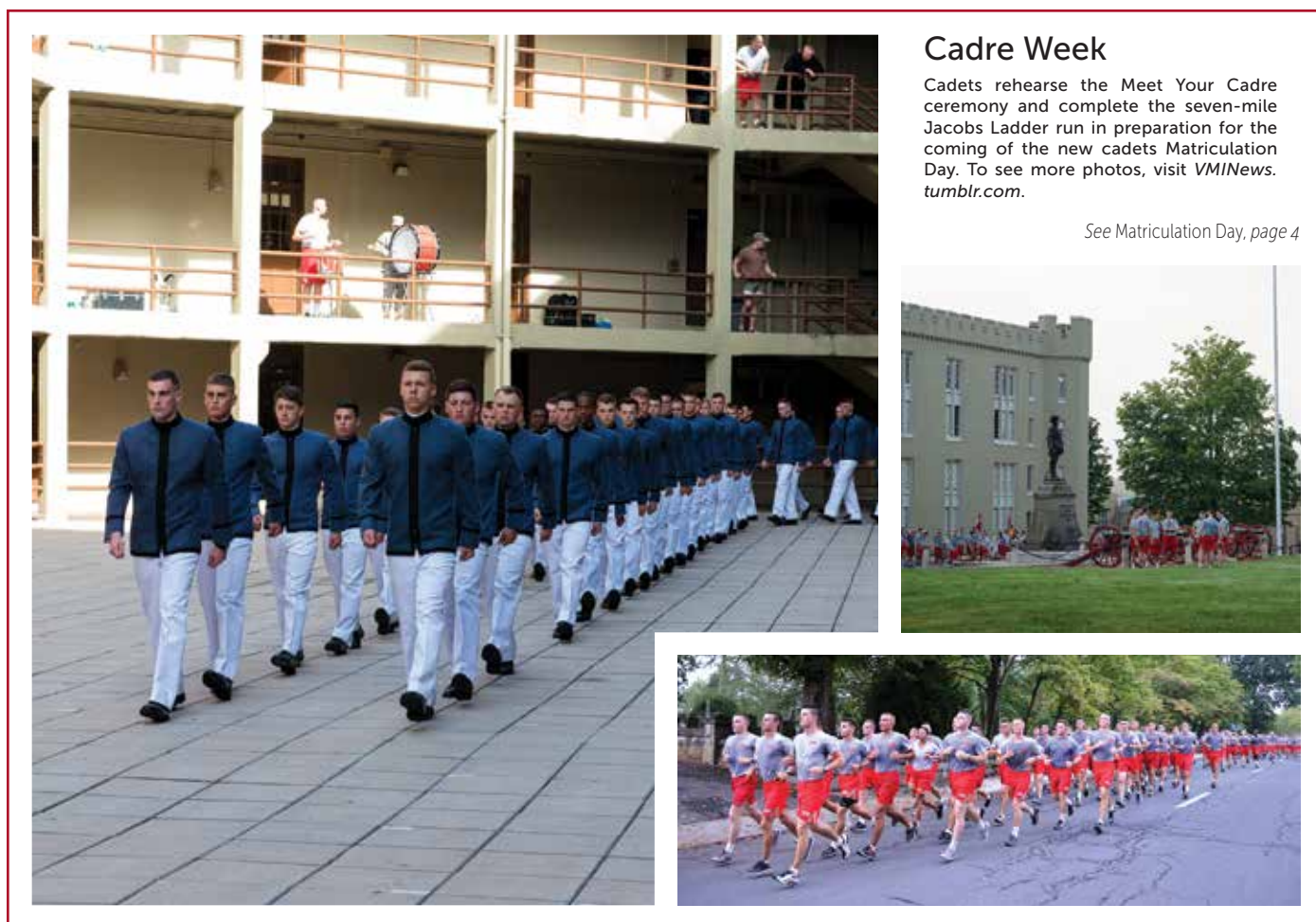




INSTITUTE REPORT

VIRGINIA MILITARY INSTITUTE
Volume XLIV, Number 1, September 2015



Cadre Week

Cadets rehearse the Meet Your Cadre ceremony and complete the seven-mile Jacobs Ladder run in preparation for the coming of the new cadets Matriculation Day. To see more photos, visit VMINews.tumblr.com.

See Matriculation Day, page 4



Chemistry Major Interns in National Materials Science Lab Path Opened by VMI Undergraduate Research and Mentorship Among Faculty and Cadets

By Mary Price

A VMI cadet got a major career boost this summer when he interned at the Lawrence Livermore National Laboratory in California.

Angelo Kirchon '16, a chemistry major, worked in the materials science division of the physical and life sciences directorate at Livermore, a government-owned facility that was created in the 1950s to advance the science of nuclear weapons. Today, Livermore

addresses a broad range of security concerns, among them counterterrorism and energy security.

While Kirchon could not share many details of the project he worked on because it is still in the process of being patented, he did say that his work involved the synthesis and characterization of nano-porous metal foam, a material made up of a metal such as copper

that looks like a sponge on a sub-microscopic scale.

"The project's materials could have a wide range of applications ... for high energy density physics," Kirchon wrote in an email.

The Pennsylvania native noted that his work at Livermore has not only taught him

See Materials Science, page 6

INSTITUTE REPORT

Volume XLIV, Number I, September 2015

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. © 2015 Virginia Military Institute.

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Class of 1965 50th Reunion Campaign Nets \$13.24 Million, 90 Percent Participation

By Scott Belliveau '83, VMI Foundation

The Class of 1965's 50th Reunion Campaign, which concluded on June 30, raised \$13.24 million. The campaign was so successful that its initial goals were raised and a blitz at the end achieved a participation rate greater than 90 percent.

The effort began in spring 2013, when the campaign chairman, retired U.S. Army Lt. Col. Harry J. Bartosik '65, began recruiting a 33-strong campaign committee to handle the tasks of contacting Brother Rats and soliciting gifts and commitments from them. He also formed an executive committee of class agent Thomas A. "Mickey" Finn, W. Gregory Robertson, and Conrad M. Hall and included Charles L. "Lou" Siegel, class president and chairman of the reunion committee, in all campaign activities.

At its first meeting on post in November 2013, the committee set goals to raise \$12.5 million and achieve 80 percent participation. It also established the Class of 1965 Unrestricted Endowment, the Class of 1965 Athletic Endowment, and the new Class of 1965 Leadership & Ethics Endowment as fundraising priorities. It later added a scholarship honoring VMI's longtime athletic director Donny White '65 to the list.

The committee focused initially on urging Brother Rats to attend the reunion. Not long after contacts with the class began in January 2014, Bartosik said, it was evident that the turnout would be excellent.

Fundraising began a couple of months later, and Bartosik believes that the committee's initial focus on attendance helped fundraising.

"By being positive from the beginning," he said, "we helped our Brother Rats realize the reunion's special nature and, in turn, ... [that] VMI is a special place that deserved their help."

The committee was careful to avoid a hard-sell approach. "Since we were aiming at a high participation rate," said Bartosik, "we didn't want to put anyone off. So our message was, 'Give whatever amount is commensurate with your financial situation, but give something.'"

So successful was this approach that, in November 2014, the campaign committee adjusted the goals upward to \$13.5 million and 90 percent participation.

When it presented the initial proceeds to VMI at the April 25 reunion parade, the Class of 1965 had raised \$13.21 million and 88 percent of the class had made a gift. Determined to achieve the participation goal, on June 1 the committee began to contact Brother Rats who hadn't yet participated. This effort paid off, and the final participation rate stood at 90.34 percent.

As to the credit for this success, Bartosik said, "Everybody – the executive committee, the reunion and campaign committees, and the Brother Rats who made this our best-attended reunion and ensured the campaign's success – had an important role. In fact, if the Class of '65 were a military unit, it would merit a unit commendation."



The Class of 1965's 50th reunion gift was presented at the parade April 25. – VMI Photo by John Robertson IV.

VMI Institute Report

'Uncommon Purpose' Campaign's Success Continues

By Scott Belliveau '83, VMI Foundation

As of July 31, An Uncommon Purpose: A Glorious Past, A Brilliant Future: The Campaign for VMI had raised \$227.3 million in gifts and commitments from 13,008 donors.

"At the end of April, a little more than two weeks before commencement, the VMI family had contributed \$215.4 million to this critically important effort," said Donald M. Wilkinson '61, the campaign's chairman. "That means that, over the summer, alumni and friends added \$11.9 million to the campaign's tally."

Wilkinson explained the nature of this giving. "So far, ... about half of the total secured has been in cash. While much of this was designated to the Foundation Fund, Keydet Club Scholarship Fund, Athletic Operations Fund, and other funds that can be used immediately, a large portion of cash gifts will expand existing endowments and create new ones."

He also pointed out that more than 38 percent has come in the form of planned gifts, such as bequests, and the remainder, about 12 percent, is pledge commitments.

"Seeing as most pledges are fulfilled within five years, the more than \$28 million that has been pledged soon will be at work on post. The planned gifts will help to secure the future of VMI and continue its traditions of recruiting and retaining the best faculty and attracting the finest possible young people to the Institute," added Wilkinson.

The priorities of the campaign fall under five categories – academics, athletics, Corps life, legacy, and unrestricted. While all of them have been generously supported, funds and endowments related to academics, including those supporting need- and merit-based scholarships, have attracted the most gifts so far, with \$137 million directed toward them. Donors also directed \$47 million to athletic scholarships and operational funding for NCAA sports. Another \$38 million has been directed toward various endowments – including those established by classes – and funds that provide unrestricted money that the Institute uses where the need is greatest.

"The response to this campaign has been awesome. The thousands of alumni of all ages, parents of current and former cadets, and friends of VMI who have united in its support have strengthened all aspects of the VMI education and helped preserve VMI's proud history," said Wilkinson.

"The work of this campaign, however, is nowhere close to being finished. If we expect VMI to continue providing our country with principled and purposeful leaders who are ready to do great things, then it is up to us, those who cherish it and understand its enduring value, to provide it with the resources it needs to do so. Truly, I can think of no better investment in our country's future," concluded Wilkinson.

For more information on An Uncommon Purpose, visit www.vmi.edu/campaign.

A 'Living Endowment,' Foundation Fund Generates Millions in Unrestricted Funds

One of the priorities of the current VMI fundraising campaign is to expand the amount of unrestricted money available to the Institute. The Institute's leadership values unrestricted money because it allows it to meet important needs, such as increased scholarship aid and sustained improvement of the academic program.

There are two common ways to generate unrestricted money, said John J. Wranek III '85, VMI Foundation vice president for annual and reunion giving. One is through endowment giving, specifically the establishment of new unrestricted endowments and gifts to already-established endowments.

"For example, classes that are executing their 25th reunion campaigns often establish unrestricted endowments as part of those efforts. Afterward, that endowment becomes a focus of class giving."

The second is through donations to the Foundation Fund.



One of the three components of annual giving – the other two being the Keydet Club Scholarship Fund and the Athletic Operations Fund – the Foundation Fund always has been a popular way for alumni and friends to support VMI. It also serves as a "living endowment" that generates millions of dollars a year in unrestricted support.

For example, during the last fiscal year, 4,008 donors, including 2,691 graduates, gave \$2,866,807 to the Foundation Fund, setting new records in terms of money raised and participating donors.

"That's a great story in and of itself," said Wranek. "However, it gets better when you ... [realize that] in order to match that amount of unrestricted money, VMI would need an endowment worth around \$60 million."

The Foundation Fund, therefore, has many positive effects. It raises millions of dollars a year in annual support for academic and co-curricular programs, which is critical while endowments are being built. And it engages thousands of members of the VMI family in the effort to support the Institute. Considering what it does as a "living endowment," however, Wranek perhaps phrases it best: "No doubt, that's immense financial power."

– By Scott Belliveau '83, VMI Foundation

Cadet Completes Northern Warfare Training

Even in Temperate Summer Weather, Alaskan Mountains Provide Test of Skills and Teamwork

By Mary Price

This year's regimental executive officer arrived on post with an extra edge when it comes to perseverance, teamwork, and dealing with a physically challenging environment.

Brian Hardick '16 spent 15 days in Alaska this summer, where he completed the Army September 2015

Northern Warfare Orientation Course, held at the Black Rapids Training Site, approximately 30 miles south of Fairbanks.

The course is designed to strengthen skills in mountaineering, such as risk management, route selection and hazard evaluation,

mountain medical considerations, and moving units over mountainous terrain. Those attending are a mix of enlisted soldiers and ROTC cadets.

See Northern Warfare Training, page 4



Matriculation 2015

New cadets are advised by faculty, meet their cadre, and begin training on Matriculation Day, Aug. 22. A total of 495 matriculated, including 53 women. The matriculants came from 31 states and five foreign countries. Three hundred two were from Virginia and 193 from out of state. – VMI Photos by Kelly Nye and H. Lockwood McLaughlin.

Northern Warfare Training *Continued from page 3*

Hardick, a mechanical engineering major, said that he applied for the northern warfare training because it fits in well with his goal of becoming an infantry officer.

“I’ll be required to lead my unit through rough terrain,” Hardick wrote in an email. “This course gave me an appreciation for mountainous terrain and an understanding of how to maneuver through it most effectively.”

Because he’d been in the Boy Scouts, and grew up in a family that enjoyed the outdoors, Hardick came into the training already familiar with some essential mountaineering skills such as rappelling and belaying. Still, there were plenty of challenges, including having to cross a draw (a small valley on a mountain) using a single rope and practicing crevasse rescue skills.

Hardick noted that the training was never easy because of the intense focus required.

“The hardest aspect of the course was the high level of attention to detail that was needed,” he wrote. “It required constant focus and repetition. The standards were what they were because lives depend on the systems we installed.”

On one occasion, Hardick found that the cliffs he and his unit were expected to scale were much larger than he anticipated. “It required us

to really work as a team to solve the problem,” he noted.

In and of itself, the temperature wasn’t as much of a challenge as people might expect. Hardick reported that it was usually in the upper 30s in the mountains – but thanks to frequent precipitation, which fell either as rain or snow, the weather still provided a major obstacle.

“It required us to apply some of the cold weather skills we had learned in the classroom,” Hardick wrote. “It was nothing compared to



Brian Hardick '16 (right) pauses with another participant in the Northern Warfare Orientation Course. – Photo courtesy of Brian Hardick.

winters in Alaska, though, where it usually hits -60, so I consider myself lucky for the weather we had.”

Hardick said he did not see the northern lights, since there was at least some sunlight 24 hours a day at that latitude in the summer. He did, though, see Alaska’s native wildlife, in the form of moose, caribou, bears, and wolves.

Reflecting on his experience, Hardick said he was glad to have chosen the course. “It was a good experience because I got to spend valuable time with enlisted soldiers in an environment other than VMI,” he commented. “It will carry over to dealing with my enlisted soldiers as a lieutenant.”

“All of the schools are important because they work to build [cadets’] knowledge base in tactics,” said Lt. Col. John Brown, senior military science instructor with Army ROTC.

VMI has been sending one cadet per year to the northern warfare course for the past three years, explained Brown. Selection for this and other specialized training opportunities, is based on the unit’s internal order of merit list, which ranks cadets by aptitude and ability.

Said Brown, “There’s a very limited number of cadets in the country who get the chance to attend these specialized schools.”

POST BRIEFS

Daniels Carving Placed at Cathedral

A stone carving of Jonathan Myrick Daniels, valedictorian of the VMI Class of 1961, was placed this summer on the human rights porch at the National Cathedral in Washington, D.C. Daniels, who was an Episcopal seminarian at the time of his death, was killed in Haynesville, Ala., on Aug. 20, 1965, while saving the life of a young



African-American girl during the struggle for civil rights. Daniels is one of only six individuals honored on the human rights porch. The others are First Lady Eleanor Roosevelt, Rosa Parks, Mother Theresa, Archbishop Oscar Romero of El Salvador, and Bishop John Walker, who was the first African-American Episcopal bishop of Washington, D.C.

Alumnus Honored for Physics Presentation

A member of the VMI Class of 2015 was honored for his work in physics this spring. Matthew A. Tate '15 won the best student paper award in the astronomy, math, and physics materials science section at the Virginia Academy of Science's spring meeting, held in May at James Madison University in Harrisonburg, Va. The title of Tate's poster was "Polarization Measurements of NGC 7380 in Both Broad and Narrow Bands." His faculty mentor and co-author was Col. Gregory Topasna, professor of physics and astronomy.

Keller Earns National Certification

Sarah Keller, assistant director of athletic academic services, has earned National Association of Academic Advisors for Athletics certification. Keller passed her initial comprehensive exam, which included relevant NCAA legislation, professional best practices, and professional ethics, in late June. With the recent extension of assistant athletic director J.B. Weber's N4A certification through continuing education, the entire Cadet-Athlete Development Office is now fully certified.

Williams Honored by Trade Association

Col. James L. "Jay" Williams '83, Physical Plant director, has been honored with the 2015 Pacesetter Award given by the APPA, an association of educational facility professionals. The award recognizes leadership in the chapter, regional, or national organization. Williams was honored during the 2015 APPA annual conference, held in Chicago in early August.

Taps – Gen. Sam Sims Walker '45



Gen. Sam S. Walker '45

Retired U.S. Army Gen. Sam Sims Walker '45, 11th superintendent of VMI, died Saturday, Aug. 8, 2015, at the age of 90. A decorated veteran of both the Korean and Vietnam wars, and a four-star general, Walker served as superintendent from July 1, 1981, to Dec. 31, 1988.

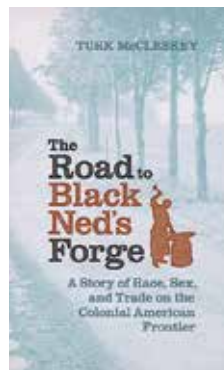
A memorial service will be held at the United States Military Academy cemetery, West Point, N.Y., at 10 a.m. Oct. 12. In lieu of flowers, memorial donations may be made to The Wounded Warrior Project, the West Point Association of Graduates, or Virginia Military Institute.

Arrangements are by Boles Funeral Home and Crematory Inc., Southern Pines, N.C. Online condolences may be left at www.bolesfuneralhome.com.
September 2015

Professor Presents at International Health Conference

Dr. Youna Jung, assistant professor of computer and information sciences, presented a paper, "Privacy-Preserving Online Monitoring Framework for e-Health Applications," at Global Health 2015: The Fourth International Conference on Global Health Challenges, held July 19-24 in Nice, France. She also joined specialists from health care and information technology in a panel discussion titled, "Ambient Support Systems and Platforms for Health Self-Management and Well-being." Jung has been invited to serve as a member of the program committee for Global Health 2016. She began teaching at VMI in December 2014 after having worked as a research scientist at the University of Florida and as a post-doctoral fellow at the University of Pittsburgh.

History Professor Receives Award for Book



Col. Turk McCleskey, professor of history, is the recipient of the 2014 Richard Slatten Award for Excellence in Virginia Biography, given by the Virginia Historical Society, for his recently published book, *The Road to Black Ned's Forge: A Story of Race, Sex, and Trade on the Colonial American Frontier*. McCleskey's narrative tells the story of Edward "Black Ned" Tarr, a black man from Pennsylvania who purchased his freedom and moved to Augusta County, where he acquired a large farm, established himself as a successful blacksmith, and married a white woman. Through the story of "Black Ned," the first free black landowner west of the Blue Ridge

Mountains, the book explores the issues of interracial marriage, slavery, and racism in colonial America.

Alumnus Named BOV Secretary

Lt. Col. Sean Harrington '94 has been named secretary to the Board of Visitors and executive assistant to the superintendent. He began his duties Aug. 1. An economics and business major at VMI, Harrington retired from the U.S. Air Force as a force support officer in 2013. During his career, he served in a variety of assignments, including deployments in support of Operation Enduring Freedom and multiple headquarters Air Staff-level assignments at the Pentagon. Col. Jeff Curtis '79, former executive assistant, retired Aug. 7. Curtis first came to VMI as chief of staff in July 2009 and became executive assistant in 2013.

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Expanding 'a Sense of the Senses'

DuPont Summer Seminar Leads Faculty to Make Sound Studies Part of Their VMI Courses

By Mary Price

Two VMI faculty members got a new perspective on a familiar topic when they attended the Jessie Ball duPont Summer Seminar for Liberal Arts College Faculty, held May 31-June 19 in Chapel Hill, N.C.

Taking a course called Sound Studies in the Humanities and Beyond were Maj. Julie Brown, assistant professor of English, rhetoric, and humanistic studies, and Dr. Peng Xu, assistant professor of modern languages and cultures.

Brown explained that the approximately 15 faculty members in the class all came from different disciplines, among them sociology, environmental studies, and film studies, in addition to English and foreign language studies.

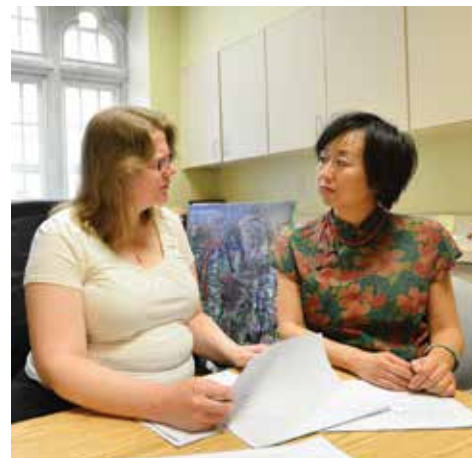
"Sound touches on all of those fields from different perspectives," said Brown. "We use sound, think about it, teach it, and talk about it in different ways. ... The seminar was an opportunity to read different critical perspectives on

what exactly sound is in the various disciplines and then have a conversation about it."

Xu, who teaches Mandarin Chinese, noted that sound studies played a large role in her dissertation, which focused on 16th-century Chinese theater performance. "What this workshop gave me was the opportunity to learn a lot more beyond the studies of China," she said, "and also to talk to people in different fields."

Now, with input she received from faculty at the duPont seminar, Xu is working on a project exploring how technology transformed music practice in early 20th-century China. Xu said the help she received at the seminar was invaluable in furthering her research.

Charles McGovern, a professor of American studies and history at the College of William & Mary, who co-taught the class, suggested that Xu look into a database of early American entertainment magazines. While still in North



Maj. Julie Brown and Dr. Peng Xu review materials from the duPont seminar. - VMI Photo by John Robertson IV.

See DuPont Seminar, page 15

Materials Science *Continued from page 1*

new lab techniques, but also essential workplace skills. "Some of the things I have learned include how to work within a research team, how important collaborations are within and outside of a team, [and] different data analysis techniques," Kirchon wrote.

"I feel that I have gained a competitive advantage over many of my fellow students applying to graduate school because of these lessons."

Kirchon added that he's spent much time this summer visiting graduate schools in California, as he could see himself attending a West Coast university to earn a doctorate in either chemistry or materials science.

Kirchon's path to the prestigious Department of Energy Science Undergraduate Laboratory Internship began this spring when Barry Goldman, internship manager at Livermore, came to VMI on a recruiting visit at the invitation of Col. Tim Hodges '80, head of the Department of Physics and Astronomy. Kirchon applied and was accepted, later learning that he was one of approximately 40 people selected out of thousands of applicants.

Hodges noted that internships like the one at Livermore are much more than work experience to put on a resume.

"Cadet internships at these national labs are typically helping to solve complicated and diverse problems," noted Hodges. "The problems could be basic research that discovers new knowledge or applies the science to solve a life problem that benefits society."

Like many cadets, Kirchon had his interest in what would become his major field of study sparked by a high school teacher. Working in the labs at VMI, under the guidance of Col. Daren Timmons, professor of chemistry, Kirchon's passion for the discipline has only grown.

"Participating in undergraduate research really showed me how to apply the knowledge I had been learning in the classroom to real science research," Kirchon wrote.

The widespread availability of research opportunities played a large part in Kirchon's decision to attend VMI.

"VMI was the only college I applied to and visited... [where] every student within the chemistry department was able to do undergraduate research," Kirchon said.

Timmons, chair of the chemistry department, noted that in Kirchon's case, the mentoring system within the department has worked exactly as it should. As a young cadet, Kirchon was partnered with Abe Jordan '14 to learn the ins and outs of working in the lab. Now, Jordan is in graduate school at Georgia Tech, and Kirchon is one of those "old hands" himself.

"It's been really neat to see him progress," Timmons noted. "He is constantly in the lab."

Timmons added that he was quite pleased to see Kirchon secure the Livermore internship. "It speaks really highly of Angelo, VMI, and of course our chemistry department," said Timmons. "He's going to have no problem



Angelo Kirchon works with liquid nitrogen in the Livermore lab. - Photo courtesy of Angelo Kirchon.

getting into graduate school with the experience he's had."

Between the Footwear and the Forces

Engineering and PE Join in Biomechanics Research Project on Joint Stress During Exercise

By Chris Floyd

Thanks to a collaborative effort between the VMI departments of mechanical engineering and physical education, people soon may be looking at the way they exercise differently.

Supported by a grant from the Jackson-Hope Foundation, Maj. Joyce Blandino approached the project from the mechanical engineering side, and Lt. Col. Mike Krackow, from the physical education side. They took a look this

while wearing combat boots and running shoes, as well as a round with no footwear at all. Analysis of the more than 100 videos the team has to study could determine which type of footwear is optimal for this kind of exercise.

“Now we have a bunch of things to compare and see the relationships,” explained Ellis, who participated as part of his Summer Undergraduate Research Institute project.

muscles will be most active and which will be least active. We can change things to emphasize muscles that are weaker.”

The researchers anticipate using the equipment they purchased in both engineering and physical education classes, and once they crunch the numbers from this summer’s research, they foresee their studies continuing in several directions.

Blandino said this summer’s study is focused on helping active people to develop better exercise routines. As the research continues, however, she hopes that their findings will eventually take them into the realm of developing better prosthetics.

“This is a really, really long project,” she said. “We’re just in the beginning stages of it.”

To see more photos, visit VMINews.tumblr.com, post date June 30.



Maj. Joyce Blandino, Cody Ellis (seated), and Lt. Col. Mike Krackow observe as test subject Zachary Heard '16 performs squats. At right, Heard dons sensors in preparation for the test. - VMI Photos by H. Lockwood McLaughlin.

summer at how the forces exerted during certain exercises can affect the body. With the help of Cody Ellis '17, the group will analyze the data over the next year and plan to expand their research in the future.

“This is the beginning of a whole biomechanical study,” said Blandino. “The final outcome is trying to develop a better training regimen for a certain exercise or even for rehabilitation. We’re excited.”

The team used the grant money to purchase a force plate and an electromyography machine, which records the electrical activity produced by muscles, to study 11 subjects. The volunteers completed several repetitions of back squats

“We’re trying to ... find correlations between the footwear and the forces.”

“Your muscles and joints deteriorate because of all of that friction and the forces put on them,” added Blandino. “How much force your shoes absorb can help reduce the forces you experience in your joints and will reduce the risk of injury.”

But the study was not all about the shoes people wear when they exercise. Krackow explained that there was much more to it than that.

“Once we know what a normal [joint] looks like, we can compare it to what a pathological one looks like,” he said. “We can predict which



Chemistry That Could Save the World

Summer Undergraduate Research Project Seeks to Convert Atmospheric Carbon into Cheap Fuel

By Mary Price

The work of two cadets doing research in VMI's chemistry labs could someday change how the world powers its automobiles and heats its homes.

Under the tutelage of Maj. Dan Harrison '05, assistant professor of chemistry, McKenzie Raber '18 and Sam Shepherd '18 worked this summer to find a cost-efficient way to convert carbon dioxide into a usable fuel source.

Raber's portion of the work involved creating three ligands – molecular fragments that serve as the core structural framework of larger, more complex molecules – that will each impart different properties once attached to ruthenium atoms. In doing so, she was creating a catalyst that will hopefully lower the activation energy required to convert carbon dioxide into fuel.

Shepherd, meanwhile, worked to find a polymer – a large molecule composed of many repeating subunits – that would provide an effective pathway for the transfer of electrons to reduce carbon dioxide into a combustible fuel such as methane.

“Really, if we can just take the carbon dioxide out of the air and turn that into clean energy, that will reduce the effects of greenhouse gases in the atmosphere as well as creating an energy source,” Shepherd noted.

Funding for the projects came from the Summer Undergraduate Research Institute and the chemistry department's Summer Undergraduate Research Program. Chemicals and other supplies were purchased with money from the Jackson-Hope Fund.

While both cadets have had much success in their work, they've also encountered the occasional snag and frustration.

Raber noted that while her work was enjoyable, it was also painstakingly slow, because she not only had to synthesize each ligand separately but also make its precursors.

“There's not one fixed way to do a reaction,” said Raber. “There's multiple ways you can get to the same end product. It's all about finding the way that works best, that will give you the cleanest end product.”

Identifying the subtle differences was a real challenge. At times, she said, “My reactions feel like they're all the same, and I get confused as to which one is which.”

Harrison, though, explained that work such as this develops the kinds of skills a chemist needs to be successful in the lab.

“In class you have a lot of linear or serial thinking, but in a lab you have to be able to parallel think or you won't make any progress,” he said.

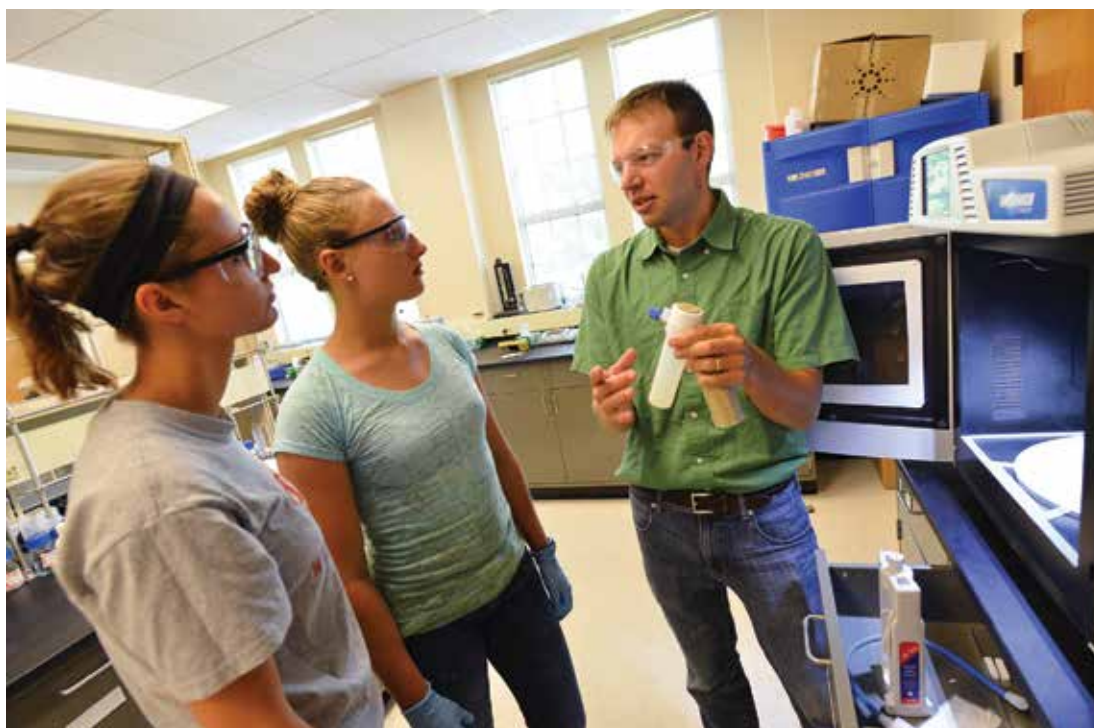
Now in his third year teaching at his alma mater, Harrison became interested in alternative fuels while completing a post-doctoral fellowship in 2011 at the University of North Carolina at Chapel Hill. At UNC's

Energy Frontier Research Center, he investigated a process that would mimic photosynthesis.

Harrison explained that plants make energy by taking in water and carbon dioxide to make oxygen. He and other scientists investigating alternative fuels hope to find a way to replicate that process in a lab, with a clean-burning combustible fuel as the end product.

“Plants do [photosynthesis] naturally, and they've had a really long time to figure it out,” noted Harrison. “We don't. We have 50 years or so to solve this problem of allowing us to consume a lot of energy but not produce a lot of waste.”

Raber added, “Right now it's not feasible to convert carbon dioxide because of the high cost. By making these catalysts, ideally, we'll be able to get to a monetary value that's affordable and sustainable.”



Samantha Shepherd '18 (left) and McKenzie Raber '18 undergo training with Maj. Dan Harrison on the Microwave Assisted Reaction System (MARS 6), which uses microwaves and high-pressure vessels to heat up reactions beyond their normal boiling points and induce reactions that do not occur under normal conditions. – VMI Photo by John Robertson IV.

Raber explained that the availability of undergraduate research opportunities such as these were a powerful draw in her decision to attend VMI – as was the NCAA swim team, where she's among the Keydets' top female distance swimmers.

“VMI is known for its undergraduate research in the STEM majors, so I hoped to do research, but I didn't think it would be this soon or this kind of work,” she noted.

She continued, “I'm very appreciative of this opportunity, because I feel like that at a lot of larger schools this is not something you could even think about coming out of your freshman year.”

Shepherd, a defender with the NCAA soccer team, said she'd been a bit timid about jumping into research, but she's quite glad she made the leap. “You get to do things, and make things,” she said. “We're doing a project that could save the world. How is that not great?”

To see more photos, visit VMINews.tumblr.com, post date June 19.

Research Project Uses Tea to Create 'Electroless' Water Filter for Developing Countries

Before he began his 3rd Class year at VMI, Garrett Briggs '18 had already learned an important lesson: in science, as in life, "When life hands you lemons, make lemonade."

In mid-May, Briggs was about to begin his Summer Undergraduate Research Program project designing a water filter that can give results in the field in real time. There was just one problem – some chemicals that his faculty mentor, Maj. Kyle Bantz, had ordered hadn't come in yet and the month-long summer session was passing fast.

Looking at the published literature, Bantz and Briggs found that tea – the kind sold in an ordinary grocery store – might be a workable substitute for the missing chemicals.

"We had to look somewhere else for methods, and that's how we found the tea bath," said Briggs, a chemistry major doing his first independent work in a lab. "We tried that, and it worked pretty well, surprisingly, so we've gone on from there."

Briggs has been electroplating water filters with a silver salt to make the filters more sensitive. Then, a process known as

surface-enhanced Raman spectroscopy is used to determine how much of a given molecule is present in a sample of water. The caffeine and organic materials in the tea make the silver stick to the water filter better, said Bantz, assistant professor of chemistry.

"We kind of use the tea to catalyze everything," she explained.

Briggs said that he'd tried several kinds of tea, including decaffeinated tea, but quickly found that caffeine is necessary. Coffee, though, didn't work as well, so it was discarded. Briggs found himself enjoying the learning process occasioned by the unexpected snag in his research plans.

"I really enjoy how fluid research is," said Briggs. "You can make a plan, and have goals, but you've got to be flexible. You'll have things missing, and you'll have things not work, and you need to be able to adapt and move on from that and still get results."



Water filter samples have silver deposited on their surfaces from various silver salt/tea bath combinations. – VMI Photo by John Robertson IV.

An environmental chemist, Bantz came to teach at VMI in the fall of 2014 after earning her doctorate at the University of Minnesota. Growing up in Wisconsin, near the Great Lakes, she developed an ongoing interest in water quality issues. Her goal for the water filter project is to create a product that could be used on

site in the developing world.

"The whole purpose of doing this with electroless [for which electricity is not needed] plating is to make this out in the field," Bantz explained. "Could we use this for villages that need their water tested?"

Bantz plans to keep the water filter project going through at least next summer. She and Briggs have tested the filter using clean water, but in the fall Bantz hopes to test water from the Maury River and then later test water that's pre-contaminated with bacteria.

"There's always steps between proving this works and ... proving that it's stable," she noted.

– By Mary Price



Garrett Briggs uses the Raman spectrometer under the direction of Maj. Kyle Bantz to determine if the filter has a good sensor surface. – VMI Photo by John Robertson IV.

Federal Grant to Improve User Access to Chessie Trail

By Chris Floyd

As owner of the Chessie Nature Trail, VMI is responsible for the upkeep and maintenance of the 7-mile jaunt from Lexington to Buena Vista. Among many projects Physical Plant staff have taken on are a series of improvements to the Chessie Trail funded by a federal grant.

The Federal Highway Administration recently awarded a Recreation Trail Program Grant to VMI. The \$79,000 grant, which is administered through the Virginia Department of Conservation and Recreation, will go a long way toward making the popular trail much safer and more user-friendly. The grant will also make it possible for VMI to improve several identified deficiencies on the trail.

“VMI is committed to 20 percent,” explained Maj. Jenny deHart, former staff engineer and sustainability coordinator at VMI’s Physical Plant, and a staunch advocate for the Chessie Trail. “The other 80 percent is reimbursed. For \$15,000 we ... get \$80,000 worth of work. I’m pretty psyched about this.”

Some of the work paid for by the grant has already begun, and though it took four years to secure the grant, all of the work must be completed in two years.



Physical Plant intern Josh Pike '17 assesses a bridge on the Chessie Trail. Pike’s hazard analysis may inform some of the work eventually performed under the grant. – VMI Photo by H. Lockwood McLaughlin.

First, there are plans to upgrade the gate systems that dot the trail itself as well as those that allow vehicular access.

Currently, there are eight gates along the trail; few, if any, of them are adequate. Most of them need an upgrade to make them more user-friendly, granting “as unfettered access as possible to a wide range of users,” said deHart. At the same time, these gates have to work for the land

owners along the trail, who often complain of unthinking guests leaving the gates open and allowing cattle to stray.

Entry points along the trail allow maintenance and emergency vehicles access to the trail, but they are in need of work as well. DeHart explained that a system of bollards – evenly spaced upright posts – is being considered to rectify that situation.

“There are places where we currently have gates which are strictly to keep vehicular traffic to a minimum,” said deHart. “Bollards would be a good option there. Any emergency or farm vehicles can just move one of those bollards and drive in.”

As plans for gates go forward, work has already begun on adding signs. New trailhead signs going up in three locations will include basic trail information, regulations, and a map. More signs designating private property,

VMI Institute Report



New signs and trash and recycling receptacles are among the improvements funded by the grant. – VMI Photo by John Robertson IV.

warning of rock fall, and even pointing out an endangered species of flower that was recently discovered on the trail have gone up, too.

Among maintenance projects undertaken this summer is a partial resurfacing of the trail. According to Jackson “J.B.” Harris, a grounds foreman with the physical plant and the man in charge of routine trail maintenance, plans are to lay down a ton of a gravel and sand mix this summer to begin work on resurrecting the old surface. That is not enough for the entire seven miles of trail, said deHart, but it is a start.

“We are hoping to use a new, finer trail surface in selected locations that will help with proper drainage,” said deHart, noting that drainage is another important area covered by the grant. “It will also help with the concept of firm and stable, which is required for universal access.”

Bridge repairs are already underway as well, and, down the road, VMI hopes to use some of the grant money to improve parking areas for users of the trail.

“There is very little official, permanent parking for the trail, especially toward the Lexington end,” deHart said. “The places where people park now are not on VMI property; plus, some of the parking requires people to cross the road, which can be dangerous.”

Plans are to construct two parking areas. The first will be in the area designated the “industrial zone,” near East Lexington about one-half mile

along the trail. VMI owns a building in that area, and when it is moved, a parking area with 10 spaces, including a handicapped space, will take its place. The other parking area will be placed about five miles in, on the east side of South River.

“These are pretty important things,” said deHart. “These are the inglorious things you have to do to make a trail safe.”

DeHart will not see this work completed, however. She recently left VMI to become the sustainability director at Unity College in Unity, Maine. She is confident that the work on the Chessie Trail will continue unabated.

“Whoever takes this over has a lot of work ahead of them,” she said. “[But] whoever comes after me will be able to, I hope, pick it up right where we left off.”

The grant work seeks to improve user access to the Chessie Trail from end to end as part of a master plan for the Brushy Blue Greenway. Eventually the Chessie will be the central – and longest – piece of a trail that will run from Brushy Hills through Lexington to Buena Vista, along the riverwalk and through Buena Vista to connect with the Appalachian Trail.

To see more photos, visit VMINews.tumblr.com, post dates July 11 and July 22.

Tutorials and Travel

Cadets Join Students from Five Schools to Study the British Way in Virginia Program at Oxford

By Daniel Stinnett '07

Since 1980, the Virginia Program at Oxford has sent deserving students from Virginia colleges to study at Oxford University in England for the summer. This year’s program ran from June 29 to Aug. 8, and two cadets – Emily Bierut '16 and Callum Wallace '17 – represented VMI, joining students from Washington and Lee University, Roanoke College, Sweet Briar College, Mary Baldwin College, and Hampden-Sydney College.

Each of the six schools has one faculty member that helps run the program and goes to Oxford with the students on a rotating basis once every six years. Dr. Duncan Richter, professor of English, rhetoric, and humanistic studies, serves as VMI’s representative.

“The program is designed to teach students about British history and literature around the time of Shakespeare,” Richter explained. “As well as lectures, reading, and tutorials, the program takes students to London and to Shakespeare’s birthplace in Stratford-on-Avon where they see some of the plays they are learning about and related historical sites. There are also opportunities to travel, especially to London, during the weekends.”

On most days there is one lecture in the morning given by a different expert. A question and answer period follows and then informal conversation over cookies and coffee.

On Fridays, lectures are replaced by tutorials, which are similar to a class except there are only three students, and the format is discussion, with no lecture.



Emily Bierut poses in front of the Tower Bridge in London. – Photo courtesy of Dr. Duncan Richter.

“This is a shock to some students, but most come to enjoy it. It’s a real chance to improve your reasoning and debating skills,” observed Richter. “Since the class is so small, you cannot get away with not doing the reading and you will be challenged not only to say what you think about it but to justify your view in a rational and informed way.”

After these morning lectures and tutorials, the rest of the day is free for the students to use as they like, usually preparing for the next academic day and visiting sites of interest.

“London was close enough for a day trip and there are plenty of excellent museums in

Oxford that were well worth the afternoon visit,” said Bierut. “I had lots of chances to go explore, and the museums around Oxford were fantastic. Just walking around the city was great since the buildings were always stunning to look at. I think the place that I visited that stands out the most was the trip I took over the long weekend to Northern Ireland and to the Irish coast.”

Wallace also enjoyed the opportunity to travel and used some of his spare time to visit destinations beyond the British Isles.

“My favorite part of the experience aside from studying at the university was the ability to travel on the weekends. During my time in Oxford, I traveled to Dublin, Ireland and Brussels, Belgium. However, my favorite weekend trip was to Normandy, France, where I was able to visit Omaha Beach and the American Cemetery,” he said.

Despite the positive feedback from cadets who complete the Oxford program, participation from cadets has been down in recent years. VMI has sent as many as 10 cadets in one summer, and Richter hopes to attract more participation next year when he travels with the program to Oxford.

“One VMI alumnus told me that not only is it the best experience he has ever had, but that everyone he has ever spoken to who has gone on the program says the same thing. People really love it, but it’s hard to get across to cadets how great it is until they experience it for themselves,” he explained.

Nine Credits in Five Weeks in France

Intensive New Course Teaches French Language and Culture in Paris and in Normandy

By Chris Floyd

A new class this summer gave cadets the opportunity to visit France and engage in intensive language and cultural studies. French 252, the brainchild of French professors Maj. Jeff Kendrick and Maj. Abbey Carrico, offered cadets nine credits in just five weeks.

“Paris was really our classroom for that course,” said Carrico. “They were surrounded by the language. That’s something we try to do in the classroom, but there’s only so much authentic experience we can give them. That’s the benefit of being in these study-abroad experiences, giving them the chance to practice what they are learning while they are learning it.”

In all, 11 cadets made the trip to France, earning nine credits in just five weeks. Some of that time was spent in a French classroom, learning the language from French instructors, but Kendrick and Carrico also took their charges out on the town to experience French culture firsthand.

The group traveled in Paris and the surrounding area for the first 10 days, exploring historic sites important to French culture. Prior to each excursion, the cadets were assigned readings about the excursion, and when the trip was over, they were required to reflect on the experience.

“The whole course was designed to give them a reading, to get them thinking about it, then actually have them see and visualize,” said Carrico.

“They wrote some really nice pieces about ... how they could feel the connection between the present and past and really gained some insight



Cadets visit the grave of a fallen VMI alumnus at the American Cemetery in Normandy. – Photo courtesy of Maj. Abbey Carrico.

from that,” said Kendrick. “It was making those connections between the head and the heart that we want and that is really, I think, indicative of real learning.”

“I enjoyed being able to experience another culture, getting a better understanding of how the world works,” noted Tyler DeJoe '18, an international studies major. “It was amazing to actually use the language I was studying and become more effective at using the language.”

While the group experienced the traditional French landmarks like the Louvre and the Bastille, the outing that resonated most with the cadets was the trip to Normandy. Of course they visited the beaches where Allied forces landed during D-Day, but they also paid their respects at the gravesides of fallen American troops, including those of several VMI graduates.

“There was just so much to see and do in that region of France that two days simply wasn’t enough to take it all in,” said political science major Benjamin Malcolm '17. “From the war cemeteries to the ruins of German bunkers at

Pointe du Hoc to standing on Omaha Beach looking out to the vast emptiness of the English Channel, it was certainly an experience like none I’ve had before.”

The program was so successful that a plan to bring back French 252, which will only be taught in the summer and will always be held overseas, is already in the works.

“We’re already looking forward to doing it again next year,” Kendrick said.

Keydet Club Raises Record Amount in Fiscal Year 2015

By Scott Belliveau '83, VMI Foundation

The VMI Keydet Club raised a record \$13.5 million in the past fiscal year. It’s part of a trend that has seen the generosity of alumni and friends markedly increase since 2000, when a total of \$1.5 million was raised.

“Giving in FY 2015 to the Keydet Club Scholarship Fund and the Athletic Operations Fund topped \$3.65 million; that’s a 16 percent increase over last year,” said Gregory M. Cavallaro '84, CEO of the Keydet Club. Short-term pledges nearly doubled, too, to more than \$1.8 million. Donors fulfilled more than \$3 million in pledge commitments and added more than \$4.8 million in new planned gifts during the year.

“What truly made this a year to remember, however, was that an astonishing record \$9.84 million was added to the Keydet Club endowment, bringing the value of the total endowments supporting athletics to more than

\$44 million,” said Cavallaro. “This is a transformational achievement for VMI and will have an immediate and incredibly positive effect on our entire athletic program.”

Cavallaro credited the people behind VMI’s NCAA teams with helping drive the recent success.

“Every team has outstanding coaches and staff who believe in and support the VMI educational system, and, led by athletic director Dave Diles, VMI’s ‘front office’ is doing terrific things,” continued Cavallaro. “Most important, however, we have in our cadet-athletes an excellent group of young people who are superb representatives of VMI.”

Cavallaro also credited the Institute’s current fundraising effort, An Uncommon Purpose: A Glorious Past, A Brilliant Future: The Campaign for VMI, with spurring athletic fundraising. “No doubt about it, by making

athletics a campaign priority, the Institute boldly underlined the central role of NCAA sports in VMI’s life and the need for increased giving to athletics,” he said.

“In the end, though, our success comes down to our donors. No matter how they give or where they direct their gifts, they understand the profound effect their philanthropy has on the lives of hundreds of young men and women.”

Since its founding in 1934, the Keydet Club has raised more than \$100 million for VMI’s NCAA athletics program, providing thousands of cadets the opportunity to compete in Division 1 intercollegiate sports while reaping the benefits of a VMI education. It also has generated support for the operations of the athletic department, each of the Institute’s 18 NCAA teams, and VMI’s academic support activities for cadet-athletes.

'Out of the Classroom'

Cadets Soak Up History and Culture on International Studies Trip to Hungary and Austria

By Mary Price

Ten cadets recently got in-depth exposure to life outside of the United States when they participated in a summer trip to central Europe.

The cadets, accompanied by Maj. Patrick Rhamey, assistant professor of international studies, spent the majority of their time at the National University of Public Service in Budapest, Hungary. They also visited Austria for nine days, with three of those days in the southern city of Graz and the remainder of the time in Vienna.

While they were overseas, the cadets were in class for three hours each morning, six days a week. During the first half of the trip, Rhamey taught a class, Politics of Central Europe, while during the second half, a faculty member from the National University of Public Service, Dr. Jozeph Nemeth, taught another on trans-Atlantic security.

In his class, Rhamey strove to make cadets aware that the European Union, while technically a rather young organization, is not a groundbreaking concept.

"One of the themes throughout the trip was that the EU as it is today is not really a new thing," said Rhamey. "There are a lot of carryovers in political organization from the Austro-Hungarian Empire and the Holy Roman Empire. ... You had to come up with a way to hold all of these different people together."

To help the cadets understand this on a more visceral level, Rhamey had the group form a mock European Union, with each cadet representing a central European nation. The cadets were asked to come up with legislation that would benefit their nations and then lobby for that legislation's passage.

"I represented Austria in the mock EU, and my goal was to create a better transit system for commercial vehicles to ... facilitate trade," explained Andrew Bradshaw '17. "I ... [concentrated] on the fact that I was between Germany (the largest membership) and Italy (third largest membership) and used that to lobby that the roads would connect them."

For the cadets' final paper, Rhamey had them write about the challenges their country is currently facing and how those challenges pertain to the European Union as a whole.

"It was a case study-oriented class," explained Rhamey, whose specialty is international relations. "Everything led to an international perspective."

Outside of class, the group visited many historic sites in Budapest, including the Holocaust Museum and the House of Terror. The latter first served as headquarters for the Nazis during World War II, and later became home to the Soviet secret police. The group also took a walking tour of Budapest led by Nemeth.

For one cadet, the signs of the Soviet occupation, more than 25 years after the fall of the Berlin Wall, weren't just history – they were reminders of his family's past. Andriy Onufriyenko '17 was born in the Ukraine, and has now lived in the United States for approximately 10 years.

"I grew up with very little, and I thank my mom every day for bringing me and my brother to America," Onufriyenko explained via email. "Especially with what's going on there now, I couldn't be more grateful than I am now, because if it wasn't for her I would be involved in all kinds of war activities."

Onufriyenko noted that he came back with many happy memories of the trip, including a chance to play soccer with Hungarians in front of St. Stephen's Basilica in Budapest.

In Austria, the cadets filled their time with lectures by Rhamey and two Austrian professors, plus guided tours and plenty of sightseeing, including a stop at the Styrian Armoury, the largest repository of medieval armor in the world.



Cadets pose for a photo in Budapest's Heroes' Square. – Photo courtesy of Maj. Patrick Rhamey.

For Rhamey, the purpose of the trip goes far beyond simple sightseeing, or even earning academic credit. He noted that of the 10 cadets who went on this year's trip, eight plan to commission.

"You might be fighting alongside Hungarians as NATO alliance members," Rhamey noted. "It's important to have a cross-cultural understanding of these people, because they're your allies."

For Onufriyenko, who plans a career in international business, the trip was another chance to explore the global village – and fall semester, he'll take yet another as he studies abroad in Japan.

"I'm all about taking opportunities," he noted.

Rhamey concurred, explaining that international studies is not a discipline that lends itself to learning from books only.

"You've got to get out of the classroom and experience it for yourself."

Army ROTC Cadets Train Through the Summer

Information Courtesy of Army ROTC

More than 100 Army ROTC cadets were tested and evaluated against other ROTC cadets from across the nation in platoon and squad field training exercises during Cadet Summer Training at Fort Knox, Ky. The evaluations will be used to set accession goals as cadets pursue careers in the Army.

Cadets from the VMI ROTC detachment also attended the Basic Airborne School at Fort Benning, Ga., the Air Assault School at Fort Campbell, Ky., Cadet Field Training at West Point, N.Y., and the Combat Diver's Qualification Course at Key West, Fla.

Cadet Troop Leader Training gave 25 cadets the opportunity to shadow commissioned lieutenants at active duty Army units located across the nation and abroad, including Fort Bragg, N.C.; Fort Lewis, Wash.; and South Korea.

Two cadets were selected to travel to Thailand and the Philippines under the Cultural Understanding and Language Proficiency Program, spending three weeks learning the local culture.

Cadets Excel at ROTC Field Training

Information courtesy of Air Force ROTC

Twelve 2nd Class cadets completed Air Force ROTC Field Training this past summer, and several were recognized for their achievements.

Brendan Caldwell, Brian Colitti, Jack Smith, and Rachel Tanner were awarded Distinguished Graduate, indicating they were the top 10 percent of their class. Caldwell, Colitti, and Philip Jewett were also given a peer-elected award for Warrior Spirit, illustrating their tenacity and insistence on putting their teammates' needs ahead of their own.

The program lasts 23 days. The cadets trained first in an in-garrison environment at Maxwell Air Force Base in Huntsville, Ala. The second, more grueling, portion was held at Camp Shelby in Hattiesburg, Miss.

Each site tests the cadets' propensity to lead under a variety of stressors and rigors. This allows cadre on site to evaluate how a potential future officer might react in myriad scenarios.

Once they complete the course, the cadets take leadership roles with the Air Force ROTC Professional Officer Course here at VMI. They instruct their younger counterparts as they prepare for Field Training.

EMT Course Prepares Cadets to Certify and to Serve

By Daniel Stinnett '07

Twenty-one cadets completed an emergency medical technician course offered on post during the first summer session. The course, which was taught by Jeanette Mann, a registered paramedic, and several assistants, helped qualify cadets to achieve Virginia and national EMT certification.

"The course taught us a lot on how to think and operate as EMTs," explained Joseph Lemly '17. "We learned how to take a general complaint from a patient and, using simple medical instruments, make a general assessment of the patient and determine what we believed to be the best treatment."

During the academic year, cadet EMTs are critically important to the health and well-being of the Corps, as they are generally the first to respond to medical emergencies on post. They are also present during physically demanding Rat Line activities to monitor the welfare of both new cadets and cadre. One cadet EMT is on call at all times, day and night, and each EMT's door is marked for quick identification should more help be needed.

The summer session, which ran May 19 to June 19, was a good time to fit the demanding course into the cadet schedule, but it made for long days – Monday through Friday from 8 in the morning until 5 in the evening, with a short mid-day break for lunch.

"It's been challenging because the class itself is usually taught in a 15-week semester and our class is five weeks long," observed Lemly. "Usually we cover numerous topics in one class, and that does not give you long to home in on that particular topic before the next one comes at you."

Eventually, though, it all comes together for the cadets.

"The most rewarding part is when all of the lessons ... fall into place and you finally understand the material. Once this happens, it becomes fairly easy to assess a patient and come up with a diagnosis."

Upon finishing the course, the cadets took a practical exam in which they were evaluated on how well they managed a simulated emergency



Kasey Kettle '17 (left) and Amanda Smith '17 practice their skills on Sam Thomson '17 during EMT training. – VMI Photo by Kelly Nye.

situation. Those satisfactorily completing this scenario were allowed to proceed to the written exam.

For Lemly, the opportunity to be an EMT provides a chance to serve the Institute while gaining some applicable experience for his life after VMI.

"I wanted to become an EMT because I wanted to give back to VMI and the surrounding community. I also believe that having a good understanding of medical knowledge is very important ... because you never know when you will need it in the future," he explained.

Lemly expects to make good use of his training, as he hopes to commission into the Air Force and go into the pararescue field.

To see more photos, visit VMINews.tumblr.com, post date June 22.

Cadet Interns on Underwater Physiology Research Project

By Kelly Nye

In the waters of Malaysia, the people of a tribe called “Bajau” can hold their breath for up to five minutes while spear fishing underwater. This talent is rare among other people, including U.S. Navy divers. But even Navy divers, who are well-equipped for their work, must achieve their objectives under rigorous underwater extremes. How the human body copes with those extremes was the subject of a summer research project Connor Meyer '16 took part in.

Meyer, a biology major who is pursuing a minor in exercise science, joined Dr. David Hostler and his researchers at the University at Buffalo School of Public Health and Health Professions in their study on the dangers of dehydration for Navy divers. The Navy is seeking to develop new protocols for divers, prolonging endurance and making missions safer overall.

Meyer applied for the internship after taking Environmental Physiology and Human Performance, a course offered last spring by Dr. Andrew Young '74, the Floyd D. Gottwald, Jr. '43 Visiting Professor in Leadership and Ethics. Though Young had offered to help all of his cadets find internships for the summer, he knew Meyer would fit right in at UB.

“I knew that the Department of Exercise Science and Nutrition at UB had faculty whose research interests were in the area of human performance physiology. I knew of Dr. Hostler from his research papers and presentations at the annual scientific meeting of the American College of Sports Medicine, and thought the work he was doing would interest Mr. Meyer, so I suggested that he ask Dr. Hostler if he'd take a summer intern,” said Young.

Meyer, who has always had an interest in exercise physiology, found that the internship built on work he had done at VMI. “I felt prepared for the internship because the biology department at VMI has access to a variety of scientific equipment that I have encountered at UB, as well as a great program to prepare you for the scientific community.”

Having that background from VMI led him straight into his research at UB. The research demanded physical activity above ground as well as below the surface. “The Navy research is ... looking at hydration status in commercial divers and then will move into Navy divers to examine the



Connor Meyer (in water) conducts research with Dr. David Hostler and a University at Buffalo physical therapy student. – Photo courtesy of University at Buffalo.

effects exercise underwater has on hydration and vice versa, especially with transitioning to land. It is expected to ... help the Navy special forces community as well,” said Meyer.

Meyer experienced the effects firsthand. “From the initial trial runs that I was able to conduct myself, we saw a serious effect on hydration when you are submerged for up to four hours. This made exercise on land ... more difficult than before submersion in the water,” Meyer said. The results of the research may eventually lead to perpetual underwater hydration systems for divers.

For Meyer, Young hopes the research experience will open up opportunities for the future. “The biggest benefit of an internship in a research laboratory is probably the hands-on experiences and skill development in laboratory procedures, as well as the opportunity to work closely with an experienced human physiologist conducting experiments,” said Young. “Also, he will have expanded his network of professional mentors beyond VMI, which may help diversify his package of letters of recommendations for grad school or employment following VMI.”

Meyer plans to commission as a second lieutenant in the Army this spring. He hopes to go on to earn a doctorate in exercise physiology.

DuPont Seminar *Continued from page 6*

Carolina, Xu forwarded the link McGovern had sent her to the librarians at Preston Library. Within two days, she had access to the database.

“I’m very thankful to the librarians here,” she commented.

Thanks to her participation in the seminar, Xu is now planning to propose a new course, Premodern Literature and the Sonic Past of China, utilizing Preston Library’s collection of Chinese music, plus her own personal collection.

“That will bring my new research project into my teaching,” she said.

Brown likewise said that the summer course would lead her to teach in new ways.

“My research is primarily in poetry,” she explained. “Of course, sound plays a big role in poetry, ... but that’s not really my specialty. I’ve always focused more on the connection with visual art and also tactility and touch.”

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She added, “This was another opportunity to expand my sense of the senses, and to think about what sound can do for me as a scholar and teacher.”

With those thoughts in mind, Brown is planning to restructure one of her courses, in which cadets are not only asked to read poetry, but to write it as well. In that course, she’s always asked cadets to write a poem that uses a sense other than vision.

“Now I’m thinking about restructuring the course around the senses, so you would have a unit about the sense of sight, the sense of touch, the sense of sound,” she said.

The duPont seminar, which is sponsored by the National Humanities Center, is an outgrowth of the philanthropic legacy of Jessie Ball duPont (1884-1970). Faculty from 42 schools that duPont supported during her lifetime are eligible to attend the classes held each year.



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Early Return for Athletes

Football, women's soccer and men's soccer teams take to the field after the cadets' early return in August. Women's soccer opened the fall season for VMI NCAA athletics with a home game against Youngstown State University Aug. 21, following an exhibition against Liberty University earlier in the month. Men's soccer opened its season Aug. 28 at Longwood University after playing exhibition games against Bridgewater College and Washington and Lee University. The first game for VMI football was Sept. 3 at Ball State University. Follow VMI athletics at www.vmi.edu/athletics. – VMI Photos by Steve Hanes and H. Lockwood McLaughlin.