MEDIA ARE DISCOVERING WEROWOCOMOCO

It's midway through the 400th anniversary year of the founding of Jamestown and the nation's media are still discovering Werowocomoco. This year it's been hard to keep up with media references to Werowocomoco, the site of Chief Powhatan's capital city in the early years of Jamestown. The site of Werowocomoco was discovered several years ago. The Werowocomoco Research Group, headquartered at William and Mary, is conducting an ongoing, archaeological excavation of the York River site, the subject of the cover story in the Spring, 2006 issue of Ideation.

Writers and producers came to the Peninsula to see about Jamestown in 1607, and the more thoughtful among them found that they couldn't tell the story of the colony without including the story of Werowocomoco. Lead Werowocomoco archaeologist Martin Gallivan, associate professor of anthropology at William and Mary, found himself in demand for interviews—by phone, in person and on camera. He and his students were featured in "Pocahontas Revealed," an episode of the PBS program NOVA, in early May. The program was premiered locally on May 1 in Williamsburg's Kimball Theatre to an enthusiastic audience of archaeologists, scholars and others involved in the production of the show, notably members of the Virginia Indian tribes with lineal connections to the Powhatan people. "The Virginia Indian community were completely indispensable to the project," said Evan Hadingham, NOVA's senior science editor. Among the attendees were Anne Richardson, chief of the Rappahannock, and her granddaughter Ashlee Harless, who portrayed Pocahontas in the reenactment segments of the show.

Producer-directors Kirk Wolfinger and Lisa Quijano Wolfinger singled out the contributions of Buck Woodward, a graduate student in William and Mary's anthropology department, who "built an entire Indian village in a day." "Pocahontas Revealed" focuses on discoveries and revelations that continue to yield new information about Powhatan, his people, and their relationship with the Jamestown colonists. Other television documentaries are in the works. William and Mary researchers also contributed to a National Geographic article and accompanying web site. —Joe McClain


Neuroscience!

WILLIAM & MARY? YOU BET!

plus:

21ST CENTURY MAGI
CHOREOGRAPHING POLYMERS
MYSTERY OF A CONFEDERATE SUBMARINE
The College of William & Mary
in Virginia
Chartered February 8, 1695, by King William III and Queen Mary II of Great Britain, Phi Beta Kappa, the nation’s premier academic honor society, and the honor code system of conduct both were founded at William & Mary.

As editor of a chief contributor to ideation, I am particularly pleased by this medal, which was awarded in the category of Periodical Resources Management. A win in a category recognizing results possible from a modest set of resources is appropriate to a magazine covering the intellectual activity at William & Mary.

Nearly three years ago, I came here from a big research university and was almost immediately overwhelmed by the attitude of the scholars and researchers. The collaborative, “we found a way to make it work” ethos here was refreshing after so much of a culture that seemed to be based on the researcher as a central cog in a machine, often not engaged with other cogs, intent on stamping out a prescribed number of papers in academic journals.

The integration of undergraduate students into research activity—even in departments such as physics with full graduate programs—is one of the principal characteristics of the William and Mary way of doing research and scholarship. The neuroscience program, subject of our cover story, page 4, contains many instances of undergraduates doing work that, at Big Research U., is reserved for only a few high-performing graduate students. And it’s not just the hard sciences, either; read about a hands-on Sharpe Seminar in history on page 22.

The deep involvement of undergraduates in research activity is an aspect I try to showcase as much as possible in ideation. I suspect William and Mary has more per capita undergraduate co-authors of peer-reviewed journal articles than any other U.S. school—but that’s no agency that keeps track of this info on a nationwide basis. If you know different, please let me know. There’s a movement afoot to hardwire our faculty-undergraduate research connections into the curriculum; you can read about it on page 25.

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Neuroscience program connects work of faculty from five departments

Many brain disorders are actually vascular disorders. Stroke is a vascular disease, it's not a brain disease.

Griffin’s lab. He and his colleagues manipulate brain tissue to retain the rudiments of behavior, essentially the motor rhythm that drives breathing movements. They use fluorescent marking to make the target respiratory neurons glow, so that they can record the neurons’ activity at a number of levels. Griffin and Del Negro, both cellular guys, collaborate a lot and have complementary skills. For instance Griffin relies on Del Negro’s expertise when it comes to injecting dye into cell nuclei, while Del Negro acknowledges “John is a better microscopist than I am.”

Neuroscience at the cellular level will get a big boost from the establishment of a new microscopy facility in William and Mary’s Integrated Science Center, now under construction between Rogers and Millington halls. The ISC will be the permanent home of the neuroscience program’s new confocal microscopy facility. The instrument itself, which Del Negro calls “the best thing we can possibly get, the best microscope around,” arrived in April and has been set up temporarily in Millington.

BLOOD FLOW

If the brain is to work well, it needs a steady supply of oxygen-bearing blood. A problem in the blood supply leads to a problem with the brain. “Many brain disorders are actually vascular disorders,” Robin Looft-Wilson points out. “Many dementias are caused by vascular disease in the brain. Stroke is a vascular disease, it’s not a brain disease.”

Looft-Wilson is an assistant professor in the kinesiology department at William and Mary and insists that she’s “a physiologist and not exactly a neuroscientist.” Nevertheless, she is presiding over important work in the neuroscience program regarding the understanding of how blood vessels work and how their workings contribute to the health of the brain. One of the projects she is working on concerns a condition known as hyperhomocysteinemia, the excess of a certain amino acid in the bloodstream.

Hyperhomocysteinemia is a very common cardiovascular risk factor in the population,” Looft-Wilson said. “It’s an independent risk factor like high cholesterol and everybody’s heard about cholesterol. And hyperhomocysteinemia is typically the result of low B vitamins in the diet, which is actually very common.”

Hyperhomocysteinemia, she explained, tends to increase oxidative stress—that biological imbalance we try to counter by consuming foods rich in antioxidants. Oxidative stress is involved in the physical manifestations of the aging process, as well as a number of disease states, notably Alzheimer’s and atherosclerosis—hardening of the arteries.

“High oxidative stress makes blood vessels not function properly. It interferes with lots of chemical reactions,” she said. A healthy blood vessel, she explains, produces plenty of that critical and versatile biological messenger, nitric oxide. Looft-Wilson knew that hyperhomocysteinemia reduces nitric oxide availability, but how? She and a group of students working in her lab (“They are all...”)

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neuroscience majors.”) recently concluded a study that shows hyperhomocysteinemia alters the regulation of endothelial nitric oxide synthase (eNOS), an enzyme that triggers production of nitric acid. They wrote up their findings in a paper—with four undergraduate co-authors—for a journal and also presented at a physiology conference in Washington, D.C., that attracts thousands of scientists, of whom only a hundred or so are undergraduates.

**LEARNING AND MEMORY**

Pamela Hunt studies learning and memory—which, from her point of view, are intertwined. She is associate director of the neuroscience program and an associate professor in William and Mary’s Department of Psychology—and says that developmental psychology and neuroscience are intertwined, too.

“How do we get this brain? How does it develop? How does it grow? How do we avoid predation? Well, one way that we do that is to exhibit a variety of behaviors that allow us to protect ourselves,” she said. “How do we get this brain to work, now the trend is to try to focus on the development of the brain and Hunt’s concern continues to rise. Education hasn’t seemed to help, she said. A mouse, for instance will freeze at a shadow that might be a hawk, an evolved response that helps the mouse avoid detection. “They stop moving, their heart rate decreases and they increase their attention and their vigilance to the environment.” Children born with fetal alcohol syndrome (FAS) often, but not always, look different from other kids. Alcohol also is detrimental to the development of the brain and Hunt’s concern is with how learning and memory are affected in FAS.

“I have become very interested in ways that we might be able to take an individual who has problems as a result of alcohol in the memory domain and try to improve that, to try to overcome that,” Hunt said. “Maybe if we train the individual using a different technique, they could learn. We might be able to give them a drug treatment that would be able to facilitate their memory and help them perform better in school.”

Hunt has received funding from the National Institute on Alcohol Abuse and Alcoholism, one of the National Institutes of Health, to investigate such possibilities in animal models. One of the most promising ways to improve memory/learning, she says, is through choline supplementation.

“We found that the animals that are given alcohol exposure for a model of fetal alcohol syndrome are deficient in some way in some kind of ‘conditioning,’” she said. “And then we give the animal extra choline, which is just basically like giving you extra broccoli when you were a kid or a vitamin supplement. Given extra choline, they actually perform much more normally later on in that particular type of memory task.”

**APPLICATIONS**

This article has given an overview of work by just four of the seventeen faculty in the neuroscience program. It’s easy to see the potential application of Pamela Hunt’s work with memory and learning problems associated with fetal alcohol syndrome. The basic science being done in William and Mary’s neuroscience labs also contributes to medical application. John Griffin’s work with neural regulation of temperature has implications for studying the effects of fetal alcohol syndrome. The basic science being done in William and Mary’s neuroscience labs also contributes to medical application. John Griffin’s work with neural regulation of temperature has implications for studying the effects of fetal alcohol syndrome.

**PERFECT STORM FOR HIGH-ACHIEVING UNDERGRADUATES**

The neuroscience program at William and Mary brings together “perfect storm” conditions for undergraduates looking forward to medical school or neuroscience graduate programs—particularly the elite M.D./Ph.D. programs at major research universities.

“Out of about 60 graduates in 2006, we had four who went on to M.D./Ph.D. programs,” said John Griffin, director of William and Mary’s neuroscience program. “They get their medical school and their graduate programs completely paid for. They get a stipend to live on through those seven- to eight-plus years it takes them to complete both degrees and so when you think about how much that is, that’s about a quarter million dollars a student.”

Griffin likes to keep track of where his neuroscience graduates end up; he posts updated stats on the program’s web page. Many waver between medical school and graduate programs and Griffin asks indecisive students a simple question.

“My question to them is: Do they ever want to see patients? Do they want to be on the clinical side?,” he said. “With an M.D., you can be a clinician or you can be a research scientist. With a Ph.D, obviously there’s no clinical side of that.”

The interdisciplinary nature of William and Mary’s neuroscience program provides a high degree of versatility, and graduates have taken a variety of paths. Once the basics are covered, a neuroscience major can pick a number of directions.

“So Student A can say, ‘I really like neuroscience, I’ve been exposed to it and I have the basic science background but I really like behavior,’” Griffin said. “That kind of student is going to take behavioral courses and maybe apply to a behavioral neuroscience graduate program. Student B says, ‘I really like cell-molecular...’ They’re going to take more cell-molecular courses and apply to a cellular-molecular neuroscience program.”

One of the program’s goals is to get as many neuroscience students into the lab as possible. Griffin says a third of the papers published by faculty in the program have undergraduate co-authors. Papers in important journals with undergraduates as first authors are not unknown.

Research requires dedication and tenacity from the students. In turn they bring the usual virtues of youth—not least of which are the free motor skills necessary for some of the neurological lab work. Christopher Del Negro says a pair of “pretty decent hands” are necessary for fine neural work and that young people are able to get the knack more often than not.

“I mean we’ve worked with students who have been practicing neonatal medicine for years and years who just cannot learn this dissection that we do in the lab,” he said. “But most 19-year-olds can learn it in about a week.” Students unable to perform the fine dissections need not give up on neuroscience, he said—there are other opportunities, such as microscopy and mathematical modeling. It comes back to the interdisciplinary nature of the program, Griffin said.

“One of our program is different in that we really try to create a well-rounded scientist who has had exposure to all these different disciplines, who’s had exposure to all the different aspects of neuroscience,” he said. “I think that’s what makes our students so sellable when they graduate. That’s why they are getting snapped up by professional programs—med schools, pharmacy schools, veterinary schools—as well as by the top graduate programs.”

How do we get this brain? How does it develop? How does it grow? What are the processes involved? How do we avoid predation? Well, one way that we do that is to exhibit a variety of behaviors that allow us to protect ourselves, she said. A mouse, for instance will freeze at a shadow that might be a hawk, an evolved response that helps the mouse avoid detection. “They stop moving, their heart rate decreases and they increase their attention and their vigilance to the environment.” Children born with fetal alcohol syndrome (FAS) often, but not always, look different from other kids. Alcohol also is detrimental to the development of the brain and Hunt’s concern is with how learning and memory are affected in FAS.
for the understanding of fever and menopausal “hot flashes.” Medical science certainly knows more about the regulation of breathing thanks to the research done by Christopher Del Negro and his colleagues. One of their recent papers disproved a long-held belief about the molecular mechanics of respiration. Robin Looft-Wilson’s group has contributed much to the understanding of how the brain receives critical blood flow. Their research has been supported by the Jeffress Trust and Looft-Wilson recently received funding from the American Heart Association to continue her work.

The neuroscience program at William and Mary is a loose confederation, rather than a department, and its participants have managed to capitalize on the strengths of each of the contributors, turning out a respectable body of work while also producing an annual stream of some of the nation’s most promising future physicians and scientists.

Oxidative stress is involved in the physical manifestations of the aging process, as well as a number of disease states, notably Alzheimer’s and atherosclerosis—hardening of the arteries.

When the nation’s media search for expert analysis of global events, the star hangs squarely over little old Williamsburg.

Global trouble spots: Iraq, North Korea, Latin America, Northern Ireland. They’ve been there and seen that—and earned the wisdom of experience. That’s why three William & Mary faculty members are prominent in the Rolodexes on desks of wire services and TV newsrooms across the country. You’ve read their comments in the major stories and seen their heads talking. Now George Grayson, Mitchell Reiss and Lawrence Wilkerson, above, get a chance to talk about the global issues, how much we really know and how often the media gets it right. —Ed
The experts speak their minds

Is there still a “world order”?  

GRAYSON: Yes. The United Nations and other international institutions, such as the World Bank and International Monetary Fund, still play a significant role in what is referred to as a global world order. Sometimes it is easy to overlook this because of all the global disorder that is out there.

WILKERSON: There is always a world order because there is always power. At times, to the casual observer it may look more like world disorder; but so long as there is power to be had and wielded remains the currency of choice and whose culture permeates the world, and China, which is surging in the growth of GDP and exports. At the same time, there are a plethora of important, formal international agencies: the UN, the International Monetary Fund, the World Bank, the World Trade Organization, etc. These are complemented by private international players: non-governmental organizations, multinational corporations, terrorist groups like al-Qaeda, immensely wealthy drug cartels, networks of immigrant smugglers. Last but not least are the financial markets that can affect the global economy as we witnessed in the activities of the Shanghai and Shenzhen stock exchanges just after the Chinese New Year.

What are the top 3 global security threats?

GRAYSON: Terrorism and weapons of mass destruction, the spread of infectious disease and the real possibility that the U.S. will retreat from its global responsibilities.

WILKERSON: First is the proliferation of terrorism and weapons of mass destruction, the spread of infectious disease and the real possibility that the U.S. will retreat from its global responsibilities.

GRAYSON: U.S. presidents focus on Mexico when an economic or energy crisis erupts below or above the Rio Grande. Mexico is an extraordinary rich country—oil, natural gas, silver, gold, beaches, historic treasures, incredible museums, a robust industrial sector, fisheries and wonderful, hard-working people. However, Mexico’s elite pay little in taxes, benefit from ubiquitous corruption, live extremely well, spend anemic amounts on education, health care and job-training, and seek to use the border as an escape valve so absentee tax payers and the American taxpayers shoulder the responsibilities that the Mexican power structure shirks.

On a scale of 1-10 rate the security threat posed by Iraq. How about Iran and North Korea?

GRAYSON: For me, it’s the arrogant, preoccupation with unilateralist foreign policy of the Bush White House; the increasing readiness of the U.S. government to lie—the Bush administration conducted its own people and world as it pursues quixotic policies in the Middle East, while placing a low priority on forging a modus vivendi between Israel and the Palestinians; and the pusillanimous unwillfulness of the U.S. Congress and most presidential cabinet secretaries of both parties to challenge executive decisions that are devastating to our national interests and standing in the world.

Is there a “terrorist threat” to the United States? If so, what is it?  

GRAYSON: There is a non-state terrorist threat. I would rank about a 5 on a scale of 1 to 10. The American public is poorly informed—security experts, technology or fissile material. Consequently, the American taxpayer—what it is, the public’s or the media’s?  

GRAYSON: We are a parochial nation. Yet, as Bill Moyers pointed out in a recent PBS special, officials in Washington manipulate the mainstream media—including The New York Times, The Washington Post, and the three largest TV networks—as if they were your local museums, a robust industrial sector, fisheries and wonderful, hard-working people. However, Mexico’s elite pay little in taxes, benefit from ubiquitous corruption, live extremely well, spend anemic amounts on education, health care and job-training, and seek to use the border as an escape valve so absentee tax payers and the American taxpayers shoulder the responsibilities that the Mexican power structure shirks.

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When you are interviewed, do the media seem to have a good understanding of world events?

Grayson: Normally, no. One of the great failings of our democracy in the past 20 years has been the almost total transformation of the Fourth Estate into an entertainment industry rather than an essential element of our republic, an element whose main mission is to speak the truth to power. If you are in the entertainment business, detailed, careful analysis and study of an issue is unnecessary.

Wilkerson: The military men I have worked with and been associated with, and the press to which I have been associated, are the exception to the rule. The ideal soldier is a professional, dedicated to the defense of the country. If there is a military policy or a political policy that he does not think is the right solution, he is expected to do his job and get on with it. The media is the same way. You have the fact that the press is not a free agent; it is not independent. It is a part of the bureaucracy, and it is expected to present a certain perspective. The military men and the media men have an ethical code, and they are expected to adhere to that code.

What should the media be reporting on that they’re not?

Grayson: The best reporting, I think, is what is happening in the world. The American media does an abominable job of covering Mexico. Desk-bound journalists thrive on submitting short and rarely explore issues in depth.

Wilkerson: I find that most of the disturbing omissions are generated by an abysmal lack of historical knowledge. For example, one of the most pressing aspects of U.S.-Iranian relations today is in part a direct result of U.S. policy toward Iran since U.S. complicity in the coup d'état that overthrew the first democratically-elected government in Iran in 1953, the subsequent installation of the shah, and U.S. support of that incredibly poor ruler for the next quarter century, until he was overthrown in 1979. I have listened to hours of media reporting on Iran and have never heard a word of this understanding of why we find ourselves today in the dangerous situation that confronts us with regard to Tehran.

Do you see a bent toward a partisan approach?

Grayson: Most others are. Nick Kristof of The New York Times, Ginger Thompson of The Miami Herald, the Copley News Service really pursues stories and spends time sorting out fact from fiction. I have listened to hours of media reporting on Iran and have never heard a word of this understanding of why we find ourselves today in the dangerous situation that confronts us with regard to Tehran.

Wilkerson: My most memorable was when the media began to pick up on the detainee abuse issue (with respect to the U.S. abuse of those personnel captured in the so-called Global War on Terror). My worst moment was when I was a member of the Bush administration and on background I commented on how stupid U.S. Cuba policy was—and, later, my comments were written up and attributed to me. However, I have since found a little moral courage and no longer find that revelation embarrassing, but exhilarating.
Choice is generally thought to be a good thing. But with any choice comes consequence—intentional or otherwise. When it comes to choosing where our children go to school, researchers have found as educational choices increase, our public schools become more racially segregated.

By Erin Zagursky

Salvatore Saporito and Deenesh Sohoni, faculty in William and Mary’s sociology department, wanted to see if the racial mix and poverty rates of students in public schools matches those of the first neighborhoods the schools serve. For instance, if census data identifies the population of the area served by a certain elementary school as 48 percent white, 37 percent black and 15 percent Hispanic, then shouldn’t the school’s enrollment reflect that mix?

It should, but research by Saporito and Sohoni indicates that it often doesn’t, at least in many of the nation’s largest school districts. So what’s going on? It’s important to know, so important that their research is part of evidence presented in two current U.S. Supreme Court cases.

Their research draws a connection between school choice and segregation, but hasn’t yet tackled the “whys.” Are some parents more financially able to exercise school choice than their neighbors? Are there racial motives? And what motivates parents to keep their children in neighborhood schools, because staying in the local schools is also a choice—or is it?

Saporito and Sohoni’s next step is to investigate those thousands and thousands of individual family decisions that drive the trend—the individual tiles that make up the mosaic their research already has revealed. The size and scope of their work so far will make that next step a daunting task, but their mastery of mapping technology will make it a little easier.

The researchers first examined the racial composition of the populations within the 22 largest school districts in America. Defining exactly where school districts were located and then creating a new set of population data for those areas had never been done before and proved to be very labor-intensive.

“We went on a map quest,” said Saporito, assistant professor of sociology. The quest yielded school attendance boundary maps, including the old-fashioned paper kind. What that led to was a data set no one else had ever created.

“We have been able to collect a data set that nobody else has ever had—we were the first ones to do it,” Saporito explained. “Not only were we able to conceive of it but we were willing to put in the time and effort to collect the data and put in the technical expertise to marry all of those research methods together. It was sort of like a person who plays five or six instruments at once.”

The researchers entered coordinates of the school attendance boundaries into a geographic information system (GIS) program. This required the researchers to learn a good deal of computer programming.

“Programming is very tedious because one keystroke error can cause the whole program to have problems. We had to troubleshoot the programs until they would run correctly, which often would take a couple pair of eyes,” said former student researcher Laura Nixon, a 2005 graduate who currently works at the Census Bureau on special projects sponsored by the National Center for Education Statistics. “We learned a lot about programming by figuring out those issues, and I even use those same troubleshooting skills in my current job, which requires a lot of programming.”

The GIS approach allowed Saporito, Sohoni and their student researchers to correlate each school’s area of service with census data on the racial and ethnic mix of children living in the same area. They then compared that information to the actual enrollment statistics for schools, using information from the Common Core of Data, a U.S. Department of Education’s program that annually collects fiscal and non-fiscal data about all public schools in the United States. The researchers were then able to see if the racial mix of the public schools matched that of the neighborhoods they served.

“They didn’t. The research revealed that fewer white children attend public schools than minority children, particularly when neighborhoods are mostly integrated.

“If a school should have been 50 percent white, based on residential composition, it was on average 40 percent white,” said Saporito.

no match

Illustration by Hank Selby

Outside the lines

Why are our schools looking less and less like the neighborhoods they serve?
It's one of the big issues in sociology lately: Where you find racial segregation, is it due to race, or is it due to the high correlation between race and economic status?

hypothetical Gamma Grade School, where half of the children are poor and less than half are non-white. Gamma’s student body is so far lower than the neighborhood it serves.

“Healthier children are leaving those schools that have higher percentages of black children and also are poor at much greater rates than they are leaving schools with higher percentages of white children but the same amount of poverty—so race is clearly part of the puzzle here,” said Saporito.

An important question is whether the schools really are segregating along racial— as opposed to economic—lines.

“It’s one of the big issues in sociology lately: Where you find racial segregation, is it due to race, or is it due to the high correlation between race and economic status?” Sohoni said. To address the question, researchers applied the same mapping method they had used on race to investigate economic segregation.

Saporito and Sohoni compared poverty rates in neighborhood public schools with corresponding school attendance areas. They argue that choice give disadvantaged students the option to leave under-resourced and under-performing schools.

But, former student researcher Megan McD puzz the research was cited in the brief as supporting race-conscious policies, Saporito and Sohoni know that proponents of the free-market approach sometimes cite their work as well.

“Nobody is challenging our findings, but people can interpret them in different ways. However, our research clearly shows that creating more choice would end up exacerbating economical segregation in schools,” said Sohoni.

Decisions in the two cases before the Supreme Court (Parents Involved in Community Schools v. Seattle School District No. 1 and Crystal Meredith v. Jefferson County Board of Education) are expected by the end of the court’s term this summer and could impact public schools across the nation.

What’s driving the data?

The research conducted by Saporito, Sohoni and their students can show differences in the populations of children within school boundaries and those actually attending the schools, but those numbers have not allowed the researchers to examine individual choices.

“We can’t say what’s happening on an individual level,” said Sohoni. “But that’s what we want to find out.” Saporito has made a start, though, investigating the dynamics of individual choice through analysis of individual school magnet applications from the School District of Philadelphia.

“My assumption was that I’d be one of

Continued on page 33
Conjugated polymers can really shine, but you have to know how to make them dance

Harbron, a photochemist, is talking about the dancing of molecules, not people. She is demonstrating how a group of polymers change shape when activated by light, using her arms to demonstrate the action of azobenzene side chains coiling and uncoiling around a central molecular backbone. The chemically literate will recognize that she is acting out the process of cis-trans isomerism.

Her lab is investigating the properties of conjugated polymers, long-chain molecules that can be made to glow, even change colors, when they convert from cis to trans. The fluorescent properties of conjugated polymers can be activated by light or by electric charge, which makes them good candidates for a new class of commercial-product display screens based on polymer light-emitting diode (PLED) technology.

Conjugated polymers give a number of advantages to displays. Their fluorescent properties make for nice bright, high-contrast readout. This means that future cell phones equipped with PLED displays won’t require backlighting. PLED technology is especially appealing for computer monitors. Think of your laptop screen offering 180-degree visibility, even in the sunlight.

“Because this is a polymer, it’s plastic, right? In theory, you could make these flexible. So you could imagine some sort of flexible computer monitor,” she said. “The technology just isn’t there yet, but that’s where it’s headed.”

Some European consumer products, cell phones—even an electric razor—already use conjugated-polymer displays, Harbron said. But basic science always comes before cell phones and laptops and other consumer products. “We’re not going to be making cell phones here in my lab,” she said. “My group will never be widget producers, but we’re going to learn more and more things about what these polymers can be made to do. What we do may some day help the widget makers.”

Harbron’s work is based on coming up with new conjugated polymers that have groups attached to them that respond to light signals. “Conjugated polymers will fluoresce if you put electricity through them, but we’re focused on light because it’s very straightforward and an easy thing to do,” she said. The groups of polymers being investigated will fluoresce differently—brighter or a different color—depending on how they are shaped. Her work choreographing azobenzenes, for instance, has revealed that they respond differently to ultraviolet light than they do to blue light.

“If you made them coil up, they would glow a different color than when they’re all spread out,” she explained. “So I thought wouldn’t it be cool if we could force them to do that with a light signal? Just say ‘do it now’ and ‘now go backwards’.”

She characterized her lab’s work with azobenzenes so far as “finding out what we could do.” They discovered, for instance, techniques for changing the color of a conjugated-polymer solution, making the liquid change from yellow-orange to green and back again. She also has developed an approach to fluorescence modulation—a way to make the polymer glow brighter and dimmer.

“Once you can talk to the azobenzenes

A chemical choreographer

Elizabeth Harbron is describing a bit of choreography: “There are two groups and they start out like this, OK?” she says, right arm out, bent at the elbow, with forearm vertical. Her left arm also is extended, forearm dangling. Both wrists are bent and her fingers are gently curled.

“And in the light, they do this,” she nods, crisply drawing her right arm across her body and coiling herself up slightly. “Then…they go back.”

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“Once you can talk to the azobenzenes...”
We’re a physical organic lab. That means everything we study, we have to make. You can’t go out and buy this stuff.

POLYMERS FROM SCRATCH

The first step to beginning work is earnest on spiropyran, to be a supply of the polymer, she said, starting from scratch.

“We are a physical organic lab. That means everything we study, we have to make,” she said. “You can’t go out and buy this stuff. So we’re kind of in a synthesis phase right now, where we’re figuring out the best way to make the spiropyran polymers.”

Once the spiropyran polymers have been synthesized, Harbron’s lab will begin solution characterization of their samples, then move into films. She also has a list of other photoactive molecules that might prove to be promising.

Harbron’s lab already has made a number of important contributions about conjugated polymers to the scientific literature. Typical of many labs at William and Mary, Harbron relies on a steady supply of high-performing undergraduates as collaborators. In May, two seniors, Matthew Imm and Deana Hadley, were finishing up some work in the lab.

Not quite all colors of the rainbow—yet.

But conjugated polymers do come in a wide range of hues. The idea is to get them to change color and/or intensity when excited by light (left) or electric current.

When you do research on conjugated polymers, you get the added visual satisfaction of working with a versatile Crayola of substances.

“So much of organic chemistry is taking a white power and dissolving it into a clear, colorless liquid and maybe adding another clear, colorless liquid and isolating a product that is going to be another white powder,” Elizabeth Harbron said. “But I think that everything we work with is colored. A lot of times you’ll know if a reaction has succeeded or failed just on the basis of color. Just look for the color change!”

Conjugated polymers, Harbron explains, have a pattern of alternating single and double carbon-bonds throughout their backbones. Things that are highly conjugated become colored. Beta-carotene, in carrots, is orange because it has a conjugated backbone,” she explained. “And that’s a small molecule; we work with polymers—they’re even more conjugated, so we’re going even further into the spectrum.”

Most of the polymers in Harbron’s lab are various shades of deep red. Spiropyran side arms are alternately purple and yellow, depending on whether they’re in cis or trans state.

“We don’t know what color our new polymers are going to be yet, because we don’t have them. We’re not sure what’s going to happen when purple meets red. We may be making brown sludge today,” she said. “We’ll find out.”

and figure out how to make them brighter and dimmer, you ask. “OK. Now, can we go completely on, completely off, just with a light signal?” she asked. “And that’s one of the places we’re working.”

THE FILM’S THE THING

Basic investigation of the properties of any conjugated polymer begins in solution, but does it work in film?

As Meyers continued to study the poet, he found that Swinburne was an early admirer of Percy Bysshe Shelley, Charles Baudelaire and Walt Whitman. He also found that Swinburne had written a groundbreaking critical book on William Blake during a time when Blake was not yet taken seriously. In 1852, when Tennyson died, Swinburne’s work was so well known that there was talk of his becoming the next poet laureate. However, his controversial works and political views kept him from the post.

37 YEARS OF SWINBURNE

Intrigued by the poet who resisted the conventional pressures of the Victorian age and whose melodic poetry “pushes language to the point where sound and sense find their edge,” Meyers decided to write a thesis on him.

“I have now been working on Swinburne for 37 years and I’m still having fun,” he said.

Meyers began work on his uncollected letters in 1985, with grants from the National Endowment for the Humanities. Working before the advent of the Internet, the research was extremely time consuming, and Meyers relied heavily on assistance from libraries, Victorian-era scholars, book collectors, family members and students. Meyers wrote to libraries and private collectors for copies of letters and even spent hours pacing through libraries, leafing through collections of letters by Swinburne’s contemporaries on the off-chance of finding a connection to the poet.

“There was a lot of serendipity in that,” he said.

Even when the Internet became widely used and Meyers could look at Swinburne’s work online, the subjects of some of Swinburne’s poems were still so controversial that Virginia law prevented Meyers from reading some of them on his office computer without prior permission from the state.

As the collection of letters came together, he was surprised both by the number of letters he had been able to collect and by the number of letters he found to Swinburne, including letters from strangers. Meyers said the letters to Swinburne help to illuminate the milieux he lived in—from familial and intellectual to social and professional.

VICTORIAN FREETHINKERS

“One thing that becomes apparent from Swinburne’s correspondence: There was a larger network of skeptics and freethinkers during the time than we might think,” Meyers said. “It was an age of great religious piety where books of sermons were bestsellers, and yet there is a network of people who, despite strong pressures, are freethinkers and skeptics.”

An intriguing part of Meyer’s collection is a series of letters between Swinburne and his cousin Mary Gordon Leith, who is thought to have rejected a marriage proposal from him in his youth. In the
In its brief career, the H.L. Hunley was a success and a failure. Now, years after its resurrection, the Confederate submarine is a mystery and a research project.

The Hunley was the first submarine in history to sink an enemy vessel. On a quiet February night in 1864—six years before Jules Verne’s fictional 20,000 Leagues Under the Sea—the Hunley rammed a spar into the stern area, planting a torpedo into the hull of the USS Housatonic, one of the Union ships blockading Charleston harbor. The Hunley’s crew reversed its crank drive, backing away from the are dead colonies,” Jason said. “The Hunley sank. It was the first submarine to sink an enemy vessel, but it was lost probably since I was about six years old,” Jason said. “One of my first grade school teachers had noticed my interest in shipwrecks and lent me one of his personal books. At that time they were still looking for the Confederate submarine. I thought it rather fascinating but I never thought they would actually find it; it is rather a small article to find lost in a rather large ocean.”

WHERE BECOMES WHY

Not only was the Hunley found, in 1995; it also was recovered. In fact, the Hunley is on public display at the Warren Lasch Conservation Center in Charleston, South Carolina. If you want to see the Hunley, you’ll have to go on a Saturday, because during the week, archaeologists are working to preserve the Hunley and to solve the remaining mystery—why did it sink?

“The H.L. Hunley was the first submarine to sink an enemy vessel, but it was lost shortly thereafter,” Jason said. “It was somewhat of a technological marvel of its day and that can be emphasized by the secrecy in which it was moved from Mobile to Charleston. A special train car was constructed to conceal its identity during its entire journey.”

Not all the work on the Hunley is being done in Charleston. Jason Lunze is adding pieces to the solution of the mystery from the College of William and Mary’s chemistry department, who put him in touch with M. Scott Harris of Costal Carolina University, a William and Mary alumnus who has a record of collaborating with faculty at his alma mater. Harris is temporarily reassigned, working on the Hunley team.

Jason thought work involving the sedimentation of the Hunley might make a good geology project, but Harris told him there was no suitable sedimentation work. “But he had a project on the formation of rusticles within the submarine and I said that I’d love to work on the project,” Jason said.

A geology student examines rusticles to help solve mystery of a Confederate submarine

BACTERIAL CONDOS

Scientific examination of the bacterial colonies that create rusticles (see inset)—and the minerals produced by the bacteria—can provide insight into a number of conditions, present and past, in sunken iron vessels. Jason received five rusticles removed from the sub’s interior.

“The samples that I collected from the H.L. Hunley are dead colonies,” Jason said. “The submarine was in-filled with sediment which stopped their growth. This gives us a good view of what the inside conditions were like before the sediment in-fill completely killed off the colonies.”

He has been using a variety of nondestructive analytical techniques to examine his rusticles. He has worked with Bob Pike of William and Mary’s chemistry department, but does the majority of his work in the Surface Characterization Lab in the Applied Research Center. Jason keeps his rusticles wet, to avoid oxidation. In fact, the entire Hunley hull is kept under water in a preservation tank.

“The samples have to be dry in order to run the analytical techniques,” Jason explained. “So I have to dry them out first.” The drying process involves placing a rusticle sample in a desiccating vacuum chamber, adding argon gas, which helps the process by displacing air.

Jason, who expects to graduate in 2008, will be busy on rusticle tests for the next four to six months. He will write up his findings in a senior thesis and hopes to have a paper accepted into a peer-reviewed journal. He characterizes his work as “a small brick in the wall of knowledge” on the H.L. Hunley that ultimately may solve the mystery of the innovative warship that accomplished its mission, but didn’t come back.
ack in the day, Richmond’s Jackson Ward was home to a thriving African American community every bit as vibrant as Harlem or Atlanta’s Sweet Auburn. A great deal of the credit for Jackson’s prosperity properly goes to Maggie Walker.

The name of Maggie Walker is not forgotten in Richmond. It lives on in the Maggie L. Walker Governor’s School for Government and International Studies, a magnet high school. Her home, at 110 1/2 E. Leigh St., is a National Historic Site administered by the National Park Service, open for tours.

But honor and recognition have not extended to the seat of the Walker enterprise, the building that housed Mrs. Walker’s bank and served as the economic powerhouse of the community during the early decades of the 20th Century. Today, the Independent Order of St. Luke’s bank building at 900 St. James St. is a plywood-clad, graffiti-tagged four-story structure, long vacant, with little to remind anyone of its place in history. Heather Huyck and the participants of her Sharpe seminar hope to change all that. Huyck, a visiting assistant professor in William and Mary’s history department, has based the content of her first-year seminar on the building and—just as important—on the historical and social milieu in which the bank was conceived and grew. She and her nine freshmen want to see the bank building listed as a National Historic Landmark—and they’ve prepared the nomination document themselves.

The Sharpe Community Scholars Program at William and Mary combines community activism with academicism. Scholars live in a common residence and enroll in one of a group of specially designated courses—Sharpe seminars—that are the basis for year-long service-learning projects. Huyck’s seminar adds a research component to the mix.

“‘To me, what we’re doing goes to the heart of what a liberal arts education is,’” Huyck said. “‘A liberal arts education is about not the specifics as much as having foundational skills and the attitude that you can make a difference.’”

Huyck, a retired National Park Service historian, is an ideal professor/mentor for the project. Last year, she taught a class on national parks and Monica Griffin, director of the Sharpe program, asked Huyck if she would be interested in doing a freshman seminar this year.

“I said ‘twist my arm!’ so she did. I really wanted to do a seminar that was very rigorous in terms of the students working on their communication skills and their analytical skills, so I push them hard on their reading and research and writing,” Huyck said. “At the same time, I really wanted them to have an understanding that I don’t think any of them had. They were mostly white kids from suburbia and through the readings, through visiting the sites—and most importantly, through some of the African Americans that they met—they came to have a very different understanding of what African American history is about and how you can’t understand American history unless you fully understand African American history.”

Maggie Walker was active in the First Baptist Church of Richmond and became involved in the Independent Order of St. Luke, a fraternal, mutual aid society whose aims included “to educate and assist its members in thrift.” The Independent Order of St. Luke provided an established structure on which she could build, plying her entrepreneurial genius to fill needs denied to African Americans by law and/or custom—continued on page 24

The students came to have a very different understanding of what African American history is about and how you can’t understand American history unless you fully understand African American history.
Look for even more student-faculty collaborations in the future

Classes and projects involving faculty-mentored undergraduate research—such as the one centering around the St. Luke Building—will become more common at William and Mary.

In September, the College began a new faculty-student research initiative, which has received important support from the Andrew W. Mellon Foundation in the form of a $500,000 grant. The new grant will enhance the College’s ongoing commitment to student research, supporting initiatives that will more fully incorporate research into the undergraduate curriculum from freshmen through senior year.

Joel Schwartz, director of the College’s Roy R. Charles Center, which facilitates William & Mary’s honors program and promotes undergraduate research and scholarship, cited Heather Huyck’s Sharpe seminar as a model class for the kind of “learning through research, inquiry and creative activity” that the initiative will promote.

“Our plan is to integrate the teaching and research missions of William and Mary, so they’re not competing, but so that they’re cooperating with each other and that both are winning as a result of this collaboration,” said Schwartz. “The underlying logic is to find ways to bring research into the curriculum so that it will have a structural impact on how we interact with students, so that even more students will be involved with research.

The undergraduate experience at William and Mary already holds many opportunities for research, said Carl Stikwerda, dean of arts and sciences. “Mellon Foundation support will allow us to begin a systematic incorporation of faculty-mentored research into curricular offerings,” he said. “We want research to be a part of each student’s William and Mary education—beginning in the freshman year as often as possible. This effort will be supported by a full-time undergraduate research coordinator, a new position made possible by the Mellon grant.

William and Mary has received previous support for undergraduate research from the Mellon Foundation as well as from a number of additional sources, such as the National Science Foundation, the Howard Hughes Medical Institute and individual donors. Previous Mellon funding has made possible the Mellon Teaching Fellows Program, in which faculty introduce group research projects into large mid-level courses, with the assistance of experienced upper-level honors students who serve as peer-mentors and project coordinators. The foundation has also provided significant support for the College’s highly regarded Environmental Science and Policy Program.

The strategy is to build research into the curriculum along two dimensions. A temporal dimension will address undergraduate research as an activity that will unfold across four-year students, so it’s only up single-spaced pages but it’s written almost like a legal document where every syllable counts,” Huyck says. “It’s tough to make the grade, too. She said that 75,000 properties are on the National Register of Historic Places, compared to fewer than 2,500 on the more exclusive National Historic Landmarks. The seminar students get their draft application in on time and are working on revisions for a final submission in the fall. A lot of work, but earning a place on the list carries real value.

“The building then becomes eligible for grants. It also gets recognition and a certain amount of park service oversight for its condition,” she said. “Getting the NHL status is a way of helping the building get more resources for preservation and more support for its interpretation.”

Huyck will teach the seminar again in the fall, focusing on identifying uses for the building and raising its visibility. She brings to the nomination task considerable experience with the park service, plus more than eight years working for the House of Representatives subcommittee on national parks, but she stresses that she’s just a “partner” in the task taken on by her seminar students.

“They are really getting first-hand experience in how these projects get started and the kind of intense work it takes to get them going,” she said. “What I’m really trying to do is give them the skills through the freshman seminar, because I have experience in these kinds of projects. I’m trying to give them support and encouragement and try to open my park service contacts to them.”
Stepping up...and staying up

BOV secretary finds supporting research to be fulfilling

By Joe McClain

In 2002, when Suzann Matthews joined William and Mary’s Board of Visitors, she got on board just in time for a big budget squeeze.

“Funding for the College was at sort of a low ebb,” Matthews said. “The entire summer research grant program was eliminated. We also heard about how funding would affect every single department—how they would have to eliminate this course and that program, et cetera.”

Matthews, a 1971 graduate of William and Mary, knew that young faculty typically are in a particularly vulnerable stage of their career, often struggling to raise money for travel, supplies or other support necessary to budding research projects. The College shares in that vulnerability, to surviving yet underequipped, young faculty are in danger of being wrenched away to another school.

“All of us were very concerned about this, especially knowing what it meant to the younger faculty members and how much they wanted to stay here, but they just weren’t able to do their work,” she said. “In particular, it was the middle of the night; I was thinking. I looked at two amounts of money and I said, ‘Well someone should just be able to step up and take care of at least part of this problem, and then I thought: Oh my gosh, maybe that should be me!’

And so a committee was formed to choose recipients for Suzann Wilson Matthews Summer Research Grants, a process in which Matthews herself does not get involved. “I leave the selection entirely up to the committee,” she said. “I’m perfectly thrilled. I have absolute faith and trust in what they’re doing.”

Five years later, Suzann Matthews is secretary of the College’s Board of Visitors and William and Mary is in fiscal circumstances that—while a long way from what it could—or not legitimately be described as near the dire levels of 2002. She has continued her support of summer research, which she says she finds quite rewarding.

“It’s incredibly rewarding to watch as the younger faculty’s careers progress and fascinating to learn about what they are doing,” she said. “Their research is so cutting-edge that they keep William and Mary in the vanguard of many fields, either by adding to general knowledge of a subject or by making possible the practical applications of their work. And our students are also beneficiaries of the summer research program. Sometimes they are able to assist in the research directly—as many do. Other times they benefit indirectly, through the increased knowledge and experience the faculty bring back to the classroom in the fall.”

One of the criteria for Matthews grants is that recipients should not be receiving significant funding from other sources. Occasionally a recipient has to withdraw from the program because he or she is notified that a grant request has been funded. It happened this year, when chemist Elizabeth Harbron withdrew after receiving a big award from the National Science Foundation.

“The Suzann Matthews summer program has made an immense difference to our faculty,” said Dennis Manos, provost for research. “Suzann provides support for our faculty as they start to define their research programs, the most difficult time on the academic path. When people visit our campus, they are awed by the abundance of superb research programs involving so many students and faculty mentors. We recognize that many of these great teachers might not still be with us had it not been for generous givers like Suzann.”

SETH AUBIN, PHYSICS

Ultra-Cold Atomic Physics Research

In the basement of Small Hall this summer, Seth Aubin will be setting up apparatus for producing very, very, very cold atoms. The idea is to observe matter when it stops behaving according to the dictates of classical physics—but matter only does that in extreme conditions, which Aubin will provide.

“At very low temperatures—about one nanoKelvin, that’s about one billion times colder than room temperature or Antarctic temperatures—the quantum nature of matter becomes apparent,” explains Aubin, assistant professor of physics. “This means that the wave nature of matter drives physical processes and matter behaves more like light than discrete atomic particles.”

Ultra-cold atoms present a wide variety of applications. Theoretical plans to create very accurate rotation sensors and atomic clocks, for instance. His work will also advance the understanding of the physics of new types of superfluid states, with potential applications to semiconductors. It also has potential to test aspects of theoretical physics, including aspects of string theory that predict that gravity between small objects behaves quite differently than the force we’re used to.

ANNE HARPER, CHA R I T Y , E N G L I S H

Assessing Teacher Evaluations of African American English

For many children, the language of their homes and neighborhoods is very different than the language of the school. Anne Harper is examining whether the speech patterns that students bring to school pose specific challenges to teachers in order to understand how language variation is perceived in school.

Charity, assistant professor of English and linguistics and director of the College’s Language lab, has developed an on-line survey where teachers can listen to sound files of children speaking and respond to questions about the child’s social development and academic skills (https://helpuslisten.wm.edu). The second part of her work will be to design materials to aid teachers in more effectively helping children learn the language of the school. Her ultimate goal is to improve the student’s overall academic success.

“I want to get a sense from teachers about how they understand the relationship between variation in spoken language and the process of learning to read and write,” she said. “I am interested in the pedagogical challenges that arise due to differences in the home and school language.”

ELIZABETH HARB R O N , C H E M I S T R Y

Photocontrol of Conjugated Polymer Fluorescence in Photochromic Poly[p- phenylenevinylene] Derivatives

After receiving a $494,000 grant from the National Science Foundation in April, Elizabeth Harbron withdrew from participation in the program. You can read about her work on page 16.

MATTHE W LIEB MANN, ANTHROPOLOGY

Examining the Archaeology of the Pueblo Revolt in New Mexico 1680-1696

In 1680, the Pueblo Indians of the American Southwest united in a rebellion that drove out Spanish colonists and missionaries, ushering in a 12-year period of independence. The 80-year pre-revolt colonial period is documented by journals kept by the Spanish, as is the time following the Spanish return to the area in the 1690s. Matthew Liebmann, assistant professor of anthropology, has been researching the dozen years in which the Pueblo were free of the colonial influences of the Spanish.

“We know that the leaders of the revolt told the Pueblo, ‘We need to get rid of all the Spanish influence in our lives and go back to the way things were.’ What I want to do is see how that attitude is or isn’t manifested in the architecture and ceramics of the time,” Liebmann said.

In his initial research, he found examples in which Pueblo artisans revived archaic, pre-colonial elements of architecture and pottery designs, and other instances in which they created styles based on past, but which are entirely new creations. This summer, he will visit another Pueblo site in New Mexico, combing steep acre slopes below the high mesas for pottery samples.

SILVIA TANDEC IAR Z, MODERN LANG UAGES AND LITERATURES

Teatros de Memory: Grandmothers of Plaza de Mayo and Teatroxlaidentidad

Among the victims of the “dirty war” perpetrated from 1976 to 1983 by Argentina’s military dictatorship are the hundreds of babies taken away from their birth parents and often raised by families of the very people who had imprisoned and tortured their parents.

“These were babies born in captivity or babies taken from homes that were ravaged by the military when they were looking for so-called subversives,” Silvia Tandeciarz explains. “Because they were children, the state erased memory of the alien biological parents or their history, so the process of recovery is all the harder.”

The abuelas formed in order to recover those children lost during the dictatorship. The abuelas are the Grandmothers of the Plaza de Mayo, who have put together a theater for identity, or ‘teatroxlaidentidad’—one of a number of grass-roots ‘cultural interventions’ countering the official government treatment of the “dirty war” period. Theater works commissioned by the abuelas address Argentines aged 24 to 30 and ask: Do you know who you are?

The work with the Grandmothers of Plaza de Mayo is one piece of Tandeciarz’s larger project, Citizens of Memory, addressing how the history of the dictatorship years is being reconfigured in the collective imagination of today’s Argentina.

The text above was extracted from a PDF. The original document appears to be a page from a journal or academic publication. The text is centered and formatted in a standard academic style, with paragraphs and sections clearly separated. The text is primarily in English, with occasional use of other languages, such as Spanish. The content is scholarly, discussing topics related to archaeology, anthropology, and language studies. There are references to specific research projects and grants, including the Suzann Matthews Summer Research Grants, which are supported by Suzann Matthews. The text also references other researchers and their work, such as Matthew Liebmann and Silvia Tandeciarz. The overall theme of the text is the exploration of historical events and their impact on language, memory, and cultural identity.
Barbara King is anxious about being misunderstood.

King is the author of the book Evolving God, A Provocative View on the Origins of Religion. In the weeks surrounding its mid-January release, King was featured on National Public Radio shows, in salon and other media. The book explores evidence of behaviors among extinct hominids and modern living apes that King says are the root of what eventually became religious practice.

She is anxious that Evolving God not be taken as an attempt to discredit religion. Today’s religious practitioners seem to understand.

“I get lots and lots of enthusiastic correspondence from pastors and mentors in church contacts, King said.”

To properly understand evolutionary thought, you have to be wary of generalization and to be aware of distinctions. Some of the distinctions are small, if vital, for instance, there’s “a tail of tail” separating apes from monkeys. (Generally, monkeys have tails; apes don’t.) And King is jealously that while certain behaviors among chimpanzees may superficially resemble human religious acts, chimpanzees are not religious. “Could you even call it proto-religious?” she echoed in an interview. “Well, no! I’m going to reject the premise of that question. What chimps do is echoed in an interview. “Well, no! I’m going to reject the premise of that question. What chimps do is echo what we’ve seen in Neanderthal and Homo sapiens co-existing in the world. Yet they’re involved in burial of the dead, but the Neanderthals—just as much as our own species—are doing with this apparent emotion,” King said. “There is evidence of grave goods, grave markers, ceremonies at the grave site. You just don’t see it among australopithecines or early Homo species.”

King says that the evidence of the care that went into Neanderthal burial sites very likely represents a spiritual component of Neanderthal life. Her William and Mary undergraduates, she says, often challenge her on the point. “My students ask me some very good questions,” she said. “They ask ‘couldn’t it just be hygienic?, a way to deal with the dead body and all its germs. Or ‘couldn’t it be to avoid social denunciation? A way to deal with the dead body and all its germs. Or ‘couldn’t it be to avoid social denunciation?’”

Charles McGovern is an associate professor of history and American studies. His interests include American literature, but he doesn’t have the market to buy stuff. Sold American: Consumption and Citizenship, 1890-1945

At some point in history American citizens changed from being a nation of consumers to become a nation of consumers. McGovern shows us how it happened through the reticent shaping of the seemingly devouring forces of advertising and consumer advocacy. The admen set up a consumption-based American dream while the consumer advocates warned us to be skeptical and not to be taken in.

Charles McGovern is an associate professor of history and American studies. His interests include 20th-Century popular culture, popular music and the culture of American capitalism.

THE GRAMMAR OF INK, BRANDS AND SCARS
IDENTIFYING MARKS: RACE, GENDER, AND THE MARKED BODY IN NINETEENTH-CENTURY AMERICA
JENNIFER PUTZ
University of Georgia Press

Evolving God: A Provocative View on the Origins of Religion
BARBARA KING
Doubltay

Jenny McAlpine describes the arm of Qooqong as “attiried all over with an unmentionable Gorill basket of a figure.” Ishimah’s uparsonal beauty from Moly Dook may have a name in 20th-Century American literature, but he doesn’t have the marketplace cornered on body modification. Far from it. Putzi looks at marked men and women in classics and lesser-known works, exploring how tattoos, scars and brands alternatively serve as stigma and as emblems of healing and survival.

Jennifer Putz is an assistant professor in the English department. She specializes in 19th-century American literature, women writers and American silent films.

THE NUNS ARE ALL RIGHT
HABITS OF COMPASSION
Irish-Catholic Nuns and the Origins of the Welfare State
MAUREEN FITZGERALD
University of Illinois Press

In the early 20th century, the pope of New York City—especially women—had a hard lot, but at least they had the Irish Catholic nuns on their side. Members of the protestant majority had their own idea of charity, often linked with blame and condemnation. Fitzgerald’s book discusses how the nuns championed the rights of the poor and disfrocked while laying the groundwork for what eventually became a comprehensive system of government-supported social programs by marshalling New York’s Irish political structure. (Tammany Hall probably knew never what hit it.)

In March, Nelson received the Organization of American Historian’s (OAH) Merit Award for the best book published in American cultural history. In avoiding the pomp, the OAH said of his book, “We are honored to be able to recognize and honor Dr. Nelson’s achievement through the archaeology of the archetypal process of meaningful research, and history writing, compelling readers to understand how all of us come to understand the past.”

The Anisfield-Wolf Book Award will be presented this year at a ceremony in Ohio and carries a $10,000 prize. The awards were created in 1937 by Cleveland-born philanthropist Edith Anisfield Wolf. She designed the awards for books that expose racism or explore the subtleties of human diversity. The awards are bestowed through a fund at the Cleveland Foundation.

—Sandra Sarat

BANGS AND WHIMPERS:
Background Radiation
HENRY HART
Salt Publishing

Background radiation, the legacy of the Big Bang, is all around us and always has been. This lyrical title collection of poems deals with events from our history and our natural world that shape our everyday life even though they’re not necessarily part of our immediate day-to-day experience. For example, you need a Manhattan to fully appreciate the image of New York losing its two front teeth.

Henry Hart is the Mildred and J.B. Hickman Professor of Humanities. This is his third book of poetry.
That can’t-keep-them-out-of-the-lab quality

When Margaret Saha met Arnold Beckman, he was nearly 100 years old, but he still had a spark in his eye.

It’s the same spark she sees in the students who his program benefits. It’s a passion for scientific research and for excellence. The Beckman Scholars Program supports undergraduate research students in chemistry, biochemistry and the biological and medical sciences at select institutions throughout the country.

At the time of the program’s inception in 1997, William and Mary was one of only 20 four-year institutions to receive the award. Since 1998, the College has received the award four times—something that only four other universities (California State, Carnegie Mellon, Hope College and San Francisco State) have achieved.

“I think we’re a natural fit for the program because the goals of the Beckman Scholars Program and the goals of William and Mary really dovetail completely,” said Saha, a professor of biology at the College. She also is director of the Howard Hughes Medical Institute Undergraduate Science Education Program at William and Mary, which offers research fellowships and grants to undergraduate biology students. Programs such as the Beckman scholars and the HHMI Undergraduate Science Education Program are particularly important at William and Mary, which offers masters degrees—but not the Ph.D.—in biology and chemistry.

INSTITUTIONAL HONOR

It’s an honor for an institution to be selected for a Beckman Scholars Program. Saha, who was chairperson of the Beckman Scholars Program Advisory Board last year, said that “excellence” is a key word when considering which schools would receive the awards. She likes to quote founder William and Mary, which offers masters degrees—but not the Ph.D.—in biology and chemistry.

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Vijay Dondeti worked with Saha as a 2003-2004 Beckman Scholar to study neural differentiation and plasticity in the African clawed frog using micrYsorps. “The most important thing I got out of being a Beckman Scholar is seeing first-hand how research and science really work,” the 2004 graduate said. “Experiments are not as easy as described in textbooks. They take a long time to do and require a lot of planning and even then things can go wrong. In spite of this, I find that I enjoy research even more than I could have imagined. The moments at which you get the actual results, after week-long experiments, make the effort really worthwhile.”

Beyond the research experience, the program also provides networking opportunities for participants. “The Beckman Scholars Program is really pretty special because I wasn’t just part of a select group at William and Mary. I really became part of this larger Beckman scholar community,” Bowes said. “It was a wonderful opportunity to talk to other undergraduate research students and see not only what they are doing now but what they plan on doing with the rest of their lives and careers. So it was really useful in my personal career development to be part of that group.”

The annual symposium that the scholars attend provides the perfect opportunity for students to share their ideas and be inspired by the impressive lineup of speakers, often including Nobel laureates, Saha said. “This was an amazing opportunity for me to interact with other students and faculty from all over the country. And also, I get a chance to personally interact with great scientists from leading institutions,” Dondeti said.

For Bowes, the symposium also provided a unique opportunity to push herself by giving a scholarly presentation. “I think I am naturally kind of a shy person and I sometimes have difficulty in speaking up and putting forth ideas … and that experience, which was very intimidating at the time, has made it really easier for me giving research presentations now.”

Bowes is currently a graduate student at Duke University working to earn a Ph.D. in pathology and working in the lab of Salvatore Pizarro. She said her Beckman experience gave her an understanding of the dedication required of researchers and the frustrations that are part of the profession. “Sometimes things aren’t always going to work out and you can spend weeks or months in a direction that just doesn’t work. Understanding the frustration and the work involved really prepared me for the Ph.D. program,” she said. “I think it also helped me make the decision to pursue research in the future. A lot of people lose Ph.D. programs because I don’t think they knew what they were getting into and once they get there, they realize that’s not something they want to do. Whereas that long-term research experience really helped me feel confident that this is something I could do and this was indeed something that I wanted to do.”

Dondeti is currently a graduate student at the University of Pennsylvania working on a Ph.D. in the cell growth and cancer group with Dr. M. Celeste Simon. Like Bowes, he said his experience in the Beckman Scholars Program was invaluable to his current academic pursuits.

TEAMWORK

“I really got to see what research was like— the hard work involved and how long it takes to get results. I clearly saw how teamwork oriented it is. Any successful project requires a group effort to get all the parts right,” he said. “I also learned how important it was to be able to communicate the results of a project to the scientific community through the publication process. As an undergraduate, I got my first first-author publication. I had to learn how to write scientific papers. All of these skills have prepared me very well for my graduate research.”

The community also benefits from the program as the scholars are required to complete an appropriate service or volunteer experience. Katherine Fisher, ’06, a 2005-06 Beckman scholar at the College, served as a mentor and teacher with the College’s Science Training and Research (STAR) Program.

“During both of my summers as a Beckman scholar, I was able to present my research to students in STAR, a program for disadvantaged teenagers, as well as interact directly with them in the laboratory and introduce them to hands-on science experiments,” she wrote in her stewardship report to the Beckman Foundation. “I consistently arrived to serve as a teacher and mentor to the younger students in the lab. I was assigned as the mentor to one younger student in particular and I have taken great pride in helping her develop her own independent research techniques and problem-solving skills.”

Saha said the service aspect of the program is vital. “I think it’s really important now for scientists to reach out. Among the public, there’s so much lack of information, misinformation about what scientists do, how we do it, what our goals are, that we really need to educate the broader public, but also I think it’s very important that we give back so that it’s a continuous circle,” said Saha. 
NEH fellowships support individuals pursuing advanced research that contributes to scholarly knowledge or to the general public’s understanding of the humanities. Recipients usually study scholarly subjects, monographs on broad topics, and historical, architectural, site reports, translations, editions or other scholarly tools. Full-term NEH fellowships carry a stipend of $40,000 and allow recipients to take time off from teaching and other faculty duties in order to work full time on their research projects.

TURKISH URBAN TRANSFORMATION

Sibel Zandi-Sayek, assistant professor of art and art history, will use her fellowship to finalize her book A World in Flux: The Politics of Space in 19th-Century İzmir. A World in Flux is about 19th-Century İzmir/Smyrna (in present-day Turkey) and the difficult processes by which this cosmopolitan Mediterranean seaport was transformed between the 1830s and the 1880s in the context of Ottoman modernization reforms and European capitalist expansion. As an architectural and urban historian, Zandi-Sayek explains that her focus is on the built environment both as a site and a means for larger power struggles. She studies specific conflicts over the reorganization of physical space, such as the provision of modern infrastructure, the registration/taxation of land property, and the uses of rights to the streets and public spaces.

“On the whole,” she says, “A World in Flux will show how urban space was an indispensable tool used by various competing interest groups to promote their visions and priorities.

EXPLORING HUMANE HUMAN MOTIVATIONS

Alan Goldman, William R. Kenan, Jr., Professor of Humanities and professor of philosophy, will spend a year supplementing and reorganizing his writings into a book titled Reasons from Within: Motivation and Practical Reasons. Having won a summer grant a couple of years ago (which he used to write and publish the book Aesthetic Value), this is Goldman’s second NEH award. Goldman will produce a book that will defend a Humean internalist view of practical reasoning and practical reasons.

“Eighteenth-century Scottish philosopher David Hume believed that reason was—and should be—the slave of the passions,” says Goldman. “This account holds that the reasons we have for acting in various ways are determined and limited by the motivations we have. These motivations include not only specific desires, but broader and deeper concerns and values that underlie specific desires.”

Goldman hopes that this book should be of interest to non-philosophers as well as philosophers interested in practical reason and he believes that it will provide a healthy antidote to the quasi-humane view of reason and practical motivation by which many contemporary philosophers have come to believe that reasons, with which we believe our desires are grounded, are merely an illusion.

Chemical choreographer

To be published as an undergrad because we don’t have a whole lot of graduate programs," Deana said. “I’ve been never been lead author though. I’ve always been listed behind Professor Harbron—but ahead of Matt.’

ECCLESIASTICAL ARCHITECTURE

Carl Lounsbury is a visiting associate professor in the Lyon G. Tyler Department of History. He is also a member of the Architectural Research Department at the Colonial Williamsburg Foundation.

After teaching a summer field school, Professor Lounsbury will use his year to focus on his book, The American Church and Meeting House: From the Beginnings to 1800. This is, he says, “my opportunity to pull together about two decades of research. For the past 20 years I’ve traveled up and down the eastern seaboard looking at churches and meeting houses roughly dating from the late Seventeenth Century through the very early Nineteenth Century and during that period I’ve probably been in about 400 buildings from Maine to Georgia.”

A scholarly work based on primary research, Lounsbury also envisions color images and drawings with which he will set forth the history of the architecture of ecclesiastical buildings in early America. He hopes to put American buildings in context of European buildings and has conducted research into English, Dutch and German churches.

A footnote on W&MD grants workshops: “The workshops that were held at William and Mary for faculty grants were of great value,” says Zandi-Sayek. “I would encourage my colleagues to participate in them.”

the rest of the stories
Eddies fuel mystery ocean blooms

Researchers from the College’s Virginia Institute of Marine Science were members of a team that helped to solve the mystery of how vast blooms of microscopic plant life form in the middle of otherwise barren mid-ocean regions. An article in a May 2007 issue of Science outlined the group’s discovery that episodic, swirling current systems known as eddies pump nutrients up from the deep ocean to fuel such blooms. The EDDIES project, a multi-year study of eddies in the Atlantic Ocean, was led by Dennis McGillicuddy of the Woods Hole Oceanographic Institution (WHOI), and includes VIMS Associate Professor Deborah Steinberg, postdoctoral researchers Sarah Goldthwait, graduate student Bethany Eden and research technician Joe Cope. They found that ocean productivity was surprisingly high when stirred by mid-ocean eddies. These huge swirls of water were teeming with diatoms (a type of phytoplankton) in concentrations of 10,000 to 100,000 times the norm—a finding that was traditionally observed in the Sargasso Sea, an otherwise barren mid-ocean region south of Bermuda. “Eddies have a dramatic ripple effect on the open-ocean food web,” Steinberg said. Their team found up to three times as much zooplankton under eddies as they did in surrounding waters.

—from reports by Stephanie Murphy/WHOI and David Malmquist/VIMS

Griffioen is elected APS Fellow

Keith Griffioen, professor and chair of William and Mary’s physics department, has been elected a Fellow of the American Physical Society (APS). Fellowship is a distinction awarded each year to no more than half of one percent of the APS membership.

A particle physicist, Griffioen was nominated by the American Physical Society’s Topical Group on Hadronic Physics. The nomination citation reads: “For definitive experimental studies of the open structure of the proton and neutron, both in the perturbative, deep-inelastic regime, and in the non-perturbative resonance region.”

Much of Griffioen’s current research is conducted at the Jefferson Lab. He is active in the Geantino experiment, which studies the quantum chromodynamics structure of protons and neutrons, and the Q-weak project, a “new physics” initiative that aims to challenge predictions of the Standard Model.

Griffioen is a member of the American Council of Learned Societies and is the professional organization for art historians and artists, with 3,400 individual and 1,200 institutional members.

—Ellen Zagarovsky

Wallach honored for teaching art history

When notified of his winning the honor, Wallach said he felt as if he had hit the jackpot. “There is no award, no form of recognition, I would rather have,” he said.

Wallach is cited for the far-reaching significance of his publications, including “The Museum of Modern Art as Late Capitalist Ritual,” “The Universal Survey Museum,” and “Making a Picture of the View from Mount Holyoke.” Wallach was also co-editor with William Treutlein of the exhibition catalog Thomas Cole: Landscape into History (Yale University Press, 1994), for which he wrote the principal essay, and he is the author of Exhibiting Contradictions: Essays on the Art Museum in the United States (University of Massachusetts Press, 1998). “My aim has always been to put history back into the history of art—a field that has at times tended to consider works of art apart from their historical contexts,” Wallach said.

Beyond his scholarly achievements, the award also cites Wallach for his teaching abilities.

“I am not interested in students memorizing dozens or hundreds of works of art but in learning to think critically about the history of art through close scrutiny of a limited number of works,” he explained. “Dialogue is essential,” said Wallach. “Although the work of art may be a given, we all see differently.”

—Suzanne Scowers

2007 Goldwater scholars

Kelly Hallinger and Ashwin Rastogi, students at the College of William and Mary, have been named 2007-08 Goldwater Scholars. They are among 37 U.S. sophomores and juniors recognized by the Harry B. Goldwater Scholarship and Excellence in Education Foundation.

The one- and two-year Goldwater scholarships will cover the cost of tuition, fees, books, and room and board up to a maximum of $7,500 per year. A third William and Mary honoree, Zachary Swanson, received an Honorable Mention from the Goldwater Foundation.

Kelly Hallinger is a sophomore biology major from Lancaster, Pa. She has been studying the effect of mercury contamination on the songbirds of the Shenandoah Valley, working with Associate Professor Dan Cristol of the biology department. Kelly began research as a freshman at William and Mary, operating a mass spectrometer in the chemistry lab of Associate Professor J. Costas. Her career goal is to earn a Ph.D. in applied ornithology, then to teach at the university level and conduct research, with particular emphasis on conservation biology and ecotourism.

Ashwin Rastogi is a junior from Fairfax, Va. He is a junior mathematics and physics major, working with Christopher Crame, Class of 2007, Associate Professor of Physics, on a project involving particle physics. The work is aimed at constructing a mathematical model for unifying two of the fundamental forces of nature: electromagnetism and the weak force. His goal is to get a Ph.D. in physics and to “develop a tool that will make a meaningful contribution to the modern theories and understanding of physics at an academic institution.”

Goldwater Scholars are selected from a national field of 1,200 mathematics, science and engineering students.

—Joe McClain

Center for Piezoelectrics by Design gets grant to fund new high-performance computer cluster

The recent $500,000 grant, awarded from the Office of Naval Research, will allow the CFD to install a specialized computer cluster to implement its testing methods. The new equipment will increase the CFD’s computing power tenfold.

“The infrastructure is for important work, which has generated almost no money over the past five years for the College. We will now be renewed and improved, so that he and his colleagues can press the boundaries of computation even further.”

Some of the immediate technological challenges being tackled by the CFD will involve increased computer performance, effectiveness and longevity of naval electronics. In addition to the technological advances, the CFD also produces many highly trained graduate students and postdoctoral researchers.

The Center for Piezoelectrics by Design is based at the Applied Research Center (ARC) in Newport News. Senior participants come from eight research universities, including William and Mary. The ARC, a seven-story, 122,000 square foot research facility, serves as the Bagelbrot laboratory in a 900-acre research park. In addition to the CFD and other facilities associated with the College of William and Mary, the ARC houses the operations of four other universities, offices and laboratories of the Thomas Jefferson National Accelerator Facility, high-tech business startups, and high-tech business support services.

—Joe McClain

Virginia’s healthiest community?

Pooquonos is the healthiest community in Virginia, according to a study by the College’s Schroeder Center for Healthcare Policy.

“The top ten in the center’s first ranking also contained Fairfax County, Loudoun County, Falls Church City, Arlington County, Pohickatan County, Highland County, York County, Stafford County and Fauquier County. Communities were evaluated on 14 types of risk factors and outcomes, such as prevalence of smoking, motor vehicle deaths, lack of health insurance, poverty, activity limitations and cancer deaths.”

“We are continuing the analysis to understand whether some communities develop public policies that increase their capacity to be healthier,” said Louis Rossiter, director of the Schroeder Center.

—Joe McClain

F I E L D

L I B R A R Y

Alain Wallach, the Ralph H. F. Professor of Art and Art History and professor of American studies at William and Mary, received the 2006 Distinguished Teaching of Art History Award from the College Art Association.

The award is given annually to individuals who are noted for their influence as scholars and their dedicated work with students.

Wallach is the first professor from William and Mary to receive this award in its 29-year history. He shares it this year with Wenda Corn of Stanford University. The award was conferred on the two professors at the CAA’s annual meeting in February, 2007.

When notified of the winning the honor, Wallach said he felt as if he had hit the jackpot. “There is no award, no form of recognition, I would rather have,” he said.

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—Suzanne Scowers

VIMS researcher Deborah Steinberg (left) discusses her research with William and Mary Chancellor Sandra Day O’Connor during the chancellor’s spring tour of VIMS facilities.
Chrisochoides awarded Guggenheim Fellowship

Nikos Chrisochoides was awarded the 2007 John Simon Guggenheim Memorial Fellowship in Medicine and Health, one of just two such awards given this year and William and Mary was the only U.S. university to receive the award in this field.

Chrisochoides, Alumni Memorial Distinguished Associate Professor of Computer Science, is also the only recipient from a Virginia college or university. Guggenheim fellows are appointed on the basis of distinguished achievement in the past and exceptional promise for future accomplishment. The 2007 fellowship winners include another 95 artists, scholars and scientists selected from almost 2,400 applicants from the U.S. and Canada.

Chrisochoides is working on geometric and numerical algorithms and software for image-guided neurosurgery, a therapeutic intervention in the treatment of brain tumors. Survival rate and quality of life for a patient greatly depend on the accuracy and precision of tumor resection, which can be significantly improved by utilizing preoperative brain scans as an aid in decision making during the procedure. However, during the course of intervention the areas of interest may dilate due to brain shift (deformation) and thus invalidate existing preoperative brain images.

Chrisochoides’ group in the Parallel Experimental Laboratory (PELab) at William and Mary uses intraoperative MRI and many clusters of computers to track brain deformation.

“William and Mary is proud of the interdisciplinary research that our faculty does,” commented Carl Stirkow, dean of the College of Arts and Sciences at the College. “Professor Chrisochoides is one of our distinguished scientists doing cutting edge research bringing together information science, medicine and medicine.”

In November of 2005 Chrisochoides’ group with their colleagues at Harvard Medical School were the first team of doctors and scientists to perform in real-time the aligning of pre- and intraoperative brain images using landmark tracking across the entire brain and present the results to neurosurgeons at BWH during the tumor resection procedure.

“This work would not be possible without the generous support from the National Science Foundation and more specifically without the vision, hard work and tenacity of Frederick Bean, director of sensor science and technology at NSF,” said Chrisochoides, who has received more than $1 million in NSF funding over the seven years he has been at William and Mary.

“Progress made in this very difficult problem is a result of a large scale collaboration and involves a group of neurosurgeons led by Dr. Peter Black and Dr. Alan Golby, a group of radiologists led by Dr. Ron Kikinis and Dr. Simon Warfield at Brigham and Women’s Hospital (BWH) in Boston, Mass., and an IRMA (Sophia-Antipolis, France) team including Dr. Oliver Clatz and lead by Professor Nicholas Ayache – all part of a large interdisciplinary team put together during the last 14 years by Dr. Ferenc Cakir and Dr. Ron Kikinis at Harvard Medical School.” Chrisochoides said.

He added that “the Guggenheim fellowship will help us to set the foundation for the next steps which require, one, the use of the web and many supercomputers across the country to improve the accuracy of current results, two, widen the use of our work, through the web, from other hospitals in US and around the world, and three, train the next generation of researchers that can carry out a noble objective – better and more affordable health care for all.”

“The fellowship means quite a lot to my research,” said Chrisochoides. “The fellowship is in medicine and health, not computer science as one would expect, and it will open many more doors for grant and project projects.” Chrisochoides added that he will use the fellowship to establish a new Center for Real-Time Computing at William and Mary and design three new courses on Medical Image Analysis. The College also hopes to find time for writing the first book on parallel mesh generation. “Parallel mesh generation is critical for real-time medical image analysis,” he added.

Chrisochoides is the fourth professor to receive the John Simon Guggenheim Memorial Foundation Fellowship while on faculty at the College of William and Mary. Past William and Mary fellows are Professors James Ash (history), Barbara King (anthropology), and Talbot Taylor (English).

The foundation notes that since 1936 it has granted over 100 million in fellowships to more than 16,250 individuals. Fellowship decisions are based on recommendations from hundreds of judges worldwide and are approved by the foundation’s Board of Trustees.

“We’ve gone on the radar of a lot of people, because no one dreamed that William and Mary had anything to do with this stuff,” said Chrisochoides.

In the world of sensors, Bill Bean is a facilitator, a matchmaker, a quarterback. Above all, he is an “honest broker” trying to introduce people working on sensor technology in Hampton Roads to people who want to use sensor technology—and to each other.

Bean is director of the Technology and Business Center at William and Mary and his true vocation is just one part of his job.

“We are trying to make greater Hampton Roads become known as a sensor center,” he said. He works with two groups to accomplish this goal—the Hampton Roads Technology Council (HRTC) and the Hampton Roads Research Partnership (HRRP). Each has a sensor component.

Bean explains that the Sensor Science and Technology Forum, a branch of the Hampton Roads Technology Council, is “industry driven,” while the Hampton Roads Research Partnership has a “university-centric” sensor cluster.

“As they both focus on sensors and related activity, they share a lot of commonality but they are separate programs,” Bean explains. “Because I manage both of them I try to leverage them together simply because of available hours in a day.”

FOUR AREAS OF TECHNOLOGY

The sensors cluster is one of four areas of technology identified by the Hampton Roads Research Partnership as showing promise for academic development by the “university-centric” HRRP. Each cluster is based at a school. Atmospheric science is centered at Hampton Roads’ Technology Council, biomedical devices at Eastern Virginia Medical School and modeling and simulation at Old Dominion University.

“Although there’s a huge amount being done by all of these universities—every single one does something with regard to sensors,” Bean said. “There’s none of them that really stand out as the ‘sensor school.’”

In cross-pollination of technology and science, Bean’s sensor components in the Hampton Roads Research Partnership and the Hampton Roads Technology Council benefit from a high degree of overlap and cross-pollination. William and Mary benefit from Bean’s activities as well.

“I don’t think William and Mary had very much presence at all within certain segments of the technology community,” he said. As a result of these programs the visibility that William and Mary receives as a leader in some of these technologies has gone way up in the community. We’ve gone on the radar of a lot of people, because people dreamed that William and Mary had anything to do with this stuff.”

Bean organized an early May symposium of the HRTC’s Sensor Science Program holding its first meeting in 2003.

“The meetings we’ve had have been remarkable because the participants may have heard of each other. They are sensor researchers to meet with people in industry, or even with each other.

“A lot of these guys are highly siloed and most of them are on a tenure track so they still have to publish and teach, but through this program, by bringing them together, you can begin to break down the silos,” he said. “Silos dissolve-R-U.”

In early 2007, the Hampton Roads Research Partnership received a grant from the Economic Development Agency, an arm of the U.S. Department of Commerce. Bean’s sensor cluster will share in the grant.

At a recent Sensor Science and Technology Forum, Rick Lalli, chairman of the Hampton Roads Technology Council, watches Mark Patterson of VIMS set up_fetch, a sensor-laden submarine.