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## SCHOLARS DIG DEEPER

While most of Norwich's undergraduates headed home, hit the beach or toiled at off-season jobs, student and faculty scholars from all six schools returned to the laboratory, the library and the wider world for an unprecedented summer of research in 2008.

"This is the broadest collection of researchers we've ever had," David Westerman, Norwich's Dana Professor of Geology and director of student research, observed at the start of the summer. In all, 15 students, each with fellowships from Norwich's Student Research Committee, worked under the guidance of faculty members conducting research in similar areas. In addition to six from the School of Mathematics and Sciences, five students represented the School of Social Sciences, one each came from the Schools of Humanities, Architecture and Art, and Business and Management, and one came from the David Crawford School of Engineering.

"It's more diverse," said Associate Prof. Alison Fisher, chair of the research committee and faculty mentor to two summer researchers. "In the past, it's been more than half math and science."

## Student • Faculty Summer Research



*photograph by Darren McCollester*  
Michael Self and Associate Prof. Rowland Brucken weigh the ethics of the war on terror. **Continued, p.5.**



Robert Negron-McCarthy and Prof. William Estill gear up for the next soldiers' story of Norwich's American Journey series. **Continued, p.4.**



Michael Anton and Prof. Gary Lord follow Norwich founder Alden Partridge on his journeys of celebrity in the pre-electronic United States.

**Continued, p.4.**



This time, the research ranged from a scientific comparison of the songs of gray jays to a survey of the oratorical skills of Alden Partridge, founder of Norwich University. Funding for the fellowships came from the Chase Endowment for Academic Excellence and the Weintz Research Scholars Program.

Four student-faculty teams of research fellows worked full time for 10 weeks on coordinated projects, with stipends of \$4,000 per student and \$8,000 for each professor. Meanwhile, with the guidance of faculty mentors receiving \$1,000, 11 students qualified for stipends of \$4,000 apiece for their projects. While most of them worked on or near campus, two traveled to Europe.

A particularly intense student/faculty partnership saw criminal-justice major Michael Self work with Associate Prof. Rowland Brucken on a survey of U.S. methods for interrogating foreigners suspected of terrorist acts. In addition to poring over human-rights documents that he and Dr. Brucken found online and in libraries at Norwich and in Boston and New York, Self interviewed military officers, psychologists, interrogators and people in law enforcement.

"If you'd told me even a year ago that we'd be able to collaborate on a project like this, I would have stared at you incredulously," Dr. Brucken said. "Norwich has put up the money to spread this across the schools. For me, it's absolutely wonderful to work with an undergraduate student in a graduate-school setting."



Dmitriy Narov/iStockphoto

Brian Lundberg and Assistant Prof. Aimee Vieira explore the economic and social lives of an English-speaking enclave of Quebec's Eastern Townships — including the under-the-radar role of the marijuana trade in the way residents make ends meet. **Continued, p.6.**



## More research ahead ...

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## THE WAR AT HOME

Some of the 2008 summer-research fellows caught their professors' eyes in the classroom during the academic year. Others showed their mettle in the chemistry and biology laboratories.

Robert Negron-McCarthy won over Prof. William Estill with his three years of work in the trenches where Norwich communications students craft documentaries for the *Our American Journey* series.

"Our projects would not exist without his participation," Prof. Estill wrote in his application for a fellowship to work with McCarthy on *The War at Home*, the next documentary in the series. "Rob is passionate about his work and possesses the ability to process and package information in extraordinary ways."

Sometimes, McCarthy's passion carries over, during such projects as the acclaimed *Vermont Fallen*, about the families of soldiers who died in Iraq and Afghanistan.

"Three or four times I have gotten angry and had to leave the TV lab," McCarthy recalled in his fellowship application. "Prof. Estill helped me to understand that it was a good thing because it showed that I cared so much, but that I could not get away with that in the professional world. Now I am able to calm myself down and talk through what I need to do."

Teacher and student spent the summer laying the groundwork for the crew of six to eight undergraduates who will work on the upcoming documentary, about the struggles of Vermont veterans adjusting to civilian life. In his role as producer, Prof. Estill pursued grants, set up interviews and helped to edit footage. Meanwhile, McCarthy, as director and senior producer, tested new equipment, conducted on-camera interviews and worked on a trailer for the film.

"It empowers the students," Prof. Estill said of Norwich's documentary work. "They want to get it right so much. They know they have the power to make a dramatic change in people's lives."



## FOUNDING FATHER

The more he read about Capt. Alden Partridge in the media of the early 1800s, the more Michael Anton appreciated the celebrity surrounding the founder of Norwich University.

And he really appreciated the advance of the printing press in Partridge's era of growing literacy.

"It's been very difficult trying to read 19th-century handwriting," Anton said of his research journey through letters and diaries as well as newspapers, pamphlets and books. "Partridge's was the worst."

Good thing for Anton that Partridge marched his cadets hither and yon, lecturing at each of their stops on education, history and military matters — and making sure that the local papers knew they were coming. Anton and Gary Lord, Norwich's Dana Professor of history, found that material in the 350,000-issue database, "Early American Newspapers, 1690-1876," through Kreitzberg Library. And Kreitzberg archivist and special-collections librarian





Kelly Nolin and historical-collections specialist Kelly Gonzalez helped them excavate Partridge's own writings for examination and copying.

"This has enabled us to find out more about Partridge's activities than we could find in our collective lifetimes," Dr. Lord said.

While Anton unraveled the what, when and where of Partridge's journeys, Dr. Lord focused on the how and why of Partridge's mission to spread his ideas on education and the proper use of the military.

"Not many undergraduates have such an opportunity or perform so well when they do have the chance," Dr. Lord said. "(Anton's) work is not only very useful to me but will serve other researchers interested in Alden Partridge."

### SAFE AND SORRY?

With his decades of scholarship and activism on human-rights issues, Associate Prof. Rowland Brucken knew where to steer Michael Self to find documents and databases on torture.

And with his 15 years of teaching history to undergraduates, Dr. Brucken knew how to play sounding board and devil's advocate while his student collaborator wrestled with the fundamental question of his summer-research fellowship: Does national security justify sacrificing the internationally-recognized human rights of foreigners accused of terrorist acts?

As for the "Black Wall" that Self ran into while interviewing intelligence, law enforcement and military sources about the ethics and value of harsh interrogation? Well, Self was pretty much on his own, there.

"I've spoken with three or four (experts) that opted out of answering my questions, and two or three agreed under anonymity," Self said. "I wanted a bigger picture of what (interrogation of suspects) was like from them, but what I received more was conditions and situations on the ground level of the terror war."

Self did learn enough to help Dr. Brucken leaven his study of efforts to protect human rights between World War II and the Korean War. While Dr. Brucken spends the fall 2008 semester revising his upcoming book, Self is distilling his findings into a paper that he hopes to submit to a scholarly journal, and present at conferences.



*photograph by Darren McColister*

"You're laying foundations for historians to look at later on and adding to the contemporary debate over how to treat suspected terrorists," Dr. Brucken told Self in the spring. "You're laying crumbs for historians to follow and eat up."

Self just hopes he can find his way back.

"The more I dig, the more of a rabbit hole I find," Self said. "I can't stop going down."



*Rijan Klos/iStockphoto*



## ECONOMIC MINORITY REPORT

**T**hey spent most of the summer of 2008 hundreds of miles apart. Yet Assistant Professor Aimee Vieira can't remember a fellow researcher contributing more to a project than Norwich criminal-justice major Brian Lundberg did with her ongoing study of the

ways that English-speaking residents in a corner of Quebec's Eastern Townships make ends meet.

"He's not doing any of the fun stuff, I'm afraid," Dr. Vieira said. "It's a lot of reading and a lot of writing. But it doubles and trebles my activities.

"It's more of a sense of collaboration than anyone else I've worked with."

While Dr. Vieira revisited data she had collected for her dissertation on the social and economic interactions of the people she lived among and interviewed for three years, Lundberg explored another aspect of the area's underground economy. It turns out some residents of the region grow marijuana as a cash crop that provides a living — and a social life — for many neighbors.

"Everybody up there calls it 'landscaping and gardening,'" Lundberg said during his and Dr. Vieira's presentation of their findings to the Rural Sociological Society on July 31.

Lundberg zeroed in on portions of Dr. Vieira's transcripts, in which residents spoke of the area's marijuana industry. Weeding that data, then sharing the results with audiences of scholars outside his field, revealed another world to Lundberg.

"In criminal justice, you have a certain bias against a lot of things," he said. "This is a chance to look at things in a broader perspective."

Call it another unexpected harvest for Dr. Vieira.

"This work will make Brian a really great police officer," she said. "He'll be more sensitive to a lot of issues."

## INTO AFRICA

**H**ere's how Kelly Allenspach spent her second consecutive summer fellowship of literary research: Reading 28 novels by 10 women and four men from six African countries. In 10 weeks.

"That's over 6,000 pages," the rising junior said at the start of her project. "Fortunately, I'm already an intense reader."

Intense enough, after falling behind in her work on "The Developing African Woman" to read at least 300 pages a day for nine days in a row — all while taking notes on the perspectives, perils and peregrinations of the female characters in works from Nigeria, Botswana, Cameroon, Senegal, Ghana and Kenya.

"I felt like my eyes were bleeding," Allenspach recalled at the end.

Her reading also exploded stereotypes, some of which she admitted taking into her bibliographic marathon.



"Unity," by permission of Monica Stewart

“It was more about empowerment of women instead of violence against them,” Allenspach said. “That made more enjoyable reading.”

To give her eyes and her mind a change of pace, Allenspach used some of her fellowship grant to travel to Dartmouth College’s Hood Museum of Art, which conveniently was putting on the exhibition, “Black Womanhood: Images, Icons and Ideologies of the African Body.”

“And I bought the book,” she said with a smile.

**STILL WATERS**

**O**ne minute, Greg Miller expected to spend the summer between his sophomore and junior years working at the hardware store back home.

The next minute, Norwich Associate Prof. Richard Dunn told students in his geomorphology class about a Weintz fellowship to hunt for evidence of Bronze-Age water resources on the southeast coast of Greece.



“I had no idea something like this was possible,” Miller said after returning from the Saronic Harbors Archaeological Research Project (SHARP). “To go with a teacher I highly look up to is an amazing opportunity.”

Examining tectonic fault lines and patterns of rock fracture in the mountains surrounding the former harbor town of Kalamianos, Miller and Dr. Dunn found that Myceneans 3,500 years ago made the area habitable by building artesian wells that captured the flow of groundwater through cracks in the underlying limestone.



“Greg’s work addressed what was a fundamental question for the archaeological team – where was the freshwater supply in the Bronze Age?” Dr. Dunn said.

Miller also discovered another resource, working with scholars from Florida State University and the University of Pennsylvania.

“I was surrounded by people going for their masters and their PhDs,” Miller said. “The stories they told and the background knowledge they had was just phenomenal.”

**FLOWER POWER**

**I**n the line of Norwich students who have devoted their summers to helping Associate Prof. Alison Fisher probe the mysteries of flowering plants, biology major Quinn Conklin passed one torch to chemistry major Sean Paz and grabbed another for herself in 2008.

“Last summer, I basically worked on what Sean is working on now,” Conklin said. “He is confirming my results this year and asking new questions.”

While Conklin was extracting RNA from plant-tissue samples at Norwich’s new molecular biology lab this summer, Paz sought to further understand how different amounts of darkness and light trigger flowering in the plants that Dr. Fisher has been





poking and prodding and deceiving for more than five years: *Pharbytis (Ipomoea nil)*, or Japanese morning glory) and *Arabidopsis thaliana* (thale cress). He and Dr. Fisher suspect that the gaseous hormone ethylene is involved. Using a gas chromatograph to measure the concentrations of ethylene that he took from week-old leaves kept in gas-tight vials sometimes cost Paz sleep, too.

“At one point,” he said, “I had to come in at 2 in the morning to expose my dark-grown plants to a brief period of light, so I could measure their ethylene production the next day.”

He put in those hours under a fellowship from the Chase Endowment for Academic Excellence — and reaped rewards for himself as well as the larger project.

“He’s thought of all sorts of experiments he wants to do,” Dr. Fisher said. “It’s not just me saying, ‘Do this experiment, do that experiment.’”

After Conklin spent the summer of 2007 on experiments for Dr. Fisher under a grant from the Vermont Genetics Network (VGN), Dr. Fisher urged her to apply for a Weintz summer-research fellowship for 2008. Conklin didn’t need to think twice about returning to the lab.

“It’s good to expose them to research now,” Dr. Fisher said. “Some students decide they love it. Others think, ‘It’s not for me.’ In research, most of the experiments we do fail. It can be hard for someone to see failure, day in and day out. But that makes positive results all the more exciting.”

## CLOSE TO HOME

Some alumni of Norwich will always remember the admission of civilian students in the early 1970s as the day the music died.

So what do those early non-uniformed students recall? Norwich history major Margaret Kelley spent the summer of 2008 asking many of the 76 surviving civilians from the classes of 1973-1976 to share those memories for a paper she’s now preparing.

“I had about a 35 percent response rate, which is average for surveys,” Kelley said at summer’s end. “I’m still continuing to hear from alumni as more responses trickle in.”

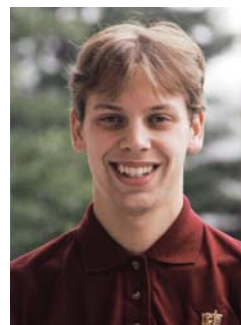
Early in her search of the archives at Kreitzberg Library, Kelley found visceral reactions to Norwich’s 1972 merger with Vermont College — particularly in the student newspaper. In the May 4, 1974 edition of the *Guidon*, a cadet editorialized: “It is a marriage of the devils.”

Among those “devils,” civilian pioneer JoAnn Murphy married Michael Kelley, the cadet and fellow 1974 graduate who now serves as commandant of Norwich. Three Kelley daughters went on to attend Norwich, and this year Margaret Kelley followed sister Meegan in winning a summer-research fellowship.

“I’m hoping in the future, another project will follow up with the cadet alumni,” the younger Kelley said. “It’s a story that needs to continue to be told.”



## NUMBER MAGIC

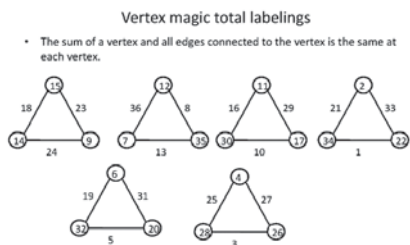


While Jeremy Holden finds computers as helpful and fun as the next guy, he spent little time on them while researching the mathematical intricacies of Edge-Magic and Vertex-Magic labeling of regular graphs this summer.

"It's generally pen and paper," Holden said midway through his fellowship. "Computers don't help a lot."

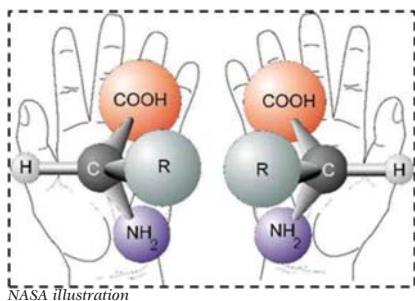
Persistence helps more. That's why Associate Prof. Dan McQuillan agreed to mentor the rising junior for a second straight summer of mapping the patterns within cycles of lined-up numbers on the graphs that add up to the same number.

"In addition to being extremely talented," Dr. McQuillan said, "Jeremy is also willing to keep working on a very difficult problem for a long time — a crucial ability for a researcher."



Holden came to Norwich to major in physics — then discovered the "creative aspect" of math in the training sessions that Dr. McQuillan holds for competitors in the Putnam international math competition. That experience, and two summers of research, fanned the flame of his passion for numbers.

"I want to go to graduate school for math," Holden said. "To do this all day, and be able to teach people, is like a dream."



## BETTER CHEMISTRY THROUGH RESEARCH

In the dead of winter, she skated in pursuit of pucks for Norwich's first varsity women's ice hockey team. In the heat of the summer of 2008, Kaitlyn Doolittle chased more efficient methods of manufacturing safer drugs.

"Research is one of the things that I really wanted to do," the rising-junior chemistry major said during her fellowship. "When I came to Norwich for my visit, I saw that while the chemistry department is

small, you get really good guidance from professors who are willing to work with you, one on one."

Doolittle jumped at the offer to this summer to collaborate in the lab with Assistant Prof. Natalia Blank, with whom she'd taken an organic-chemistry course.

"I noticed that her lab reports were very precise," Dr. Blank said. "She wrote down important information, like good scientists should."

This summer, Doolittle wrote down information about their efforts to custom-make pure, chiral (right- or left-handed) organic molecules, the better to catalyze a reaction and create needed drugs in fewer steps.

"This research could make some medicines more available to the general public," Doolittle said. "It would take less time and money to make certain things."





## CALLS OF THE WILD

For a rare bird, the gray jay keeps biology Prof. Bill Barnard and many young Norwich researchers busy. In 2008, biology major Jason Grupp joined the parade, spending the whole summer analyzing, naming and trying to translate the jay's calls under a Weintz Research fellowship.

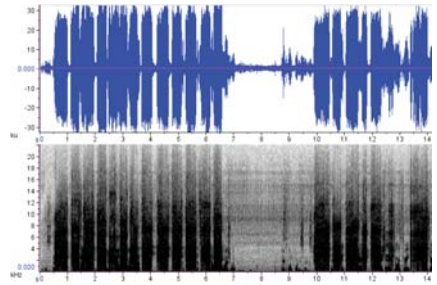
"I was able to identify 12 calls, though I heard more than 12," Grupp said at summer's end. "I omitted some of the calls because there was just not enough evidence to call it a call and not just a random sound."

Just another twist in Dr. Barnard's years of studying the lives, habits and quirks of one colony of *Perisoreus Canadensis* in Vermont's Northeast Kingdom.

"We've never been able to put a behavioral context to these calls," Dr. Barnard said. "Once we get names for them, we can start to take better notes."

Enter Grupp, who transcribed Dr. Barnard's audiotapes from the last 17 years with software that separates calls from other noises, and then edited and pasted them into a spectrograph.

"It's a large amount of time that these kids are dedicating to this kind of work," Dr. Barnard said. "I'm thrilled at the direction the university is taking in making research fellowships available."



## RESTING IN PEACE

You can get there from here. Norwich architecture major Rosario Gallo just took a few detours on the way to the Brion-Vega Cemetery in northern Italy in July.

First, he learned at a train station that he needed to take a bus to find the masterpiece and final resting place of designer/architect Carlo Scarpa. Then he left the bus too soon and wound up in a bar, asking for directions.

Five miles on foot later, Gallo sat down in the tomb's temple entrance, closed his eyes — and remembered why he applied for a fellowship to evaluate, analyze, draw and photograph the cemetery for a future book.

"I heard birds chirping and the cool breeze lifting the moisture off my skin," Gallo recalls. "The lily pads made a plunking noise

in a nearby reflecting pool. The entrapping cornfield made a whistling sound with the light breeze that swept across the countryside. The fish splashed around in another reflecting pool. My nerves were calmed.

"I felt like I was in a garden and not a tomb."

Gallo, whose project advisor is Assistant Prof. Wendy Cox, also visited other Scarpa works around Italy, and encountered "just about every piece of art and architecture that Venice, Florence and Rome had to offer" and that influenced Scarpa's vision.

"Without the Norwich backing, this would not have been possible," Gallo concluded. "I would encourage my peers to take full advantage of the research grants."



Bradley Swarms / East Coast Architecture Review



**RESEARCH, WITH INTEREST**

As bank transactions go, the first went as smoothly as Jaimie Ruel could ask.

Aiming to quiz officers of community banks around Vermont about their strategies for success, she led off with Doreen Allen, president of the branch of Merchants Bank in Northfield, Ruel's hometown.



"She helped me reframe my questions," Ruel, a business management major, recalls. "Of all the people I interviewed, she was the most knowledgeable."

The admiration ran both ways.

"I would give Jaimie high marks," Allen said. "She did her homework. She was able to switch gears as our conversation developed."

From there, Ruel visited officers of a dozen banks in economically underdeveloped parts of Vermont, asking about everything from banking regulations to the types of customers the banks serve and the primary economic supports in each community. With guidance from Dr. Mehdi Moghagheh, professor of economics, Ruel sought to determine why Vermont's community banks return better profits than larger, national banks.

"People are drawn to these banks because they focus on their customers," Ruel said. "Everyone has a name, not a number. Also, decisions are made locally, making the process faster and easier for customers."

**ROCKET SCIENCE**

Five weeks to research a computer simulation program for the protection of NASA spacecraft? Norwich Associate Prof. R. Danner Friend knew just the Norwich engineering student for the task — Kevin Wheeler, a Marine-to-be with no aspirations to rocket science.

"He is not afraid of a challenge and he is willing to take on tough projects," Dr. Friend said. "He is eager to always learn more and get everything out of his education that he can."

Never mind that Wheeler came here with a different vision for his future.

"When I went into mechanical engineering, I was thinking in terms of gears, engines — things I could put my hands on," Wheeler said before leaving for officer candidate school. "This is a little more structural analysis than I pictured engineering to be."

As part of his senior project, Wheeler will continue his analyses for NASA, which is preparing to phase out the space shuttle and develop the Orion spacecraft for missions to the moon and beyond.

"In 10 years or 30 years, to see a spacecraft landing on Mars, to think that my research now helped get them there ... That is amazing to me," Wheeler said.



NASA illustration

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To read in more detail about the summer 2008 projects, visit April through August 2008 entries at <http://www.norwich.edu/academics/academicAffairs/news/>

*On the cover:* The painting, "Famella-icon" is used with permission of the artist, Larry Richardson. The photograph of the entrance to Brion-Vega Cemetery is released to the public domain by Frederika Eilers.

