

Pitt's Dick Thornburgh Forum, Swanson School to Host March 27-28 Symposium on Future of Nuclear Power



Dick Thornburgh



Gerald D. Holder

By Patricia Lomando White

"From Its Birthplace: A Symposium on the Future of Nuclear Power"—a two-day event that will include presentations on such topics as engineering technology, public health, emergency management, insurance, and financing—will take place March 27-28 in the University of Pittsburgh William Pitt Union Ballroom. The symposium is cosponsored by Pitt's Dick Thornburgh Forum for Law and Public Policy and Swanson School of Engineering.

Dick Thornburgh (LAW '57)—Pitt emeritus trustee, former governor of the Commonwealth of Pennsylvania, former

attorney general of the United States, and former U.N. under-secretary general, and now counsel to the international law firm K&L Gates in its Washington, D.C., office—will open the symposium with welcoming remarks. Pitt Chancellor Mark A. Nordenberg and Gerald D. Holder, the Swanson School's U.S. Steel Dean of Engineering, also will speak.

"This symposium is built on two of the many strengths of this University," said Pitt Chancellor Mark A.

Nordenberg. "The first is the Dick Thornburgh Forum for Law and Public Policy, which honors the legacy of achievement and impact of University of Pittsburgh trustee and alumnus Dick Thornburgh, who, through a lifetime of public service, has made extraordinary contributions to the public good. The other is Pitt's Swanson School of Engineering, which is among this country's finest by almost any standard of measure, among them its cutting-edge research, faculty stature, industry partnerships, and quality of its student body."

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—Dick Thornburgh

highly regarded experts with a variety of vantage points to consider the future of nuclear power," said Thornburgh. "And there could be no more appropriate venue for this event than Pittsburgh, where nuclear power was born. During the symposium, the in-depth presentations will examine not only the many aspects of nuclear power, but also the accidents at Three Mile Island, Chernobyl in the former Soviet Union, and Fukushima Daiichi in Japan."

According to Edward McCord, director of the Dick Thornburgh Forum, the symposium stands apart from others by virtue of the role Western Pennsylvania has played historically and continues to play as a leader

Continued on page 9



Clue Uncovered for Origins of Type of Supernovae Explosion

By B. Rose Huber

An important clue has been uncovered about the origins of an important type of exploding star, Type Ia supernovae, thanks to a research team at the University of Pittsburgh. Studying supernovae of this type helps researchers measure galaxy distances and can lead to important astronomical discoveries. A paper detailing this research has been accepted for publication in *Astrophysical Journal Letters*.

Principal investigator Carlos Badenes, assistant professor of physics and astronomy in Pitt's Kenneth P. Dietrich School of Arts and Sciences, detailed the ways in which his team used the Sloan Digital Sky Survey—a collection of multicolor images and more than a million spectra covering more than a quarter of the sky—to determine what kinds of stars produce Type Ia supernovae explosions.

"We knew that two stars had to be involved in such an explosion, and that one of them had to be a white dwarf," says Dan Maoz, professor of physics and astronomy at Tel-Aviv University in Israel and coauthor of the soon-to-be-published paper on the discovery. "But there were two possibilities for what the second star is, which is what we sought to discover."

According to Badenes, there were two potential outcomes for the star's type. It could be a "normal star," like the sun, or it could be another white dwarf, which is a smaller, more dense faint star composed of electron-degenerate matter. The team suspected the latter, as two white dwarfs within the same star system would revolve around one another at half a million miles an hour, speeding up and getting closer and closer until one day they merge, most likely producing the fireworks of Type Ia supernovae.

"There were obvious reasons to suspect that Type Ia supernovae come from the merging of a double white dwarf," says Maoz. "But our biggest question was whether there were enough double white dwarfs out there to produce the number of supernovae that we see."

Because white dwarfs are extremely

Continued on page 5

Pitt Researchers Develop New Science of National Preparedness

By Daniel Bates

It could be said that nothing shook the nation to its core—and catalyzed a transformation in the way the nation thinks about the complexities of national security and disaster preparedness—like the tragedies of Sept. 11, 2001, and Hurricane Katrina in 2005.

Certainly, preparedness discussions already were occurring at places like the University of Pittsburgh long before those infamous events. But amidst those disasters, the nation's lawmakers, law enforcers, policy analysts, constitutional rights advocates, public health officials, first responders, the military, and academia suddenly found themselves front and center in national and regional debates. With a new sense of urgency, they grappled with the future what-ifs of disasters—how to better prepare for them, anticipate them, manage them, and mitigate their consequences.

An intellectual "Code Orange" thus ensued over the coming years as thoughtful leaders around the country theorized, planned, and simulated possible future disasters—and worked to solve technological problems at a level of intensity not seen before.

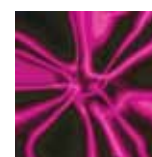
Among them, of course, was a diverse group of University of Pittsburgh researchers and policy experts who joined forces to hold their own academic discussions, conduct intensive research, and, ultimately,



develop science-driven, big-picture frameworks to harness the complexities of large-scale disasters. That collective initiative culminated in 2004 with the launch of the University of Pittsburgh Center for National Preparedness.

Since then, the multidisciplinary center has helped drive the national agenda. Its leaders hail from Pitt's Schools of Medicine, Information Sciences, Engineering, Law,

Spotlight on Research



and Nursing, as well as, among others, the Kenneth P. Dietrich School of Arts and Sciences and the Graduate Schools of Public and International Affairs (GSPIA) and Public Health (GSPH). The center's researchers have developed new innovations in such areas as disaster management, robotic search and rescue, information

Continued on page 6

Briefly noted



Pitt Schools, Programs Advance in U.S. News' Best Graduate Schools Rankings

In the latest edition of *U.S. News & World Report's Best Graduate Schools*, a number of University of Pittsburgh schools and programs have advanced in the guidebook rankings, according to the publication's 2012 methodology. These rankings appear in highlights form in the *Best Graduate Schools* book, available for newsstand purchase on April 3, and for purchase online; visit www.usnews.com/usnews/store/grad_school_compass.htm for more information.

Within the Top Schools of Medicine—Primary Care category, Pitt's School of Medicine advanced to No. 18, up from No. 28 last year. And in the Medical Specialties—Pediatrics category, Pitt moved up to No. 9 from No. 11 last year. In the Health Disciplines categories last ranked in 2008, Pitt jumped from No. 16 last year to No. 8 this year in Audiology, tied with Northwestern University; from No. 9 to No. 6 in Occupational Therapy, tied with Colorado State, Thomas Jefferson, and Tufts universities; from No. 19 to No. 14 in Pharmacy, tied with the University of Florida and the University of Illinois-Chicago; from No. 14 to No. 11 in Social Work, tied with Fordham University, the University of Southern California, the University of Wisconsin-Madison, and Virginia Commonwealth University; and from No. 12 to No. 8 in Speech-Language Pathology, tied with the University of Kansas.

In addition, the Swanson School of Engineering moved into the top 50 in The Top Schools of Engineering category, advancing from No. 52 last year to No. 47 this year, tied with Case Western Reserve University.

—By John Harvith

Swanson School Names MIT's Chakraborty to Receive Bayer Distinguished Lectureship

The University of Pittsburgh's Swanson School of Engineering has chosen Arup K.

Chakraborty, the Robert T. Haslam Professor of Chemical Engineering, Chemistry and Bioengineering at the Massachusetts Institute of Technology, as the recipient of the Bayer Distinguished Lectureship 2012. Chakraborty is one of the nation's leading researchers in experimental immunology through theoretical and computation methods, especially autoimmune deficiencies and HIV.

Chakraborty will present two lectures at Pitt: "How to Hit HIV Where It Hurts" at 5 p.m. March 22 and "Understanding Adaptive Immunity: A Crossroad of the Physical, Life, and Engineering Sciences" at 9:30 a.m. March 23. Both lectures, which are free and open to the public, will be held in Room 102 Benedum Hall. For more information, call 412-624-9630.

The Bayer Distinguished Lectureship is presented annually by Pitt's Department of Chemical and Petroleum Engineering and recognizes excellence in chemical education, outreach, and research.

—By B. Rose Huber

Pitt's Honors College Sets March 22 Panel Titled "The Press and Campaign 2012"

Political reporters on the campaign trail will be making a stop at the University of Pittsburgh to share their insights in a University Honors College-sponsored panel discussion titled "The Press and Campaign 2012" at 7:30 p.m. March 22 in the O'Hara Student Center.

The five national journalists are David Espo, the Associated Press; Michael Kranish, the *Boston Globe*; James O'Toole, the *Pittsburgh Post-Gazette*; Joe Rago, *The Wall Street Journal*; and Karen Langley, the *Pittsburgh Post-Gazette*. David Shribman, executive editor of the *Post-Gazette*, will moderate.

Seating is limited for this free public event; those interested in attending must RSVP at www.honorscollege.pitt.edu/press-panel-2012 and click the link to reserve a seat. Additional information is available at <http://tinyurl.com/presspanel>.

—By Patricia Lomando White



Pitt Day in Harrisburg, 2012



PHOTOS BY JIM BURKE/CODE

As many as 500 Pitt students, parents, faculty, staff, alumni, and other supporters participated in the annual Pitt Day in Harrisburg on March 13. Six buses departed from the William Pitt Union at 7 a.m. for the three-hour journey to the state's Capitol, where they joined supporters from the University's four regional campuses. At the top of participants' to-do lists was to discuss with legislators the state's proposed 30 percent cut in Commonwealth appropriations to three of the four state-related universities: Pitt, Penn State, and Temple. **1.** Students gathered in the Capitol Rotunda before fanning out to visit their respective legislators to discuss how the proposed cuts would affect Pitt. **2.** Jeff Gleim (left), Pitt Alumni Association executive director, talks with State Rep. Dan Frankel (D-23), minority caucus chair. **3.** Michael Pinsky (left), Pitt Faculty Senate president, and Jack Smith, Pitt Alumni Association president. The event was organized by Pitt Advocates, a network of alumni, faculty, staff, students, and friends who share a commitment to higher education and to Pitt; the Pitt Alumni Association; and Pitt's Office of Governmental Relations.

225 Stories to Celebrate

Pitt Nurses Travel the World



"I want to see Pitt nursing students practice around the world, and I want nursing students from around the world to come here to Pitt," says Pitt School of Nursing professor Ann Mitchell.

Mitchell's vision is working; Pitt nurses travel to various countries and benefit from international, multidisciplinary networks. Mitchell herself received a Fulbright award to lecture and do research in Oman.

Mitchell's colleague Paula Sherwood received a Fulbright award to work in Finland. She works with family caregivers to develop ways to relieve stress that may accompany

caring as patients recover—or fail to recover—from treatment.

For his work in distance and simulation education as well as international volunteerism, Richard Henker earned both a Chancellor's Distinguished Teaching Award and a Human Volunteers Overseas Golden Apple Award. Henker is professor and interim chair of Pitt nursing school's Department of Acute and Tertiary Care.

For more stories about Pitt's legacy of achievement or to share your own stories about the University, visit www.225.pitt.edu.

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Women's History Month

As Army Surgeon General, Horoho Pioneers Leadership for Nurses, Women

By Niki Kapsembellis

This article is reprinted with permission from Pitt Nurse, which published it in its Spring 2012 issue.

Patricia D. Horoho, lieutenant general (three stars), in the U.S. Army, has enjoyed a career marked by significant firsts: She was the first woman and the first nurse to command the Walter Reed Health Care System, and she mounted the first medical response to the attacked side of the Pentagon when it was struck by terrorists on Sept. 11, 2001.

Ten years after that fateful morning in the Pentagon, Horoho (NURS '92G) was again honored as a pioneer, becoming the first nurse and first woman in the 236-year history of Army Medicine and of the U.S. Department of Defense to serve as a surgeon general.

"I would submit that I am just the next person who is passing through the crack that has been opened by pioneers and leaders who came before me, regardless of gender, culture, race, or creed," she says. "And I will take that role (Army Surgeon General) seriously. It's a tremendous honor to be able to serve in that position."

On Horoho's most recent deployment to Afghanistan, officers and enlisted men and women approached her to say that her nomination to the surgeon general's post inspired them and gave them hope that their daughters could one day serve in such a role.

Considering that nurses could not command when Horoho first joined the service in 1983, her rise to the highest rank in the medical corps becomes virtually meteoric.

Horoho credits, among her many mentors, her grandfather, an Italian immigrant named Eddie Tarone, with instilling the values that she considers the bedrock of what it means to be an American: faith, family, honesty, and being a team player. A coal miner with a sixth-grade education, Tarone never bought anything on credit. He later opened a small bar and owned apartments, making his way in his new homeland and teaching his descendants the value of a kind word.

"I never heard my mom or him say a bad word about anybody," recalls Horoho, whose mother, Jo Dallas, has been one of her most

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Patricia D. Horoho

ardent supporters.

Today, her parents live with Horoho, her husband, Ray, and their three children. She credits their support for allowing her to spend 28 years on active duty while serving as a mother, wife, daughter, officer, warrior, and nurse.

As the senior officer of the U.S. Army Medical Department, the surgeon general provides advice and assistance to the secretary of the Army and chief of staff of the Army on health care matters. In her new role, Horoho serves as medical commander for an organization that provides health care to 3.9 million beneficiaries—including both active and retired personnel and their dependents—and oversees 616 fixed medical facilities as well as 345 field units. The budget alone, which she also manages, is \$13 billion.

"It's a very comprehensive system," says Horoho, who served as deputy surgeon general prior to her 2011 confirmation.

Hands-on Leadership

Although she has three offices in the United States—in the Pentagon; elsewhere in the Washington, D.C., area; and at the medical command in San Antonio,

Texas—Horoho also intends to travel to parts of the world where Army Medical Department members are assigned. "I want to be able to hear and see how the provision of care is implemented in all environments where care is rendered," she says.

That desire to see firsthand what is happening on the ground has followed Horoho throughout her military career. Though she initially joined with the intention of staying three years and "seeing the world," as she puts it, she quickly learned that the Army offered a breadth of experiences and opportunities that could not be duplicated in civilian life.

She has traveled to Haiti, Egypt, Kuwait, Iraq, Afghanistan, Australia, Switzerland, and virtually all of Europe. Everywhere she goes, she helps to ensure that the best possible care is available for American service members. Moreover, she has served in a diplomatic role by helping to partner with other countries to improve care.

"Army service allows you to meet international health care leaders and be able to look at where there's a global issue that might spark collaboration," she says.

As a nurse leader, Horoho often speaks about her "C4SG" philosophy: Connection, Character, Competency, and Convic-

Horoho also urges young nurses to develop a strong clinical background that will better inform them as they eventually move on to leadership roles: By learning how to balance direct patient care with administrative experience, they will have added insights about the impact policies have on care.

"You need to be able to be open to new experiences and make sure that life is a continual lifelong learning process."

—Patricia D. Horoho

tion, along with Serving and the Gifts offered by the profession. "The reason those words are so powerful is because we have strategic implications at the point of health care delivery," she says. "We not only impact the health of that patient and his or her family members, we also have the ability to impact the strategic aspect of health care."

Working in a dynamic environment means nurses must have the courage to change. "If you don't change, you become irrelevant," she says. "And for nurses, I think it takes a tremendous amount of courage to connect emotionally and spiritually with patients."

Looking Ahead

During the next four years of her tenure as Army Surgeon General, Horoho plans to focus on collaborative partnerships and the collective health of military service members, their families, and all those entrusted to their care. She believes that the Army Medical Department can work not only with colleagues within the Department of Defense, but also with civilian counterparts in an effort to improve

Continued on page 4

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Women's History Month

Continued from page 3

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American service members' health and well-being and partner to improve the health of the nation.

Horoho also urges young nurses to develop a strong clinical background that will better inform them as they eventually move on to leadership roles: By learning how to balance direct patient care with administrative experience, they will have added insights about the impact policies have on care.

"You need to be able to be open to new experiences and make sure that life is a continual lifelong learning process," she says.

And while Horoho cites many role models—as varied as President Ronald Reagan; Anna Mae Hays, the first woman to earn the rank of brigadier general; and Elizabeth L. (Noroian) Graham (NURS '68, '70G, EDUC '80G), her trauma instructor at the University of Pittsburgh School of Nursing—she says none is as influential as her mother and grandfather.

"None of this would have been possible if the two of them had not been instrumental in guiding me to pursue a profession in nursing," she says.

Universities Prepare Leaders in Nation's Academia, Industry, and Military



Horoho speaking at the 2012 Pitt Honors Convocation ceremony

(This is the printed version of remarks delivered by Patricia D. Horoho (NURS '92G) during the Feb. 24, 2012, University of Pittsburgh Honors Convocation in Carnegie Music Hall, Oakland. Horoho, who was honored as a 2012 Distinguished Alumni Fellow, is a U.S. Army lieutenant general and the U.S. Army surgeon general and commanding general.)

Chancellor Nordenberg, Provost Beeson, [Pitt Alumni Association President] Dr. [Jack] Smith, distinguished alumni and faculty, honored students, my fellow honorees David Tepper and John Petersen, and, especially, family members who are here to support the University family, it is my privilege and pleasure to be here today and be honored as one of your distinguished alumni.

This year the University of Pittsburgh celebrates "225 Years of Building Better Lives" and providing outstanding undergraduate and gradu-

ate education. It is this nation's universities that help keep us a world leader and help create tomorrow's leaders in academia, private industry, or—should you value service to country as highly as I do—in our country's military.

It has been my great opportunity to be of service to an outstanding organization—Army Medicine—that also claims a magnificent tradition and more than 236 years of service to country in support of those who wear the cloth of our nation. Since 1775, America's medics have stood shoulder to shoulder with our fighting troops—ready when called to put their lives on the line to care for our wounded soldiers.

One such outstanding soldier is one of 2010's Distinguished Alumni from the University of Pittsburgh—Jeremy Feldbusch. Sgt. (Ret.) Feldbusch (A&S '01) is an Army Ranger, Purple Heart and Bronze Star recipient, and the first national spokesperson for the Wounded Warrior Project. I thank Sgt. Feldbusch for his service to country and his fellow soldiers. I have never been prouder as a military officer than to say that I can stand alongside the world's finest medics and soldiers—soldiers such as Sgt. Feldbusch.

The Army, however, could not prepare soldiers such as Mr. Feldbusch without the education, research, training, and partnerships provided by institutions such as this one. It was my training at the University of Pittsburgh as a clinical trauma nurse specialist that helped to propel me along in my career. Without colleges and universities providing the education that they do, our nation would not be the greatest country in the world.

It is the partnerships that academia forms with private industry and government that allow us to develop ideas and products for success. This university partners with students and families, it partners with industry to research and develop better products that improve our lives, and this university

partners with the U.S. government to help our men and women in uniform.

I particularly want to mention the partnerships that Army Medicine and our Institute of Surgical Research have with our nation's research universities—the McGowan Institute for Regenerative Medicine of this university in particular—that help rebuild the lives of our soldiers and improve our capabilities to do facial reconstruction, burn treatment, healing without scarring, limb salvage, and limb reconstruction.

These commercial and academic partnerships—together with military and government organizations—are essential to the long-term success of efforts such as the Department of Defense's regenerative medicine research. Without these partnerships, we cannot effectively solve the problems that our wounded warriors face and help rebuild their lives.

There is one other partnership I'd like to mention. Currently, there are more than 500 veterans attending the campuses of the University of Pittsburgh, and each year, between 10 and 30 active duty members of the military graduate from Pitt. Nearly 150 additional students are cadets with ROTC. No partnership is more critical to the success of our military and country than one that ensures that our veterans receive the finest education we can provide for them.

Finally, let me repeat how deeply honored I am to be here. By recognizing my distinguished fellow alumni and me with this award, you are helping to build bridges of success that benefit students, industry, and government equally.

Thank you, Mr. Nordenberg, for this prestigious recognition—and to all of the student honorees here today—congratulations!

Launch of Teenie Harris, Photographer



PHOTOS BY MARY JANE BENTY/CODE

The University of Pittsburgh Press and Pitt's Office of Public Affairs celebrated the launch of the new book *Teenie Harris, Photographer: Image, Memory, History* (University of Pittsburgh Press, 2011) at a special Black History Month program on Feb. 28 at the Twentieth Century Club. The book, which was coauthored by Pitt history professor Laurence Glasco, reveals the essence of African American life in Pittsburgh from the end of the Great Depression through the civil rights movement. As a photographer for *The Pittsburgh Courier*, Harris captured on film historic events and celebrities coming through town, as well as everyday scenes at Hill District locations. Pictured, from left, Robert Hill, Pitt vice chancellor for public affairs; Joe Trotter, book coauthor and Giant Eagle Professor of History and Social Justice at Carnegie Mellon University; Glasco; and Cynthia Miller, University of Pittsburgh Press director.

Scholars & Stewards

Bayer Group Is Generous Funder of STEM Education Initiatives at Pitt

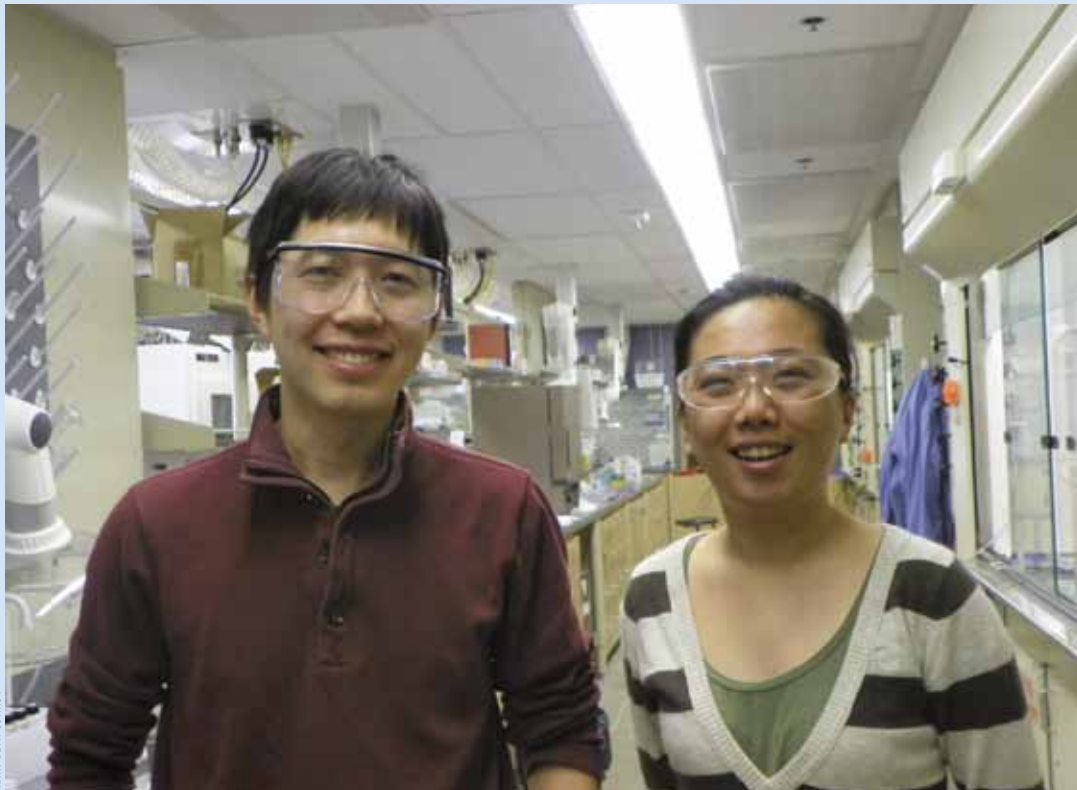
By Lynn Shea

The Bayer Group is generously supporting the University of Pittsburgh's programs in science, technology, engineering, and math (STEM) education.

Among the many contributions that Bayer—a global health care, nutrition, and high-tech materials company—has made to Pitt's STEM programs is a recent \$276,520 grant from the Bayer USA Foundation to fund the Bayer Graduate Fellowship, which directly supports graduate students in the Kenneth P. Dietrich School of Arts and Sciences' Department of Chemistry. The fellowships are part of a larger commitment that Bayer has made to provide 50 internships for students from various universities in STEM-related fields in 2012.

Bayer, which defines its mission as "Science for a Better Life," sponsors a number of programs nationwide to improve science education. Its *Making Science Make Sense* program—created 15 years ago to advance science literacy through hands-on, inquiry-based learning, employee volunteerism, and public education—includes several partnerships with schools in Southwestern Pennsylvania. In 2010, Bayer became one of 100 companies that signed on to Change the Equation, an effort championed by the Obama Administration to help improve STEM education.

Karl Haider, a research fellow with the New Technologies group at Bayer, says, "We are fortunate to be headquartered in Pittsburgh, where there are so many great university programs in polymer and materials science—including Pitt's chemistry and engineering departments."



From left, Haitao Liu, an assistant professor in Pitt's Department of Chemistry, and Hyo Jeong Kim, a Bayer Graduate Fellow.

While all 200 doctoral candidates in Pitt's graduate program in chemistry receive stipends as teaching or research assistants, being selected a Bayer Graduate Fellow benefits both the student and the department. Bayer fellows receive financial support for as many as six semesters, enabling them to concentrate on their research studies. Also, funds targeted by their research advisor to support these Bayer Fellowship recipients can be redirected to other aspects of their programs.

"The Bayer Fellowship helps us recruit

highly qualified applicants to the program," said Jay Auses, assistant chair in Pitt's Department of Chemistry. "It also allows us to provide the recipients with a secure funding source, and that helps faculty researchers who otherwise must pay for graduate research assistants from their own funding," he added.

During the fall and spring terms, Pitt's chemistry department teaches more than 4,000 undergraduates in the Dietrich School, the School of Nursing, and the Swanson School of Engineering. Bayer Graduate

Fellow Hyo Jeong Kim was required to teach—like all first-year graduate students—during her first term, in the fall of 2011. As the recipient of a Bayer Graduate Fellowship, Kim will not be required to teach in the spring term, so she can devote more time to research. She plans to work with Haitao Liu, an assistant professor whose research group focuses on the physical and synthetic chemistries of nanomaterials.

Haider said that corporate research and development operations rely more heavily now upon their collaborations with top University research programs than before.

"You need both," Haider said, because the new concepts often stem from university labs, but corporate scientists must translate the idea or technology into a commercial application.

Bayer also values the networking opportunities provided by its association with its university partners. "We need to support STEM programs in order to help develop the future workforce," said Haider.

Bayer offers internship opportunities to fellows. In addition, the company funds endowed professorships in Pitt's chemistry department and the Swanson School's Department of Chemical and Petroleum Engineering. Bayer has sponsored the Bayer Lecture Series in the chemical and petroleum engineering departments as well as the chemistry department at Pitt. The chemistry department's lecture series has hosted prominent chemists, including seven winners of the Nobel Prize in Chemistry.

Clue Uncovered for Origins of Type of Supernovae Explosion

Continued from page 1

small and faint, there is no hope of seeing them in distant galaxies. Therefore, Badenes and Maoz turned to the only place where they could be seen: the part of the Milky Way Galaxy within about a thousand light years of the sun. To find the star's companion, the team needed two spectra to measure the velocity between the two. However, SDSS only took one spectrum of most objects. The team decided to make use of a little-known feature in the SDSS spectra to separate each one into three or more subspectra. Although the reprocessing of the data was challenging, said Badenes, the team was able to compile a list of more than 4,000 white dwarfs within a year, each of which had two or more high-quality subspectra.

"We found 15 double white dwarfs in the local neighborhood and then used computer simulations to calculate the rate at which double white dwarfs would merge," says Badenes. "We then compared the number of merging white dwarfs here to the number of Type Ia supernovae seen in

distant galaxies that resemble the Milky Way."

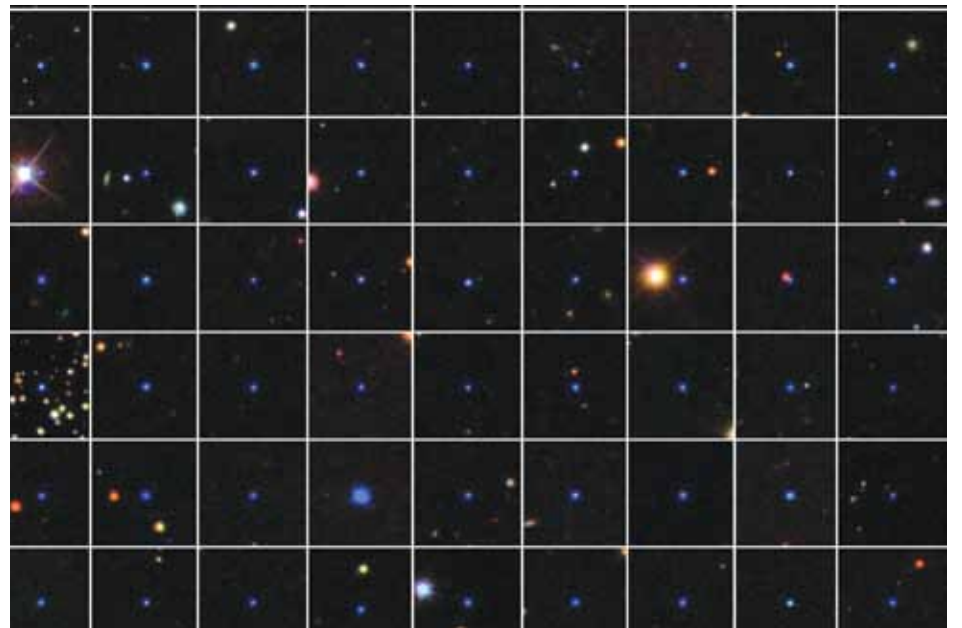
The result was that, on average, one double white dwarf merger event occurs in the Milky Way about once a century.

"That number is remarkably close to the rate of Type Ia supernovae we observe in galaxies like our own," says Badenes. "This suggests that the merger of a double white dwarf system is a plausible explanation for Type Ia supernovae."

In addition to providing a key clue about the nature of these important events, the team's discovery shows the potential of giant astronomical surveys like the SDSS.

"Twenty years ago we decided to take three subspectra for each spectrum. We did that for entirely practical reasons," says Robert Lupton, senior research astronomer in Princeton University's Department of Astrophysical Sciences and a colleague of Badenes. "We had no idea that it would someday give us an important clue to the mystery of the Type Ia supernovae."

For more information on the SDSS, visit <http://www.sdss.org/>.



Pitt Researchers Develop New Science of National Preparedness

Continued from page 1



MARY JANE BERTY/CODICE

Carey Balaban (left) and Kenneth Sochats brought a unique mix of academic disciplines to the 2004 creation of the University of Pittsburgh Center for National Preparedness, which they codirect. Balaban is a professor in the Pitt School of Medicine's Departments of Otolaryngology and Neurobiology; Sochats is a professor in Pitt's Swanson School of Engineering. The work they and other researchers do for the Center for National Preparedness has helped to create a new academic field at Pitt—the science of national preparedness. “We have taken an evidence-based, systems-of-systems analytic approach to issues of national preparedness. We are bringing the full rigor of the academic endeavors to practical problems that improve outcomes for the good of society,” Balaban says.

analysis, and public health monitoring.

But that's only the beginning.

By taking the issue of national preparedness to a new level, these collaborative experts have created a whole new academic discipline at Pitt.

“National preparedness is about having leaders who expect or anticipate things that previously were unimaginable,” says Carey Balaban, a professor in the School of Medicine's Departments of Otolaryngology and Neurobiology and a seemingly unlikely codirector of the Center for National Preparedness. “These leaders know the possibilities, try to mitigate them beforehand, respond quickly when they occur, and build to prevent them from recurring. It's a cycle.”

And now it's a science, too, according to Balaban and Kenneth Sochats, an information systems engineer who also is a founding codirector of the center.

“We're making a science of national preparedness,” Balaban declares. “We have taken an evidence-based, systems-of-systems analytic approach to issues of national preparedness. We are bringing the full rigor of the academic endeavors to practical problems that improve outcomes for the good of society.”

A brief history

While Pitt researchers had been studying national preparedness issues substantively prior to Sept. 11, 2001, the fall of the World Trade Center towers quickly prompted the University's Office of the Provost to evaluate its own potential for creating a national preparedness-focused research program, which included an inventory of any current, related research.

A consulting firm's conclusion at the

time, according to George Klinzing, vice provost for research at Pitt: “You already have one. The Scharpenburg Report [as the consulting firm's report came to be known] confirmed that we have great strength in the areas of health and information science. The knowledge is here. Now we're pulling it together.”

And they did. But as Klinzing noted at the time of the launch of the Center for National Preparedness, “This is not just about homeland security. We're finding that the different aspects of national preparedness add up to a much larger picture.”

Disease outbreak surveillance and the national agenda

As the consultant pointed out, Pitt found strength—and much favorable national media attention—largely in its collaborative mix of public health and information sciences research. In early 2002, for instance, Pitt became a poster child for the national agenda on preparedness and security when then-President George W. Bush and his Department of Homeland Security director,

former Pennsylvania governor Tom Ridge, visited Pitt. Their focus, which at the time became an integral talking point within the president's national agenda: a Pitt research initiative called RODS, or Real-time Outbreak and Disease Surveillance.

RODS is an information system that was designed by Michael M. Wagner of the School of Medicine's Department of Biomedical Informatics to immediately identify sudden jumps regionally in emergency room visits related to specific complaints. The system, which captures and monitors such activities, was designed to detect disease

outbreaks, with the idea that such spikes could serve as a first warning of a possible bioterrorism event. The RODS research team also had worked on the development of a National Retail Data Monitor, which would collect and analyze data on the sale of over-the-counter drugs—also designed to detect disease outbreaks.

At the same time, a Pitt research team was developing a decision-making process for first responders that included recognition, protection, decontamination, triage, and treatment. That same team embarked on developing what it called the Pittsburgh Matrix, which measured survivorship and cost over a timeline beginning with the detection of a biocontaminant as well as the scale of medical resources required to respond.

At the same time, Margaret Potter, a Pitt professor of health policy and management and director of Pitt's Center for Public Health Practice, was advocating with the Pennsylvania legislature for a statewide public health communications network that would improve the response to local emergencies. Potter also served as principal investigator with the Graduate School of Public Health's Center for Public Health Preparedness, one of 22 such centers nationwide that were funded by the Centers for Disease Control and Prevention.

Today, that center (www.prepare.pitt.edu) continues to thrive, educating and training public health workers and school personnel in preparedness issues such as emerging infectious diseases, disasters, preparedness law and policy, and crisis leadership. The center also oversees a graduate certificate program in public health preparedness and disaster response.

On the ethics front, the Matthew B. Ridgway Center for International Security Studies within Pitt's Graduate School of Public and International Affairs began to study the ethical dilemma presented by effectively gathering security intelligence on potential terror threats while still respecting the constitutional privacy rights of U.S. citizens.

Another initiative that brought Pitt to the forefront of national preparedness shortly

after the 9/11 tragedy included the following. Regional Biocontainment Laboratory. The National Institute of Allergy and Infectious Diseases awarded Pitt a \$17.5 million grant in 2003 to establish this laboratory—one of nine in the country. The lab is housed in the University's state-of-the-art Biomedical Science Tower 3.

Preparedness today: an evolving discipline

Today's Center for National Preparedness continues to pave new paths in helping to drive the nation's preparedness agenda.

“It has morphed in a lot of ways,” Klinzing says of the center. “I think that, after a broader focus earlier in its evolution, we've found some solid niches on which to build. I'm happy with them; we have the right talent.”

Sochats, who has spent more than 30 years working in both academia and the telecommunications industry, says the center has matured in its focus since “the early days, when everybody was scurrying around exploring a number of competing theoretical approaches to managing disasters.”

He adds: “It's still a new field, but now we're actually developing tools and producing educational programs.”

And the center's doing so in partnership with, among others, the Potomac Institute, Harris Corp., Lockheed, the military, federal agencies such as NORAD, FEMA, NIST and NORCOM, and numerous other universities, state agencies, and regional preparedness consortia.

“With the new funding picture nationally,” Sochats says, “we need to partner very closely with the commercial sector, where they actually make things.”

What follows are descriptions of some of the center's research endeavors, which build largely on the same academic strengths that had been identified in 2002.

An unlikely partnership in disaster management

One could fairly describe Balaban and Sochats as the most unlikely of research partnerships. Balaban is a prolific and frenetic thinker and idea man with a background in medical science and a passion for neuroscience. Sochats is an electrical engineer with a penchant for visual information systems, electronic record keeping, and practical, buildable solutions. The pair originally was brought together by Klinzing as part of a brainstorming team to explore the establishment of the center.

As Klinzing is quick to acknowledge, “They're just two of the most creative people I know. They really work great together.”

Once together, though, this emerging team not only agreed to lead the new center, but they also began to explore—over lots of Starbucks coffee—the need for new decision-making tools in managing disasters that account for the many “actors” responding to or affected by a disaster and the fast-changing dynamics of the disaster scenario. Eventually, their collaboration led to the development of what they call their Dynamic Discrete Disaster Decision Simulation System, or D⁴S².

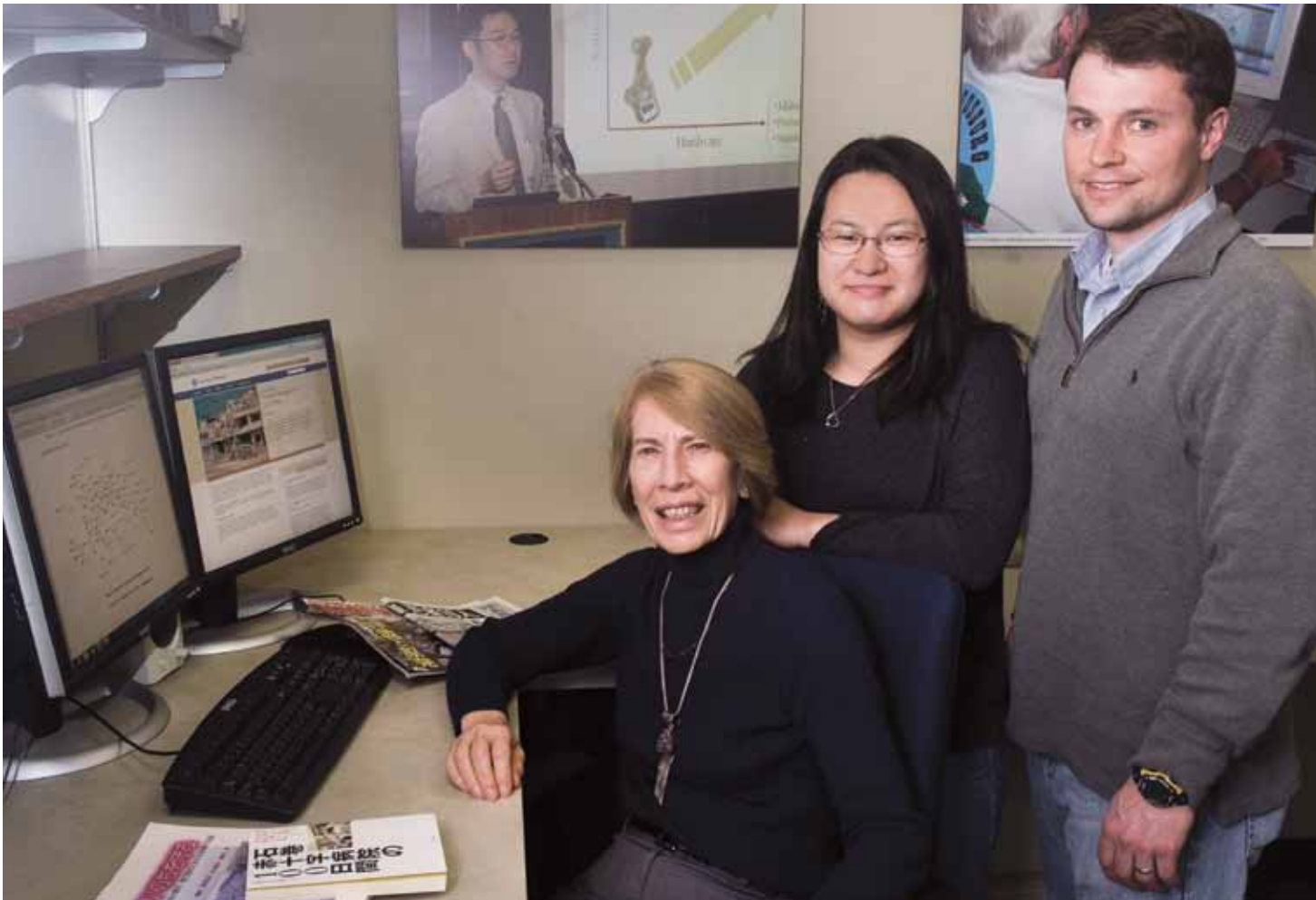
The patent-pending system, which continues to evolve, integrates a geographic information system, discrete event simulation, a custom-built decision-modeling system, and a control interface that resembles an emergency operations center. It allows users to overlay all actors in a given disaster and informs each group continuously as situations change and decisions are made.

“It's all about situational awareness,”

Continued on page 7



Continued from page 6



Louise Comfort (seated), a professor in Pitt's Graduate School of Public and International Affairs (GSPIA), travels the globe in her quest for understanding how governments and residents handle natural disasters. "I'm very interested in the decision making" that's done at the time of disasters, says Comfort, an organizational design theorist and policy analyst. She has developed a computer-based decision support tool that can be used by emergency managers in a rapidly changing, urgent environment. Above, Comfort talks with Pitt's Center for Disaster Management staffers Aya Okada, a GSPIA doctoral candidate who traveled with Comfort to Japan following the 2011 tsunami there, and Clayton Wukich, a postdoctoral fellow.

Balaban says, as he compares the system to the human body's neural system. "It's all about prediction and dealing with complex interactive networks and how they operate together. I think it's actually a very powerful platform for other applications... We expect this to become a premier tool in emergency response."

Balaban and Sochats are working with the University's Office of Technology Management to commercialize their innovation.

Avoiding the "cascade of failure"

When Louise Comfort, a professor in GSPIA since 1984, looks at a disaster, she sees multiple actors and situations and a sequence of decision points that can, in cases like the Hurricane Katrina disaster, lead to a "cascade of failure."

"I'm very interested in the decision making," says Comfort, an organizational design theorist and policy analyst. "I believe that the decisions made in the initial response to a disaster will set the trajectory of the rest of the situation and determine whether it will escalate or not."

Take Hurricane Katrina, for example, which Comfort has studied extensively over the years. "It's incredible that all four levels of government failed" in handling many aspects of the disaster response. "One of the critical issues was a lack of understanding of the scientific information available and how this affected their decisions. There was no capacity to imagine what would happen to the aging infrastructure of the city under the impact of the interconnected dynamics of a storm surge from a Category 3 hurricane flowing through the Mississippi River Gulf Outlet into the low-lying districts of New Orleans."

Her biggest complaint: "The information was there, but it was very complex, and

nobody put the pieces together. Nobody saw the whole. That's exactly what we're trying to facilitate with computational decision support for human managers."

Comfort, who also spent time recently in Japan studying the response to the March 2011 earthquake, tsunami, and subsequent nuclear disaster there, has turned her analysis into what she calls an Interactive Intelligent Spatial Information System (IISIS). She describes her innovation as a computer-based decision support tool that tracks and monitors the interactions between critical conditions, actors, and agencies in real time, providing decision support for emergency managers in a rapidly changing, urgent environment.

"I study ways that computers can extend human capacity for decision making in urgent situations, when human decision-making cognitive capacity drops under stress," Comfort says of her innovation and research. "The one constraint is that human minds are much faster than machines, but human beings also make more mistakes."

Comfort says she continues to update her computer system, recently adding modules for an engineering dashboard for hospitals and collaborative decision support for airport fire-rescue teams. Meanwhile, she also is studying the concept of regional risk assessment and is working on helping others "to look at the whole set of hazards that could happen in a region" and helping them develop "complexity profiles," among other tools, she says.

Is she obsessed with studying disaster response? Maybe a little bit. "I am thinking about disasters all the time," Comfort deadpans. "But given my teaching schedule, I can probably manage [researching] one disaster a year."

Making opinions matter

While some researchers work on ways to prevent or manage disasters and possible security threats, one Pitt professor and her research team are trying to harness the potential intelligence that could be extracted and interpreted from vast amounts of printed text.

Janyce Wiebe, a professor in the Dietrich School's Department of Computer Science and codirector of a multi-university Intelligent Systems Program initiative, is collaborating with Rebecca Hwa, a professor of computer science at Pitt. They, along with researchers from several other universities, are working to develop what Wiebe describes as machine learning-based statistical models that can rapidly process large volumes of unstructured text in search of opinions, general sentiments, motivations, and tensions.

The computational models are being designed to automatically merge facts and entity relationships across sets of documents and populate large databases with information from many text sources as they relate to such events as terrorist incidents or disease outbreaks. The design challenges, Wiebe says, are complicated, particularly when considering the researchers' goal of developing retrainable, robust components

"To make decisions, policy makers have to be aware of what people are writing and saying. What are all of the opinions being expressed, and how do they travel over time and forums? There are vast amounts of texts, and humans can't possibly read it all, so we want to develop systems that can bring the relevant data to analysts' attention."

—Janyce Wiebe

for those models.

"To make decisions, policy makers have to be aware of what people are writing and saying," Wiebe says. "What are all of the opinions being expressed, and how do they travel over time and forums? There are vast amounts of texts, and humans can't possibly read it all, so we want to develop systems that can bring the relevant data to analysts' attention."

And what are these systems looking for in those texts? "I'm looking for subjectivity—the linguistic expression of somebody's opinions, sentiments, emotions, evaluations, beliefs, speculations," Wiebe says. "But you can't just look for points like 'good' and 'bad.'"

Multiple-robot search and rescue simulation

Also building on Pitt's strength in information sciences is Michael Lewis, a professor of intelligent systems programs in the University's School of Information Sciences. He started working on human-robot interaction research in the area of search and rescue beginning in 2002, supported by a National Science Foundation Information Technology Research grant.

Lewis, in collaboration with Carnegie Mellon University researchers, began to develop robots, design interfaces, and equipment, all aimed at search and rescue with multiple robots in extreme environments. Ultimately, the researchers developed an urban search-and-rescue simulation that eventually was used in a national Virtual Robots RoboCupRescue Competition. The simulator also has been used by many researchers across the country to support and test their own robotic development efforts in search and rescue.

Among the challenges that Lewis and his collaborators tackled with the simulation platform: organization and command and control using multiple platforms, Lewis says.

"When you have four or five robots in one area, you get lots and lots of redundancy, and it gets very confusing," Lewis says. "They may be good for search and rescue of static targets, but it's more difficult with dynamic targets."

More recently, Lewis and researchers from Carnegie Mellon, Lockheed Martin, and the Eglin and Wright Patterson Air Force bases, have been developing prototype interfaces and intelligent-agent coordination algorithms for interacting with small teams of Wide Area Search Munitions, or WASMs. WASMs are a cross between unmanned aerial vehicles and munitions. One of the

Continued on page 8

"I believe that the decisions made in the initial response to a disaster will set the trajectory of the rest of the situation and determine whether it will escalate or not."

—Louise Comfort



Continued from page 7

major challenges, Lewis says, is trying to control multiple independent WASMs in close proximity to one another as they search for targets to destroy. Among the solutions: more elaborate communications systems capable of managing large WASM teams.

"We have to find ways to command them cooperatively," Lewis says of WASMs.

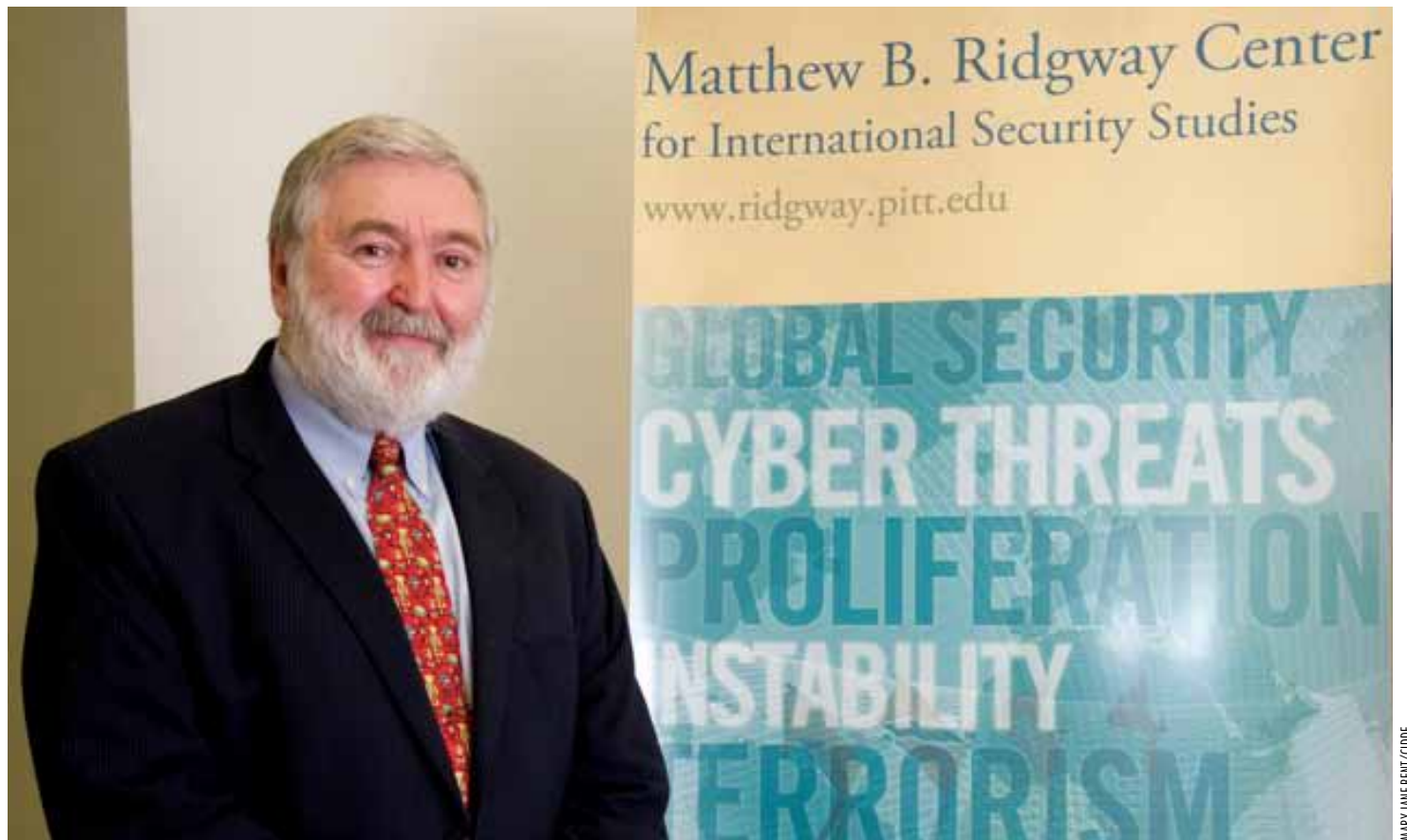
The academics of nonstate violence

One doesn't need to look much beyond the so-called Arab Spring uprisings throughout North Africa and the Middle East, or the chaos of Somalia, or the insurgent Taliban, or Mexico's drug culture to realize that national preparedness and security in the future will depend largely on a new and better understanding of the world's fast-emerging threats. That is what GSPIA Professor Phil Williams calls such violent nonstate actors as terrorists, criminals, insurgents, pirates, militias, warlords, and drug traffickers, among other armed groups.

Williams, the Wesley W. Posvar Chair in International Security Studies and director of GSPIA's Matthew B. Ridgway Center for International Security Studies, has redirected the center's research focus to target this threat category—and develop an academic program around it, in collaboration with the likes of the Carlisle, Pa.-based U.S. Army War College's Strategic Studies Institute. He has found plenty to observe.

"If you look around the world, there has been a phenomenal rise of violent, nonstate actors," says Williams, who singles out Mexico and the Middle East to make his point. "Around the world, something is going on with states, where we have more weak states, unstable states, and even failed states. And because of globalization, the instability is spilling over to developed countries. So we have a much less stable world where things are much less predictable."

Williams says the Ridgway Center has been developing an academic effort "to get a handle on the new threat." The new endeavor also has led to the addition of several new security studies faculty members in GSPIA, which has increased the Ridgway Center's depth. "We're building a niche within that



Phil Williams contends that violent nonstate actors—terrorists, insurgents, pirates, warlords, and drug traffickers, among other armed groups—are one of the world's fastest-emerging threats. Williams is the Wesley W. Posvar Chair in International Security Studies and director of the Matthew B. Ridgway Center for International Security Studies, both within Pitt's Graduate School of Public and International Affairs. In defining the future academic challenges of the Ridgway Center, Williams told an audience during his inaugural lecture that "The rise of violent, nonstate actors is one of many developments that have made the security agenda in the 21st century both more crowded and more complex."

subject," he adds.

Among Williams' own academic interests, which focus largely on the "pernicious" interconnectedness of these armed groups, are the following: the relationship between terrorists, criminals, and drug-trafficking organizations; the question of whether drug organizations in Central and South America are willing to help fund terrorists; links between those drug-trafficking organizations and terrorist groups in West Africa; and, more academically, the question of

whether these threats represent disparate threats that seem to be converging to create fewer but bigger threats—or threats that are diverging, creating more threats about which to worry.

Williams also notes that, in cyberspace, the tools developed by criminals for cybercrime also are being employed by states as part of their own cyberwar strategies—yet another focus of Williams' national security-related research.

As Williams, in defining the future academic challenges of the Ridgway Center, told an audience during his inaugural lecture, "The rise of violent, nonstate actors is one of many developments that have made the security agenda in the 21st century both more crowded and more complex."

His contention, which drives his research and teaching, is, "The issue is not simply that governance is inadequate to meet security challenges; rather, it is that poor governance itself is a major source of insecurity and disorder."

The emergence of an academic discipline

Recognizing a need to turn all of this collective research into a big-picture academic discipline with substance, Balaban and Sochats have spearheaded a Center for National Preparedness-based initiative to develop an entire University curriculum around national preparedness. As such, the team, in partnership with Pitt's College of General Studies, launched in Fall 2010 an 18-credit Certificate in National Preparedness and Homeland Security program.

The program focuses on the analytical and managerial aspects of preparedness at the international, national, state, and local levels. It describes itself as evidence-based, analytical, systems-of-systems-ori-

ented, and visual.

"We're trying to develop scholars in this area," Balaban says of the certificate program. "We now have the vision of what a Pitt graduate in this area should look like: one who adopts an analytic, often innovative approach, to managing issues of national preparedness."

As the courses largely reflect what the collective research at Pitt has shown over time, Balaban and Sochats do acknowledge that their own views and approaches to preparedness have evolved, extending to their academic pursuits. Initially, for instance, the two subscribed to an "all-hazards" approach to disaster prevention, response, management, and mitigation. That is, they focused more on the various actors responding to a disaster and the commonality of response elements that can be identified across a variety of disaster scenarios. Recently, and based on extensive research, the team has adopted an "all-needs" philosophy, which means focusing more on the immediate and longer-term needs of the population that is affected by the disaster.

A problem with the all-hazards approach is that "the effectiveness of response cannot be measured exclusively in terms of logistical indicators, but rather by the recovery and resiliency of the region," according to a paper by Balaban, Sochats, and Potomac Institute researchers Donald Donahue and Stephen Cunnion that was published in February 2012 in *Homeland Security Affairs*.

The article also states, "By basing planning on the needs of the impacted population—the 'all needs' approach—planners can better prioritize the full range of requirements and fully integrate both the government and nongovernment contributions."

The Center for National Preparedness' new certificate program builds on that philosophy, Balaban and Sochats note.

Says Balaban: "We've learned it well enough that we actually can distill it and teach it, and we're focusing on developing the leaders of tomorrow."



Michael Lewis, a professor in Pitt's School of Information Sciences and Intelligent Systems Program, researches human-robot interaction in the context of search-and-rescue efforts. Lewis, in collaboration with Carnegie Mellon University researchers, develops robots and designs interfaces and equipment, all aimed at search and rescue with multiple robots in extreme environments. The trick, he says, is coordinating the robots: "When you have four or five robots in one area, you get lots and lots of redundancy, and it gets very confusing."

Pitt's Dick Thornburgh Forum, Swanson School to Host March 27-28 Symposium on Future of Nuclear Power

Continued from page 1

of the energy industry. Also relevant, said McCord, is the unique position Pennsylvania holds as a result of the March 28, 1979, Three Mile Island accident, which serves as a case study of nuclear crisis management under the Thornburgh administration.

Last March, the Three Mile Island accident again was thrust to the forefront of media attention with the Fukushima Daiichi disaster, and this month marks both the first anniversary of Japan's accident and the 33rd anniversary of Three Mile Island, an alignment that positions the symposium to make an important contribution towards public awareness of this critical policy issue.

The symposium comprises four panel sessions featuring national and international experts in nuclear, fossil fuel, and passive energy; federal, state, and local government leaders; and academic and scientific researchers.

The titles, times, dates, and speakers for each session follow.

Nuclear Power and Energy Alternatives, 2:15-4:45 p.m. March 27

Patrick Moore, cochair of the CASEnergy Coalition;

Matthew Wald, environment and energy reporter at *The New York Times*;

Peter B. Lyons, assistant secretary for nuclear energy in the U.S. Department of Energy;

Anthony Cugini, director of the U.S. Department of Energy's National Energy Technology Laboratory;

Matthias Kurth, president of the Federal Network Agency, Germany; and

Jim Ferland, president of Westinghouse, Americas, and, effective April 1, president and CEO of Westinghouse Electric Company.

David Shribman, executive editor of the *Pittsburgh Post-Gazette*, will moderate.

America's Nuclear Future, 7-9:30 p.m. March 27

Vicky A. Bailey, president of Anderson Stratton International, LLC, and a member of the President's Blue Ribbon Commission on the Future of Nuclear Power;

David Lochbaum, director of the Nuclear Safety Project for the Union of Concerned Scientists;

Ann Bisconti, president of Bisconti Research, Inc.; and

Jacques Besnainou, CEO of AREVA Inc., North America.

Douglas Heuck, publisher and editor of *Pittsburgh Quarterly*, will moderate.

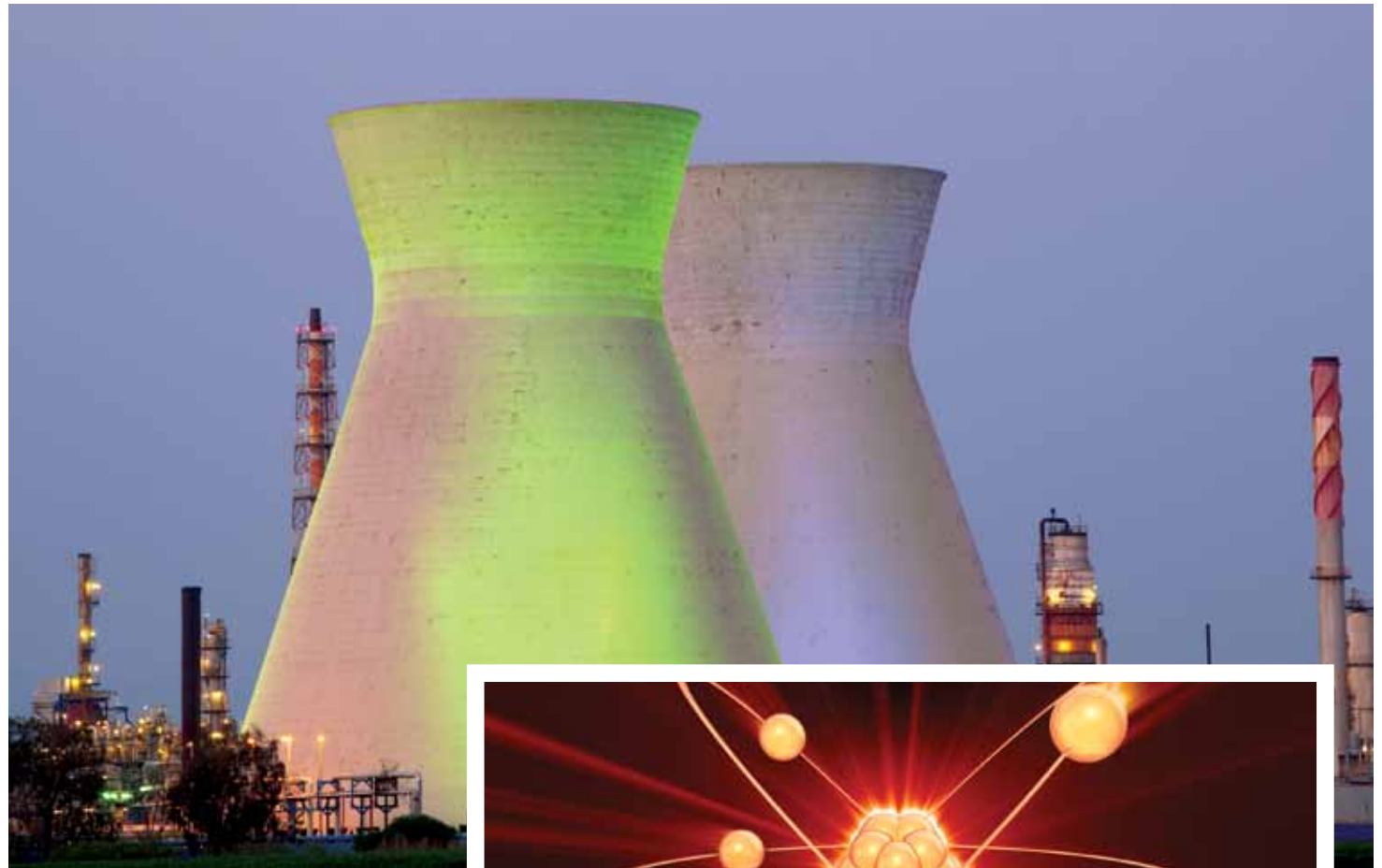
Three Mile Island, Chernobyl, Fukushima Daiichi, 9 a.m.-noon March 28

Harold Denton, former director of the Nuclear Regulatory Commission's Office of Nuclear Reactor Regulation;

Adolf Birkhofer, managing director of the Institute for Safety and Reliability, Germany;

Isao Kato, deputy general manager of the Nuclear Power Department, Tohoku EPCo, Japan;

Daniel Roderick, senior vice president



of GE Hitachi Nuclear Energy; and William Magwood IV, commissioner of the Nuclear Regulatory Commission.

Kathy Kiely, national political journalist at *USA Today* and managing editor at the Sunlight Foundation who covered the Three Mile Island story in 1979 for *The Pittsburgh Press*, will moderate.

Legal and Financial Aspects of Nuclear Power, 2-5:30 p.m. March 28

Barton Cowan, of counsel to the Pittsburgh-based law firm of Eckert Seamans Cherin & Mellott, LLC, and a visiting professor of law at the West Virginia University College of Law;

Mark Cooper, senior research fellow for economic analysis at the Institute for Energy and the Environment, Vermont Law School;

Peter P. Sena III, president and CEO for FirstEnergy Nuclear Operating Company;

Steve Kuczynski, chair, president, and CEO of Southern Nuclear Operating Company; and

Robert F. Powelson, chair of the Pennsylvania Public Utility Commission.

Bill Flanagan, host of WPXI-TV's *Our Region's Business* and executive vice president for Corporate Relations at the Allegheny Conference On Community Development, will moderate.

Barton J. Gordon, partner at K&L Gates in Washington, D.C., and former member of the U.S. Congress from Tennessee, will give a lunch presentation titled "The Politics of Nuclear Power: A View From the Congress"—from noon to 2 p.m. March 28. A video presentation featuring Lamar Alexan-

der, U.S. Senator from Tennessee, will also be shown during the luncheon.

There is a \$300 fee to attend. For more information about the symposium or to register, visit www.thornburghforum.pitt.edu.

In addition, the sessions provide up to 11.5 hours of Continuing Legal Education (CLE) credits and are presented in conjunction with the University of Pittsburgh

School of Law. Both of the March 27 sessions have been approved by the Pennsylvania CLE Board for four-and-one-half hours of substantive credit, for \$45; the March 28 session has been approved for seven hours of substantive credit, for \$70. Participants seeking credit may pay at the door with a check made payable to the University of Pittsburgh School of Law. Separate checks are required for each date. For more information, contact Lila Steffy at 412-648-1305 or steffy@pitt.edu.

Professional Development Hours (PDHs) verification will be provided, upon request, for professional engineers for two PDHs for each session attended (eight PDHs maximum).

Established in 2007, the mission of the Dick Thornburgh Forum for Law and Public Policy is to foster public education and civic action on important public policy issues, building on Thornburgh's legacy by creating a framework for advancing his vision of creating effective and principled governance.

The forum engages in a variety of activities across the University that are designed to enhance the accountability and integrity of governmental institutions at the local, state, and national levels. Internationally, it seeks to advance those values as well as the commitment to the rule of law for all levels of government.

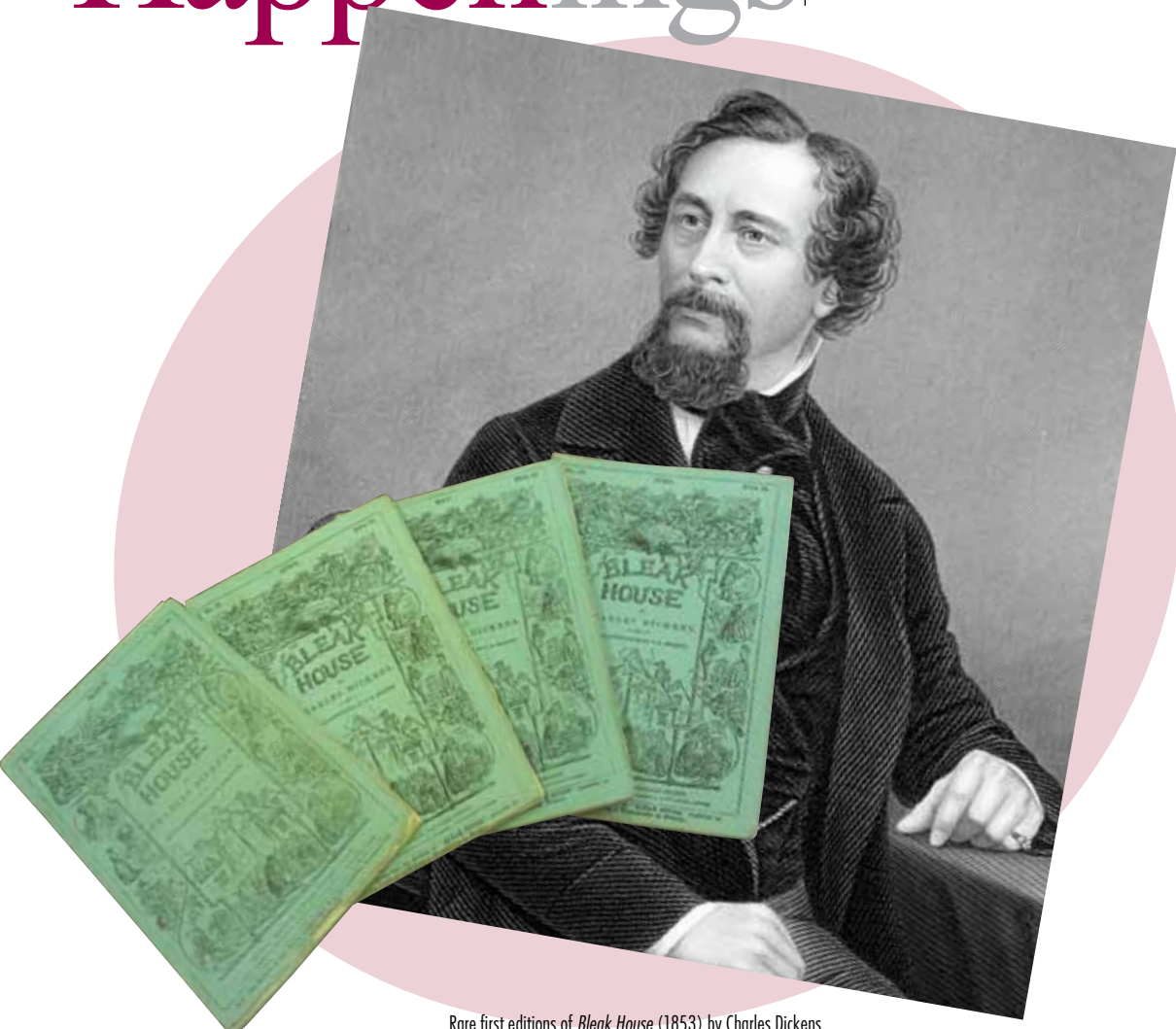
The University's Swanson School of

Engineering is one of the oldest engineering programs in the United States. The Swanson School has excelled in basic and applied research during the past decade and is on the forefront of 21st-century technology, including sustainability, energy systems, bioengineering, microsystems, computational modeling, and advanced materials development. Approximately 120 faculty members serve more than 3,200 undergraduate and graduate students and Ph.D. candidates in six departments, including bioengineering, chemical and petroleum engineering, civil and environmental engineering, electrical engineering, industrial engineering, and mechanical engineering

and materials science. For the two most recently reported consecutive years, 2009 and 2010, the Swanson School has had the second-highest percentage of doctoral degrees awarded to women in North America, according to the American Society for Engineering Education.

Established in 2007, the mission of the Dick Thornburgh Forum for Law and Public Policy is to foster public education and civic action on important public policy issues, building on Thornburgh's legacy by creating a framework for advancing his vision of creating effective and principled governance.

Happenings



Rare first editions of *Bleak House* (1853) by Charles Dickens, and a photograph of Dickens taken at the time he wrote *David Copperfield*.

Hillman Library,
an exhibition of first editions and significant works by novelist Charles Dickens
March 28-May 1

Concerts

Robert Ward and Eric Moe, performances of works by Pulitzer Prize-winning composer Ward and Pitt professor Moe, 8 p.m. **March 21**, free, Bellefield Hall Auditorium, Roger Zahab conducting University of Pittsburgh Symphony Orchestra, 412-624-4125.

Sean Jones Duets, poet Vanessa German joins trumpeter Sean Jones in an evening of lyrics, rhymes, and rhythms, 7 p.m. **March 22**, August Wilson Center for African American Culture, 980 Liberty Ave., Downtown, August Wilson Center, Pittsburgh Cultural Trust, 412-456-6666, www.trustarts.org, PITT ARTS Cheap Seats, 412-624-4498, www.pittarts.pitt.edu.

Steve Gallo and Donna Occhipinti, acoustic singer-songwriters, noon **March 23**, free, Cup & Chaucer Café, ground floor, Hillman Library, Emerging Legends Series, Calliope: The Pittsburgh Folk Music Society, University of Pittsburgh Library System, www.calliopehouse.org/legends.htm.

Sara Chang, West Side Story, Yan Pascal Tortelier, conductor, and Sarah

Chang, violinist, performing works by Gould and Sibelius and Bernstein's *West Side Story Suite*, **March 23 and 25**, Heinz Hall, 600 Penn Ave., Downtown, BNY Mellon Grand Classics, Pittsburgh Symphony Orchestra, 412-392-4900, www.pittsburghsymphony.org, PITT ARTS Cheap Seats, 412-624-4498, www.pittarts.pitt.edu.

Music for Three Sovereigns, performed by the 12-voice vocal ensemble Blue Heron, 8 p.m. **March 24**, Calvary Episcopal Church, 315 Shady Ave., Shadyside, Renaissance & Baroque, 412-361-2048, www.rbsp.org, PITT ARTS Cheap Seats, 412-624-4498, www.pittarts.pitt.edu.

IonSound Project, avant-pop music, 7 p.m. **March 25**, Bellefield Hall Auditorium, Pitt Department of Music, 412-624-4125.

Gentorum, a fixture on the world, traditional, and Celtic music circuit, 7:30 p.m. **March 29**, Pittsburgh Center for the Arts, 6300 Fifth Ave., Shadyside, Roots Cellar, Calliope: The Pittsburgh Folk Music Society, www.calliopehouse.org/legends.html, PITT ARTS Cheap Seats, 412-624-4498, www.pittarts.pitt.edu.

Phil Smith & Steve Weber, Pitt professors of English and chemistry, respectively, and lifelong supporters of acoustic blues and folk music, noon **March 30**, free, Cup & Chaucer Café, ground floor, Hillman Library, Emerging Legends Series, Calliope: The Pittsburgh Folk Music Society, University of Pittsburgh Library System, www.calliopehouse.org/legends.htm.

A Cinderella Suite, Leonard Slatkin conducting works by Stucky and Prokofiev and, in Saint-Saëns' "Egyptian" Piano Concerto, soloist Stephen Hough, **March 30-April 1**, Heinz Hall, 600 Penn Ave., Downtown, BNY Mellon Grand Classics, Pittsburgh Symphony Orchestra, 412-392-4900, www.pittsburghsymphony.org, PITT ARTS Cheap Seats, 412-624-4498, www.pittarts.pitt.edu.

Exhibitions

Frick Fine Arts Building, Pitt Studio Arts Student Exhibition, featuring creative works by graduating seniors alongside pieces by Studio Arts majors and nonmajors, **April 4-28**, www.studioarts.pitt.edu.

Carnegie Museum of Art, Teenie Harris, Photographer: An American Story, through **April 7**; **Maya Lin,** imaginative recreations of natural forms transformed into objects of contemplation, **through May 13**;

Hand Made: Contemporary Craft in Ceramic, Glass, and Wood, ongoing, 4400 Forbes Ave., Oakland, 412-622-3131, www.cmoa.org.

Westmoreland Museum of American Art, The Art of Seating: 200 Years of American Design, includes The Jacobsen American Chair Collection, a comprehensive private collection of iconic and historic chairs from the mid-1800s to pieces from today's studio movement, **through April 8**, 221 N. Main St., Greensburg, 724-837-1500, www.wmuseumaa.org.

The Warhol, About Face, a series of three-dimensional large-format portraits by photographer Anne Swenson; **Warhol and Cars: American Icons,** examining Warhol's enduring fascination with automobiles as products of American consumer society, both **through May 13**; **I Just Want to Watch: Warhol's Film, Video, and Television,** ongoing, 117 Sandusky St., North Side, 412-237-8300, www.warhol.org.

Hillman Library, an exhibition of first editions and significant works of famed novelist Charles Dickens, **March 28-May 1**, Room 363; **Pitt—225 Years of Building Better Lives—1787-2012,** exhibition of vintage photographs, maps, and copies of front pages of Pitt's two original state charters, on loan from Pennsylvania's state archives, **through May 18**, ground floor; also on display in glass Audubon case are actual front pages of Pitt's original state charters, University's 225th anniversary commemoration, **through May 18**, 412-953-3298, jeanann@pitt.edu.

The Frick Art & Historical Center, Draw Me a Story: A Century of Children's Book Illustration, survey of drawing styles and techniques spanning more than 100 years, including watercolors, pen drawings, and experimental combinations from artists like Randolph Caldecott, Chris van Allsburg, Ernest Shepard, and Maurice Sendak, **through May 20**, 7227 Reynolds St., Point Breeze, 412-371-0600, www.thefrickpittsburgh.org.

Hunt Institute for Botanical Documentation, Native Pennsylvania, A Wildflower Walk, collaborative exhibition between Hunt Institute and Carnegie Museum of Natural History, **through June 29**, 5th floor, Hunt Library, Carnegie Mellon University, 4909 Frew St., Oakland, 412-268-2434, http://huntbot.andrew.cmu.edu.

Carnegie Museum of Natural History, Warhol's Cats and Dogs Series, **through June 30**; **M is for Museum,** **through Aug. 30**, 4400 Forbes Ave., Oakland, 412-622-3131, cmnhweb@carnegiemnh.org.

Lectures/Seminars/Readings

"Community Practice: From Local to Global Perspectives and Back," Marie Weil, Berg-Beach Distinguished Professor, University of North Carolina at Chapel Hill School of Social Work, noon **March 20**, Pitt School of Social Work Conference Center, 20th floor, Cathedral of Learning, Pitt School of Social Work Speaker Series, World Social Work Day, 412-624-6304.

"Bioengineering at the University of Pittsburgh: Past, Present and a Terrific Future," Harvey S. Borovetz, Pitt Distinguished Professor of Bioengineering, Swanson School of Engineering, 4 p.m. **March 20**, 2500 Posvar Hall, Pitt Provost's Inaugural Lecture Series, www.provost.pitt.edu.

"Islamic Resurgence in Post-Colonial Malaysia," Ya-wen Yu, Pitt postdoctoral visiting scholar in political science, noon **March 22**, 4130 Posvar Hall, Asia Over Lunch Series, Pitt Asian Studies Center, 412-648-7370, asia@pitt.edu.

"Planning to Ensure Safety at Biological Research Facilities," Kelly Stefano Cole, associate director,

Pitt Regional Biocontainment Laboratory and professor, Pitt School of Medicine's Department of Immunology, and Daniel J. Fisher, Pitt assistant vice chancellor for research operations within the Department of Facilities Management, 3 p.m. **March 22**, 532 Alumni Hall, Pitt Center for National Preparedness, www.cnp.pitt.edu.

"The Haqqani Network, Quetta Shura, Pakistan, and the End Game in Afghanistan," Kenneth Alford, Christian Becker, Ira Guberman, Timothy Kish, and Neeti Rajput, Pitt Graduate School of Public and International Affairs students, 3 p.m. **March 22**, 3431 Posvar Hall, Pitt's Matthew B. Ridgway Center for International Security Studies, University Center for International Studies, www.ridgway.pitt.edu.

"Cell-Extracellular Matrix Adhesion: Molecular Basis, Signaling, and Human Diseases," Chuanyue Wu, Lombardi and Shinozuka Experimental Pathology Research Chair, Pitt's School of Medicine, 4 p.m. **March 22**, Lecture Room 6, Scaife Hall, Pitt Provost's Inaugural Lecture Series, www.provost.pitt.edu.

"How to Hit HIV Where It Hurts," Arup K. Chakraborty, Robert T. Haslam Professor of Chemical Engineering, Chemistry, and Biological Engineering, Massachusetts Institute of Technology, 5 p.m. **March 22**, 102 Benedum Hall, Bayer Distinguished Lectureship 2012, Swanson School of Engineering, 412-624-9630, che@eng.pitt.edu. (See page 2.)

Eula Biss, artist in residence, Northwestern University, 8:30 p.m. **March 22**, Frick Fine Arts Auditorium, Pittsburgh Contemporary Writers Series 2011-12 Season, Pitt Writing Program, The Book Center, 412-624-6508, www.pghwritersseries.wordpress.com.

"Understanding Adaptive Immunology: A Crossroads of the Physical, Life, and Engineering Sciences," Arup K. Chakraborty, Robert T. Haslam Professor of Chemical Engineering, Chemistry, and Biological Engineering, Massachusetts Institute of Technology, 9:30 a.m. **March 23**, 102 Benedum Hall, Bayer Distinguished Lectureship 2012, Swanson School of Engineering, 412-624-9630, che@eng.pitt.edu.

"New Research in Asian and American Music," international symposium honoring Pitt Professor of Music Bell Yung for his 31 years of teaching at Pitt, 9 a.m.-6 p.m. **March 24**, Music Building, Pitt Department of Music and numerous other sponsors, www.ucis.pitt.edu/asc/conference/music/index.html.



Eric Moe

Robert Ward and Eric Moe, Bellefield Hall Auditorium, **March 21**

Phil Smith and Steve Weber, Cup & Chaucer Café, **March 30**





IonSoundProject

March 25
Bellefield Hall

**IonSound Project,
Bellefield Hall,
March 25**

Miscellaneous

TIES Informational Luncheon for Researchers and Research Assistants, talk on Text Information Extraction System (TIES), Rebecca Crowley, director, Department of Biomedical Informatics Graduate Training Program, Pitt School of Medicine, 11 a.m. **March 19**, Magee-Womens Hospital Conference Room CR2131, open to Pitt and UPMC faculty, staff, and students, registration required, <http://ties.upmc.com/register/index.html>, 412-623-4753.

Pitt Five Campus College Fair for University Faculty and Staff and family members interested in educating a dependent at Pitt, 11 a.m.-2 p.m. and 5-7 p.m. **March 22**, Alumni Hall's Connolly Ballroom, drupert@pitt.edu.

Harvest of Loneliness (2010, Gilbert Gonzalez, Vivian Price, Adrian Salinas), screening of the award-winning documentary about the Bracero Program, a guest workers program that brought Mexican workers to the U.S. between 1942 and 1964, 4:30 p.m. **March 22**, McConomy Auditorium, University Student Center, Carnegie Mellon University, 5032 Forbes Ave., Squirrel Hill, 412-268-1895, www.harvestofloneliness.com/englishversion/english.html.

The Press and Campaign 2012, panel discussing how the press has been covering Republican primary and the Obama campaign, featuring five political reporters and moderator *Pittsburgh Post-Gazette* Executive Editor David Shribman, 7:30 p.m. **March 22**, O'Hara Student Center, Pitt Honors College, limited seating, reserve seat by contacting www.honorscollege.pitt.edu/press-panel-2012. (See page 2.)

Faces of Others, Carnegie Mellon International Film Festival cosponsored by Pitt, screenings of films shining a cinematic light on the human faces that reflect the themes shaping our contemporary social landscape, with a focus on the concept of "the other," **March 22-April 15**, at various locations around Pittsburgh, Carnegie Mellon University, www.cmu.edu/faces.

Writing Research Articles, workshop providing an introduction to writing and publishing research articles, 10 a.m.-3 p.m. **March 24**, Lecture Room 2, Scaife Hall, Pitt Survival Skills and Ethics Program, www.skillsandethics.org, survival@pitt.edu.

12th Annual Computer Science Day, gathering of educators, students, alumni, and industry for a day of computing science, computing business, and computing fun 11:30 a.m.-4:30 p.m. **March 30**, fifth and sixth floors, Sennott Square, Pitt Department of Computer Science, 412-624-5755, www.cs.pitt.edu/csday.

Opera/Theater/Dance

Jesus Christ Superstar, rock opera by Andrew Lloyd Webber with lyrics by Tim Rice, **March 22-April 1**, Byham Theater, 101 Sixth St., Downtown, PNC Broadway Across America, Pittsburgh Cultural Trust, 412-456-6666, www.trustarts.org, PITT ARTS Cheap Seats, 412-624-4498, www.pittarts.pitt.edu.

Diespace by PIPS:lab, an innovative look at life, death, and the Internet, **March 23-25**, Trust Arts Education Center, 805-807 Liberty Ave., Downtown, Distinctively Dutch Festival 2012, Pittsburgh Cultural Trust, 412-456-6666, www.trustarts.org, PITT ARTS Cheap Seats, 412-624-4498, www.pittarts.pitt.edu.

Every Tongue Confess, a blend of the secular with the spiritual, including Bible stories with everyday occurrences of newsworthy events, set in rural Alabama in the 1990s, **March 23-April 1**, August Wilson Center for African American Culture, 980 Liberty Ave., Downtown, August Wilson Center, Pittsburgh Cultural Trust, 412-456-6666, www.trustarts.org, PITT ARTS Cheap Seats, 412-624-4498, www.pittarts.pitt.edu.



**The Press and Campaign 2012,
O'Hara Student Center, Pitt Honors College,
March 22**

Tosca by Puccini, diva defies the most powerful and corrupt man in Rome, in life and in death. **March 27, 30, April 1**, Benedum Center, 237 7th St., Downtown, Pittsburgh Opera, 412-281-0912, www.pittsburghopera.org, PITT ARTS Cheap Seats, 412-624-4498, www.pittarts.pitt.edu.

The Electric Baby by Stephanie Zdravec, the titular character is fragile, yet powerful, and his tale of urban folklore connects his Romanian mother and Nigerian father with colorful Americans in Pittsburgh, **March 29-April 22**, The Waldorf School, 201 S. Winebiddle St., Bloomfield, Quantum Theatre, 412-362-1713, www.quantumtheatre.com, PITT ARTS Cheap Seats, 412-624-4498, www.pittarts.pitt.edu.

Freud's Last Session, an evening of conversation between C.S. Lewis and Sigmund Freud about God, love, sex, and the meaning of life, **through April 1**, O'Reilly Theater, 621 Penn Ave., Downtown, Pittsburgh Public Theater, 412-316-1600, www.ppt.org, PITT ARTS Cheap Seats, 412-624-4498, www.pittarts.pitt.edu.

Ruthless! The Musical, featuring crazy antics of a homicidal eight-year-old aspiring actress, **through May 6**, CLO Cabaret, 655 Penn Ave., Downtown, Pittsburgh CLO Cabaret, www.pittsburghclo.org, 412-325-6766, PITT ARTS Cheap Seats, 412-624-4498, www.pittarts.pitt.edu.

Pitt PhD Dissertation Defenses

Faisal Jamalallail, School of Health and Rehabilitation Sciences' Rehabilitation Science Program, "Spatial and Multidimensional Visualization of Jeddah Health Resources: A Community Health Assessment of Jeddah City," 11 a.m. **March 19**, 6053 Forbes Tower.

Mark Fromm, Kenneth P. Dietrich School of Arts and Sciences' Department of Music, "Pitch Symmetry in Martin Bresnick's 'My Twentieth Century' and 'Meden Agan' for Chamber Ensemble," 12:30 p.m. **March 23**, 114 Music Building.

Matthew Heap, Kenneth P. Dietrich School of Arts and Sciences' Department of Music, "Keep Going: Narrative Continuity in Luciano Berio's *Sinfonia* and *Dillinger: An American Oratorio*," 1 p.m. **March 27**, 114 Music Building.

Raynard Washington, Graduate School of Public Health's Department of Epidemiology, "Epidemiology of Type 1 Diabetes Complications in African Americans," 1 p.m. **March 27**, 2nd-Floor Conference Room, Diabetes and Lipid Research Building.

Carrie Bonilla, Kenneth P. Dietrich School of Arts and Sciences' Department of Linguistics, "Testing Processibility Theory in L2 Spanish: Can Readiness

or Markedness Predict Development?" 10 a.m. **March 28**, 2809 Cathedral of Learning.

James Moore, Kenneth P. Dietrich School of Arts and Sciences' Department of Music, "A Comparative Study of the Modern Jazz Trumpet Styles of Clifford Brown, Donald Byrd, and Freddie Hubbard: An Examination of Improvisational Style, 1953-1964," 9 a.m. **March 29**, 114 Music Building.

Michelle W. Moore, School of Health and Rehabilitation Sciences' Communication Science and Disorders Program, "Differences Between Early-Developing and Late-Developing Phonemes in Phonological Processing," 9 a.m. **March 30**, 4014 Forbes Tower.

James S. Hale, Kenneth P. Dietrich School of Arts and Sciences' Department of Chemistry, "Implementation of Catalytic, Asymmetric Technology Towards the Total Synthesis of Apoptoludin C," 3 p.m. **March 30**, 325 Eberly Hall.

"Japan and Its World: Late Edo Period and Today," Constantine Vaporis, professor of history and director of the Asian Studies Program, University of Maryland, Baltimore County, 9:30 a.m.-noon, **March 24**, 4130 Posvar Hall, Pitt World History Seminar, National Consortium for Teaching About Asia, Pitt's Global Studies Center, hughespw@pitt.edu.

"A New Surveillance Method for International and Drug Trafficking," Siddharth Chandra, professor and director of Asian Studies Center, Michigan State University's James Madison College, 4 p.m. **March 26**, 3431 Posvar Hall, Pitt's Matthew B. Ridgway Center for International Security Studies, www.ridgway.pitt.edu.

"Disengagement and De-Radicalization From Terrorism: Current and Future Directions for Research," John Horgan, director of International Center for the Study of Terrorism, Penn State University, 12:30 p.m. **March 28**, 3911 Posvar Hall, Pitt's Matthew B. Ridgway Center for International Security, University Center for International Studies, www.ridgway.pitt.edu.

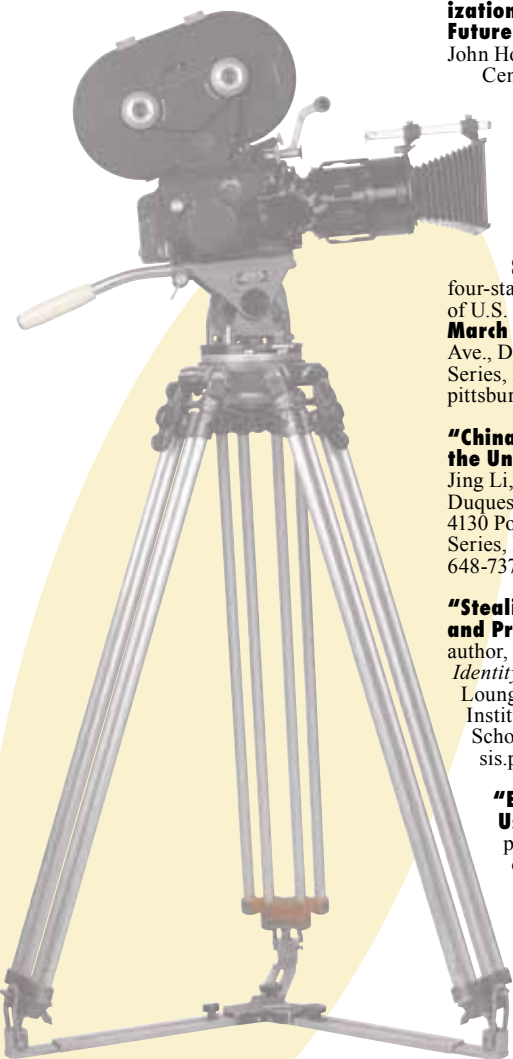
Stanley McChrystal, retired four-star general and former commander of U.S. forces in Afghanistan, 8 p.m. **March 28**, Heinz Hall, 600 Penn Ave., Downtown, Pittsburgh Speakers Series, Robert Morris University, www.pittsburghspeakersseries.org.

"China's America: The Chinese View the United States, 1900-2000," Jay Jing Li, associate professor of history, Duquesne University, noon **March 29**, 4130 Posvar Hall, Asia Over Lunch Series, Pitt Asian Studies Center, 412-648-7370, asia@pitt.edu.

"Stealing Digital Assets—Piracy and Privacy," David H. Holtzman, author, *Privacy Lost and Surviving Identity Theft*, 3 p.m. **March 29**, Lower Lounge, William Pitt Union, Sara Fine Institute Annual Lecture Series, Pitt School of Information Sciences, www.sis.pitt.edu/~fineinst/lectures.html.

"Emerging Trends in Search User Interfaces," Marti Hearst, professor in UC Berkeley's School of Information, 1:30 p.m. **March 30**, 403 Information Sciences Building, iSchool Colloquium Series, Pitt School of Information Sciences, www.ischool.pitt.edu.

"The Steel Bar: Pittsburgh Lawyers Forging America From the Frontier to the Future," symposium presented by Pitt Law Review, 9 a.m.-4:30 p.m. **March 28**, University Club, course approved for CLE credits, \$10 lunch fee, www.law.pitt.edu/events.



**Faces of Others,
Various Pittsburgh locations,
March 22-April 15**



Above: Andy Warhol, *Dog (Dachshund)* (1976)
Below: Andy Warhol, *Cat* (1976)
The Andy Warhol Museum, Pittsburgh;
Founding Collection, Contribution The Andy Warhol Foundation for the Visual Arts, Inc.,
© The Andy Warhol Foundation for the Visual Arts, Inc.

**Carnegie Museum of Natural History,
Warhol's Cats and Dogs Series,
ends June 30**



Rare First-Edition Works of Charles Dickens Exhibited at University's Hillman Library

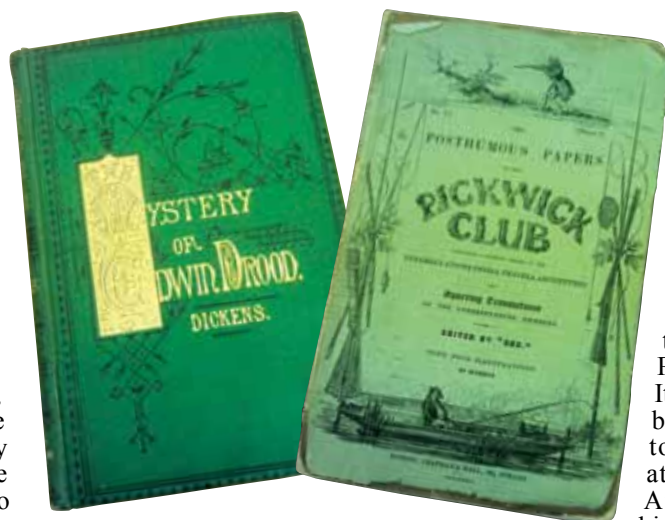
By Sharon S. Blake

Pitt's University Library System (ULS) joins the world in celebrating the 200th anniversary of Charles Dickens' birth with a display of rare first editions of some of the author's most significant works. The free display is open to the public through May 1 in Room 363, Hillman Library.

From 9 a.m. to 4 p.m. March 28—to mark the 170th anniversary of the day that Dickens visited Pittsburgh—an open house will be held in Room 363, featuring the Dickens books as well as those of some of his contemporaries, including Anthony Trollope and Wilkie Collins, among other British literary figures. The display also will showcase historical documents that relate to Dickens' stay in Pittsburgh, which was part of his first North American reading tour, in 1842. Librarians will be on hand during the open house to answer questions.

Long considered to be one of the greatest novelists of the Victorian period, Dickens emerged on the scene with a serialized publication of comic sketches called *The Posthumous Papers of the Pickwick Club* (1836), written under the pen name Boz. *The Pickwick Papers* continued monthly through 1837, became an enormous popular success, and eventually were published as a novel. *Oliver Twist* (1838) and *The Old Curiosity Shop* (1840) followed, and Dickens went on to pen some of the most renowned works of all time that continue to be read today.

The Pitt exhibition includes an extremely rare complete set of *The Pickwick Papers* as well as *Nicholas Nickleby* (1839), *Barnaby Rudge* (1841), *Life and Adventures of Martin Chuzzlewit* (1843), *Dombey and Son* (1848), *Bleak House* (1853), *A Tale*



of Two Cities (1859), *Great Expectations* (1861), and others. The Dickens Christmas books, comprising *The Christmas Carol* (1843), *The Chimes* (1844), and several others, also are part of the display and maintain their original gold and crimson bindings—a valuable resource in the study of the history of printing, binding, publishing, and descriptive bibliography.

Pittsburgh welcomed Dickens and his wife, Catherine, on March 28, 1842, for a three-day stay, during which he toured the city, visited the prison, and received people at the Exchange Hotel. His guests included William Barclay Foster, mayor of Allegheny City, whose son Stephen Foster would go on to be one of America's most admired composers. Others who visited with Dickens were Andrew McDowell, a physician who treated the author for an ailment during his stay, and Charles B. Scully and Robert McKnight, two prominent Pittsburgh

lawyers. McKnight's personal diary, in which he recorded an account of his visit with Dickens, also is on display.

The rare volumes in the Dickens display are from Pitt's Darlington Memorial Library, which comprises at least 11,000 books, 3,000 photographs, hundreds of maps, letters, pamphlets, and other materials pertaining to the history of Southwestern Pennsylvania and Colonial America. It was the first major collection of books, atlases, and maps ever donated to Pitt, assembled by Pittsburgh attorney William M. Darlington. After Darlington's death in 1889, his widow, Mary O'Hara Darlington, and the couple's children continued to acquire materials for the collection. Darlington's son, O'Hara, built the collection of Dickens works that comprises the Pitt display. More information on the library can be found at <http://digital.library.pitt.edu/d/darlington/>.

The ULS is the 23rd-largest academic library system within the United States. Under the administration of the Hillman University Librarian and ULS Director Rush G. Miller, it includes 20 libraries and collections and holds more than 6.2 million volumes and world-class specialized collections, among them the Archive of Scientific Philosophy and the Archives of Industrial Society, as well as major foreign-language materials from around the world totaling 1.4 million volumes. The ULS offers state-of-the-art facilities and services, with innovative digital library collections and capabilities.

PittChronicle

Newspaper of the University of Pittsburgh

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PUBLICATION NOTICE The next edition of *Pitt Chronicle* will be published April 2. Items for publication in the newspaper's *Happenings* calendar (See pages 10-11) should be received at least two weeks prior to the event date. *Happenings* items should include the following information: title of the event, name and title of speaker(s), date, time, location, sponsor(s), and a phone number and Web site for additional information. Items may be e-mailed to chron@pitt.edu, or sent by campus mail to 422 Craig Hall. For more information, call 412-624-1033 or e-mail robinet@pitt.edu.