THE COLLEGE OF WILLIAM & MARY IN VIRGINIA

Chartered February 8, 1693, by King William II 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.

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Ideation is the crystallization and conceptualization of ideas. It is part of the process through which thought ultimately becomes deed.

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Cover Photo
Archaeologist Martin Gallivan is leading a team probing the mysteries of WeroWocomoco, the capital town of Chief Powhatan (background).

Notes
WeroWocomoco is named after a Native American tribe that possibly co-existed with the Powhatans. Archaeologist Martin Gallivan is leading a team of researchers who are attempting to uncover the secrets of this ancient settlement. The team's work is supported by the funding from the Integrated Science Center.

The problems at hand today have reached the level of complexity where traditional disciplinary training is inadequate, even—or maybe especially—at the undergraduate level. At the groundbreaking for the ICS, it cited an article titled “125 Questions: What Don’t We Know?” from the July 2005 issue of Science. It was a list of the most important and most pressing problems that need to be addressed over the next 25 years. Though the number of things we don’t know in science is immeasurably larger than the number of things we do know, but the problems on this list are real bone-archers. What is the biological basis of consciousness? What controls organ regeneration? How much can human life be extended? These are among the questions that our students will be called upon to answer. They’re not only beyond the capability of any one person, they also go beyond the borders of our traditional disciplines. Our new science faculty must allow our students and faculty to communicate and collaborate in ways we have not yet invented. So, in the best interdisciplinary liberal arts tradition, we are integrating science at William and Mary.

We broke ground on Phase One of the Integrated Science Center on October 10, 2006. Members of the departments of chemistry, biology and psychology will populate this new building as well as the renovated Rogers Hall.

The building is the first step in developing a “science precinct” here at William and Mary, extending the principle of “integrating sciences” to departments in adjacent buildings. It is an ambitious project and we’re going to need a lot of help. Some alumni and friends have already stepped forward, particularly Sarah “Sally” Vesey Gore ’56 and her husband Bob. The Integrated Science Center is not just for faculty labs and offices. Carl Strikwerda, our dean of arts and sciences, offers that 45,000 square feet is an underestimation for what it will be, but it will be used to house undergraduate research, an important part of the liberal arts.

The problems that are going to be addressed are those that society needs to think about. They’re not only beyond the capability of any one person, they also go beyond the borders of our traditional disciplines. Our new science faculty must allow our students and faculty to communicate and collaborate in ways we have not yet invented.

The problems at hand today have reached the level of complexity where traditional disciplinary training is inadequate, even—or maybe especially—at the undergraduate level. At the groundbreaking for the ICS, it cited an article titled “125 Questions: What Don’t We Know?” from the July 2005 issue of Science. It was a list of the most important and most pressing problems that need to be addressed over the next 25 years. Now clearly the number of things we don’t know in science is immeasurably larger than the number of things we do know, but the problems on this list are real bone-archers. What is the biological basis of consciousness? What controls organ regeneration? How much can human life be extended?

Notes: Integrating Sciences

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IDEATION

The Raw Data

New construction:
Renovation, Rogers Hall
Research, Teaching/Laboratory Space
Classroom, Office Space
Anticipated completion, new building
Anticipated completion, Rogers
Design Team
Construction management contractor

Phase One of the Integrated Science Center will house faculty in departments of chemistry, biology and psychology—and the College’s interdisciplinary neuroscience program for undergraduates.
It was the best of times. Wahunseenacawh, also known as Chief Powhatan, had settled into a new capital town on a bay off what is now the York River.

The site, known as Werowocomoco, was not a newly-created community, but was a strategic location from which to administer a power base. Powhatan was the paramount chief, also known as the “great king” of the Virginia Tidewater—ruling an area ranging from just south of the James River north to the Potomac and from the fall line near today’s I-95 eastward to include the Eastern Shore. His capital city through a stable system of governance administered through sub-chiefs, or weroances, among thirty-odd districts comprising dozens of villages and about 15,000 people.

Meanwhile, down on the James River, times weren’t so good. In late 1607, life in Jamestown (also known as James City), the first tentative toehold of what was to become the first permanent English colony in the New World, was so precarious that 400 years later tourists were attracted to the interpretive exhibits of Jamestown by an advertising campaign asking, “Could you have survived?” Odds aren’t good, considering that nearly half of the original set of colonists were dead by the end of 1607.

While preparations are being finalized for the events of 2007, the 400th anniversary of the founding of the Jamestown colony, Werowocomoco is emerging into daylight, as archaeological excavations of the site by the Werowocomoco Research Group uncover evidence of life in the onetime capital of the region. Abandoned by 1609 by Powhatan and all but forgotten for centuries, “Wero” is in for its share of the spotlight, as well. A NOVA episode on Werowocomoco is in the works; an advance crew from WGBH-TV has been on the ground with Gallivan and others involved, including Bob and Lynn Ripley, whose Gloucester County property includes the Wero archaeological site. The Virginia Department of Historic Resources—a part of the project through the work of Randy Turner, director of its Tidewater Regional Preservation Office—placed Werowocomoco on the Virginia Landmarks Register in March; Wero was also placed on the National Register of Historic Places.

A PLACE OF POWER
It’s impossible to talk about the early days of Jamestown without mentioning Werowocomoco. Much of the story of the colony either happened at Werowocomoco itself or was influenced by decisions that were made there. The legendary, albeit historically controversial, intervention by Pocahontas in the execution of John Smith happened at Werowocomoco. Smith and Christopher Newport met several times with Powhatan, each time at Werowocomoco. All the decisive action...
occurred at Wero because it was the seat of power. In fact, the standing description of Powhatan’s capital at the Werowocomoco Research Group is “a place of power.” Think of it this way: The White House is in Washington, the Holy See is at the Vatican and Fort Knox is in Kentucky. In 1607, the political, religious and economic authority of the Chesapeake region all rested in a single place: Werowocomoco.

“When Jamestown was settled in 1607, Wa-hurunacawnah—Powhatan—is the regional power,” Gallivan said. “In the early days of the colony, when the colony struggled to feed itself and to establish its place in the region, Powhatan controlled affairs across the Chesapeake region. It obviously changed in the early 17th Century, but in the early days, it was Powhatan who decided when and how much to feed the English colonists and whether or not they would be allowed to continue to live in the area.”

It was inevitable that John Smith would meet the great king. The meeting didn’t take long to come about. In December, 1607, just a few months after the colony’s founding, Smith was carrying out one of the colony’s missions by exploring the Chickahominy River as a possible route to the Pacific Ocean. He had gotten separated from his men and was found—stuck in the mud—by a force led by Opechancanough, brother of Powhatan and a Pamunkey warrior in his own right. Opechancanough took Smith on a circuitous route through the region, ending up at Werowocomoco. Smith wrote up accounts of his captivity and subsequently became a leading member of the tribes, the parts of the memoirs centering on Smith and Powhatan have served as the basis for movies, popular literature and countless thousands of grade-school pageants. Taken as a whole, accounts from Smith and other Jamestown colonists are a primary historical record of the people of Powhatan. It’s only in the 21st Century that Werowocomoco began to tell its own long, mysterious and distinguished tale, a story that predates Powhatan and is beginning to offer glimpses of a place that has held significance for centuries.

Wero occupies a peculiar place among ancient native town sites we’ve known about it long before it was rediscovered. And as Danielle Moretti-Langholtz, a cultural anthropologist at William and Mary and a specialist in Native American communities, points out, “We actually have the name for the place in the Powhatan language.”

“There’s right,” Gallivan seconded. “The folks that lived at Cahokia didn’t call it Cahokia. The folks that lived at Pueblo Bonito in Chaco Canyon didn’t speak Spanish.”

GETTING PAST POCOHONTAS

Werowocomoco began to come out of hiding in 2001. Lynn Riple had collected an impressive amount of artifacts on her farm, which led to a survey of the property by archaeologists from the Fairfax Foundation. As the Purton Bay site became an increasingly likely candidate for the location of the legendary capital city of the manannahoff, Gallivan consulted Moretti-Langholtz on how to involve the native community, many of whom are descendants of the Powhatans.

“We decided that instead of having the native community wake up to a newspaper story that said Dr. Gallivan is going to be working on this site that we think is Werowocomoco, let’s bring them in before we begin work,” Moretti-Langholtz said.

Representatives of the eight state-recognized tribes were invited to a meeting at William and Mary during which Gallivan and others explained their intentions and asked for reactions. As a follow-up, Moretti-Langholtz arranged with Bob and Lynn Riple for the tribal representatives to visit the site in February, 2003.

“We learned a lot that day, as archaeologists, about what the Powhatans were intrigued by, what they were interested in, what they wanted to know.” There were some directions they pushed us in that were different from where we might have headed on our own,” Gallivan said. “For example, they expressed an interest in the long history of the Powhatan community. Not just the events of 1607, 1608 and 1609 involving personalities such as Pocahontas and John Smith—

they’re intrigued by that history as we are. But they are just as interested in the decades and centuries leading up to 1607—what happened in the years prior to 1607 to make this place Werowocomoco, to make it the king of the place, the chief.”

“I took that to heart,” Gallivan said. “That was not at the top of our list coming into that meeting but it was at the top of our list coming out. It shaped the direction of our research in a positive way.”

Work began in earnest in June, 2003, as a project of the College’s Archaeological Field School, consisting largely of students from the Archaeological Methods class. Excavations soon revealed that Werowocomoco was an old place. In comparison with Jamestown and other sites in the history-laden Tidewater, Werowocomoco, Moretti-Langholtz notes, is “an early story.”

If the history of the town was compressed into a 24-hour Pocahontas would come along in the final reverberations of the last stroke of the clock sounding midnight.

“The location of Werowocomoco has been occupied for several millennia,” Gallivan said, “but there’s an abrupt change around A.D. 1600 where we start to see evidence of a large, fairly permanent community in the location. We see evidence of houses, pits, pottery, stone tools and these sorts of things in fairly large numbers starting around A.D. 1600.”

These relics of early life came from stratified deposits near the river and are typical, Gallivan says, of other native communities of the time—“a fairly large community of corn, beans and squash farmers.” The researchers have unearthed similar evidence of a residential community up to about 1,000 feet back from the riverbank, where the finds stop and an empty space begins. Where the empty space ends, things get very interesting.

THE PUZZLE OF THE PASTURES

Behind that empty space, we found an area that we refer to as the Pastures,” Gallivan said. “It’s demarcated by a set of ditch features, earthworks. We haven’t exposed them in their entirety, but they seem to form a kind of enclosure a thousand feet back from the riverfront—from away from the residential community.”

There are two parallel earthworks, each about two and a half feet wide and two feet deep. The field team has exposed over 600 feet of the front side and they’re still going. Gallivan said that ditchworks are not uncommon in native communities in Tidewater. In some places the ditches surrounded palisades, other times not, but the Werowocomoco ditches are unusual.

“Something like this that’s 600 feet on one side is unheard of,” he said. “It’s gigantic. It’s unique in the area. It’s incredibly large—and also separated from the core of the community.”

Work in the Pastures has also uncovered the remains of post-hole architecture, with at least one hole that is beginning to offer glimpses of a place that has held long-term history of place, the history of that location.

“Representatives to visit the site in February, 2003.”

“A TRULY ALGONQUIN ROUND TABLE

There are eight state-recognized native tribes in Virginia. Of those eight, seven are descendant from the Powhatans. Six of the seven are represented in the Virginia Indian Advisory Board, which works with the Werowocomoco Research Group. Members of the descendant communities are more interested in Werowocomoco as a place important within their own heritage than as an archaeological site, Danielle Moretti-Langholtz said.

“We have the name for the place in the Powhatan language.”

“The folks that lived at Cahokia didn’t call it Cahokia. The folks that lived at Pueblo Bonito in Chaco Canyon didn’t speak Spanish.”

“We actually have the name for the place in the Powhatan language.”

“It’s incredibly large—and also separated from the core of the community.”

“Something like this that’s 600 feet on one side is unheard of,” he said. “It’s gigantic. It’s unique in the area. It’s incredibly large—and also separated from the core of the community.”
Top: Working carefully below the plow line. Center: Gallivan and Moretti-Langholtz examine some of the thousands of artifacts yielded by the site. Lower: Sifting tons of dirt is a tedious, but necessary, task of archaeology.

Indication, Gallivan says, that goods were being moved into the site. There is also copper, a much rarer find down near the river.

“We found 20 pieces of copper that have been chemically matched with Jamestown copper.” Gallivan said. “Eighteen of the pieces come from the Pastures. Two come from the riverfront. So there’s a pretty big imbalance there. Copper is, of course, a key trade item between the Jamestown colonists and the Indians. Copper has enormous significance for the Powhatans as a high-status item. Those who wear it and those who control it have elite status in the Powhatan world.”

Gallivan refers to the documentary accounts of John Smith and the practices of other native cultures to make a preliminary interpretation of the findings in the Pastures. There were the narratives of meetings with Powhatan, of course, and Smith also described the physical layout of Opechancanough, the village the Chichahominy headdress that Powhatan made him after abandoning Werowocomoco.

Smith’s description of Werowocomoco has Powhatan’s house separated from the rest of the community and was situated “thirty score” from the riverfront. “A score is twenty,” Gallivan said. “Twenty what? Is he referring to paces? To feet? It’s unclear in the text, but that reference to a score of the Powhatan community emphasizes that Powhatan’s house was separated from the rest of the community and we’re seeing something in the archaeological record that parallels that.”

Smith was a little more detailed in his description of Opechancanough, placing Powhatan’s house in the woods, a mile from the rest of the community. In this house Powhatan kept his copper, shell beads, and deer skins that he was given as tribute.

“It was a place that could be described as a storehouse, a sacred space—those words could apply to it. It was a place where only Powhatan and his priests could attend,” Gallivan said.

Were the Pastures the site of another, maybe logical site, but I would love to see that happen. But right now, this is a key future component of the site.”

WITHER WEROOCOMOCO?

As an archaeological site, Werowocomoco is not only large, but also disturbed, with dwelling sites spread across 50 acres. Gallivan and Moretti-Langholtz concur that excavation and cataloging of evidence still buried in the riverfront community and the Pastures represent a lifetime of archaeological work.

“They really have a tremendous opportunity here,” Gallivan said. “The site is intact. It is in great shape archaeologically. It is owned by one family, Bob and Lynne Ripley, who have been very amenable to the archaeological research. They’ve opened their door to the Virginia Indian community. They’ve been really fantastic.”

As the site is worked, conversations turn to the future of Werowocomoco, when the focus shifts from excavation to interpretation of the site and what it has revealed.

“It’s not yet clear what the site and its post-excaavation profile could be in terms of presenting the complexity of native culture,” Moretti-Langholtz said. “I don’t know if we’re close to the day when we can see Werowocomoco as an interpretive site rather than an archaeological site, but I would love to see that happen. But that can’t happen without the archaeological work and it can’t happen without our native partners. I think that day will come and the landowners seem to know that that is a key future component of the site.”

The opening volume begins with Marshall’s early life and the collection tracks Marshall’s papers, correspondence and selected legal decisions over the course of his life. For example, the first document of the first volume is an entry Marshall made in a Williamsburg store in November 1775. At the time, Marshall was a 20-year-old member of the Culpeper Minute Men Battalion and had stopped in Williamsburg on his way to fight in the Battle of Great Bridge.

The final document of the most recent volume is a simple epigraph Marshall wrote for himself two days before he died on July 6, 1835.

“Two days before he died, on July 4th, he drew up his epitaph, which is a very brief and humble docu- ment,” Hobson said. “It shows the simplicity of John Marshall. It gives the facts of his birth, the date of his marriage to his wife, Mary Willis Ambler, and that he was the son of Thomas and Mary Marshall. Hobson added, “He left blank the date of his death, naturally.”

The project began 46 years ago with a comprehen- sive search for Marshall’s documents and papers. Historians explored documents, biographies and books that led them to holdings of manuscripts and libraries, such as the U.S. Library of Congress, the National Archives, the Virginia Historical Society, the Library of Virginia and the historical societies of Pennsylvania, New York and Massachusetts. Foreign archives, such as the British Public Record Office, were also searched. The Earl Gregg Swem Library at William and Mary also provided a small collection of original Marshall docu- ments that were either donated to the College by the family or purchased over the years.

“There was a systematic search undertaken in all of the major libraries,” Hobson said, “and that document and print off a copy. Other times, he said, the auctioneer would gladly send a copy for the Marshall project. An online auction Web sites such as eBay. In fact, project editor Charles Hobson said publication of the final volume was delayed because more and more documents were turning up online.

Sometimes, Hobson would only have to go to the eBay link that included an image of the document and print off a copy. Other times, he said, the auctioneer would gladly send a copy for the Marshall project.

“There are a number of documents in volume 12 that were obtained in just that way,” he said. “Sometimes, it was literally ‘Hold the presses,’ because we would get wind of another document becoming available online.”

continued on page 28

By BRIAN WHITSON

Computers Can Remove the Drudgery, But Can’t Replace Musical Creativity

Sophia Serghi might use three different keyboards to compose, but the end result is the same—talented students with more than a single creative point of view.

Some of the students come from film studies and some from music. Four are freshmen.

“IT’S A very competitive group to get into because you obviously have to have previous musical experience and have some compositional skills and orchestration craft and so forth,” Serghi says. “These students came in with a lot of skills. Nowadays there is too much software available to them that they can pretty much do everything in their rooms. It’s just wonderful, though, to have the media lab for them to experiment with high-end applications that would cost a lot of money and they otherwise wouldn’t have.”

From MIDI to Full Orchestration

The students have assignments each week to compose short pieces for film clips—ranging from blockbusters to avant-garde works, such as Fernand Léger’s 1924 “Le Ballet Mécanique.” By the end of the semester, each student should have six small clips from various movies, with two- to three-minute orchestrations for each.

“We do a MIDI realization, in that what we hear in the classroom is all electronic, but they can generate a full orchestra score that’s all written out,” Serghi says. “So, if an orchestra comes and says we want to do your music, they can just generate the parts and it can go to the hands of real musicians.”

continued on next page

By KATHERINE HOVING

Computers Can Remove the Drudgery, But Can’t Replace Musical Creativity

Sophia Serghi might use three different keyboards to compose, but the end result is the same—talented students with more than a single creative point of view.
Each student will choose a favorite to be played live—a reading situation, not a finished performance—by William and Mary’s Orchestra or the Wind Symphony. This opportunity will give the students the rare experience of seeing a first performance of their composition, with the students in orchestra and conducting it as Sergi did in New York.

Students composing pieces for the class can begin at one of three keyboards. There’s the QWERTY one attached to their computer or the MIDI piano-type keyboard, which also can be plugged into the PC. There’s also the standard 88-key hammer-and-wire piano that would be familiar to Beethoven. One student, Chris Cowan, doesn’t use any keyboard, plugging a guitar into the computer instead. Many of her students are comfortable initiating their compositions at a computer, but as Sergi notes that “when I first started it was pen, pencil and paper.”

“This is a very much a pen-and-paper kind of artist for me. I don’t have a lot of sketches, I don’t write music on the piano, I work at a computer and play to my music, so I usually have a lot of sketches, handwritten sketches. The big architecture of the piece may happen on the keyboard, but the initial kernels happen on the piano.”

Bay McLaughlin, a member of the class of 2006, is an example of one of the students in Sergi’s class who has mostly worked directly on a computer keyboard. He likes to “bend sound” using a professional program like Logic 7. He plays a few measures, which are immediately scored and ready for playback. Then with a touch of a key, a drag of the mouse he can add notes, transpose or alter just about anything. Change a flute to a drum? Click—it’s done. Make an eighth note into a dotted sixteenth? Click, drag—no problem.

“You can take any noise that’s in your head and make it happen,” he said. “You have just endless possibilities of the sounds you create; anything you want. A program like this goes so far past anything you can ever imagine in your mind. You can’t get to a point where the computer won’t do something. For me, that’s about as cool as it gets.”

In an atmosphere filled with powerful software and other high-tech whistles and bells, Sergi continues to emphasize the creative process and writing scores that support the visual message of the film. Additionally, there are still some issues in music on which technological advances have very little impact.

“I get frantic calls from parents occasionally—all is he going to make a living,” she says. “Out of the 10 kids that I have in my class, at least five are going to go to grad school in film scoring, and that’s really what they want to do. Three of my current students are thinking of going on to grad school for concert composition.”

By Suzanne Seurattan

**Working with industry partners**

To help fund research like Harry Wang’s on hurricane storm surge effects and to identify where VIMS research may be the most useful, William and Mary’s Office of Economic Development is working with local industry to pinpoint the most beneficial fields and research for industry goals.

The VIMS Industry Partners Group includes VIMS/SMS researchers and representatives from a broad array of the corporate community. John Wells, VIMS director and dean, chairs the committee. Jim Golden, director of economic development, facilitates the meetings. Through the Office of Economic Development, William and Mary actively supports collaborations not only with industry, but with non-profit organizations and government entities that serve the university’s mission of teaching, research, and public service.

Professor Harry Wang

Hurricane Katrina wreaked havoc on the Gulf Coast of the United States when it made landfall in late August, 2005.

According to the National Oceanic and Atmospheric Administration’s National Weather Service, the storm was the third largest to hit the United States in 100 years. It brought wind gusts exceeding 140 mph brought $81 billion in property damage.

Two years before Katrina hit the Gulf, Hurricane Isabel blew its way across much of coastal Virginia and North Carolina. Isabel was no Katrina in terms of property destruction or strength—but she might have been much worse. Isabel was Category 2 storm at landfall but reached Category 5, the top of the Saffir-Simpson Scale, three times during her life out in the Atlantic Ocean. A Category 5 hurricane has winds in excess of 156 miles per hour and produces storm surge approaching 20 feet.

“Hurricane Isabel was a wake-up call for me,” Harry Wang said. He points to a picture of a destroyed dock near his office at the Virginia Institute of Marine Science at Gloucester that he hit by Isabell winds and storm surge. “That’s my icon. That dock was standing there for a long time, but this one hurricane completely destroyed it.”

Wang is an associate professor of marine science at VIMS. He studies coastal and estuarine physical process—in short, the way that water moves. Wang along with other members of his Estuarine and Coastal Modeling Group (ECMG), studies the way water moves through the use of computational models. He estimates not only the ways water moves but also the quantity that moves and what the water takes with it if it flows—rocks for instance.

After Katrina, Wang and his colleagues wondered what Isabel might have been like if it had made landfall as a Katrina-strength storm. Much of the Katrina-related damage along the Gulf Coast was from flooding from storm surge. Wang said scientists haven’t been focusing on predicting storm surge and he emphasizes, they should be.

“Ironically, from a scientific point of view we don’t pay much attention to storm surge predictions,” he said. “We think we know what would happen with a lot of water and a lot of wind, but we don’t!”

ECMG’s research on coastal and estuarine physical processes includes studies on the effects of storm surge on low-lying coastal regions—how ocean waves interact with wetlands and barrier islands and man-made structures, such as levees and buildings. Wang said he was struck with how much of a difference even an inch—or a foot—of additional storm surge made in terms of damage.

“The difference between water at the front step versus flooding in your living room,” he added. “That’s one foot.”

After witnessing Isabel’s destruction first hand, the ECMG team began using their computer models to chart the impact of the storm’s surge on areas around the Chesapeake Bay.

Through complex mathematics and state-of-the-art computer processing, they turned raw water level, velocity, salinity and water temperature data into graphic storm surge calculations. Wang is hopeful they can increase the accuracy of storm surge predictions from 3.4 and 5 feet to 3.5 and 3.3—the more accurate the better.

Wang, along with his colleagues Sun Jeon, a research assistant professor, and Weng Tong, a visiting scientist, used the computational model to demonstrate the impact of a Category 4 hurricane on the Bay region, using the Isabel model as a platform. In essence the scientists put together a model with Hurricane Katrina on Isabel’s path. The model showed that a storm the size and strength of Katrina would

continued on page 28

By Suzanne Seurattan

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After witnessing Isabel’s destruction first hand, the ECMG team began using their computer models to chart the impact of the storm’s surge on areas around the Chesapeake Bay.

Through complex mathematics and state-of-the-art computer processing, they turned raw water level, velocity, salinity and water temperature data into graphic storm surge calculations. Wang is hopeful they can increase the accuracy of storm surge predictions from 3.4 and 5 feet to 3.5 and 3.3—the more accurate the better.

Wang, along with his colleagues Sun Jeon, a research assistant professor, and Weng Tong, a visiting scientist, used the computational model to demonstrate the impact of a Category 4 hurricane on the Bay region, using the Isabel model as a platform. In essence the scientists put together a model with Hurricane Katrina on Isabel’s path. The model showed that a storm the size and strength of Katrina would

continued on page 28

Millions of migrating shorebirds use the rich, mangrove-fringed Bay of Panama as wintering grounds. For millions more the bay serves as a kind of Chicago O’Hare or Dallas/Fort Worth—an international hub for refueling and maintenance en route to a further destination. Refueling, for many of the species studied, means grazing for marine worms on the abundant mudflats. Others are sandflat specialists or like to forage in adjacent grasslands. Maintenance consists of replacements of worn flight feathers on the bay’s molting grounds.

“IT STARTS WITH MANGROVES”

“This location is one of the more important areas for migrant shorebirds in the western hemisphere,” said Bryan Watts, director of the Center for Conservation Biology at the College of William and Mary. “There are only a few places in the world that offer enough available energy to support these huge congregations of shorebirds.”

The wintering grounds and the birds they support have avoided a triple threat to their future, at least for now. In October, 2005, the Bay of Panama joined the Western Hemisphere Shorebird Reserve Network as a “Hemispheric Site.” Research work and grass-roots education efforts by the Center for Conservation Biology helped to generate interest in the birds and their habitats. “The Canal Zone was actually military land—and the DOD was concerned that these lands might change hands. Watts was joined by Dana Bradshaw and Bart Paxton, senior biologists at the CCB. Researchers sought to inventory numbers of birds and bird species—U.S. companies included—and to do a rapid ecological assessment of DOD lands before they turned those lands over.”

William and Mary’s Center for Conservation Biology has earned a reputation over the years for excellence in conducting bird surveys, making it a natural choice to help inventory and maintain the birds they ultimately support—from becoming lost to bayfront condos and gouged-out shrimp farms. Watts said, “It was important to get the government to sign on. If this international organization had just come down drawing lines on a map and saying we declare this to be a site of international importance for shorebirds and wetlands and other things, that by itself wouldn’t have carried much weight within the country.”

Center for Conservation Biology researchers told their story through booklets, printed in both English and Spanish. The publications were designed by Marian Urbi Watts featuring artwork inspired by “molas,” traditional needlework panels sewn into their blouses by Panamanian Indian women. The western sandpiper (inset) is the dominant species passing through at the Bay of Panama, migrating from coastal Alaska down into South America. People all along the sandpiper’s migration route have told CCB personnel that the booklet’s drawings are very similar to bird forms seen in the indigenous artwork of their own area. Several thousands of the Spanish-language brochures were distributed at schools in Panama, distributed at schools in Panama, and also in other Spanish-speaking areas.

The vast expanses of mangrove forests controlled by the Department of Defense had long been left undisturbed, but as the date approached on which the Panama Canal would become Panama’s canal the fate of the mangrove-driven wintering grounds seemed increasingly precarious. The mangroves were immediately vulnerable to development pressures from nearby Panama City as well as from shrimp farming operations.

“Throughout Central America, these companies—U.S. companies included—will come in and clear the mangrove forest,” he said. “They’ll dig out these large lakes, which they will use for shrimp farming. They last for about four or five years and then they just leave them. There’s plenty of places on the coast of Panama where you see these huge routed-out places that are just abandoned now.”

Grass-roots support among the citizens of Panama was necessary to keep the mangrove forests—and the birds they ultimately support—from becoming lost to bayfront condos and gouged-out shrimp farms. Funded by the Department of Defense, the Center for Conservation Biology produced a pair of brochures, “Migrant Shorebirds Within the Upper Bay of Panama.” The brochures are identical twins, one in English and another in Spanish.

The Spanish-language brochure, distributed heavily in the Panamanian schools, was a huge success. Suddenly, everyone was interested in the shorebirds, having read about those chorlos, waillepiedras, zarapitos, agujetas—U.S. companies included—and to get a handle on their distribution, specific habitat and ecological requirements. Studies by the CCB and others revealed that much of the relevant habitat was based on mangrove areas. Watts said, “It’s important to get the government to acknowledge that.”

“Mangroves are an important part of the ecosystem,” Watts said. “The canopy provides habitat for many shorebird species,” Watts said. “The mangrove forests and the birds they support are important areas for migrant shorebirds.”

Not all data collection was done “on the fly”—Bart Paxton collects birds from a mist net at dawn with the Panama City skyline in the background.

By JOE McCRAIN

¡MIRA! ¡Un playero semipalmeado!

Center for Conservation Biology researchers told their story through booklets, printed in both English and Spanish. The publications were designed by Marian Urbi Watts featuring artwork inspired by “molas,” traditional needlework panels sewn into their blouses by Panamanian Indian women. The western sandpiper (inset) is the dominant species passing through at the Bay of Panama, migrating from coastal Alaska down into South America. People all along the sandpiper’s migration route have told CCB personnel that the booklet’s drawings are very similar to bird forms seen in the indigenous artwork of their own area. Several thousands of the Spanish-language brochures were distributed at schools in Panama, and Panamanian schoolteachers readily used the brochure in their classrooms. The colorful and informative pieces kindled widespread local interest in the birds and helped to generate support for the shorebird preserve.
“We were flying surveys on an outgoing tide over a mudflat in Panama that is two kilometers wide, about 50 feet off the deck to flush birds up so that I can count and try to identify them. I’ve done a lot of that over on the Eastern Shore and you get up flocks that are maybe in the thousands over there. These were flocks that were in the tens of thousands, with birds getting up in front of the plane for an hour solid. We’re not only counting birds, but also mapping flocks. The way it goes down is that we have a flight map and it’s broken up into segments and I have somebody in the back. So you’re blowing through these birds at a hundred miles per hour and there’s just waves of them getting up in front of you. It’s not like you can just pull over and stop. You gotta keep the information out in front of you because if you get behind everything just falls apart. I tell the person in the back I want a site map here. He maps the site, and I give an assessment into a tape recorder. The guy in the back watches the map and tells me when we reach the end of the segment. It’s difficult because we were counting not only shorebirds but also marine birds. There are just thousands and thousands of pelicans down there and gulls and herons and all of these different groups. It’s real intense business and you just have to stay completely focused in the moment to do it.

Most pilots don’t like to fly down low like that, particularly out in the middle of nowhere where if you crash you are pretty much done. We had a really great pilot, Krish Persaud. Krish ran a little flight school. He had an instructor there—every time we’d come in, this instructor keeps asking to fly us. We didn’t want to fly with him because it takes a while to break in a pilot, but one day Krish was going to be gone. So we fly with this new guy and I kept telling him to get down—fly lower, fly lower. We finally got down to about 50 feet and we turned up into one of these coves. When you turn that plane, the wing tip is almost in the mud, you know, and all of a sudden—pop!—we took a whimbrel down the left side. We counted nearly three million birds and that was the only one we ever hit, but that pilot turned white as a sheet. After that, every time we’d come into the place, this instructor would go in the back and hide. He didn’t want to have anything to do with us again.

Then we did a lot of hands-on stuff where we were catching birds, working with headlamps over tropical marsh at night. And you’re getting covered with mosquitoes and you’re trying to work the birds out and not think of all the fever and everything else that’s going around. It was some real hard-earned stuff but we did it.”
he name comes from the Latin word for fortress. It’s the Suda, a medieval compendium of information about the classical Mediterranean world, a reference used for centuries by scholars.

The most recent print edition of the Suda was published in Greek more than 70 years ago, but now the fortress is becoming more accessible, thanks to efforts led by William and Mary professor to develop an Internet community devoted to Suda translation, annotation and discussion.

“The Suda itself is an attempt in the 10th Century A.D. by Byzantine scholars to gather as much information as they could about classical history and literature,” William Hutton, associate professor of classical studies, explained. “There’s also some Byzantine history and literature and some church-related or New Testament-related history—anything that they thought would be useful for somebody trying to become an educated person at that time. In that period the mark of education was to be able to write and speak as if you were from classical Greece, which in the 10th Century would have been 1,400 years in the past.”

This 10th Century compilation of more than 30,000 entries was collected by educated people, and therefore, was written in classic Greek. Much of the Suda consists of scholia, explanatory notes or annotations added to the original ancient texts by ancient and Byzantine compilers. The modern definitive edition of the Suda, the one that sits on Hutton’s desk, was compiled and edited by Ada Adler, a Danish scholar.” Adler’s five-volume work, published in installments between 1928 and 1938, is in classic Greek, of course. It contains the Adler number, pinpointing the location of the passage in the Suda. It also gave the original sentence that the “headword” in the Suda On Line entry. The entry also contains the Adler number, pinpointing the location of the passage in the Suda. It also gave the original sentence that contains the headword and translators for both. Emily’s headword translation was “I am accustomed.” The full translation adds a bit of context: “I do something out of habit. For example, ‘...being accustomed to Oineus’ threshing-floor.’”

HOW IT WORKS

One day in early 2006, a handful of William and Mary undergraduates gathered in Professor Hutton’s office to discuss progress on their Suda translations. Hutton logged into the Suda On Line and checked the assignment of Emily Rossow. Emily was to translate the word “...ΕΘω...” which became “...Éthi...”, which became “...Éthí...”, which became “...ETH...”. Rossow, editor of the Stoa Consortium for Electronic Publication in the Humanities, the project was able to get funding for some computer hardware and software experts to bring the Suda into the 21st Century, Hutton said.

“Our goal was to create a database of translation that’s not fixed,” he said. “The one disadvantage to the print version is that it’s always going to be written just as it’s printed. Nobody can change it unless they produce a completely new version. The Suda On Line entries are designed to be revisable and now our contributors are going to have that capability.”

When it comes to scholarly translation, ancient texts are moving targets, subject to revision based on numerous factors such as new scholarship, fresh contexts and the discovery of previously unknown material. Therefore, scholars will never be “finished” with the Suda.

“Sometimes ideas change about how you should understand certain texts, certain literatures, and so forth,” Hutton said. “Changing and revision is part of scholarship and should be reflected. On a regular basis, people will put the text in and translate it. Somebody else will come along and say, ‘wait a minute—consider updating the text.’”

A laptop and a place to sit allow William Hutton to work on translations of classic Greek text just about anywhere there is wireless access.

Currently more than 100 people participate in the Suda On Line. Through the enthusiastic participation of Ross Scaife, editor of the Stoa Consortium for Electronic Publication in the Humanities, the project was able to get funding for some computer hardware and software experts to bring the Suda into the 21st Century, Hutton said.

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A note tells the origin of the entry (Homer’s Iliad) and indicates continued on next page

A fortress under siege

A n I n t e r n e t c o m m u n i t y o f s c h o l a r s c h i p s a w a y a t a m a m m o t h p r o j e c t

By JOE McLAIN
Undergraduates working on translations of the Suda (from left) Kenyu Bumbaco, William Travis Hall and Emily Rossow discuss their progress with Professor William Hutton.

IT’S NO LONGER GREEK TO THEM

By JOE McLAIN

William & Mary physics professor Joshua Erlich is helping to unravel the enigmatic mysteries of string theory using a holographic twin model of quantum chromodynamics in four spatial dimensions—plus time.

“Gravity is the strangest of all the forces, meaning we understand it the least,” Erlich said. “The only quantum theory (which seems to work) that includes gravity together with other interactions is string theory.” He explained the higher dimensional gravity of string theory makes stuff known through holographic duality in the form of particles that exist in its four-dimensional twin.

“The holograph is a completely different world which has gravity in it and it has more dimensions than the three spatial dimensions in our world,” he said, “and the exact equality makes it special.”

“It’s not just obvious that these two worlds are the same,” he continued. “You can calculate in one you can calculate in another. There’s a dictionary between how to calculate things in one world and things in the other.”

This dictionary, or map, between the two worlds has allowed physicists to make a number of discoveries regarding the nature of the strong force, Erlich said, through a property known as chiral symmetry.

“This symmetry maps onto a set of interactions in the extra-dimensional world which is dual to the strong interactions,” Erlich said. “So now we input the physics and we ask what comes out.”

What has come out, at least so far, is that predictions of the mass of certain particles made in the five-dimensional world are accurate to 10 percent accuracy, he said.

“If you tell a string theorist that you predicted something in the real world to 10 percent accuracy, he’ll get very excited because it’s very difficult to make physical predictions from string theory,” he said.

Erlich explained that tests of the accuracy of the model make it a good candidate for work such as calculating masses of mesons and predicting the interaction between particles.

“The physics of this is difficult to study from the perspective of quantum chromodynamics, but easy to study from the perspective of this higher dimension,” he said. “It’s really a great tool and we’re very excited because if we could understand why it works so well, I think I could use it and then just follow our noses it makes really nice predictions.”

A SURFACE WITH A SMALLER NUMBER OF DIMENSIONS MIGHT CONTAIN ALL THE INFORMATION TO DESCRIBE ANOTHER KIND OF WORLD WHICH HAS MORE DIMENSIONS IN IT.
It was a chilly December morning at College Landing Park as Devon Sabb and his classmate Alex Turner worked together to lob a large black-and-white disk over the pier railing.

Attached to a rope, the disk—called a Secchi disk—is a standard research tool used to determine water clarity. You lower the disk until you can’t see it, then record the depth of the rope from the surface. Devon and Alex were among a group of middle-school students studying the waters that are part of College Creek.

Later, the students collected water using a device called a Secchi tube, fishing up water samples from the bottom of the creek. Using electronic probes, the team collected data such as water temperature and pH balance and plotted the information on spreadsheets in their handheld personal digital assistants.

“It’s a little puzzle,” said Devon, who is a middle-school student at Williamsburg-James City County’s Center for Educational Opportunities. “It’s also work out here, but if you put your mind to it you can do a lot.”

The field trip may have been fun, but the point of the morning spent at College Landing Park was for the middle schoolers to discover the rudiments of aquatic research while William and Mary’s graduate students in education gain insight into how to incorporate field work into a science curriculum. This program is part of a partnership with the School of Education and the Keck Environmental Field Lab at the College of William & Mary.

“I think this gives a student a real taste of what being a scientist is all about,” said Tim Jones, a William and Mary graduate education student who plans to teach science. Jones spent the morning with the students and is doing his graduate thesis on the project.

“This gives them a learning environment they may be more suited to,” Jones added. “I know I love the outdoors and hope when I’m teaching I’ll be able to take my students outside into the field as much as possible.”

The project—called Lake Matoaka Studies—was initially developed by Nancy West, who is the science education coordinator for W-JCC Public Schools. West said the project represents the ultimate collaboration among colleagues in different disciplines.

The project provides the students a unique opportunity to combine several subjects—science, technology, math and language arts. Using the electronic probes and the handheld computer devices, the students examined a number of aspects of College Creek such as water temperature, water depth, current flow and cloudiness.

The students are documenting their work with digital cameras and also are writing papers on their experiences in the field. Later this spring, West said, the students will spend a few days at William and Mary’s Keck Environmental Field Lab to see how they can compare the data collected on College Creek to conditions at Lake Matoaka.

“We always try to keep the students engaged in what they are learning,” said Trisha Farinholt, a middle-school reading specialist at CEO who received her master’s in education from William and Mary in 1989. “That’s one of the reasons why I wanted to invite William and Mary graduate students to participate.”

Most of the equipment was purchased with a $4,000 Dominion Education Partnership grant. Other equipment for the project was loaned by William and Mary’s School of Education. “That’s one of the reasons why I wanted to invite William and Mary graduate students to participate,” West said.

“We’re combining so many subjects with this project and it gives the students an unusual opportunity to work in the field,” she said. It’s also work out here, but if you put your mind to it you can do a lot.”

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When Sebastian Schreiber talks about his work, he uses quite a few references to rock lyrics. He has a PowerPoint presentation titled “Living in the variable world,” a nod to a hit by Madonna. Schreiber distinguished associate professor of arts and sciences at William and Mary, uses quantitative methods to explain and predict many complex interactions observed in nature.

Seen through the lens of Schreiber’s mathematical models, our world is a mosaic of variability. For instance, consider just one variable factor: temperature.

“If you want to know how temperature affects a certain organism, you’d ask, ‘Well, where is the organism?’—because its temperature varies across space,” Schreiber said. “And where you were looking at the organism—because its temperature varies across time. Of course, there’s variation among individuals, as well.”

If you study enough individuals or record enough temperature readings, you end up with a reliable data set from which to base a model. The concept of “variability” would seem to imply “unpredictability,” but not to a mathematical biologist. Schreiber uses different forms of variation to reveal insights about the way diseases spread through human populations or the interactions of predator and prey species. The rock lyrics help to frame some of his findings.

“When I talk about populations persisting and evolving in a variable environment, I use a Clash song because the basic question that every organism is facing is ‘Should I Stay or Should I Go?’” he said. “After all, one might be better or worse. Moving across space influences how fit the population is. For example, if there’s variability only in space, individuals that move less displace those that move more—in other words, the tortoise beats the hare.”

LOOKING AT SUPERSPREADERS Schreiber says he is still looking for a lyric to illustrate his work on disease outbreaks. The journal Nature evidently didn’t care: Schreiber was a co-author of a paper published in 2005. It proposed a new way of looking at contagious disease outbreaks based on variations in infection rates among individuals, and especially the role of “superspreaders.”

The Nature paper examines the phenomenon of superspreading from data collected during eight disease outbreaks, such as the Asian severe acute respiratory syndrome (SARS) incidents of 2003, which made “superspreader” a household word. The diseases studied included pneumonic plague, measles, smallpox and monkeypox, all passed from human to human with no vector in between.

Variability turns out to be a crucial epidemiological concept, Schreiber said, because mathematical modeling shows that the degree of variability can predict how the disease is likely to spread.

“Data sets on SARS and Ebola illustrate that diseases can exhibit different degrees of variability in infectiosity,” he said. “For SARS, the average infectiosity is achieved by many individuals infecting no one and a handful of people infecting many others. In contrast, for Ebola, the average infectiosity was achieved by most infected individuals infecting the same number of people.”

Diseases that exhibit more variability are less likely to spread. “The most common way to spread an outbreak, Schreiber explained: ‘However, when an outbreak does occur in a disease with more variability, it tends to spread like wildfire through the population.’”

High-variability diseases, therefore, tend to erupt in surges, he said. SARS, for example, probably appeared in many locations but did not always progress to surges, he said. SARS, for example, probably appeared in many locations but did not always progress to surges, he said. In contrast, for Ebola, the average infectiosity was achieved by most infected individuals infecting the same number of people.

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“The song on that is Running with the Devil by Van Halen,” he said. “If you think of the predator as the devil, there are some conditions in which the prey actually will go to places preferred by the predator—or so they’re running with the devil.”

Not all prey choose to run with the devil. Sometimes prey will avoid high-variability patches where there’s lots of food and/or better conditions for breeding, choosing patches with a lower quality of life—but fewer predators, he said.

“And the predator will spend most of its time searching for the prey in the high-variety patches despite the fact that most of the prey are in the low-quality patch.” Schreiber explained. “So they’re doing things that sound quite counter-intuitive at first glance, but not really, because the prey in the low-quality patches are effectively trying to escape the predator and the predator in the high-variety patches are hunting a few prey items, but they’re of higher quality.”

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College shows moderate growth in sponsored research dollars

Research funding at the College of William and Mary is on a moderate increase, according to the 2004-2005 Annual Report of Sponsored Programs released by the Office of Grants and Research Administration.

Grants received for fiscal ’04-’05 totaled $43.2 million, up from $41.2 million posted the previous period. The figures represent external funding for research by faculty at both the William and Mary campus and at the Virginia Institute of Marine Science. “The overall trends continue upward,” said Michael Ludwick, director of sponsored programs in the grants office. “We had a one-year bump with a couple of big awards in 2003, then we went down to something like normal in the next year.”

Ludwick pointed out other funding trends revealed in the report. Research expenditures, for example, followed the same upward path as the awards, totaling $43.9 million in ’04-’05, up from $41.5 the previous year. Also increasing are the numbers of grant proposals, requests for financing, handled by the grants office. “The grant proposal trend line is going up; that doesn’t mean that we’ll necessarily get all those awards, but proposals and awards do tend to follow one another,” Ludwick said. Funding sources in FY ’05, he said, were led by federal “stalwarts,” such as the National Science Foundation, and departments of commerce, education and defense.

“We have been getting some more National Institutes of Health funding,” he said. “I hope that trend continues.”

Three students named Goldwater Scholars

Three William and Mary undergraduates were named 2006 Goldwater Scholars by the Barry M. Goldwater Scholarship and Excellence in Education Foundation. The three students join 320 other juniors and seniors selected on the basis of academic merit from a field of 1,081 mathematics, science and engineering students who were nominated by the faculties of colleges and universities nationwide. The students are:

- Blair S. Ashley, class of 2008, a neuroscience/neuroimaging major from Upper Clair Township, Pa
- Kendra L. Letchworth, class of 2007, a mathematics/physics major from Williamsburg

Asked to name a professor who was particularly helpful or inspirational, Ashley and Saltzman both cited Sebastian Schreiber of the math department. In fact, in completing their applications to the Goldwater Foundation, both listed work done through the Biomath Project, in which Schreiber is a participant. Saltzman also thanked Lawrence Leemis of the math department and Ronald Rapoport of government. Ashley mentioned Robin Loof-Wilson of kinesiology.

Letchworth said she was inspired by Vice Provost for Research and Graduate Studies Dennis Manos, who taught her Honors Physics class for freshmen. “He challenged me to work hard in class and provided me with my first opportunity to do research,” she said.

The Goldwater Foundation said that among this year’s class of scholars, 32 are mathematics majors, 234 are science majors, 47 are majoring in engineering and 10 are computer science-related majors. Many of the scholars, including William and Mary’s three winners, have dual majors in a variety of mathematics, science, engineering and computer disciplines.

The one- and two-year scholarships will cover the cost of tuition, fees, books, and room and board up to a maximum of $7,500 per year.

Taylor is NHC fellow

Talbot J. Taylor, the Louise G. T. Cooley Professor of English and director of William and Mary’s linguistics program, is among next year’s crop of fellows at the National Humanities Center.

Each year, the center draws together faculty in the humanities to its facilities in the Research Triangle Park of North Carolina to work on individual projects and share ideas in seminars, lectures and conferences. Taylor’s project, sponsored by the Delmas Foundation Fellowship, is titled “Agency, Reflexivity, and the Problem of Linguistic Order.” He will be one of 39 fellows who competed successfully from among more than 500 applicants in its fellowship competition for 2006-07.

History Channel tapes at W&M

Dennis Manos, William and Mary’s vice provost for research and graduate studies (left), prepares for taping a segment for an upcoming episode of the series Modern Marvels for the History Channel. Manos answered questions about metals and metallurgy to be used in a show titled “Heavy Metals,” tentatively scheduled to be shown in mid-June. The taping took place outside the SucoM Library board room.
Paul Smith wins Thomas Jefferson Prize

Paul A. Smith, a senior major from Blacksburg, Va., is the recipient of the 2006 Thomas Jefferson Prize in Natural Philosophy at the College of William and Mary. The prize is awarded annually to a college undergraduate for exceptional work in natural philosophy.

Smith is a math major whose undergraduate research was supported by the National Science Foundation. After graduating, he plans to pursue a Ph.D. at the University of California, Berkeley.

George H. Miller

Alumnus to lead Livermore

George H. Miller, a triple alumnus of the College of William and Mary, was named interim director of the Lawrence Livermore National Laboratory at the University of California in March, 2006. Miller received his B.S. with high honors in physics in 1967, his M.S. in physics in 1969 and his Ph.D. in physics in 1972—all from the College of William and Mary. He is a nuclear weapons national security expert and a leader in large facilities management.

Miller has been an associate director since 1985 and associate director at large for the laboratory since June 2005. He joined Lawrence Livermore in 1972 as a physicist.

Secretary of Energy learns about G0 project

Stephanie Bailey, a Ph.D. student in physics at the College of William and Mary, gave a presentation on nuclear physics research to U.S. Secretary of Energy Samuel W. Bodman, which required security clearance.

“Communities think of businesses as economic drivers, but they often don’t think of universities in that light,” said James R. Golden, director of economic development and corporate affairs at William and Mary. “This study shows universities can and do play that role.”

Research conducted by the Wessex Group, Ltd., revealed that the College of William and Mary has a potent economic impact—and not just in the Peninsula. The study shows that the College contributes more than $339 million and supports 3,700 jobs to the Virginia economy.

The Wessex Group examined the school’s economic impact on the Greater Williamsburg community, the Hampton Roads region and the Commonwealth of Virginia. The study found that William and Mary contributes more than $343 million to the local economy, $491 million regionally and $539 million to the state in FY 2005.

Completed in January, 2006, the study notes that William and Mary is not only a major employer in the area, but also attracts approximately 120,000 visitors to Williamsburg each year for various campus activities including admission visits and College-sponsored conferences. These visitors spend some $19 million in the local area and $26 million in Virginia each year.

For the study Wessex examined both the direct and indirect economic impacts of the campus community, including the Virginia Institute of Marine Science. The study began by gathering information about direct expenditures on payroll, procurement and construction by William and Mary and related organizations.

The analysts then surveyed the student body to estimate the degree of their off-campus spending, finding that the 7,500 students pump more than $11 million into the Greater Williamsburg economy annually.

The study also pointed out that William and Mary has other significant economic impacts beyond the spending researchers could measure. The College generates large benefits for the region and the Commonwealth through its preparation of students for professional careers, creation of knowledge, technology transfer, community outreach, assistance to businesses and support of economic development agencies.

— Suzanne Seurattan

Research: College’s economic impact adds up to $339 million

Israeli-Palestinian violence studied

Violence between Palestinians and Israelis in the Middle East has a deep and long history, but the popular notion that both sides are engaged in a never-ending cycle of attacks and counter-attacks may be wrong, according to a recent report co-authored by David A. Jaeger, associate professor of economics and public policy at the College and M. Daniele Paserman from Hebrew University in Jerusalem.

“The Cycle of Violence: An Empirical Analysis of Fatalities in the Palestinian-Israeli Conflict” demonstrates that while Israeli responses in a predictable way to Palestinian violence, the opposite is not the case.

One of the key findings is that the overall number of fatalities on both sides might be reduced if counter-attacks may be wrong, according to a recent report co-authored by David A. Jaeger, associate professor of economics and public policy at the College and M. Daniele Paserman from Hebrew University in Jerusalem.

“The Cycle of Violence: An Empirical Analysis of Fatalities in the Palestinian-Israeli Conflict” demonstrates that while Israeli responses to with force quickly after Israeli deaths but did not find a significant response by the Palestinians to Palestinian deaths. While the overall level of violence on either side appears to have a deterrent effect, the authors did find that Israeli attacks that resulted in the death of one of the leaders of a Palestinian faction reduced subsequent violence against Israelis.

Jaeger and Paserman examined more than 3,200 Palestinian and 1,000 Israeli fatalities between September 2000 and January 2005.

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“We don’t know the number of fatalities on both sides might be reduced if counter-attacks may be wrong, according to a recent report co-authored by David A. Jaeger, associate professor of economics and public policy at the College and M. Daniele Paserman from Hebrew University in Jerusalem.

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Christopher Ball sits at a table in a small, gray-painted room. The monitor of a laptop computer in front of him flashes a series of single solid green dots and red circles.

“You can see that the red ones outnumber the green ones, probably about three or four to one,” Ball says. “You’re to press the mouse button when you see the red and you don’t press for the green People who have trouble maintaining attention will press at the green because they can’t inhibit their response.”

Ball, an associate professor in the psychology department, was demonstrating new instrumentation that allows experimenters to observe the activity of the cerebral cortex—the surface of the brain—as the subject responds to stimuli. Researchers have begun tests involving the repeated presentation of a stimulus that requires a specific behavioral response.

“Depending on the experiment, a procedure might be as simple as flashing the symbolic stimulus/mouse-click response demonstrated by Ball. Or the stimulus might be the presentation of two words and the response deciding whether the words are semantically related. Real-time data allows the scientist to verify and monitor the model’s output. Wang notes, better terrestrial elevation data as well as wind speed and rainfall predictions during the storm are needed importantly to Wang, lives could be saved.

Wang noted that computer models used by federal and emergency management agencies have evolved in their accuracy in predicting hurricane paths and landfall locations in recent years. “He says there is less accuracy predicting the evolution of hurricane strength and the storm’s ultimate impact on wave and surge effects. Not long after Marshall returned to Richmond following his surgery in Philadelphia, Hobson said his wife, Mary Ambler, died on Christmas Day in 1831. They had been married 49 years and the following Christmas in 1832, Hobson said, Marshall wrote about their life together.

“Marshall wrote this very beautiful memoir about his wife and their life together,” Hobson said. “It’s one of the wonderful documents in this volume.”

Hobson said the 12th volume also includes a lot of correspondence between Marshall and his family.

“There are letters to his sons, who were farmers in Fauquier County, and letters to his grandchildren where he is admonishing them to study,” he said.

Over the past half century, Hobson said, historians have examined more than 10,000 letters to complete the project, which has been funded by the National Endowment for the Humanities and the National Historical Publications and Records Commission, as well as through private donations from individuals and foundations. In total, the 12-volume set of papers includes nearly 6,700 pages and the project published approximately 2,700 Marshall documents.

“This is a collection that, as much as you can, documents someone’s life,” Hobson said. “His judicial opinions are accessible in various forms, but as for his private papers, this is the first and only edition that we have.”

To make ECGM’s models more accurate, Wang notes, better terrestrial elevation data as well as wind speed and rainfall predictions during the storm are necessary. This type of information could be used to make more informed evacuation decisions. Money and more importantly to Wang lives could be saved.

Good data is the key. A consistently updated data stream is the heart of a good predictive model, he says. Real-time data allows the scientist to verify and monitor a model’s output.

In the case of Wang notes, there has to be a focus on low-lying areas to accurately predict storm surge. He sees high accuracy in these predictions as vital because that’s where people live.

“With all the best minds in science, I don’t think we are there,” said Wang.
SELF STUDY

Undergraduate anthropology students in the foyer of Phi Beta Kappa Memorial Hall take notes on academic regalia, ranging from the subfusc black garb of undergraduates to the faculty’s dizzying array of robes, hoods and tams. The students were assigned to observe the rituals of Charter Day, the annual observance of the 1693 founding of the College.

This Just In...

GREAT REVIEWS FOR FAITHS OF THE FOUNDING FATHERS

As Ideation goes to press, reviews have started to come in for The Faiths of the Founding Fathers, a book by David L. Holmes, Mason Professor of Religion at the College of William and Mary.

Holmes’ book outlines the religious atmosphere of the Revolutionary era and has chapters devoted to the religious views of Franklin, Washington, Adams, Jefferson, Madison and Monroe. Another chapter is dedicated to the religious thought among various wives and daughters of the era, such as Martha Custis Washington, Dolley Madison, Abigail Adams and Jefferson’s daughters.

A substantial portion of the book is an exploration of the beliefs and influences of Deism—the center of which, Holmes says, was at the College of William and Mary at the end of the 18th Century.

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