, tailgating, Glee Club and theater performances, and a football game against Samford University. The Keydets defeated the Bulldogs in overtime 48-41, their fourth win of the season.—VMI Photos by H. Lockwood McLaughlin.

