

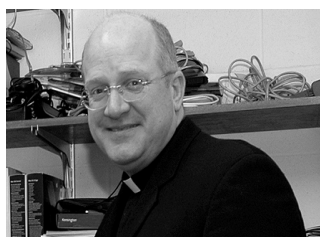
## IN THE WORKS



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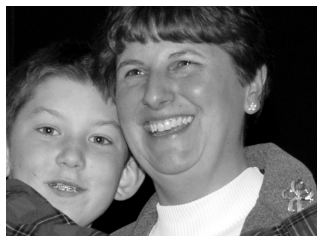
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## Secrets of a \$5.5 billion portfolio: partners and 'patriots'

By Gail Hinchion Mancini

To understand the world of Scott Malpass, vice president and chief investment officer, know this first: You might not want to ask him for a stock tip, but if you need the advice of someone who can judge character, he's your man.

Malpass' expertise is judging whether professionals are honest people who are good at finding deals, rather than personally making the "buy low, sell high" decisions for the hundreds of investments that constitute Notre Dame's \$5.5 billion portfolio. He oversees the 17th largest higher education endowment in the country—the largest among Catholic colleges. It also is among the highest performing endowment funds in the nation over the past 15 years.

Those investments include real estate, such as a choice piece overlooking Chicago's Michigan Avenue; utilities and energy projects, to name a few. His world is international—he's just returning from China, which he says "will be one of ... the greatest opportunities in our history." (He's keen on Vietnam, too, as well as Latin America)



His achievements are measured in dollars (billions of them), but Scott Malpass' gift is identifying good partners. *Photo by Matt Cashore.*

Silicon Valley also has been lucrative. Most recently, Notre Dame experienced a reported \$18.8 million windfall with the sale of the popular Internet sharing site YouTube to Google, Inc.

This is not because Malpass went on YouTube one day, liked it and told his staff: "Hey, this is cool. We should invest in this." It's because Malpass' operation trusted the California-based Sequoia Capital with Notre Dame money. Sequoia was one of the early investors in YouTube.

Continued on page 2

## Discussions planned on ND Voice findings

ND Works staff writer

Thirteen divisional meetings will take place Monday, March 19 through Friday, March 23 to discuss the findings of "ND Voice: Understanding Your Notre Dame Experience."

The survey, distributed last November, was the first to ask staff and members of the administration about a wide range of topics that affect their daily work life.

One-hour administrative presentations are being planned for each of the University's divisions. As was the case with the town hall meetings last October, the session schedule includes all shifts. Faculty did not participate in the survey but are welcome to attend the informational sessions.

Each event will include time for questions. The meeting schedule is:

**Athletics**—11 a.m. Monday, March 19, Monogram Room

**Colleges I** (Engineering, Law, Mendoza College of Business)—2:30 p.m. Monday, March 19, Jordan Auditorium/Mendoza

**Finance and Investments**—4 p.m. Monday, March 19, Jordan Auditorium/Mendoza

**Business Operations** (except Food Services and Facilities Operations)—8:30 a.m. Tuesday, March 20, Leighton Concert Hall/Marie P. DeBartolo Performing Arts Center

**Facilities Operations** (two sessions)—10 a.m. Tuesday, March 20, Leighton Concert Hall/PAC and 10 p.m., Tuesday, March 20, McKenna Hall

**Food Services** (two sessions)—2 p.m. Tuesday, March 20, South Dining Hall and 2 p.m. Friday, March 23, North Dining Hall

**Student Affairs**—9:30 a.m. Wednesday, March 21, Jordan Auditorium/Mendoza

**Colleges II** (Arts and Letters, Science, Architecture)—1:30 p.m. Wednesday, March 21, Jordan Auditorium/Mendoza

**Academic** (includes Libraries, Registrar, all units except colleges)—11 a.m. Thursday, March 22, Leighton Concert Hall/DPAC

**OIT**—9 a.m. Friday, March 23, Eck Visitors' Center Auditorium

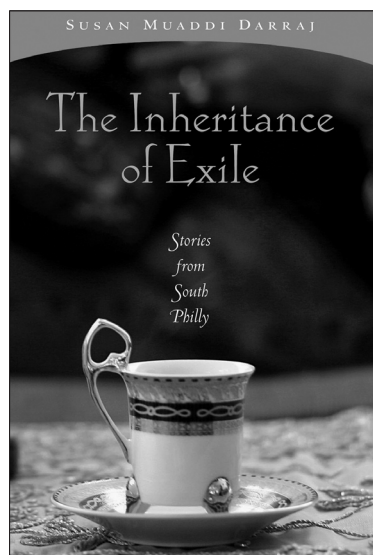
**Other Administration** (President's office, HR, OPAC, General Counsel)—10:30 a.m. Friday, March 23, Eck Visitors' Center Auditorium

## N.D. Press releases literary gem

By Gail Hinchion Mancini

Barbara Hanrahan has seen the highs, the lows and the rare surprises of the university press business for more than 30 years. And this year, she's got her hands on a rare surprise.

Going through the mail on her desk one weekend last year, Hanrahan found an unsolicited contact from



*Image by Margaret Gloster, Notre Dame Press*

a Palestinian-American author that included a sample of a volume of short stories. The writer, Susan Muaddi Darraj, had been seeking publishers but finding the field more interested in the search for the next great novel.

"I knew the minute I read a fraction of it that I wanted to publish it," says Hanrahan, who serves as director of the press.

This month marks the release of "The Inheritance of Exile—Stories from South Philly," by Muaddi Darraj, a 31-year-old teacher and writer from Baltimore. Even before its release, the staff of Notre Dame Press had validation that Hanrahan's instincts were right on. Publisher's Weekly had selected the stories for review, and Press marketing director Kathryn Pitts had already fielded an e-mail inquiry about television and movie rights.

The book of short stories weaves the lives of four young Palestinian-American women and their immigrant mothers, who seek terra firma amid the melting pot of South Philadelphia immigrants. The mothers prepare Palestinian cuisine, read tea leaves and succeed, by varying degrees, in assimilating. Their daughters collect Barbie Dolls then careers, as well as men who find them either too Arab or not Arab enough. Muaddi Darraj says she did not want the book to be

political. But loss of country and fear of violence color the mothers' lives and hence those of their daughters.

"I thought the writing was excellent," says Hanrahan, who speaks of the prose as though savoring the words for the first time. "It's perfectly balanced and just right and very powerful and very moving."

Muaddi Darraj has never been to Notre Dame and had no sense of the impact immigration has had on the University's history. But she was aware that the Press publishes short stories and supports the genre with its annual Richard Sullivan Prize in Short Fiction, sponsored by the Creative Writing Program.

Muaddi Darraj's manuscript itself was a runner-up in a national short story competition. But when she found that presses had become focused on novels, she sent a sample of her stories to four presses including Notre Dame's. "Barbara was the first to respond," she says.

Among academic publishers, Notre Dame Press is known for many strengths. In the realm of literature, poetry is a strong suit, supported by the Ernest Sandeen Prize in Poetry, also sponsored by the Creative Writing Program. Publishing blockbusters is not part of its mission. But publishers leave themselves open to all kinds of

options because wonderful projects can come from any number of sources. "You have to be receptive," says Hanrahan.

"Inheritance" has the potential to be popular, because the stories address both personal issues and the larger cultural issues behind them.

They also have the nobility of great literature and the potential to be included in a myriad of academic courses for the way they bring the human struggles between generations and cultures, and the challenges of assimilation, to life. "If a professor were teaching a course on immigration or on issues of ethnicity and race, this would be a perfect book," Hanrahan says.

As for the inquiries from television and film, Hanrahan laughs and advises: "It's never a good idea to expect to be going to the screening."

But she has seen lightning strike, as an editor at the University of Chicago Press in the 1970s. Norman Maclean's "A River Runs Through It" was the first piece of fiction the Chicago Press published. It took on the project because its director believed in its greatness, Hanrahan recalls. In time, the actor and director Robert Redford would make it into an Academy Award-winning film, with Brad Pitt in a breakout role.

# From dual roots grew dual career paths

By Gail Hinchion Mancini

Colleen Ryan-Scheutz began life with feet planted in two cultures: Italian and Irish. And as an academic she remains firmly planted in two distinct areas.

This year, Ryan-Scheutz is seeing the publication of two books whose common thread is Italian language and culture, but whose approaches are distinct.

A book she has co-edited, "Set the Stage: Teaching Italian Language, Literature and Culture through Theater," is forthcoming from Yale University Press. The volume discusses teaching all aspects of the Italian curriculum, language, literature and culture through theater and theater techniques.

Notre Dame students experience the advantages of such instruction in the Italian Theatre workshop. Since 2002, Ryan-Scheutz, director of the Italian Language Program and associate professor of Romance Languages and Literatures, has been the faculty advisor for the workshop.

"The play gives them a chance to study, in depth, a piece of literature," she says. "They do character analysis, literary analysis. We focus on one piece, but study the author in a time period and examine socioeconomic conditions presented in the play."

Actually acting out the play "helps them appropriate language and the culture in mind, the body, and their spirit."

Ryan-Scheutz herself was a bit slow to appropriate her own Italian heritage. But once she began, she found that Italy and its culture appropriated her.

A Ryan by birth, it is her mother's family who is Italian, with Santinis and Puccinis on one side of the maternal family tree or another. When she came to Notre Dame as an undergrad in the late 1980s, Ryan-Scheutz majored in French and political science and spent a year in the Angers, France program. While there, she decided to visit her relatives in nearby Italy.

"I had an awakening," she recalls. "Why didn't I ever study Italian?" She began as soon as she returned to Notre Dame for her junior year.

After graduating, she lived in Italy for three years, teaching English as a second language in a town midway between Pisa and Florence. By her third year, she began to study part-time for a master's degree in Italian from Middlebury College, and in 1993 she enrolled in Indiana University's doctoral program.

Her focus at that point was not on theater, but on film, particularly those of Pier Paolo Pasolini. Today, Pasolini may be most remembered in the U.S. for "The Gospel According to Saint Matthew," which followed Christ's life through the disciple's eyes.

Pasolini was considered a giant of European filmmaking when the after-effects of World War II and the clashing interests of socialists and capitalists were impacting Italian culture. Telling stories through strong female characters, Pasolini's works exposed his concerns about the negative effects of modern life on classic Italian culture.

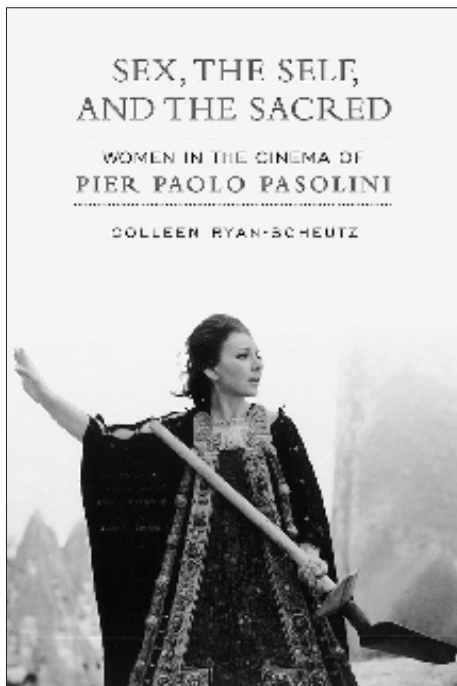
"He used the private aspects of the family or he merged the private identities of his female figures with more public or political concerns, such as the plight of

marginal social classes, social diversity, the poor—things that were important in the 1960s in Italy," she says.

Her research on Pasolini culminates in July with the release of "The Sex, the Self and the Sacred: Women in the Cinema of Pier Paolo Pasolini" by University of Toronto Press.

The publisher's notes credit the book for its advances in feminist theory. At Notre Dame, Ryan-Scheutz has been credited as an outstanding role model for women, receiving the 2003 Distinguished Notre Dame Woman Recognition Award.

She says her career will continue on dual paths when she returns from leave. She currently is engaged in a third pursuit. Or, given that Italian culture reveres both cuisine and family, we'll say she is appreciating another of the spices of life—the recent birth of her second child.



Courtesy University of Toronto Press.

# New Groody film builds on U.S. bishops' immigration campaign

By Shannon Chapla

"Jesus himself was a migrant," says theologian Rev. Daniel Groody, C.S.C., who recently released his second immigration documentary, titled "Strangers No Longer," to build on the U.S. Catholic Bishops' immigration statement and influence people's understanding of immigrants from a Catholic perspective.

Designed to expose audiences to current immigration realities, the film highlights Catholic social teaching on migration and the church's perspective on what changes are necessary.

"I think one of the most powerful ways we can be Catholic is to be hospitable," Father Groody says. "And when we are, we create a community of love and civilization that reflects God's love for the world."

"Strangers No Longer," produced by Groody River Films and the Catholic Communication Campaign of the U.S. Bishops' Justice for Immigrants campaign, will be used nationwide as an educational tool to discuss the Church and immigration, as was "Dying to Live: A Migrant's Journey," released by Father Groody in 2005.

"Dying to Live," which was screened at numerous national and international film festivals and was named "best documentary" at the New Way Media Film Festival, provides a profound look at the human face of Mexican migrants, including who they are, why they leave their homes and what they face on their journeys. It has been shown on Capitol Hill and at colleges and universities around the

world, including Harvard, Stanford, Oxford and Princeton Universities. It has been circulated among organizations, including Catholic Charities, Catholic Relief Services, the Academy for Catholic Hispanic Theologians, No More Deaths, and Humane Borders.

Father Groody, an assistant professor of theology and director of the Center for Latino Spirituality and Culture in the Institute for Latino Studies, has been studying Mexican immigration for more than 15 years and recently received a fellowship with the Oxford Refugee Centre for next year. He is the author of "Border of Death, Valley of Life: An Immigrant Journey of Heart and Spirit" and is the author of the forthcoming book "Globalization, Spirituality and Justice: Navigating the Path to Peace" and editor of "The Option for the Poor in Christian Theology," also to be released this month.

Both films are available on-line at [nd.edu/~latino/dyingtolive/](http://nd.edu/~latino/dyingtolive/).



A documentary and forthcoming books by Rev. Daniel Groody, C.S.C. continue his work on the immigration experience from the Catholic perspective and the Option for the Poor in Christian theology. Photo provided.

## Continued from page 1 Malpass

The story of Notre Dame's investment in YouTube illustrates the decision-making imperatives that have made Malpass one of the most respected higher education investors in the country.

First is to pick allies wisely. "It's all people," he says. Notre Dame has 154 partners such as Sequoia. Among other veterans, he relies on four Boston firms that helped the University into the venture capital business as early as 1980. But his team is always on the lookout for new partners; they may review or interview as many as 300 new firms every year.

"Our fundamental job is to go out there and find investment partners—a lot of time is trying to get to know people; doing due diligence," says Malpass, who gives high praise to the 26 members of his staff. "It's having the judgment to discern what's market return and what's value added above that." One key is deciding whose judgment is consistently good and who has just experienced a few lucky breaks.

Also important, Malpass' team has to understand the rapid changes of the investment market—one reason why he and his team constantly travel—and adapt to new investment strategies as they become viable. Uncovering new opportunities in international markets

was one of the strategies that helped the University's investments stabilize and return to strong growth after the dot.com bust earlier this decade, he says.

Change has been on Malpass' agenda since he arrived at Notre Dame in 1988 as a 26-year-old. He had a Notre Dame bachelor's degree, a master's of business administration and three years of Wall Street experience.

He also had a strong investment committee of Board of Trustees members—he mentions former committee head Robert Wilmoth and current head Jay Jordan—who were watching his back and helping him usher in a modernized University investment operation. When he began, the endowment contributed 3 percent of the annual operating budget. Today it is 20 percent and, as is the case with the nation's top universities, it is recognized as providing what he calls "the lifeblood."

Investment amateurs have long been counseled: Buy what you know and like.

It's considerably more complicated for Malpass, but the framework of that advice is evident as he talks fondly about some of the University's stronger investments. "I think Google was a particularly attractive investment, not just because it did so well. But it gives us the ability to get information in any discipline. It's an unbelievable learning tool."

He also loves the idea that Notre Dame investments have supported the innovations of University researchers.

If part of your investment is in your people, Malpass has a novel way of getting to know them. For years, he has taught investment to undergraduates—it's a credential that helps them get placed in great jobs. Many also go on to study law and earn their MBAs. And many, including Mike Donovan, managing director of private capital investments, and assistant directors Tim Dolezal and Rick Buhman, come back to Notre Dame to apply those skills. Dolezal and Buhman are former Malpass students. Mike Cook, head of real estate investments, and Bill James, head of energy and commodities investments, round out the main investment team.

Malpass calls his staff members "true patriots" for their dedication to advancing Notre Dame. For Malpass, love of Notre Dame is a personal investment. Diversions include golf, politics, and Notre Dame committees on the future of Catholic education and Catholic identity.



## New hall for West Quad

Construction will begin soon on Duncan Hall, a new men's residence hall to be located west of McGlinn Hall on the University's West Quad. The new hall is named after Raymond T. Duncan, a 1952 graduate and president of Duncan Oil Inc. in Denver and owner of Silver Oak Cellars in Oakville, Calif. The facility will house 232 undergraduates in 68,482 square feet. Image provided.

ND Works is published for the faculty and staff of the University of Notre Dame through the Office of Public Affairs and Communication. ND Works is produced semimonthly during the fall and spring semesters when classes are in session and once during summer session. Information for ND Works should be submitted to [ndworks@nd.edu](mailto:ndworks@nd.edu) or by calling 631-4314. To recommend content for ND Works, please contact the editors at least 10 days prior to the following spring 2007 publication dates:

Feb. 5, Feb. 22, March 8, March 26, April 12, April 26, May 7, May 24, and June 14.

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# Butterflies and the biology of climate change

By Carol C. Bradley

If you ask Jessica Hellmann how she came to be a biologist, she'll tell you she grew up as a farm kid in Anderson, Ind. "The fact that I was a farm kid and my father was an engineer tells a lot of the story," she says. "I was always outside, and I was encouraged to take math and science in college."

Today, Hellmann is an environmentalist whose focus is the biological impact of climate change. It's an interesting time to be working in the field, she says. Ten years ago the general public knew little about global warming. Today, she says, there's a much wider knowledge and acceptance of the basic science behind climate change.

Hellmann studies butterflies, although she considers herself a "global change biologist." She uses butterflies as a study organism for a number of reasons. "They're insects, and insects run the world," she says. "They provide very important ecological services, and are economically important in both positive and negative ways—pollination and disease. They have a short life cycle, and respond to temperature change. It's a lot harder to study a grizzly bear."

Hellmann's research focuses on comparisons of two butterfly species—swallowtails and duskywings—and the plant communities they live in. The research is carried out in Mediterranean-like climates on the West Coast, "Places where it rains a lot in the winter, and hardly at all in the summer. A lot of our work takes place in Vancouver Island, British Columbia and Ashland, Oregon," she says.

The large and colorful swallowtail eats a wide variety of plants. The small brown duskywing ("not all that sexy," Hellmann says) is much more specialized.

Populations of each butterfly have a range that extends from Central and Northern California north to Vancouver Island. As climate change causes temperatures to become warmer, plant and butterfly populations will likely die off at the southern end of the range. The question that has to be answered is whether populations at the northern end of the range will be able to shift farther north.

"Those that can move toward the poles should be all right," Hellmann says. "But we may have to worry about the others."

Hellmann's research, which is carried out both in the field and in greenhouses on the roof of the Galvin Life Sciences building, determines which species will be able to adapt, and which will struggle and perhaps die out.

If climate change has a negative effect on species, Hellmann says, there may be ways to help them along. Assisted migration—moving and introducing species purposely—may be one strategy employed. Hellmann concedes that some species introductions haven't worked out well in the past. Kudzu, introduced as an ornamental plant, now covers millions of acres in the south.

But we may be at the point where we're looking at the lesser of two evils. "Climate change is a train coming down the track. We may have to embark on strategies that have risk. It's not the same situation as historically. This is something new," Hellmann says. Facing a global problem like climate change, we may have no choice.

Hellmann suggests that the best solution will be to tackle the problem of climate change head-on.

"If you want to preserve biodiversity, we need to reduce greenhouse gases. Reducing individual energy consumption is one small step,

but don't let politicians ignore it," she says. "We need to have collective action—a national policy. The public can call for that, and expect it. If they don't call for it, it won't happen. Policymakers have been twiddling their thumbs for too long."



Climate change biologist Jessica Hellmann reproduces the climates of Oregon and British Columbia in greenhouses on the roof of the Galvin Life Sciences building. Photo Carol C. Bradley

## CSC's space needs expand as curriculum extends into community

By Carol C. Bradley

The Center for Social Concerns has outgrown its campus home—a building that once housed the studios of WNDU-TV.

"It's crowded," concedes Rev. William M. Lies, C.S.C., the center's director.

How crowded?

All the meeting rooms and even the TV station's old projection booth have been converted to office space. The "conference room" is in an upstairs hallway. One staffer works in a converted storage closet in the mailroom.

A lack of classroom space has forced the CSC's service-learning seminars to use wait lists. The Center is only able to meet about 75 percent of the demand for the seminars, which involve nearly 1,100 students per year. "To grow our programs, we need more space," Father Lies says.

The space crunch will be alleviated with the construction of Geddes Hall, a new \$14 million, 64,000-square-foot building that will house both the Center for Social Concerns and the Institute for Church Life, currently on the 12th floor of the library. The new building will be constructed on the current CSC site, with staff relocated for the duration of construction. The project will break ground in spring 2008, with an estimated completion date of fall 2009.

The new building, says Father Lies, will enhance programming and synergies with the Institute for Church Life. "It really affirms the University's commitment to the efforts of the center and the institute."

The Center for Social Concerns, which will mark its 25th anniversary this year, developed out of two student initiatives, the Center for Experiential Learning and the Office of Volunteer Services. The center has evolved from an organization that largely promoted student volunteerism into a nationally ranked, community-based learning and research center.



Annie Cahill Kelly and Rev. William M. Lies, C.S.C. in a staff office carved out of the old WNDU projection booth. The office-space crunch at the Center for Social Concerns will be alleviated with the construction of a new \$14 million building. Photo Carol C. Bradley

Last year's Summer Service Learning Project involved 216 students participating in projects in 40 states, as well as 34 students who traveled to 14 countries in Latin America, Asia and Africa.

The new building will provide classrooms, meeting rooms and an auditorium that will allow the CSC to host summer conferences, justice education events, and lectures. It will also allow the addition of a postdoctoral research position, offering the center the opportunity to expand research on the impact of programs on students and the communities in which they are immersed, Father Lies explains.

An expanded coffeehouse and new kitchen will allow learning communities of faculty, students and community partners to meet and share meals.

Mary Beckman, the center's associate director of academic affairs and research, notes that in keeping with the University's focus on undergraduate research, the CSC has expanded efforts to link community partners, faculty and students in research projects to benefit the community. CSC programs have become much more integrated across the curriculum.

"We used to almost exclusively offer courses in theology; today our courses are also listed in Africana Studies, psychology, anthropology and other departments across the University," Beckman says.

What the CSC is trying to do, Father Lies explains, is push the walls of the classroom out into the community, right into the heart of social issues. The Center for Social Concerns, he notes, has moved from basic volunteerism to a focus on civic engagement, grounded in academic teaching and Catholic social thought.

"If we're not grabbing students by the collar and saying, 'Do you have any idea of what your responsibility is before God and faith, and before your neighbor, globally and locally?', we're failing them," he says. "What we're trying to do is make sure that, as the University mission statement says, we are a place where learning becomes service to justice."

## BYU donation is largest for theology

By Carol C. Bradley

The recent donation of a collection of nearly 7,000 books on Catholic theology by Brigham Young University "will richly enhance our holdings in Catholic thought and history," says Alan Krieger, subject librarian for theology, philosophy and Jewish studies at the Hesburgh Library.

While it's not uncommon for the library to receive donations, he says, they typically are collections from private individuals and run to hundreds of volumes, not thousands.

"This is certainly the largest gift donation we've gotten in theology in my time here. It's a very welcome addition to our collection."

The volumes in the collection date from the late 18th through early 20th centuries, and include books on Catholic Church history, lives of the popes and saints, and Catholic theology and liturgy. Most of the collection is in French, although there are titles in German, Italian and English. Brigham Young, Krieger says, decided that Notre Dame would be a more appropriate home for the collection.

A driving force behind the donation—"aside from the fact that French Catholic religious history is not central to their research interests," Krieger says—is the prospect of the material being digitized and made available to researchers everywhere.

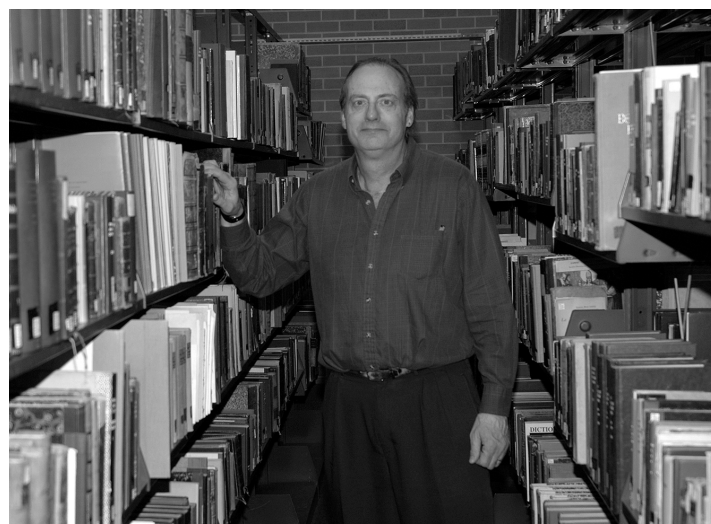
Notre Dame is partner with a number of other Catholic universities, including Marquette, Boston College and Georgetown, on the Catholic Research Resources Initiative (CRRI), a Web-based portal that points to descriptions of various special collections and archives across the country.

"Down the road, we can anticipate that the works themselves might be digitized," says Krieger, who can see works from the BYU being digitized as funding is available.

Titles that would meet the criteria for digitization would be those that date from the 18th or early 19th century, or works that are particularly important for Catholic studies research, Krieger says. Works published before 1923 are particularly suitable for digitization because copyright restrictions no longer apply.

Krieger collects in a way that's attuned to the research interests of the faculty. The collection, he says, "will certainly augment our holdings in important ways. The scope of the collection coincides with the historical strengths of Notre Dame's theology department."

The material will benefit researchers in several doctoral-level areas of study, including the



Librarian Alan Krieger with some of the 7,000 books on Catholic history Brigham Young University recently donated to the Hesburgh Library. Photo Carol C. Bradley

history of Christianity, liturgical studies, moral theology and systematic theology, Krieger notes.

Cataloguing the collection will take some time. The material should become available to researchers sometime in the next year to 18 months. Shelf space is also a concern, Krieger says, "but we're still in a position to accommodate materials that will enhance the research life of the University."

*The 40-year old concrete building southwest of the Hesburgh Library houses one of Notre Dame's most interesting and enduring stories of scientific research. This collaboration with the U.S. Department of Energy annually draws federal dollars, visiting researchers and many talented graduates.*

## Six decades of unique exploration

By David Rumbach

A fight rages over the federal government's long-standing plan to store nuclear waste deep inside Yucca Mountain northwest of Las Vegas.

Just last month, opponents in Nevada were claiming that the odds had turned in their favor even as the Bush administration proposed funding to keep the project on track for a 2017 launch.

As the political battle over the site has ebbed and flowed, scientists at Notre Dame have been quietly conducting radiation experiments aimed at, among other things, learning about the chemical changes that occur in radioactive nuclear waste.

That's just one project going on in the Notre Dame Radiation Lab, the plain concrete building just south of the library that is one of the few on campus not owned by the University.

In an arrangement with roots in the Manhattan Project, the building is owned by the federal government but operated by University chemists under a cooperative agreement with the Department of Energy (DOE), explains John Bentley, the lab's assistant director.

That makes the lab a true hybrid, simultaneously a government facility and a university research institute.

The building's security is such that science students can't just wander the halls and browse bulletin boards like they can in Nieuwland Hall. Visitors sign in at the front desk and await an escort.

But students do get in—as researchers.

Each year about two dozen undergraduate, graduate and postdoctoral students, both from Notre Dame and from around the globe, are chosen to help run experiments.

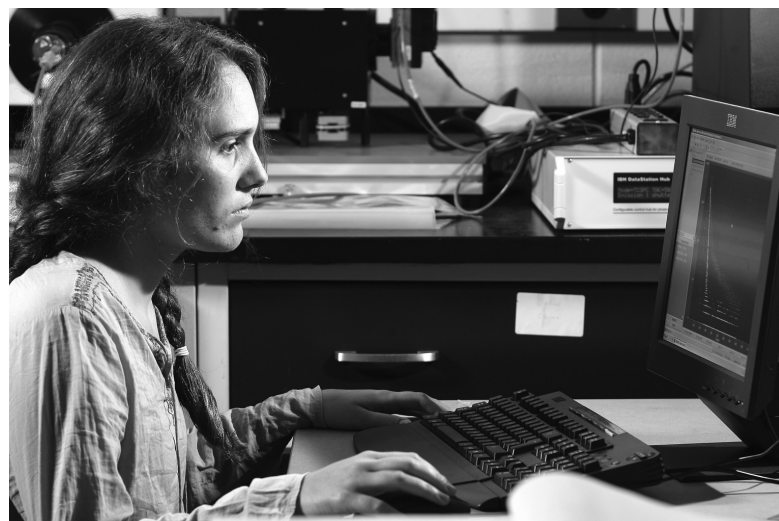
In that way, the lab provides learning opportunities for young scientists, says Director Ian Carmichael, even though the facility has no teaching function per se.

The laboratory's international collaborations connect Notre Dame to researchers from institutions in Mexico, China, Germany, Japan, Argentina, and Greece. The lab's facilities, such as its electron linear accelerator (LINAC) and femtosecond laser flash photolysis setup (LFP), are available to external users and draw researchers from around the country as well as from France, Portugal, Latvia and Japan.

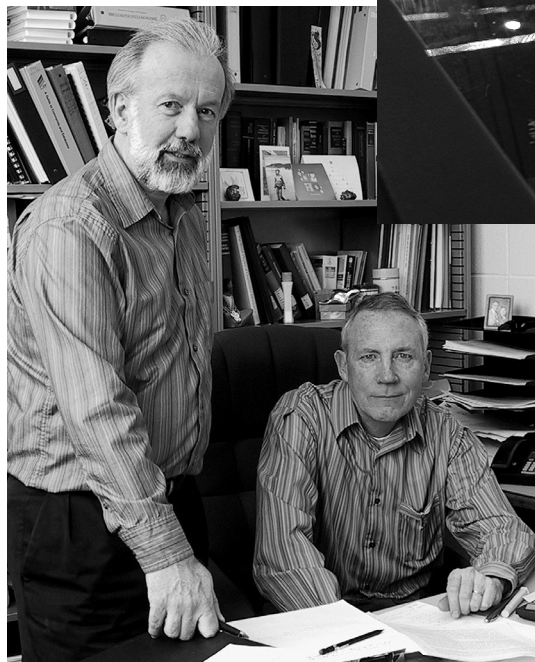
## A small facility in a small area of research

From the government's perspective, the Notre Dame Radiation Lab occupies a spot among more than 30 DOE facilities. Those include Fermilab, the DOE's accelerator in Batavia, Ill., where new discoveries in particle physics are routinely made, and sprawling, ominous places like the Los Alamos National Laboratory, which conducts weapons research.

Although its 2006 funding totaled \$4.1 million, "We are quite literally the smallest government facility of this type," says Bentley.



The laboratory sponsors undergraduate research such as a project last spring and summer by Meghan Jebb. She has submitted her findings to a professional journal on physics and chemistry.



Radiation lab director Ian Carmichael, standing, and John Bentley, assistant director, oversee a talent pool of almost 50 support staff and researchers, including undergraduates, graduates and postdoctoral fellows.

Today, much of the lab's research is aimed at getting rid of radioactive waste. But in the beginning its purpose related to scientists' need to get any information they could on the impact of radiation on the materials they used and the devices they were building.

During World War II, the government needed an accelerator capable of propelling electrons to speeds near that of light to study the chemical effect such high-energy radiation would have on the materials being put into nuclear reactors and, of course, in the atomic bomb the Manhattan Project was trying to invent.

The physics department had such a device for its own research. So the government invoked its wartime authority to "commandeer" the device, sending a scientist named Milton Burton to South Bend to take it over, Bentley says.

## The advent of radiation chemistry

After the war, Notre Dame asked Burton to stay on and establish a program in this new, as yet unnamed, field of study. And stay he did, until 1971—long enough to witness the opening of the current lab building in 1963 on a patch of land rented from Notre Dame.

"Burton was the one who came up with the name radiation chemistry," Bentley says, adding that he also became renowned as "godfather of radiation chemistry" in the international community.

The radiation research here has never focused on nuclear reactions, the splitting of atoms or the decay of unstable isotopes, but rather on the chemical changes that occur in their wake.

"When high-energy radiation passes through matter, it leaves a trail of ions and loose electrons as its wake. When these recombine, they produce free radicals, which are capable of reacting with other molecules in the system," Bentley says.

In the nuclear waste from power plants and weapons factories, this process of ionization goes on and on in self-sustaining fashion, fueled by the radioactive elements laced in with a complex brew of other waste products that are hazardous in and of themselves.

Ongoing changes in the chemical composition of this "hot" sludge might transform it into "something even more dangerous while it's just sitting there," Bentley says.

"You've got a lot of positive ions and electrons in your medium and they tend to recombine—but not necessarily in the same way they were before," Bentley explains. "So what you wind up with is a lot of free radicals that are especially reactive, and they go on to attack other things in the system. That's the underlying chemistry we're looking at."

The lab does not use radioactive materials for most of its experiments, Bentley says. Instead, it uses beams from electron accelerators and lasers to initiate the reactions it wants to study.

The most powerful of these ray guns is an 8 million-electron-volt linear accelerator capable of propelling electrons at 99 percent of the speed of light.

Which brings us back to the slow-moving, controversial Yucca Mountain project.

Whatever solutions are engineered and chosen for the government's vast stockpiles of radioactive waste, their designs will rely on chemistry worked out in six decades of research at Notre Dame.



Unassuming from the outside, the Radiation Laboratory hosts a wide range of research. Postdoctoral fellow Gustavo Ruiz of Argentina, one of several international researchers, is seen in the lab. Photos by Matt Cashore.



Milton Burton, above and at center with colleague Harold Dewhirst, helped to run the University's radiation lab. Joining the faculty shortly after World War II, he moved to the Hesburgh Library in the early 1960s.

## A war interrupted: research, a laboratory

ND Work staff writer

In the midst of World War II, much scientific research came to a halt, including progress physicists had made on the electron accelerator.

"Shortly after the accelerator was finished, work was interrupted by the war," says Waldman, a physics faculty member during the 1940s and the first 100 years of science at Notre Dame. "But the work was not lost."

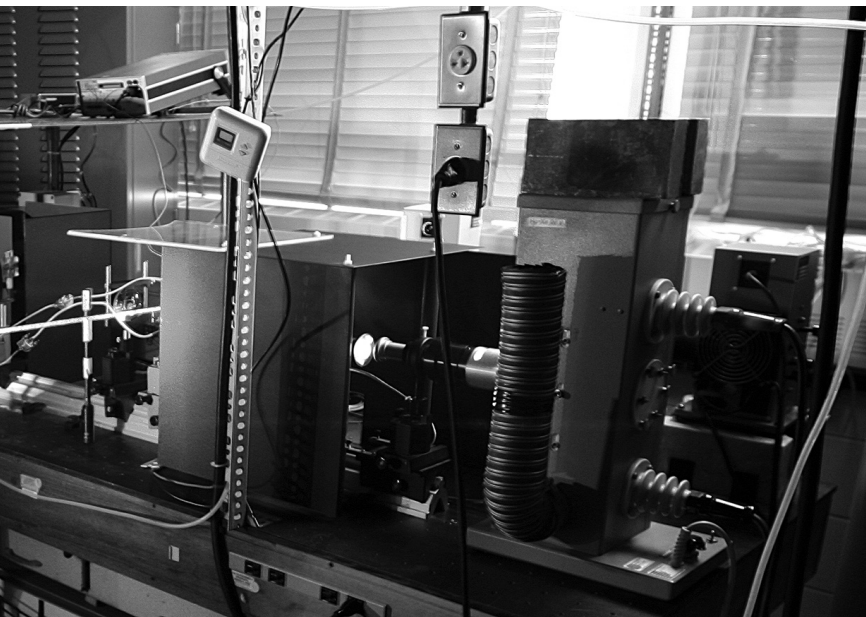
Waldman himself joined the Manhattan District Office when the atomic bomb was developed. The project's scientists found Notre Dame particularly useful—one historic account has the following to say:

By the war's end, Waldman returned and, along with Ian Carmichael and John Bentley, would come to launch what has become the Notre Dame and federal energy agencies.

The current facility opened in 1963, funded by the federal government with \$2.2 million and heralded as hosting the most advanced radiation research in the country or abroad. Asked to list the most important research, today's Radiation Laboratory scientists cited:

- Discovered how to simulate what happens in nuclear reactors for both safe disposal of nuclear waste and the development of nuclear power.
- Lent knowledge to space missions on propulsion and planets.
- Determined ways hydrogen is produced by the handling of radioactive waste and invention of nuclear fusion.
- Unraveled the mechanism of certain oxidations and the production of water from nuclear power plants.

# THE RADIATION LAB



A wide variety of experimental exploration using an enviable array of equipment. Here, international researchers use a variety of equipment to probe the laser photochemistry of rhenium polymers.

## Can electrons create a green energy source?

By Dave Rumbach

The keys to the next generation of solar cells, fuel cells and more efficient batteries may be discovered at the Notre Dame Radiation Lab.

The field of radiation chemistry, pioneered at Notre Dame at the dawn of the nuclear age, has grown to encompass the search for energy sources that won't contribute to pollution and global warming.

"Our scope is bigger now than simply radiation chemistry," says assistant director John Bentley.

The lab is probing the various ways electrons are jolted out of molecules and captured by wires to become the electricity we all depend on to run everything from toasters to iPods.

When sunlight hits a solar cell and makes

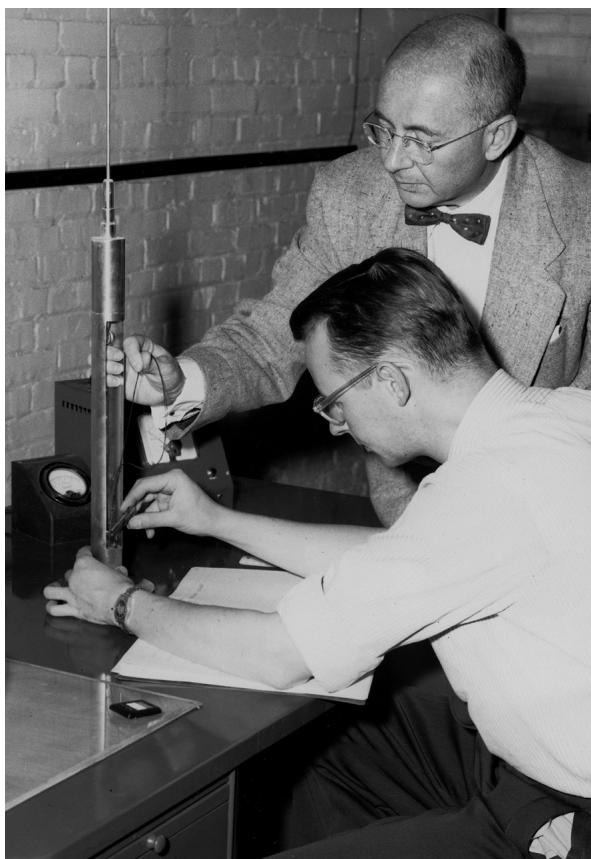
electrons jump, some flow out as electricity but others just fall back into the "hole" where they were before.

Chemists call this effect "charge separation," Bentley says, and it's the make-or-break process that determines whether energy cells are efficient or useless.

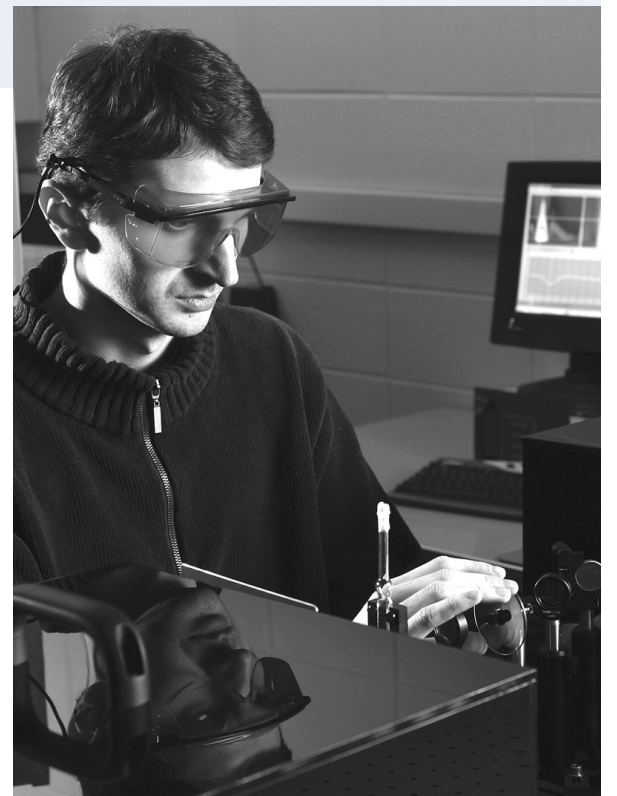
"We want to increase the chance of capturing electrons and make them do work," he said.

The basic research in charge separation is funded by the Department of Energy. But the lab has some additional grants to actually design and build better energy cells, using nanotechnology.

"We're actually building some in-house, not directly part of the DOE mandate but some of our people have some funding in addition to the DOE grant," Bentley says.



John Bentley, who, along with others, all but created the field of radiation chemistry after leaving the Manhattan Project during World War II, he was still on board as the current facility was constructed nearly



Although the laboratory is primarily associated with Chemistry and Biochemistry, its work has always been interdisciplinary. Istvan Robel defended his thesis at the Department of Physics and now holds a postdoctoral fellowship at Argonne National Laboratory.

## Interrupts and a new era is born

Scientific research at Notre Dame ground was interrupted and planned to make using a newly built

war interrupted research," noted Bernard Bentley in the 40s, 50s, and 60s, in an essay commemorating the fact that many valuable scientific contacts were made."

Manhattan Project in Los Alamos, where the atomic bomb was developed and Notre Dame's electron accelerator was used, and the government commandeering the equipment.

Another Manhattan Project scientist, chemist Milton Szwarc, led to a permanent and fruitful partnership between

supported by the Atomic Energy Commission at a cost of \$10 million for extensive chemical research underway at any time in the chief accomplishments of six decades of research, as noted:

Research into water molecules exposed to radiation, crucial to understanding radiation and medical radiation treatments.

Research into the aging of ices and minerals from comets

Research into ionizing radiation, knowledge key to both safe nuclear power and new energy sources.

Research into the chemical processes used to clean up containment



Puspalata Rajesh, a native of India, analyzes radiolytic decay traces at the LINAC control panel as visiting scholar Simon Pimblott looks on. The Radiation Laboratory's instrumentation annually draws visiting faculty to Notre Dame.

## Symposium exposes new wrinkles in protecting antiquities

By Gail Hinchion Mancini

Museum directors and curators, art historians, archaeologists and anthropologists, architects and legal experts converged on campus late last month for a topic almost as old as humankind itself: protecting ancient art and artifacts.

Co-organized by Robin Rhodes and Chuck Loving, with enthusiastic sponsorship from the Nanovic Institute, the symposium accomplished the especially important mission of identifying common ground, says Loving, director of the Snite Museum of Art. He already has heard presenters' feedback that the event may have paved the way for similar discussions on a larger scale.

"Archaeologists want to refine understanding of ancient history through the ever-more-detailed

contextualization of artifacts," explains Rhodes, associate professor of art and art history and an archaeologist specializing in the Greek architecture of Corinth. It matters, he adds, whether an ancient pot came from someone's kitchen or the tomb of a revered leader. But for museums, he says, "the intrinsic value of an object outweighs its value as a historical and cultural source."

Crooks are a constant in the antiquities business—as recently as 1990, a heist at a museum in Corinth led FBI agents to Miami thugs; most of the almost 300 stolen items were recovered. A casual reader of today's newspapers also knows that seemingly upright people and distinguished institutions buy and exhibit antiquities under questionable circumstances in spite of international law. The Getty Museum's former chief antiquities curator, Marian True, is on trial in Italy for her suspicious acquisition tactics; the Metropolitan Museum of Art in New York City last year negotiated the return of the famous Euphronios krater to the Italians.

While highly publicized stories illustrate mounting concern, the symposium allowed more than 100 participants to focus on some new wrinkles that encourage, or discourage, the looting of ancient sites. And make no mistake, there is still much to steal. Rhodes says in Corinth alone, where excavation has occurred since the 19th century. "(Archaeologists) haven't removed a fraction of what's there."

Look on eBay, encouraged speaker Marcia Rickard, associate professor of art history at Saint Mary's College. Hundreds of "antiquities" are for sale, promising a provenance of Persia or the Middle East. Caveat emptor: If they're not fakes, they may be part of the flood of historic pieces flowing illegally out of Iraq and Afghanistan, apparently through the efficient pipelines of the drug and weapons cartels.

Wars have a way of abetting criminals; symposium participants shared information on their work to staunch the problem. Law School professor Mary Ellen O'Connell outlined the points of international law at play in the safekeeping of Iraq's antiquities. Brian Rose, president of the Archaeological Institute of America, described his regular addresses to Iraq-bound troops on how to prevent looting and what to do when coming upon a looting incident.

Where these smuggled goods go—often into the private collections, increasingly in Asia—illustrates the rising influences of globalization. Many museum directors would argue, as did James Cuno, director of The Art Institute of Chicago, that antiquities should be ever more accessible to citizens of the world, not just to those who can get to an artifact's country of origin.

Yet balance must be found, Rhodes notes, as nations try to hold on to their identities against the flattening effects of globalization. "If somebody stole the Liberty Bell, we'd be crushed," says Loving, who notes that U.S. citizens also would not want the Statue of Liberty sold to the highest bidder.



Archaeologist Robin Rhodes is at work with former undergraduates Gloria Park Hunt and Phillip Sapirstein at an excavation site in Corinth, where he investigates Greek Stone Architecture. The proper handling of classical antiquities yet to be excavated from this and other sites was the topic of a conference late last month co-organized by Rhodes and supported by the Snite Museum of Art and the Nanovic Institute. *Photo provided.*

## Mini-Medical School addresses avian flu, steroids, diabetes

By Carol C. Bradley

The 13th annual Mini-Medical School Lecture Series, presented by the Indiana University School of Medicine—South Bend, will cover timely topics from avian flu to the problem of performance-enhancing drugs in athletics.

The lecture series is coordinated by Dr. Mark Walsh '69, an emergency room physician who serves as director of medical education at Memorial Hospital. He is also a clinical assistant professor of medicine at the IU School of Medicine—South Bend.

Speakers for the series include both expert local physicians and nationally known speakers. Those attending the lecture on avian flu will hear from Dr. Joseph J. Continguglia, an Air Force colonel who recently attended a Department of Defense briefing on avian flu and disaster preparedness.

In light of the recent BALCO investigations, Dr. Walsh has also asked Dr. James M. Moriarty, University Health Services physician and physician to Notre Dame's athletic teams, to speak on the problem of performance-enhancing drugs in athletics. "He has a unique vantage

point," Dr. Walsh says. "He's a charter member of the American College of Sports Medicine, and is one of the nation's leading experts in the field."

The lecture series, Dr. Walsh notes, is a good example of a joint venture between Indiana University and Notre Dame serving the interests of the community. The intended audience, Dr. Walsh says, "is anyone who wants to come." The audience at one of last year's lectures included a group of 40 high school students.

Lectures are held at Raclin-Carmichael Hall, 1234 Notre Dame Ave. Admission is free, but advance registration is requested. To register, or for more information, call 647-7389.

• 7 p.m. Wednesday, March 14: **Avian Flu Epidemic: Are We Prepared For a Disaster?** Dr. Joseph J. Continguglia, Colonel USAF, Keesler Air Force Base, Mississippi.

• 7 p.m. Wednesday, March 21: **Performance Enhancing Drugs Among Professional Athletes: The BALCO Investigation—Not Just Barry Bonds.** Dr. James Moriarty, Notre Dame Athletics team physician.

• 7 p.m. Wednesday, March 28: **Diabetes: Everybody's Got It, What Do We Do Now?** Dr. Mary Ann Emanuele, Loyola University School of Medicine.

## Heads-up as time change impacts campus technology

By James Cope

Check [oit.nd.edu/time](http://oit.nd.edu/time) to prepare your computer, telephone or PDA for Daylight Saving Time March 11.

To quote Bob Dylan, "the times they are a-changin'."

In 2005, the U.S. Congress passed a law shifting the start of Daylight Saving Time (DST) from early April to March 11 and its end to Nov. 4 from late October. The change, a result of the Energy Policy Act, affects technology and computer programs with built-in coding that recognizes the previous DST season.

Keeping ordinary clocks and watches synchronized during these extra daylight days is a mild disruption. But tweaking personal computers, Notre Dame's central computing systems and telephones to recognize the extra days in daylight saving can be a hassle for campus computer users and a lot of extra work for OIT.

"Users of computing devices on campus need to take action before March 11," says Peggy Rowland, OIT's director of customer support services.

OIT has prepared a Web-based guide for adapting to the change at [oit.nd.edu/time](http://oit.nd.edu/time), Rowland says. There, users of Windows PCs, Macintosh computers, Linux-based machines, personal digital assistants (PDAs) and telephones will find what they need to know and do to accommodate the time change.

Employees may find that their office and personal computers and other devices employ operating systems that will require patching or that will be unable to adapt to the new time schedule. The OIT Web site identifies programs that may become obsolete with this changeover.

For OIT, preparing the campus has involved a multi-phase approach. The most all-encompassing chapter thus far has been prepping faculty and staff for an update of CorporateTime. Printers throughout campus reproduced calendar hardcopies as part of the transition late last month.

Since the beginning of the year, OIT engineers have spent approximately 200 hours patching 370 time-sensitive central computing systems. Database administrators spent at least 50 hours in February patching over 50 databases to accommodate the extra daylight saving days.

"Computers that process everything from paychecks to e-mail reference an onboard clock and the clock's interaction with operating systems and applications," says OIT Director of Operations and Engineering Mike Alexander.

Unlike last year, when OIT responded to Indiana's switch to daylight saving Time, "the mandated change in the start date resulting from the Energy Policy Act is nationwide; IT departments all over the country have been scrambling their resources."

Alexander says, "Our testing shows we're ready; we'll know for sure at around 2:01 a.m. on March 11."

## FROM THE ARCHIVES



"Burmese Woman with Cigar," by British photographer J. Jackson ca. 1870s, is part of the Snite Museum of Art's new O'Grady collection of 19th-century photographs of Asian women. The collection of over 70 images will be on exhibition in fall 2007. *Photo courtesy Snite Museum of Art.*

## DISTINCTIONS

The University congratulates the following employees, who are celebrating significant service anniversaries this month.

### 30 years

Mary K. Davies, University Libraries

Dennis D. Freeman, power plant and utilities

Margaret D. Steward, development

### 25 years

Tamara R. Springer, dean's office, Mendoza College of Business

Marilyn K. Walker, aerospace and mechanical engineering

### 20 years

Kathy L. Reeves, warehouse

Sandra K. Tompkins and Ana Laskowski, facilities maintenance

Keith A. Bruce, general services

### 15 years

Claude J. Devaney, OIT—educational technologies

Brenda L. Young, facilities maintenance

### 10 years

Wade E. Stoller, service center

Annie K. Geary, development

Tina M. Durski, band office

## Spiritual fitness melds reflection with exertion

By Judy Bradford

So, you want to make more time for exercise.

But it's Lent. Prayer and introspection are also important.

You can combine the two—and be guided by a professional in both disciplines—by taking a class in “spiritual fitness” with Suzanne Judge. She's a certified fitness instructor who also has a master's degree in spiritual and pastoral care from Loyola College in Baltimore.

In her early-morning class in Rockne Memorial, she teaches aerobics and strength training while incorporating devotional exercises that get you ready to face the day's challenges.

Upbeat, rhythmic versions of traditional hymns and songs also serve as a kind of glue to bring physical and spiritual dimensions together.

The class might begin with side-to-side steps to a clubby version of “Amazing Grace,” easing into knee bends to “I Have Decided to Follow Jesus.”

Weights or stretch bands might follow. No spiritual component per se here. Hey, it's hard enough just pumping iron.

But then you might be asked to run with high knees over to a mirror that has the word “forgiveness” taped to it. While running in place, you're asked to think about your life and whether you're too hard on yourself, or whether you need to be forgiven.

## Creating a film culture on campus

By Carol C. Bradley

New live broadcasts of Metropolitan Opera performances in the Browning Cinema are just the latest reason why Peter Holland hails the facility as one of the major independent cinemas in the Midwest.

The film center of the Marie P. DeBartolo Center for the Performing Arts opened almost two years ago with a noteworthy pedigree: It is the only THX-certified cinema in the state of Indiana, and one of only six worldwide. The THX standard, developed by director George Lucas, considers image brightness, auditorium acoustics and sound quality.

Fancy as it is, the facility works as an entertainment and instructional plow horse. Last year the cinema offered 165 public film screenings—as well as lab screenings for courses on Monday, Tuesday and Wednesday nights. Film history and theory courses are also taught there.

“Students now know that movies are something to watch on a big screen and listen to in superb sound, not something you watch on TV or on an iPod,” says Holland, chair of the Department of Film, Television, and Theatre.

With the enormous range of films shown at the Browning, students are able to “learn to enjoy film in all its many manifestations,” Holland says. That experience is owed in no small part to manager Jon Vickers, who left his family manufacturing business in 1996 to give in to his own love of film. He purchased a movie theater in Three Oaks, Mich.

“It was a naïve, romantic idea,” says Vickers, who was educated as a civil engineer. “We made the decision a day after the ‘for sale’ sign went up, not knowing anything about the industry.” The original plan was to live a simpler life—he and wife, Jennifer, would show foreign, classic and independent films at the Vickers Theatre and live in an apartment upstairs.

The Vickers Theatre is still in operation, but Jon Vickers joined Notre Dame when DeBartolo opened. Last year, Vickers calculates, he saw 260 films—not counting the screener copies he watched at the office. The performing arts center presents its own roster of films such as the ongoing PAC Classic 100. The series continues with **All Quiet on the Western Front**, 3 p.m. Saturday, March 17 and

**Midnight Cowboy**, 3 p.m. Saturday, March 24.

Vickers also is an essential partner in the many film series that support instruction—on the Holocaust, genocide and European studies, to name a few.

Behind the scenes, Vickers manages a multi-step process that involves “booking, inspecting, screening, paperwork, contracts and getting (the film) back out.” Working with the Nanovic Institute on a European film series exposed audiences to films never released in the U.S. “The titles are challenging to book. For one Greek film, we brought a print over from Europe,” he recalls. The series continues with **Battle of Algiers**, 7 p.m. and 10 p.m. Thursday, March 22.

Vickers is aided by a student projectionist and a part-time production assistant, but regulars to the Browning also have seen him take tickets and even pop popcorn.

To Holland's mind, this collaborative effort means there is now a film culture on campus where faculty, staff and the local community can watch and appreciate films in a way never possible before.

“We are very, very lucky,” Holland says. The number of film majors has increased by 200 percent since the year 2000, he notes. “It's early days, but with these facilities and the faculty support, Notre Dame is going to be famous nationally for having one of the great film programs.”

The next live broadcast of a Saturday Metropolitan Opera matinee is **The Barber of Seville** at 1:30 p.m. March 24. Other upcoming Browning presentations are:

Pedro Almodóvar's **Volver** at 7 p.m. and 10 p.m. Saturday, March 17 and 7 p.m. and 10 p.m. Saturday, March 24; **Black Gold**, 7 p.m. and 10 p.m. Friday, March 23; and **Sisters of the Gion** at 10 p.m. on Thursday, March 29 and 10 p.m. on Friday, March 30.

From Thursday, March 29 through Sunday, April 1 the Browning Cinema will screen **The Decalogue**, a series of 10 shorts created for Polish Television, with plots loosely based on the Ten Commandments. The series was voted to the Vatican's Top 45 List for religion.

Tickets are \$5 for faculty and staff, \$4 for seniors and \$3 for students.

Then you might “grapevine” across the room to the word “gentle,” or do jumping jacks to the word “thanks.”

By now, the oxygen is coursing through your body and your brain, and you're ready to tackle the word “intention.”

It's also after 7 a.m., and the sun is rising. An uplifting moment all by itself.

The idea for the class was born when Campus Ministry sent out a call to all Recreational Sports instructors, asking if anyone was interested in teaching a class with a spiritual component.

Judge jumped at the chance.

“It was a great way to fuse the two together,” she says of her fitness and theological training. For participants, she says it's a great way to make

exercise a more “mindful,” and therefore special, time of the day.

“I think there is a genuine need to bring the physical element into our spiritual work. It's already in our worship tradition, with genuflecting and making the sign of the cross.”

To prepare for class, Judge says she thinks and prays about how she will meet the participants' physical fitness needs and spiritual concerns at the same time.

Second-year law student Sara Arbogast and senior undergraduate Kristen Mehlberg attend the class together. They see it as time to spend together while also meeting their workout needs.

“It's a good time to start the morning right, with a little extra prayer time. It brings you back to the basics,” says Mehlberg.

Spiritual Fitness meets Monday and Wednesday mornings from 6:45 to 7:30 a.m. To enroll, contact RecSports at 631-6100.

### Upcoming health and recreation activities:

New **RecSports Mind/Body exercise classes** begin Monday, March 19. Registration is ongoing for day and evening classes in **Pilates, Yoga, and Yoga/Pilates Fusion**, and you may register to join a class after it's started. All other fitness classes are half-price after spring break. Visit [recsports.nd.edu](http://recsports.nd.edu) for more information.

Drop-in **blood pressure and body fat checks**—11:30 a.m. to 1 p.m. Wednesday, April 4, Grace Hall lobby. Screenings are offered in this location the first Wednesday of every month.



Above, Casey Swanke exercises to upbeat hymns. At right, Analisa Andry, front, and Rosie Cisneros participate in a RecSports class that combines exercise and devotions. *Photo Carol C. Bradley.*



## FYI

### Experience ‘acrollage,’ student art

The exhibition **Evoke 2 Provoke**, by artist Rodriguez Calero continues through April 26 at Crossroads Gallery, in the Notre Dame Downtown Center, 217 S. Michigan St. Calero's distinctive style, a combination of painting, printmaking, collage and other media, is known as acrollage. Admission is free. The exhibition is presented by the Institute for Latino Studies. More information is at [nd.edu/~latino/arts/crossroads.htm](http://nd.edu/~latino/arts/crossroads.htm).

An opening for the annual exhibition of work by the Department of Art, Art History and Design **B.F.A. and M.F.A. thesis candidates** will be from 2 to 4 p.m. Sunday, April 1 at the



SFJAZZ Collective



Tiempo Libre

Snite Museum of Art. The exhibition continues through May 20.

### Labor cinema at Hesburgh Center

The **Labor Film Series**, sponsored by the Higgins Labor Research Center and the Center for Social Concerns, continues with **Farmingville**, 4:30 to 6 p.m. Monday, March 26 and “**Is Walmart Good for America?**”, 4:30 to 6 p.m. Monday, April 2 in the Hesburgh Center Auditorium. Each film is followed by a lecture and discussion. The series is co-sponsored by the Center for Social Concerns, which is celebrating the year of “Economic Justice for All.” Admission is free. For more information, visit [nd.edu/~hlrc/events/](http://nd.edu/~hlrc/events/).

### Baroque to jazz at the performing arts center

The Baroque trio **Fleur de Lys** will perform the music of Bach, Handel and Telemann on 17th and 18th century instruments at 2:30 and 7:30 p.m. Sunday, March 18 in the Reyes Organ and Choral Hall. Tickets are \$10 for faculty, staff and seniors, \$5 for students.

The **Notre Dame Chamber Players** plans music from Kabalevsky's Cello Sonata and Dvorak's Piano Quartet in E-flat for their spring concert, 8 p.m. Wednesday, March 21 in the Leighton Concert Hall.

Tickets are \$8 for faculty and staff, \$6 for seniors and \$3 for students.

The all-star **SFJAZZ Collective**, with saxophonist Joshua Redman and vibes player Bobby Hutcherson, performs at 8 p.m. Friday, March 23 in the Leighton Concert Hall. Tickets are \$30 for faculty, staff and seniors, \$15 for students. Then there's Latin Jazz from the Grammy-nominated **Tiempo Libre** Friday, March 30. Tickets are \$25 for faculty, staff and seniors, \$15 for students.

The Department of Music's **Faculty Recital Series** continues **Craig Cramer's** series of works by Dieterich Buxtehude at 8 p.m. Monday, March 19 in the Reyes Organ and Choral Hall, and soprano **Georgine Resick** in performance at 2 p.m. Sunday, April 1 in the Leighton Concert Hall, accompanied by Warren Jones, principal pianist for the Camerata Pacifica. The program will feature poetry set to music by the masters. Tickets are \$8 for faculty and staff, \$6 for seniors and \$3 for students.

Tickets are available by calling the box office at 631-2800.

### Marriage of Figaro at the Morris

The 90-member **Bulgarian State Opera** brings “Le Nozze di Figaro” (“The Marriage of Figaro”) to the Morris Performing Arts Center in an ND Presents event at 7:30 p.m.

Thursday, March 22. Tickets are \$37 to \$31 for faculty, staff and seniors, \$30 to \$26 for students. Visit [morriscenter.org](http://morriscenter.org) for tickets, or contact the box office at 574-235-9190.



For more events information, see [agenda.nd.edu](http://agenda.nd.edu)

## Her outreach brings young science students to campus

By Gail Hinchion Mancini

Karen Morris is often giving scientific demonstrations in local schools as coordinator of outreach for the Department of Chemistry and Biochemistry. But it's a good thing the children came to her Saturday, for the annual Northern Indiana Regional Science and Engineering Fair.

To successfully pull off the all-day event, Morris "needs to be everywhere at once," she says. The task requires coordinating more than 250 student participants, almost that many projects and about 130 judges. They arrived from the ranks of faculty, staff, students and teachers from elementary, middle and high schools in St. Joseph, Marshall and Elkhart counties.

The students—fourth through 12th graders—displayed their projects on poster board mounted on rows and rows of tables (complements of the South Bend Community School Corp). Throughout the course of the day, judges examined the works and awarded more than 100 special awards. Top-ranked middle and high school students would head to the state competition, and the best high school students qualified to compete at the international level.

Her department—chemistry and biochemistry—officially sponsors the fair, but cross-campus contributions are widespread. David Leighton of chemical engineering was key in coordinating judges; László Barabási's research center sponsored hospitality accoutrements. ROTC faculty were in evidence and sponsored several special awards.

It now becomes Morris' task to ensure that students receive their awards, that award sponsors are notified of the winners, and that the paperwork is prepared for those headed to state or the international competition.

But her job Saturday was of a more human nature. "I do a lot of walk throughs," she says.

Some of the younger children are brand new to this experience, as are

their parents, who can be nervous about leaving them alone for four hours (the fair is strictly for students and judges during the morning judging period.) "We assure them they're not alone, they have more than 120 adult supervisors!"

Morris came to Notre Dame in 1987, fresh out of Purdue University, where she earned a degree in chemistry education. She also holds a master's degree in curriculum and instruction from Andrew's University. She became an outreach coordinator in 2003 and took over the job of coordinating the fair from former mathematics professor Mario Borelli, whose service is honored with an award in his name.

Besides visiting local schools and running the science fair, Morris runs a one-day career conference for middle school girls every April, arranges youth tours and is continuing to organize a summer science experience for middle schools.

One of best things about Saturday's event? "It's a joy discussing their science with them," she says. "Especially the younger children."



As children and judges file into Stepan Center early Saturday morning, regional science fair coordinator Karen Morris sees that the event is off to a trouble-free start. **ND Works staff photo.**



The day-long science fair leaves participants time to see what their peers have accomplished, such as these students from local elementary schools. **Photo by Cheryl Kelly.**



The award ceremony for the Northern Indiana Regional Science and Engineering Fair draws hundreds of supporters to cheer for the more than 250 student participants. **Photos by Cheryl Kelly.**



Retired mathematics professor Mario Borelli meets Justice Johnson, the recipient of an award named in his honor. **Photo by Cheryl Kelly.**

## Osmer and Porod bring nanoscience to Lego-life

By Gail Hinchion Mancini

One hundred and four national and international youth teams are to compete in Atlanta next month in a nanoscience technology challenge drawn from a Notre Dame collaboration that was both academic and parental.

Carol Osmer, senior administrative assistant in the Office of the President, started the FIRST Lego League (FLL) team at Prairie Vista Elementary because it engaged the interest of her daughter Caitlyn, now a Penn High School junior. Osmer met fellow parent Wolfgang Porod when



A souvenir sample of a FIRST Lego League project is always nearby for Carol Osmer, whose league and professional partnerships with engineering professor Wolfgang Porod led to the creation of an international youth educational challenge on nanoscience technology. **ND Works staff photo.**

his son, Christian, also got interested in the program, eventually becoming Caitlyn's teammate. Porod is director of the Center for Nano Science and Technology and the Freimann Professor of Electrical and Chemical Engineering.

As the children advanced in FLL, the two parents became involved in running the annual regional competition, which takes place in Stepan Center each December. Their children have outgrown FLL. But Osmer and Porod were still on board last Dec. 3 to see regional competitors use Legos and Lego robotics in challenges that illustrate principles of math, science or engineering.

Nanoscience involves the science of atoms and is something of a new frontier. In real life, nanoscientific solutions are expected to aid medicine and space travel, as well as materials production.

But Osmer, who served for a time as the nanoscience center's administrative assistant, and Porod both thought the field would provide a perfect challenge for an FLL competition. "I was listening to him talking to students about what nanoscience is, and I thought it was incredibly exciting," Osmer remembers.

Osmer pitched the idea; at first, FLL officials didn't catch on to their enthusiasm. But then the commercial world began showing a comfort level with nanoscience. The advent of the iPod nano, for example, has helped put the word into the mainstream vernacular, Porod says.

In early 2005, Osmer and Porod's concept, ultimately named "Nano Quest," was designated the 2006 international challenge. They attended a brainstorming session in New Hampshire, where they found themselves part of a committee that included a Cornell nanoscience outreach specialist, an astronaut and the head of a New York children's science museum.

Eventually, the team identified nine exercises that each illustrate a fundamental point about nanoscience or demonstrate its broad-reaching potential. Competitors range from mid-grade-school through high school-age (an early elementary junior level was introduced this year as well), so the challenge concepts vary in difficulty. One merely demonstrates the small scales involved in nanoscience. Another demonstrates the manipulation of atoms that nonscientific applications employ. Others focus on the contributions nanoscience may make in space travel, medicine or the development of super-strong materials.

In committee work, the two Notre Dame representatives provided different perspectives. Porod advised on challenges that authentically represent the science. Osmer's contributions leaned toward

identifying how the science could be transformed to a concept that younger children could grasp. The committee coined the concept of "pizza molecules" and an exercise was developed that demonstrates how molecules travel from a pizza to a nose and activate the sense of smell.

In competition, teams use standard Nano Quest Lego kits and Lego robots to demonstrate a solution in 2 1/2 minutes. Another level of the competition welcomes research presentations on the science, its potential and its possible dangers. The best from the regional competition head to state.

Neither Osmer nor Porod expect to attend the Atlanta finals, hosted in April by FIRST, a broader program that sponsors several science-based competitions. Some 10,000 competitors are expected in the city's convention center.

Still, they had the satisfaction of seeing their concepts executed during the December regionals. Although not nano, the scale of that event is small and has a hometown feel. And the quality of work, says Porod, "was surprisingly high-level."

They also know that many more children—more than 70,000 children participate in FLL throughout the world—have learned about nanoscience, as have "their parents and parents' friends," Osmer says.